Darovi zemlje: neolitik između Save, Drave i Dunava

Balen, Jacqueline; Bickle, Penny; Borić, Dušan; Budja, Mihael; Burić, Marcel; Čataj, Lea; Hršak, Tomislav; Miloglav, Ina; Pasarić, Maja; Radović, Siniša; ...

ARHEOLOŠKI MUZEJ U ZAGREBU | muzej slavonije OSIJEK | FILOZOFSKI FAKULTET U ZAGREBU

DAROVI ZEMLJE

neolitik između Save, Drave i Dunava

GIFTS OF THE EARTH

The Neolithic between the Sava, Drava and Danube

IMPRESSUM

Nakladnici / Publishers
Arheološki muzej u Zagrebu
Muzej Slavonije Osijek
Sveučilište u Zagrebu Filozofski fakultet

Za nakladnike / For the publishers
Jacqueline Balen
Grgur Marko Ivanković
Damir Boras

Urednici / Editors
Jacqueline Balen, Tomislav Hršak, Rajna Šošić Klindžić

Autori tekstova / Texts
Jacqueline Balen, Arheološki muzej u Zagrebu
Penny Bickle, University of Bristol, UK
Dušan Borić, University of Cardiff, UK
Mihael Budja, Oddelek za arheologijo, Filozofska fakulteta Univerza v Ljubljani, Slovenija
Marcel Burić, Odsjek za arheologiju, Filozofski fakultet, Sveučilište u Zagrebu
Lea Čataj, Hrvatski restauratorski zavod, Zagreb
Tomislav Hršak, Muzej Slavonije Osijek
Ina Miloglav, Odsjek za arheologiju, Filozofski fakultet, Sveučilište u Zagrebu
Maja Pasarić, Institut za etnologiju i folkloristiku, Zagreb
Siniša Radović, Zavod za paleontologiju i geologiju kvartara, HAZU
Kelly Reed, Oxford, UK
Rajna Šošić Klindžić, Odsjek za arheologiju, Filozofski fakultet, Sveučilište u Zagrebu
Tihomila Težak Gregl, Odsjek za arheologiju, Filozofski fakultet, Sveučilište u Zagrebu
Alenka Tomaž, Univerza na Primorskem, Koper, Slovenija
Boban Tripković, Odeljenje za arheologiju, Filozofski fakultet Beograd, Srbija

Autori tekstova o lokalitetima / Texts on archaeological sites
Jacqueline Balen
Katarina Botić
Marcel Burić
Lazo Čučković
Ana Đukić
Tomislav Hršak
Anita Ivanković
Goran Jakovljević
Vedran Koprivnjak
Maja Krznarić Škrivanko
Dženi Los
Blanša Maljković
Zorko Marković
Marija Mihaljević
Lidija Miklik-Lozuk
Kornelija Minichreiter
Helena Nodilo
Lana Okroša Rožić
Kristian Paskojević
Mirela Pavličić
Tatjana Pintarić
Dragana Rajković
Šime Vrkić

CIP zapis dostupan u računalnome katalogu Nacionalne i sveučilišne knjižnice u Zagrebu pod brojem 876230

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Autori kataloških jedinica / Catalogue entries

J.B.	Jacqueline Balen
A.B.	Ana Bobovec
K.B.	Katarina Botić
M.B.	Marcel Burić
A.Đ.	Ana Đukić
T.H.	Tomislav Hršak
A.I.	Anita Ivanković
G.J.	Goran Jakovljević
V.K.	Vedran Koprivnjak
M.K.Š.	Maja Krznarić Škrivanko
B.M.	Blanša Maljković
Z.M.	Zorko Marković
M.M.	Marija Mihaljević
L.M.-L.	Lidija Miklik-Lozuk
K.M.	Kornelija Minichreiter
L.O.R.	Lana Okroša Rožić
K.P.	Kristian Paskojević
M.P.	Mirela Pavličić
T.P.	Tatjana Pintarić
D.R.	Dragana Rajković
S.S.	Silvija Salajić
R.Š.K.	Rajna Šošić Klindžić
K.Š.	Katarina Šprem
H.T.	Hrvoje Tkalac
Š.V.	Šime Vrkić
V.Ž.	Vesna Žarak

Prijevod / Translation
Tamara Levak Potrebica (s hrvatskog na engleski jezik)
Apostrof d.o.o. (s hrvatskog na engleski jezik)
Ana Đukić (s engleskog na hrvatski jezik)

Lektura / Editor
Božena Bunčić (tekstovi na hrvatskom jeziku)

Fotografije / Photographs
Igor Krajcar
Bruno Jobst
Damir Fajdetić
Dubravko Vidiček
Foto-arhiv i terenska dokumentacija posuditelja građe

Crteži / Drawings
Krešimir Rončević

Grafički dizajn / Graphic design
mit dizajn studio
Boris Bui, FFZG

Naklada / Number of printed copies:
500 komada

Tisak / Print:
ibl d.o.o. Osijek

ISBN 978-953-6789-80-1 (AMZ)
ISBN 978-953-6191-64-2 (MSO)
ISBN 978-953-175-503-0 (FFZG)

IZLOŽBA / EXHIBITION

Autori izložbe / Exhibition authors
Tomislav Hršak
Rajna Šošić Klindžić
Jacqueline Balen

Stručni suradnici / Expert associates
Ana Đukić
Dragana Rajković
Selena Vitezović

Konzervatorsko-restauratorski radovi / Conservation and restoration
Marina Gregl
Zrinka Znidarčić
Anđelko Kovačević
Vedran Mesarić

Marketing i odnosi s javnošću / Marketing and public relations
Branimir Ivić
Sanja Mijač Božek

Edukativni program / Educational program
Zorica Babić
Anja Bertol

Tehnička izvedba postava / Technical support
Slađana Latinović
Vedran Mesarić
Tehnička služba AMZ:
Robert Vazdar
Ivan Troha
Srećko Škrinjarić
Damir Zbukvić
Ivan Fakleš

Animacije / Animations
Preuzeto iz stalnog postava prapovijesti Muzeja Slavonije Osijek, autor Marin Balaić, mit dizajn studio

Proširena stvarnost / Augmented reality
Jasmin Klindžić

Vizualni identitet / Visual identity
mit dizajn studio

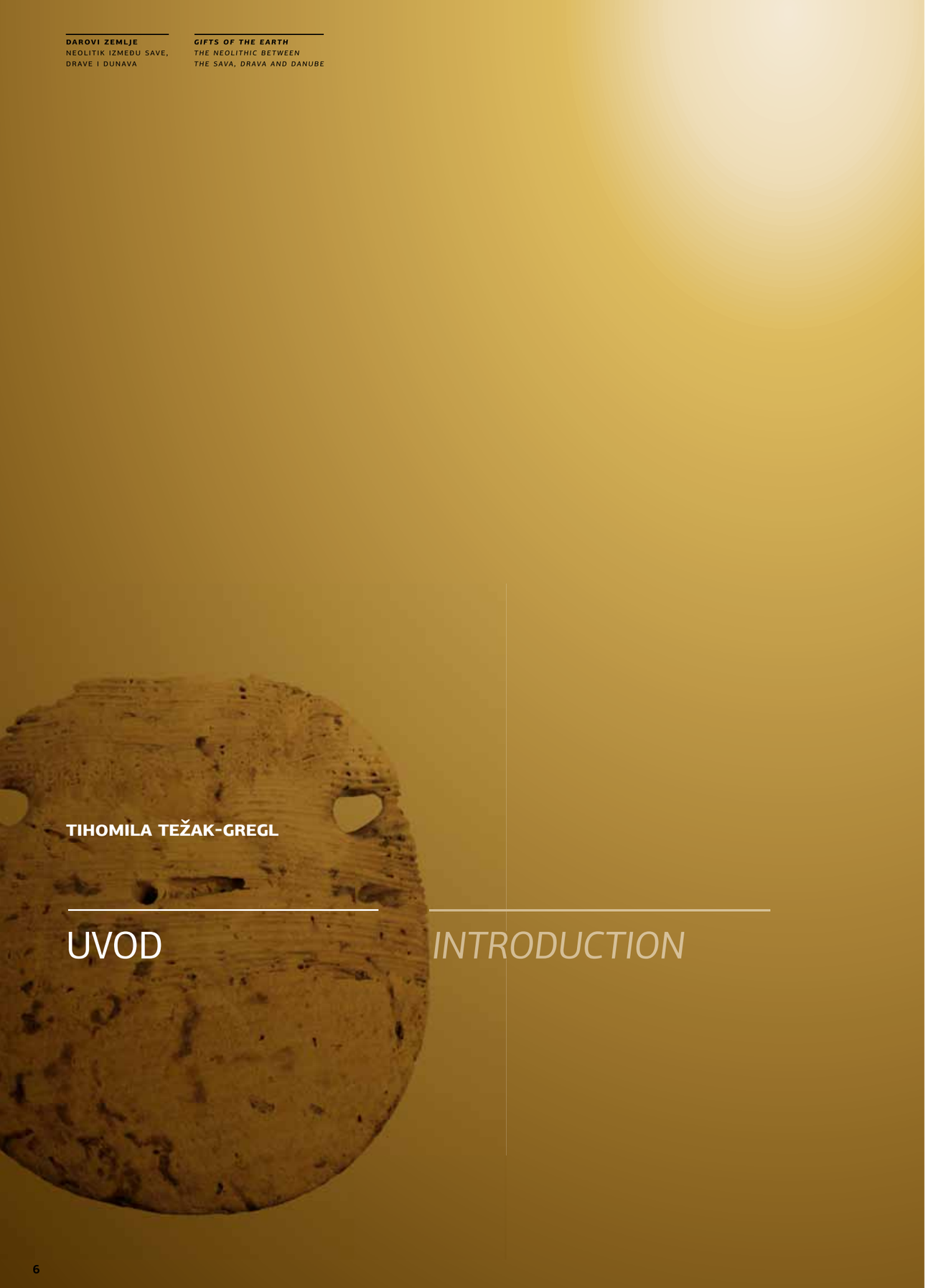
Posuditelji građe / Exhibits on loan from
Arheološki muzej u Zagrebu
Geoarheo d.o.o.
Gradski muzej Bjelovar
Gradski muzej Križevci
Gradski muzej Nova Gradiška
Gradski muzej Požega
Gradski muzej Vinkovci
Gradski muzej Virovitica
Institut za arheologiju
Muzej Brodskog Posavlja
Muzej Moslavine Kutina
Muzej Slavonije Osijek
Muzej Turopolja
Odsjek za arheologiju Filozofskog fakulteta u Zagrebu
Zavičajni muzej Stjepana Grubera

Izložba je ostvarena sredstvima Ministarstva kulture RH i Gradskog ureda za obrazovanje kulturu i sport Grada Zagreba / The exhibition was financed by the Croatian Ministry of Culture and the Zagreb City Office for Education, Culture and Sports

SADRŽAJ *CONTENT*

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE



TIHOMILA TEŽAK-GREGL

UVOD *INTRODUCTION*

U svekolikoj prošlosti ljudskoga roda, a računamo je na gotovo 3 milijuna godina, nekoliko je iznimno važnih prekretnica koje su u konačnici stvorile svijet u kojemu i kakvomu danas živimo. Smatra se da je jedna od takvih ključnih promjena prijelaz sa skupljačko-lovačkog načina pribavljanja hrane na njezinu proizvodnju poljodjelstvom i stočarstvom. Takva strategija opstanka jedno je od osnovnih obilježja razdoblja što ga nazivamo *neolitikom*. Sam naziv dugujemo Johnu Lubbocku koji ga je prvi put upotrijebio 1865. u svome djelu *Prehistoric Times, as illustrated by ancient Remains and the Manners and Customs of modern Savages* podijelivši kameno doba na raniju fazu obilježenu lomljenim kamenim oruđem (starije kameno doba ili paleolitik) i kasniju fazu glačanih kamenih sjekira (mlađe kameno doba ili neolitik). Prvobitno je, dakle, naziv odražavao samo tehnološki aspekt i opisivao razdoblje u kojemu je materijalna kultura u tehnološkom smislu bila naprednija u odnosu na prethodno. No, istraživanja neolitičkih nalazišta i promišljanja o njima ubrzo su pokazala da je to razdoblje daleko složenije i da ga određuje niz promjena, ne samo materijalnih nego i gospodarskih, društvenih i duhovnih. Smatrajući kako je uvođenje poljoprivrede i njezino širenje bilo presudno za napredak čovječanstva u njegovoj ranoj povijesti, Gordon Childe je osmislio pojam *neolitičke revolucije*. Po njegovu je mišljenju do takve sveobuhvatne i kvalitativne promjene moglo doći isključivo revolucijom koja je potom omogućila trajno naseljavanje na jednome mjestu, što je potaklo gomilanje materijalnih dobara, razmjenu i trgovinu, specijalizaciju obrta te porast populacije. Međutim, valja reći da ta promjena nije bila ni nagla ni ujednačena, nego postupna i dugotrajna, a njezino je širenje ovisilo o brojnim i različitim čimbenicima kako na široj regionalnoj tako i mikroregionalnoj razini. Dakle, nije bila riječ o iznenadnom preokretu nego o dugotrajnom procesu koji je nazvan *neolitizacijom* i shvaćan je više kao prijelaz, a manje kao korjenita smjena strategija preživljavanja. Da bi se objasnio sam proces i mehanizmi njegova djelovanja, razvijen je niz različitih teorijskih modela. Prema uvriježenom mišljenju glavne značajke neolitika koje ga razlikuju od prethodnih razdoblja jesu gospodarstvo utemeljeno na poljodjelstvu i stočarstvu, s time u vezi sjedilački način života u trajnim naseljima ruralnoga tipa, materijalna kultura zasnovana na proizvodnji raznovrsne keramičke robe te primjena tehnike glačanja, bušenja i brušenja pri izradbi i obradbi kamenoga oruđa i oružja. Ipak, ne možemo reći da su sve to inovacije neolitičkoga razdoblja. Naprotiv, sve one imaju svoje začetke već u prethodnim razdobljima gornjega paleolitika, epipaleolitika ili mezolitika. Prva proizvodnja predmeta od pečene gline, tj. keramike potvrđena je još u vremenu gornjega paleolitika o čemu svjedoče brojne keramičke figurice ljudskih i životinjskih likova kao i neki drugi predmeti. Ali masovna proizvodnja keramičkog posuđa i drugih utilitarnih predmeta te daljnje oblikovanje

In the overall past of the human race, and this is counted back almost 3 million years, there have been several exceptionally vital watersheds which ultimately created the world in which now live. It is generally held that one of these crucial changes was the transition from the hunter-gatherer way of obtaining food to food production by means of agriculture and livestock husbandry. Such a survival strategy was one of the basic features of the period called the Neolithic. The actual term was coined by John Lubbock, who first used it in 1865 in his book Prehistoric Times, as Illustrated by Ancient Remains and the Manners and Customs of Modern Savages, dividing the Stone Age into an earlier phase characterized by knapped stone tools (the older Stone Age or Palaeolithic) and a later phase of polished stone adzes (the younger Stone Age or Neolithic). Initially, thus, the term only reflected a technological aspect and described the period in which the material culture was more advanced than the preceding one in the technological sense. However, research into Neolithic sites and contemplation on them soon showed that this was a much more complex period, and that it was designated by a series of changes, not only material but also economic, social and spiritual. Believing that the introduction of agriculture and its spread were crucial to the progress of humankind in its early history, Gordon Childe devised the term Neolithic revolution. In his view, such an all-encompassing and qualitative change could only have come about by a revolution which then facilitated permanent settlement at a single place, and thus prompted the accumulation of material goods, exchanges and trade, specialization of crafts and population growth. However, it should be noted that this change was neither sudden nor uniform, but rather gradual and long-term, and its spread depended on numerous and different factors both at the regional and micro-regional levels. It was not, therefore, a matter of a sudden shift, but rather a long-lasting process which has been called Neolithization, and it is understood as more of a transition, and less as a radical change in survival strategies. A series of diverse theoretical models have also been developed to explain the actual process and the mechanisms whereby it functioned.
According to the accepted view, the primary characteristics of the Neolithic which distinguish it from preceding periods are an economy based on agriculture and livestock husbandry and the related sedentary lifestyle in permanent settlements of a rural type, a material culture based on production of various types of ceramic goods and application of polishing, drilling and grinding techniques in the production and rendering of stone implements and weapons. However, we cannot say that all of these were innovations of the Neolithic era. On the contrary, all of them had their origins already in the preceding periods of the Upper Palaeolithic, Epipalaeolithic or Mesolithic. The first production of baked clay, or ceramic, items has been confirmed in the time of the Upper Palaeolithic, to which numerous ceramic figurines of humans and animals, as well as certain other items, testify.

figuralne plastike, snažan procvat doživljavaju upravo u neolitiku i tada ti predmet kroz svoje tehnološke, tipološke i stilske raznolikosti omogućuju arheolozima da identificiraju pojedine srodne ljudske skupine – keramika postaje svojevrsni izraz njihova identiteta. Sjedilački način života – sedentizam, javlja se neovisno o poljoprivrednom načinu života, već u gornjem paleolitiku, a epipaleolitičke zajednice jugozapadne Azije poput onih geometrijskog kebarijena ili natufijena, žive u trajnim, tipiziranim naseljima. Prve korake prema domestikaciji životinja i kultivaciji biljaka također su učinili već pripadnici nekih lovačko-skupljačkih mezolitičkih i/ili epipaleolitičkih zajednica. Pri ubiranju biljaka pazili su da ostave korijen ili gomolj ili sjeme, a u lovu da ne ubiju svu mladunčad ili skotne ženke. Može se, dakle, razlikovati više stupnjeva razvoja lova koji postupno vode domestikaciji. Tehniku glačanja kamena također su poznavali već gornjopaleolitički lovci, ali primjenjivali su je samo u izradi nakita, figurica, no ne i u svakodnevnoj proizvodnji oruđa i oružja. Stoga je sedamdesetih godina 20. st. među britanskim arheolozima skovan pojam *neolitičkog paketa* koji sadrži baš sve navedene elemente. Drugi su autori kritizirali navedeni izraz jer ne odražava različitosti svojstvene pojedinim područjima ili vremenskim fazama pa su nastali i pojmovi poput *potpunog* i *djelomičnog neolitičkog paketa*. Dakle, iako je najvažnija novina u neolitičkoj privredi svjesno sudjelovanje čovjeka u organizaciji ishrane, odnosno proizvodnja hrane, sposobnost stvaranja stabilnih zaliha i mogućnost čuvanja viškova hrane, bez prepuštanja slučaju lovačkog uspjeha ili neuspjeha, to ne znači i potpuni prekid sa starom, skupljačko-lovačkom privredom. Kroz sva će daljnja prapovijesna pa i povijesna razdoblja strategije preživljavanja ljudi činiti kombinacija oba načina pribavljanja hrane, a ovisit će o ekološkim, demografskim ili društvenim okvirima.

Pitanje neolitizacije iznimno je složen problem i nije ga moguće svesti na model početne neolitizacije iz samo jednoga središta iz kojega se potom različiti oblici neolitičkog gospodarstva i tehnologije šire u druga područja, poput primjerice teze o „plodnom polumjesecu“. Proces je to koji se odvijao neovisno i često simultano u različitim područjima svijeta. Ako kao presudni trenutak neolitizacije uzmemo rađanje poljoprivrede, onda moramo krenuti od područja gdje su pojedine, najvažnije biljke i životinje živjele u svom izvornom, divljem obliku. Prvobitna središta kultivacije biljaka leže u tropskom i subtropskom pojasu s obje strane ekvatora. U tom su pogledu za područje jugozapadne Azije ključne dvije sorte pšenice i ječam. T*riticum monococcum*, jednozrna pšenica, nezahtjevna je sorta koja u divljem obliku raste na području od Irana pa do Balkana, a *triticum dicoccum* dvozrna pšenica, najznačajnija je sorta pljevaste pšenice od zapadne Azije, Mezopotamije, Egipta, preko Sredozemlja pa do Europe. Ove dvije vrste međutim, genetički ne proizlaze jedna iz druge.

But the mass production of ceramic vessels and other utilitarian objects and the further formation of figural sculpture underwent an intense blossoming precisely during the Neolithic, and then these items, thanks o their technological, typological and stylistic differences, have allowed archaeologists to identify individual related human groups – ceramics/pottery became something of an expression of their identity. The sedentary lifestyle – sedentism – appeared independently of the agricultural lifestyle, already during the Upper Palaeolithic, while the Epipalaeolithic communities of south-west Asia, such as those of the Geometric Kebaran or Natufian, lived in permanent, standardized settlements.

The first steps toward the domestication of animals and the cultivation of plants were also already taken by the members of certain Epipalaeolithic and/or Mesolithic hunter-gatherer communities. When gathering plants, they made sure to leave the roots or tubers or seeds, while when hunting they did not kill all of the young or gravid females. Thus, several phases may be distinguished within the development of hunting that eventually led to domestication. Stone polishing techniques were also already known to Upper Palaeolithic hunters, but they were only used to make jewellery and figurines, but not in the everyday production of tools and weapons. Thus, in the 1970s, the term Neolithic package was coined among British archaeologists to refer to precisely all of these elements. Other scholars criticized this expression because it does not reflect the diversity specific to individual territories or chronological phases, so that terms such as the complete and partial Neolithic package began to appear. Thus, even though the most important novelty in the Neolithic economy was the conscious participation of humans in the organization of their diet, i.e., the production of food, the capability of creating stable supplies and the possibility of storing surplus food without depending on the success or failure of hunting, this did not signify a complete break with the old hunter-gatherer economy. Through all further prehistoric and even historical periods, human survival strategies would consist of a combination of both methods of securing food, and they would be contingent upon environmental, demographic or social frameworks.

The question of Neolithization is a complex problem and it cannot be reduced to a model of initial Neolithization from only a single centre from which different forms of the Neolithic economy and technology spread to other areas, such as, for example, the "fertile crescent" theory. This was a process that proceeded independently and often simultaneously in different regions of the world. If we take the birth of agriculture as the crucial moment of Neolithization, then we must set forth from the regions where the most important individual plant and animal species lived in their original, wild form. The initial zone for the cultivation of plants was the tropical and sub-tropical belt on either side of the equator. In this regard, two varieties of wheat and barley were crucial for south-east Asia. Triticum monococcum, einkorn wheat,

Za dolinu rijeke Inda i sjevernu Kinu osnovu poljodjelstva čini kultivacija riže, soje i prosa, za srednju Ameriku to su kukuruz, grah i krumpir. Za sve to postoje i arheološke potvrde u sačuvanim ostacima, osobito zrnja cerealija (pšenica, riža, kukuruz). Područja gdje kultivacija počinje s gomoljastim i korjenastim biljem, poput Amazonije ili tropske Afrike, teže je arheološki dokazati jer se ostaci takvih biljaka teško i rijetko očuvaju.

Za neolitizaciju Europe, pa tako i područja današnjih hrvatskih zemalja, presudne su promjene koje su se početkom holocena događale u jugozapadnoj Aziji, odnosno na Bliskome istoku, gdje je već u pleistocenu klima postala toplija i suhlja pa su se kao najpogodniji prostor za život pokazale visoravni, bogate vodom koje se u luku obavijaju oko velikih riječnih nizina – to je područje tzv. plodnoga polumjeseca, područje gdje su u divljem obliku rasle razne vrste žitarica, a u gorovitom zaleđu pasle divlje vrste ovaca i koza. Takvi su uvjeti ljudima puno ranije omogućili sjedilački način života i ograničili njihovu pokretljivost. Proces prijelaza s lova i skupljanja na proizvodnju hrane odvijao se ondje kroz nekoliko razvojnih etapa i obuhvaća dva glavna arheološka entiteta: natufijen i pretkeramički neolitik A (PPNA) da bi u pretkeramičkom neolitiku B (PPNB) dosegao sva neolitička obilježja s izuzetkom proizvodnje keramike.

U isto vrijeme, sve do otprilike 7000. g. pr. Kr. veći dio Europe bio je kontinent lovaca i skupljača, no već oko 4000. g. pr. Kr. slika je potpuno drugačija - Europa je preplavljena poljoprivrednim zajednicama. Zahvaljujući datiranju s pomoću radiometrijskih metoda pokazalo se kako se neolitik širio od jugoistoka prema sjeverozapadu u tzv. valovima napretka kroz tri tisuće godina. No, to širenje nije bilo ravnomjerno ni jednolinearno nego skokovito, ponegdje brzo, a drugdje sporije tako da neke zone nisu postale neolitičke još punih tisuću godina nakon prvotnih kontakata tamošnjih domorodačkih, mezolitičkih populacija s neolitičkim poljoprivrednicima. Katkad su te enklave uvjetovane okolišnim uvjetima, poput alpskog ili pirinejskog područja ili obalnih močvarnih područja nizozemlja, ali često su bile određene i društvenim čimbenicima (primjerice baltička obala, atlantska Francuska).

Da bi se objasnio i pojasnio proces prijelaza sa skupljačko-lovačke na proizvodnu privredu, potrebno je temeljito poznavanje i razumijevanje kasnoglacijalnoga i mezolitičkoga načina preživljavanja koji se zasniva na daleko složenijim socijalnim sustavima nego što se to ranije mislilo i koji predstavljaju temelje za razvoj neolitičkih zajednica. Novonastalim postglacijalnim uvjetima ljudske su se zajednice prilagođavale okupljajući se u manjim, ali pokretljivijim skupinama koje su dobro poznavale sve vrste izvora preživljavanja u krugu svoga kretanja. Takve, izrazito mobilne zajednice ostavile su, međutim, manje tragova za sobom, osobito onih materijalne naravi pa arheolozi za razdoblje

is a non-demanding variety which in its wild form grows from Iran to the Balkans, while Triticum dicoccum, emmer wheat, is the most important variety of hulled wheat from western Asia, Mesopotamia and Egypt, through the Mediterranean and into Europe. These two varieties did not, however, genetically emerge from each other. In the Indus River Valley and northern China, rice, soybean and millet cultivation formed the basis of agriculture, while in central America the core crops were maize, beans and potatoes. There are archaeological confirmations for all of these in preserved remains, particularly cereal grains (wheat, rice, maize). The areas where cultivation began with tuberous or root vegetables, such as Amazonia or tropical Africa, is more difficult to prove archeologically, because the remains of such plants are difficult to preserve and thus rare.

For the Neolithization of Europe, including the territory of today's Croatia, the crucial changes occurred at the onset of the Holocene in south-west Asia, i.e., the Near East, where the climate had become warmer and drier already during the Pleistocene, so that plateaus rich in water that surrounded large river valleys in an arc became the most suitable places for living – this is the area of the so-called Fertile Crescent, where various types of grains grew in their wild form, while wild sheep and goats grazed in their hilly hinterlands. Such conditions made the sedentary lifestyle possible for people much earlier, and limited their mobility. The process of moving from hunting and gathering to food production proceeded thence through several developmental stages and it encompassed two principle archaeological entities, the Natufian and the Pre-Pottery Neolithic A (PPNA), and then achieved all Neolithic features with the exception of pottery production in the Pre-Pottery Neolithic B (PPNB).

At the same time, and until roughly 7000 BC, most of Europe was a continent of hunters and gatherers, but already by about 4000 BC, the picture had changed to something completely different: Europe was flooded by agricultural communities. Thanks to dating with the help of radiometric methods, it has been shown that the Neolithic spread from the south-east to the north-west in so-called waves of progress over the course of three thousand years. However, this spread was neither uniform nor unilinear, rather it proceeded in spurts, at places rapidly, elsewhere more slowly, so that some zones did not become Neolithic for a full millennium after the first contacts between local, indigenous Mesolithic populations and Neolithic farmers. Sometimes the existence of these enclaves was due to environmental conditions, such as the Alpine and Pyrenean zones or the low coastal wetlands, but often they were also a result of social factors (for example, the Baltic seaboard, the Atlantic coast of France).

Explaining and clarifying the transition from a hunter-gatherer to food production economy requires a thorough familiarity with and an understanding of the late glacial and Mesolithic mode of survival, which was based on social systems that were far more complex than previously believed, and which formed

mezolitika obično raspolažu s mnogo manje podataka nego za neolitik. Stoga je to često jedan od glavnih problema u proučavanju neolitizacije.
Prvo pitanje koje se postavlja jest zašto je uopće došlo do promjene strategija preživljavanja? Jesu li one posljedica značajnih klimatskih i ekoloških promjena koje su se odigrale u postglacijalnom razdoblju? Više temperature i podizanje razina mora znatno su izmijenile ekološki okvir ljudskoga opstanka, a u nekim područjima i smanjile njihov životni prostor. Početkom holocena, u predborealu još je prevladavala hladna i oštra klima. Rani holocen (boreal) obilježen je porastom temperature i suhom klimom, uz relativno kratkotrajno zahlađenje. Uslijedilo je daljnje zatopljenje (atlantik) s vlažnom klimom i 2-4 stupnja višom srednjom ljetnom temperaturom nego danas pa se to najtoplije razdoblje holocena naziva *holocenskim klimatskim optimumom* za razliku od narednog, općeg zahlađenja i suhe klime u sub-borealu. Tijekom holocena zabilježeno je nekoliko kratkotrajnih naglih zatopljenja i zahlađenja, od kojih je najizraženiji bio tzv. događaj 8200 prije sadašnjosti, najhladnija holocenska epizoda s prosječnim temperaturama nižim za tri stupnja. Dio istraživača smatra da su upravo ti čimbenici odgovorni za pokretanje procesa neolitizacije te da su pogodovali migracijama ljudi i širenju neolitičkih tekovina. Nema istoznačnih odgovora ni na pitanje kako je u pojedinim područjima došlo do uvođenja poljoprivrede i ostalih neolitičkih tekovina. Je li to bio potpuno autohtoni proces bez ikakvih vanjskih dodira ili lokalni proces, ali potaknut stjecanjem znanja kroz razmjenu stranih dobara i tehnika. Ili su za to odgovorne migracije stranih skupina poljodjelaca i stočara koje osnivaju prva sjedilačka, neolitička naselja. Čini se da su najrealnije teorije o mješovitom procesu utemeljenom na interakcijama lokalnih lovaca-skupljača i pridošlih poljoprivrednika. Razni autori, a ponekad i jedni te isti, priklanjaju se ovoj ili onoj mogućnosti. Unatoč nekim razmišljanjima o mogućnosti da su razmjena i prirodno širenja biljaka i životinja doveli do uvođenja i prilagodbe domesticiranih vrsta, danas ipak gotovo nitko ne podupire tezu o potpuno lokalnoj preobrazbi na neolitičko gospodarstvo, utemeljenoj na lokalnoj domestikaciji životinjskih i biljnih vrsta. Da bi lokalni proces bio moguć ovaj model bi se morao oslanjati na dugu fazu prilagodbe na stočarstvo i kultivaciju kontrolom lokalnih biljnih i životinjskih vrsta.
Isto tako nitko od pristaša demografske difuzije ne niječe određeni stupanj interakcije između domorodaca i doseljenih poljoprivrednika. Ali ni u tom slučaju ne treba zamišljati nekakvu masovnu seobu poljoprivrednih kolonista. Nekoliko pionirskih grupa sačinjenih od tek nekoliko stotina pripadnika bilo bi dovoljno da prouzroči demografsku ekspanziju tijekom ranoga neolitika, osobito ako su se miješali i ženili s domorodačkim skupinama.
U posljednjim se desetljećima izvorišta i smjerovi širenja

the foundations for the development of Neolithic communities. Under the newly-emergent post-glacial conditions, human communities adapted by gathering into smaller but mobile groups who were well aware of all types of sources of survival within the sphere of their movement. Such exceptionally mobile communities left, however, fewer traces behind, particularly those of a material nature, so archaeologists normally have far less data at their disposal for the Mesolithic than for the Neolithic. This is consequently one of the primary problems in the study of Neolithization.
The first question that arises is why did changes in survival strategies even came about? Were they the result of significant climatic and environmental changes in the post-glacial period? Higher temperatures and elevated sea levels considerably changed the framework for human existence, and in some areas they also reduced their living space. At the beginning of the Holocene, during the Preboreal, a cold and rather sharp climate still predominated. The early Holocene (Boreal) was characterized by rising temperatures and a dry climate, with relatively brief cooling. This was followed by a further thaw (Atlantic) with a moist climate and 2-4 degree higher median summer temperatures than today, so this warmest Holocene period is called the Holocene climate optimum, as opposed to the subsequent, general cooling and dry climate in the Subboreal. During the Holocene, several brief drastic warming and cooling phases were recorded, of which the most notable was the so-called 8200 BP event the coldest Holocene episode with average temperatures that were three degrees lower. Some researchers believe that it was precisely these factors that led to the initiation of Neolithization, and that they prompted human migrations and the spread of Neolithic achievements.
There are similarly no uniform answers to the question of how agriculture and other Neolithic achievements were introduced to specific regions. Was it an entirely autochthonous process without any manner of external contacts, or a local process nonetheless spurred by the acquisition of knowledge through exchanges of foreign goods or techniques? Or was it the result of migrations by foreign groups of farmers and livestock herders who established the first sedentary Neolithic settlements? It would appear that the most realistic are theories on a mixed process based on interactions between local hunter-gatherers and newly-arrived farmers. Different scholars, albeit sometimes even the same scholars, opt for one or other possibility. Despite some views on the possibility that exchanges and the natural spread of plants and animals led to the introduction and adaptation of domesticated species, today virtually no one adheres to the entirely local transformation into a Neolithic economy based on the local domestication of animal and plant species. For a local process to be possible, this model would have to depend on a long phase of adjustment to livestock husbandry and cultivation by means of control of local plant and animal species.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

ljudskih populacija pokušavaju objasniti i s pomoću genetičkih istraživanja na ljudskim i životinjskim uzorcima.
Kada govorimo o neolitičkom razdoblju na području kontinentalne, odnosno sjeverne Hrvatske, onda u vidu imamo tri glavne arheološke kulture: starčevačku, vinčansku i sopotsku, te nešto manje korenovsku i lenđelsku. Iako su spomenute kulture posvjedočene brojnim, bolje ili slabije istraženim ili samo evidentiranim lokalitetima, na pitanja kada je i kako došlo do neolitizacije ovoga prostora još uvijek ne možemo zadovoljavajuće odgovoriti. Jedan razlog tomu je slabo ili gotovo nikakvo poznavanje prethodnoga, mezolitičkoga razdoblja pa stoga ni ne znamo koja je i je li uopće neka populacija nastavala sjevernu Hrvatsku prije pojave starčevačke kulture. Sama starčevačka kultura pak kada se pojavljuje na ovome području već je jasno oblikovana neolitička zajednica s potpunim *neolitičkim paketom* i koja većinom svojih obilježja jasno pokazuje jugoistočno podrijetlo. S druge strane korenovska kultura, kao najjužniji izdanak prostranoga srednjoeuropskoga kompleksa kultura linearnotrakaste keramike nema u našim krajevima položaj prve poljoprivredne zajednice kao što ga imaju druge kulture istoga kompleksa diljem srednje i zapadne Europe. Ipak nam ona, slično kao i nešto kasnija regionalna inačica kasne lenđelske kulture pokazuje određeni zaokret u orijentaciji ovoga prostora prema srednjoj Europi. Pri tom nipošto ne smijemo izgubiti iz vida utjecaje jugoistoka Europe koji su i dalje aktivni, ponajprije kada razmišljamo o počecima metalurgije koju tradicionalno gledanje smatra presudnim obilježjem eneolitka, odnosno bakrenoga doba. No, kao što smo vidjeli da većina neolitičkih obilježja ima svoje začetke u prethodnim razdobljima, tako se i prva metalurgija rađa u okrilju tipičnih kasnoneolitičkh zajednica poput vinčanske kulture.
Zaključimo na kraju: sve sastavne dijelove neolitičkoga paketa čovjeku je darovala zemlja, bilo da ju je obrađivao kako bi posijao ili zasadio biljke, ili na pašnjacima napasao svoju stoku, bilo da ju je oblikovao u različite posude i druge keramičke predmete ili njome premazivao podove i zidove svojih kuća, ili pak u konačnici pokapao svoje mrtve u nju. Iz nje se sve rađa i u nju se sve vraća pa je zemlja i u središtu religijskog poimanja neolitičkoga čovjeka. Čak i kamen i rude metala izlaze iz zemlje i da bi se do njih došlo treba zaroniti u krilo Velike Božice Majke – Zemlje, praroditeljice svijeta.

By the same token, none of the proponents of demographic diffusion deny a certain degree of interaction between natives and newly-arrived farmers. But even in this case, one should not imagine some sort of mass migration by agricultural colonists. Several pioneering groups consisting of only a few hundred members would have been sufficient to cause demographic expansion during the early Neolithic, particularly if they intermingled and intermarried with native groups. In recent decades, attempts have been made to explain the sources and directions of the spread of human populations with the help of genetic research on human and animal samples.
When we speak of the Neolithic era in the territory of continental or northern Croatia, then we have in mind three primary archaeological cultures: the Starčevo, Vinče and Sopot, and the somewhat smaller Korenovo and Lengyel. Even though these cultures have been verified by numerous thoroughly or less thoroughly examined – or only noted – sites, no satisfactory answer can still be given to the question of how Neolithization occurred in this territory. One of the reasons for this is the poor or virtually absent knowledge on the preceding Mesolithic period, so that we even do not know whether there were any populations at all inhabiting northern Croatia prior to the Starčevo culture. The Starčevo culture itself, when it appeared in this territory, already constituted a clearly formed Neolithic community with the complete Neolithic package, and the majority of its features clearly indicated a south-eastern origin. On the other hand, the Korenovo culture, as the southernmost branch of the spacious Central European Linear Band Wa re cultural complex, does not have the status of the first agricultural community in Croatia's territory as do other cultures of this same complex throughout central and western Europe. Nonetheless, in a manner similar to the somewhat later regional variant of the late Lengyel culture, it exhibits a certain turn in the orientation of this region toward central Europe. Here one should certainly not lose sight of south-east European influences, which remained active, primarily when considering the beginnings of metallurgy which is traditionally deemed a crucial feature of the Eneolithic, or the Copper Age. However, just as it was shown that most Neolithic features had their roots in preceding periods, so too did the first metallurgy emerge under the aegis of typical Late Neolithic communities, such as the Vinče culture.
And in conclusion: all systematic components of the Neolithic package were given to humans by the earth, whether for plant cultivation or in the form of pastures for their livestock, whether used to craft various types of pottery and other ceramic items or to coat the floors and walls of their dwellings, or, finally, in which to bury their deceased. Everything is born from it, and everything returns to it, so that the earth, soil, was the focus of the religious notions of Neolithic people. Even stone and metal ores came from the earth, and to obtain them it was necessary to delve deep into the Great Mother Goddess – Earth, the primeval parent of the entire surface world.

RAJNA ŠOŠIĆ KLINDŽIĆ
TOMISLAV HRŠAK

STARČEVAČKA KULTURA

THE STARČEVO CULTURE

Ivandvor, 2006., naselje starčevačke kulture
Ivandvor, 2006, Starčevo culture settlement

Starčevačka kultura dio je velikog kompleksa Starčevo-Körös-Criş ranoneolitičkih kulturnih grupa, a u širem smislu bi obuhvaćao Protoseskло kulturu u sjevernoj Grčkoj, kulturu Anzabegovo-Vršnik u sjevernoj Makedoniji i Čavdar-Kremikovci-Karanovo kulturu u Bugarskoj (Minichereiter 2007, 14). Ta se skupina kulturnih grupa naziva i FTN (First Temperate Neolithic), a odnosi se na najranije neolitičke kulture u umjerenoj klimi Europe (Nandris 1970, 1988). Naziv je možda prikladniji jer ne odražava lokalne terminologije i obuhvaća razne prve manifestacije neolitičkog načina života (Lazarovici 2006, 112). U svojem središnjem dijelu rasprostiranja starčevačku kulturu nalazimo na prostoru južnog Banata i Bačke, Srijema, Slavonije i djelomično središnje Hrvatske do okolice Bjelovara, u istočnoj i djelomično srednjoj Bosni, čitavoj užoj Srbiji, Kosovu i sjevernoj Makedoniji (Minichreiter 2007, 14). Od prvog definiranja njenog rasprostiranja granice su bile više puta mijenjane. Utvrđeno je da je starčevačka kultura ušla u Transdanubiju dolinom Drave (Kalicz *et al.* 1998, 155). Sjeverozapadna granica stalno se pomicala uz Balaton (Kalicz *et al* 2002), a danas je ta granica starčevačke kulture na sjevernom Balatonu, na poluotoku Tihany (Regenye 2007). Na svom sjeverozapadnom rubu prostiranja starčevačka kultura se preklapa s jugoistočnim rubom rasprostiranja LTK kompleksa (Kertész *et al.* 2007, 53). Sjeverna granica čitavog Starčevo-Körös (granica s LTK) kompleksa je usred Karpatske kotline, u gornjem Potisju i sjevernoj Trasdanubiji (Kertész, Sümegi 2001, 226). Ta granica nema nikakve geomorfološke logike, s obzirom da na tom području nema niti rijeka niti većih planina koje bi mogle predstavljati prirodnu prepreku, a vrlo je malo podataka o mezolitičkim stanovnicima kao mogućoj fizičkoj prepreci. Linija ide Balaton-Szentgotthárd, a naziva se srednjoeuropsko-balkanska agro-ekološka granica (Bánnfy 2004, 356; Bocguet-Appel *et al.* 2009, 813). Novija istraživanja pokazala su postojanje dviju grupa kasne starčevačke kulture u Transdanubiji. Jedna je na području južnog Barbaca, i vrlo je slična starčevačkoj kulturi u savsko-dravskom međuriječju, dok je druga grupa Vörs i Gellenhaza s manje balkanskih obilježja, a više LTK obilježja, što se vidi u

The Starčevo Culture is part of the great complex of Starčevo-Körös-Criş Early Neolithic cultural groups, which, when defined broadly, encompasses the Proto-Sesklo Culture of northern Greece, the Anzabegovo-Vršnik Culture of northern Macedonia, and the Čavdar-Kremikovci-Karanovo Culture of Bulgaria (Minichreiter 2007, 14). This cultural-group complex is sometimes referred to as the FTN (First Temperate Neolithic), as it includes the earliest Neolithic cultures in the part of Europe with temperate climate (Nandris 1970, 1988). This name might be a more appropriate one, since it does not reflect any local terminology and encompasses various early manifestations of the Neolithic lifestyle (Lazarovici 2006, 112). In its core distribution area, the Starčevo Culture was present in the territory of southern Banat and Bačka, Syrmia, Slavonia and some areas of north-western Croatia, reaching to the surroundings of Bjelovar, in eastern and partly also central Bosnia, the whole of Serbia proper, Kosovo and northern Macedonia (Minichreiter 2007, 14). Since its distribution zone was first demarcated, its boundaries have been changed several times. It has been established that the Starčevo Culture penetrated Transdanubia through the Drava valley (Kalicz et al. 1998, 155). The north-western border was constantly moved along Lake Balaton (Kalicz et al. 2002), and nowadays this boundary of the Starčevo Culture is taken to be on the northern shore of Balaton, on the peninsula of Tihany (Regenye 2007). With the north-western edge of its distribution zone, the Starčevo Culture overlaps with the south-eastern edge of the distribution zone of the Linear Pottery (LBK) complex (Bánnfy et al. 2007, 53). The constant moving of the northern border of the Starčevo Culture has followed the excavations along the M7 motorway route. The northern edge of the entire Starčevo-Körös complex (its border with the LBK) is located in the middle of the Carpathian valley, in the upper Tisza region and northern Transdanubia (Kertész, Sümegi 2001, 226). This border is not supported by any geomorphological logic, since in that region there are no rivers or mountains which would form a natural barrier, and we have very little data on Mesolithic populations as a possible physical barrier. The border, also called the Central European-Balkan agro-ecological barrier (Bánnfy 2004, 356; Bocquet - Appel et al.

Selci Đakovački – Kaznica-Rutak, 2006., poluukopani stambeni objekt starčevačke kulture
Selci Đakovački – Kaznica-Rutak, 2006, half-buried Starčevo culture residential structure

urezivanju linearnih motiva koji se pojavljuju u za starčevačku kulturu neobično visokim udjelima (Bánnfy 2004, 12). Lokaliteti Szentgyörgyvölgy – Pityerdomb i Brunn 2 primjer su mješavine elemenata starčevačke kulture i LTK (Bánnfy 2005, Stadler, Kotova 2010). Još nije do kraja razjašnjeno pitanje kulturnih razlika starčevačke i kulture Körös, možda je između te dvije grupe veća razlika u ekonomiji nego u samom kulturnom karakteru (Garašanin 1979, 116). U najmlađim fazama radijus rasprostiranja starčevačke kulture se smanjuje, nestaje sa svojih matičnih područja, pomiče se prema zapadu te se u najmlađim fazama zadržava na prostoru Bačke, Posavine, Podravine i Transdanubije.

Problem kronologije starčevačke kulture, koji se otvorio na samom početku njezina proučavanja, postoji i danas. Ne postoji ujednačen kronološki sustav, a za takvo je stanje više razloga. Prije svega, starčevačka kultura se rasprostire na jako velikom području, a nedovoljan je broj istraženih naselja, koja su uglavnom jednoslojna, bez vertikalne ili horizontalne stratigrafije. Svaka je periodizacija rađena na određenom broju lokaliteta u određenoj regiji, bez sagledavanja čitavog prostora rasprostiranja starčevačke kulture, tako da se stvara dojam da su neke pojave i specifičnosti uočene na lokalitetu ili u mikroregiji preslikane kao bitne za razvoj kulture u cjelini, pa je teško odvojiti i razlučiti što je mikroregionalna specifičnost, a što globalna pojava. Svaka od periodizacija orijentirala se na ukrašenu keramiku i slikanje, a mnogo je lokaliteta na kojima slikana keramika nije pronađena. Mnoge tipološke i stilske karakteristike zadržavaju se kroz čitavo trajanje starčevačke kulture. Sve je to dovelo do stvaranja mnogobrojnih periodizacija, jer su se koristili razni kriteriji za određivanje pojedine faze koje nije uvijek moguće sinkronizirati iako je primijenjen isti pristup pri stvaranju svake od periodizacija

2009, 813), goes along the Balaton-Szentgotthárd line. Recent research has revealed the presence of two groups of the Late Starčevo Culture in Transdanubia: one in the area of southern Barbacs, which is very similar to the Starčevo Culture in the region between the Sava and Drava rivers, and the other – the Vörs and Gellenhaza group – with fewer Balkan characteristics, and more LBK features, as demonstrated by the incision of linear motifs whose occurrence is unusually frequent for the Starčevo Culture (Bánnfy 2004, 12). The sites of Szentgyörgyvölgy-Pityerdomb and Brunn 2 are example of the mixture of elements of the Starčevo and LBK cultures (Bánnfy 2005, Stadler, Kotova 2010). The issue of cultural differences between the Starčevo and Körös cultures has not been clarified yet; perhaps the main difference between the two groups can be found in their economies, rather than in the character of their cultures (Garašanin 1979a, 116). In its latest phases, the distribution radius of the Starčevo Culture shrank, it disappeared from its core areas, moved westwards, and in the last phases it was present in the region of Bačka, the Sava and Drava valleys and Transdanubia.

The problem of chronology of the Starčevo Culture is as old as the research on this culture, and it has not yet been resolved. There is no uniform chronological system, and such a situation is a result of several factors. First of all, the Starčevo Culture was distributed over a vast area, and the number of explored settlements is insufficient; moreover, those that have been excavated are mostly single-layer settlements, without any vertical or horizontal stratigraphy. Each periodization has been made on the basis of some sites in an individual region, not taking into account the entire distribution area of the Starčevo Culture, bringing about an impression that some phenomena or specific features observed at a single site, or in a micro-region, have been copied and proclaimed important for the development of the entire

Selci Đakovački – Kaznica-Rutak, 2006., urušenje od lijepa iznad zapune bunara starčevačke kulture
Selci Đakovački – Kaznica-Rutak, 2006, collapsed daub above fill in Starčevo culture well

(Nikolić 2005, 46).

Prvu periodizaciju starčevačke kulture napravio je V. Milojčić 1949. godine podjelom na 4 stupnja (Milojčić 1949).

- I. stupanj – ukrašavanje barbotinom, impresso, urezivanjem i plastičnim trakama. Crvena monokromna i slikana keramika nisu zastupljene.
- II. stupanj – pojava monokromne crvene keramike s premazom, a pri kraju stupnja i crna. Javlja se slikanje jednostavnih pravocrtnih ornamenata bijelom i smeđom bojom.
- III. stupanj – nestaje keramika crne boje u presjeku, gubi se crna boja monokromne keramike. Motivi slikanja uglavnom su spirale i kuke, izvedene tamnom bojom, a javlja se i polikromija.
- IV. stupanj – pojava plastičnih ljudskih i životinjskih likova te otiska klasja na posuđu. Ponovno se pojavljuje crni presjek posuda. Opada kvaliteta i količina slikane keramike.

Milojčićev je sustav vrlo rano podvrgnut kritikama, prije svega zbog nedovoljnog uvida u materijal te oslanjanje na lokalitete s vrlo malom gustoćom nalaza (Dimitrijević 1969b, 27).

Drugi periodizacijski sustav napravila je Draga Garašanin, pri čemu je starčevačku kulturu podijelila također na 4 stupnja (Aranđelović-Garašanin, 1954). Pretpostavljajući vrlo dugo trajanje naselja Starčevo, D. Garašanin se, pri stvaranju svoje kronologije, koristila isključivo zatvorenim cjelinama (jamama) iz Starčeva (Dimitrijević 1969b, 29).

- I. faza – pretežno gruba keramika svih vrsta ukrašavanja, osim slikanja koje još nije zastupljeno.
- II.a faza – slikanje bijelom i tamnom bojom na crvenoj podlozi, pri čemu je bijelo slikanje nešto dominantnije. Fina monokromna keramika češće se pojavljuje.

culture, resulting in a situation in which it is difficult to distinguish between a micro-regional specificity and a global phenomenon. Each periodization has focused on decorated pottery and painting, although in a number of sites no painted pottery has been found. In addition, many typological and stylistic characteristics persisted throughout the existence of the Starčevo Culture. All of this has generated many periodizations, based on different criteria for determining individual phases, and those phases cannot always be synchronized, although the same approach has been applied in the development of each periodization (Nikolić 2005, 46).

The first periodization of the Starčevo Culture was made by V. Milojčić in 1949. He divided it into four 'grades' (phases) (Milojčić 1949):

- *phase I – barbotine decoration, impresso, incisions and plastic bands. The red monochrome and painted pottery is not present.*
- *phase II – emergence of red monochrome slipware, and also black slipware at the end of this grade. The first simple straight-line ornaments rendered with white and brown paint.*
- *phase III – emergence of pottery which is black in cross-section, disappearance of the black monochrome pottery. Painted motifs are mostly spirals and hooks, rendered in dark paint; emergence of polychromy.*
- *phase IV – emergence of plastic human and animal figures and impressions of ears of corn on the ware. The black cross-section reappears. The quality and quantity of painted pottery decrease.*

Milojčić's system was soon criticized, primarily due to insufficient analysis of the finds, and to reliance on sites with low density of finds (Dimitrijević 1969, 27). The second periodic system was developed by Draga Garašanin, who also divided the Starčevo Culture into four phases (Aranđelović-Garašanin, 1954). Presupposing a very long existence of the settlement of Starčevo,

Kneževi Vinogradi – Osnovna škola, 2003., grob starčevačke kulture
Kneževi Vinogradi – Osnovna škola (primary school), 2003, Starčevo culture grave

Vinkovci – Ervenica, 2011., grob starčevačke kulture
Vinkovci – Ervenica, 2011, Starčevo culture grave

- II.b faza – slikanje samo tamnom bojom, faza neposredno prije dolaska vinčanske kulture.
- III. faza - posude s plastičnim figuralnim ukrasima, istovremena s ranom vinčanskom kulturom, nije zastupljena na lokalitetu Starčevo.

Treći periodizacijski sustav starčevačke kulture napravio je 1969. S. Dimitrijević (Dimitrijević 1969b). Podjela je napravljena na 5 stupnjeva.

- 1. Stupanj monokrom stupanj – sličan stupnjevima definiranim kao I. stupanj starčevačke kulture po Milojčiću i D. Garašanin.
- 2. Linearni stupanj - gruba keramika ukrašena prevlačenjem snopa grančica, monokromna keramika crvene boje, crna u presjeku. Slikana keramika je gotovo isključivo orijentirana na zdjele zaobljenog profila na šupljoj koničnoj nozi, a slikanje je isključivo pravolinijskih motiva.
- 3. Girlandoidni stupanj – slično kao linear stupanj osim što se javljaju i motivi girlandi, najčešće ispod usta posude.
- 4. Spiraloidni A stupanj – ravnomjerno su zastupljeni pravocrtni i spiralni motivi, koristi se i tamna i bijela boja, a spiraloidni motivi su izvedeni uglavnom tamnom bojom te su pravilno organizirani i pažljivo izvedeni. Javlja se polikromija, mada rijetko.
- 5. Spiraloidni B stupanj – na gruboj keramici prevladava kanelirani barbotin, pojavljuju se bikonične posude. Dolazi do slabljenja kvalitete fine keramike. Pravolinijski i spiralni motivi su jednako zastupljeni, girlande nestaju. Za slikanje se koristi uglavnom tamna boja, a bijela za rubove kod polikromije. Dolazi do odstupanja od tradicionalnih shema spiraloid A stupnja pri izvođenju spirala.

Pri samom stvaranju podjele S. Dimitrijević za svoj 1. stupanj navodi da je potpuno hipotetičkog karaktera (Dimitrijević 1969a, 36-37). Smatra da postojanje faze starčevačke kulture bez slikanja prema dotadašnjim spoznajama nije moguće znanstveno dokazati (Dimitrijević 1969a, 30). U kasnijim radovima stupanj linear se dijeli na linear A i B te se uvodi završni stupanj starčevačke kulture, tip Ždralovi, stupanj koji predstavlja razdoblje potpune degeneracije i za kojeg pretpostavlja da neće biti isti u različitim regijama (Dimitrijević 1974, 69). Rezultati K. Minichreiter potvrđuju i nadopunjuju kronologiju S. Dimitrijevića (Minichreiter 2007, 18-20).

Milutin Garašanin 1971. dijeli starčevačku kulturu na 4 stupnja: stupanj I. – monokrom, stupanj II. a linearni (Milojčić 2, Dimitrijević linear), stupanj II b krivolinijsko slikanje tamnom bojom i stupanj III - spiralno slikanje i kanelirani barbotin (Garašanin 1971, 77). Dragoslav Srejović podijelio je starčevačku kulturu na 5 stupnjeva – Protostarčevo I., Protostarčevo II., te Starčevo I, II i III (Srejović 1969, 173-178, redefinirana verzija Srejović 1971). Prema toj podjeli, Protostarčevo I i II pripadaju ranom neolitiku, a Starčevo I, II i III srednjem neolitiku (Srejović 1971). Starčevo I. odgovaralo bi linearu B, Starčevo II spiraloidu A, a starčevo III spiraloidu B po Dimitrijeviću (Tasić 1997, 26). Todorova i Vajsov su pokušali napraviti novu periodizaciju koja bi objedinila sve stare i pružila jedinstvenu kronološku sliku ranog neolitika na Balkanu. Međutim, nisu uvrstili nalaze i nalazišta sjevernog Balkana pa je teško pretpostaviti kako bi se ista uklopila (Todorova, Vajsov 1993). N. N. Tasić je autor, za sada, najnovije periodizacije starčevačke kulture. Prema njemu, podjela je napravljena isključivo na temelju najkarakterističnijih ukrasa i oblika uz napomenu da će se periodizaciju morati prilagoditi i gruboj keramici (Tasić 1997, 41). Tasić starčevačku kulturu dijeli na: ENCB (Early Neolithic of the Central Balkans) u kojoj se javljaju jednostavni oblici posuda, bijela slikana keramika uglavnom s motivima kapljica i tremolo linija; MNCB (Middle Neolithic of the Central Balkans) I – dominira gruba keramika, opada bijelo slikanje; MNCB II potpuno nestaje bijelo slikanje, prevladavaju pravolinijski motivi izvedeni tamnom bojom; MNCB III a, povratak bijelog slikanja, javljaju se spirale; MNCB III b, česta bikoničnost, tamnoglačana keramika, spirale (Tasić 1997, 43-44).

S obzirom na to da su regionalne razlike preočite i nije moguće napraviti sinkronizaciju lokaliteta, još je B. Jovanović podijelio, prema teritorijalnom kriteriju, starčevačku kulturnu grupu na sljedeće: a) južnobalkanska oblast (istočna Makedonija, južno Podunavlje, zapadna Bugarska, Kosovo, b) centralnobalkanska oblast (Pomoravlje, sjeverna Srbija, jugoslavensko Podunavlje, istočna Bosna, Srijem, istočna Slavonija) i c) sjevernobalkanska oblast (Oltenija, Transilvanija) (Jovanović 1968, 129).

Najstarija se faza starčevačke kulture (Starčevo I) istovremeno javlja na najmanje 4 (a možda i 5) područja. To bi bili Đerdap (Lepenski vir), Bačka (Donja Branjevina), Pomoravlje (Divostin),

in developing her chronology, D. Garašanin used only closed units (pits) found at Starčevo (Dimitrijević 1969, 29).

- *phase I – mostly coarse pottery with all types of decoration except for painting, which was not yet present.*
- *phase II a – painting with white and dark paint over a red surface, with white paint being predominant. Fine monochrome pottery appears more often.*
- *phase II b – painting only in dark paint, the phase closely preceding the emergence of the Vinča Culture.*
- *phase III – vessels with plastic figurative decoration, contemporary to the early Vinča Culture, not present at the Starčevo site.*

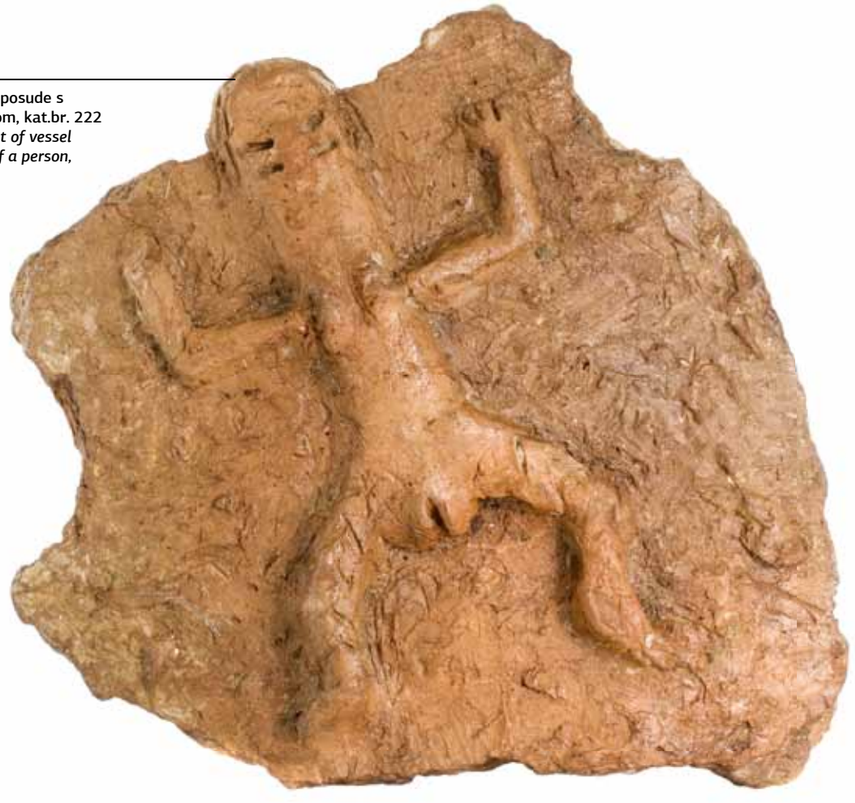
The third system of periodization of the Starčevo Culture was elaborated by S. Dimitrijević in 1969 (Dimitrijević 1969). This division encompasses five phases.

- *1 Monochrome phase – similar to phase I of the Starčevo Culture according to Milojčić and D. Garašanin.*
- *2 Starčevo – Linear phase – coarse pottery decorated by passing bundles of twigs over the surface, monochrome red pottery, black in cross-section. Painted ware consists almost exclusively of rounded bowls on a hollow conic foot, and painted motifs are rendered only with straight lines.*
- *3 Starčevo – Girlandoid phase – similar to the linear phase, but with garlands among the motifs, usually under the vessel's mouth.*
- *4 Starčevo – Spiraloid A phase – straight and spiral shapes are equally represented, both dark and white paint are used, with spiraloid motifs usually rendered with dark paint, carefully executed and organized. There are examples of polychromy, but rare.*
- *5 Starčevo – Spiraloid B phase – the predominant decoration on coarse pottery is fluted barbotine. Biconical vessels emerge. The quality of fine ceramics decreases. Straight and spiral motifs are equally represented, garlands disappear. Dark paint prevails in painted motifs, and white is used for contours in polychromy. There are deviations from the traditional spiraloid A phase schemes when spirals are rendered.*

When he developed this division, Dimitrijević stated that his phase 1 was completely hypothetical (Dimitrijević 1969, 36-37). He believed that the existence of a Starčevo Culture phase in which painting was not used could not be scientifically proven with the information available at the time (Dimitrijević 1969, 30). In his later works, he divided the Linear phase into Linear A and B, and introduced the final phase of the Starčevo Culture, the Ždralovi type, as a phase corresponding to the period of complete degeneration, for which he supposed that it would not be the same in various regions (Dimitrijević 1974, 69). K. Minichreiter's results have confirmed and supplemented Dimitrijević's chronology (Minichreiter 2007, 18-20).

In 1971, Milutin Garašanin divided the Starčevo Culture into four phases: phase I – monochrome, phase II a - linear (Milojčić 2, Dimitrijević Linear), phase II b – curvilinear painting with dark paint, and phase III – spiral painting and fluted barbotine (Garašanin 1971, 77). Dragoslav Srejović divided the Starčevo Culture into five phases: Proto-Starčevo I, Proto-Starčevo II, and Starčevo I, II and III (Srejović 1969, 173-178, redefined version Srejović 1971). According to this division, Proto-Starčevo I and II belong to the Early Neolithic, while Starčevo I, II and III belong to the Middle Neolithic (Srejović 1971). Starčevo I would correspond to Linear B, Starčevo II to Spiraloid A, and Starčevo III to Spiraloid B according to Dimitrijević (Tasić 1997, 26).

Kneževi Vinogradi, zdjela, kat.br. 128
Kneževi Vinogradi, *bowl, cat. no. 128*



Sarvaš, ulomak posude s ljudskim prikazom, kat.br. 222
Sarvaš, fragment of vessel bearing image of a person, cat. no. 222

Kosovo (Rudnik) te, možda, donji tok rijeke Save (Lug-Zvečka i Dobanovci) (Perić 2001). Vojvodinu B. Jovanović smatra prostorom na kojem su se križala dva kraka zemljoradničke kolonizacije – jedan s centralnog Balkana, drugi iz Donjeg Podunavlja gdje se stvara pojas s mješavinom elemenata materijalne kulture koji kasnije postaju karakteristični za Körös i Criş kulturne grupe (Jovanović 1974, 43).
Jedna od uočljivih karakteristika starčevačke kulture u okvirima i kronološke i geografske rasprostranjenosti je konzervativizam u stilu i tipologiji, osim možda u samoj finalnoj fazi kulture (Nikolić 2005, 45). Taj konzervativizam otežava svrstavanje nekog lokaliteta u fazu određene periodizacije ukoliko nedostaju signifikantni ukrasi i oblici. Zbog toga su još veći problem periodizacije koje su utemeljene uglavnom na slikanom posuđu, izbjegavajući činjenicu da je i gruba keramika imala svoj razvojni put, na što je upozoravao još Dimitrijević (Dimitrijević 1974, 68), no čini se, da se još nije dovoljno odmaklo u relativnoj kronologiji baziranoj na temelju svih keramičkih nalaza. U novije su vrijeme sve podjele podvrgnute kritikama i reviziji, pogotovo jer su nova istraživanja donijela nove nalaze, a i apsolutne ^{14}C datume, koji će svakako morati imati velikog utjecaja na relativnu i unutarnju kronologiju starčevačke kulture. Periodizacije koje su nastale prije skoro 60 godina, u upotrebi su i danas. Te su podjele bazirane na malom broju lokaliteta koji su do tada bili, uglavnom djelomično, istraženi. Upotreba tih periodizacija implicira da se karakteristike uočene na tim lokalitetima mogu pratiti u svim regijama na kojima se starčevačka kultura rasprostirala, te da se i rezultati novijih istraživanja mogu vrlo lako uklopiti

Todorova and Vajsov attempted to produce a new periodization which would incorporate all the previous ones, and provide a single chronological picture of the Early Neolithic in the Balkans. However, they left out the finds and sites of the northern Balkans, and we can hardly imagine that those would fit into the proposed chronology (Todorova, Vajsov 1993). For the time being, N. N. Tasić is the author of the most recent periodization of the Starčevo Culture. The author himself explained that the division was based exclusively on the most characteristic ornaments and shapes, noting that the periodization would have to be adjusted to coarse pottery, too (Tasić 1997, 41). Thus Tasić divides the Starčevo Culture into: ENCB (Early Neolithic of the Central Balkans), with pottery of simple shapes, painted white, usually with teardrop motifs and tremolo lines; MNCB I, with predominant coarse pottery and less white painting; MNCB II, in which the white painting disappears completely, and the predominant decoration consists of straight lines executed in dark paint; MNCB III a, when the white painting reappears, with spiral lines; MNCB III b, with frequent biconical shapes, dark polished pottery and spirals (Tasić 1997, 43-44).
Given that regional differences are extremely pronounced, and it is not possible to synchronize various sites, B. Jovanović divided the Starčevo Culture on the basis of a territorial key into: a) southern Balkan region (eastern Macedonia, southern Danube region, western Bulgaria, Kosovo; b) central Balkan region (the Morava valley, northern Serbia, Yugoslav part of the Danube region, eastern Bosnia, Syrmia, eastern Slavonia); and c) northern Balkan region (Oltenia, Transylvania) (Jovanović 1968, 129). The oldest phase of the Starčevo Culture ("Starčevo I") appears at the same

Sarvaš, lonac, kat.br. 223
Sarvaš, pot, cat. no. 223

u postojeće sheme i odrediti njihov relativno kronološki položaj s ostalim lokalitetima. Prema tumačenju D. Nikolić na teritoriju Srbije i Hrvatske moguće je pratiti zapravo samo 2 razvojna stupnja starčevačke kulture. To bi bili Starčevo linear B i spiraloid B prema periodizaciji S. Dimitrijevića, odnosno Starčevo II. i III. po Garašanin (Nikolić 2005, 63-65), što potvrđuju i novija istraživanja na području sjeverne Hrvatske (Balen *et al.*, u tisku).
Pojava i geneza starčevačke kulture predmet je mnogih radova i rasprava. Definicije i terminologija vezani uz rani neolitik razlikuju se kod pojedinih autora. Prva pojava nosilaca starčevačke kulture na Balkanu prema Srejoviću zabilježena je na području Đerdapa. Taj period D. Srejović definira kao Protostarčevo I. i izjednačava ga sa stupnjem Starčevo I. kod D. Garašanin i V. Milojčića (Srejović 1969, 176). Srejović koristi termin Protostarčevo upravo kako bi istaknuo geneznu vezu s mlađom starčevačkom grupom (Perić 1999, 14). Kultura Protostarčeva je, u obliku kakvom ga danas poznajemo, bila važan čimbenik stabilizacije. Kultura Starčevo-Criş koja je došla nakon nje bila je njen univerzalni nasljednik i proširila se izvan granica protostarčevačkog kulturnog područja tek kroz svoj razvoj (Pavuk 1993, 236). S druge strane, Jovanović predlaže dvije komponente koje su utjecale na formiranje starčevačke kulture – zemljoradnike s centralnog Balkana te donjeg Podunavlja (Jovanović 1974, 43). M. Garašanin definira najraniju komponentu ranog neolitika kao grupu Gura Bacului. Ta je grupa prethodnik stupnja Starčevo II. i kao izrazita komponenta balkansko-anatolskog kompleksa ranog neolitika izravno utječe na formiranje starčevačke kulture (Garašanin

time in at least 4 (and possibly 5) regions. These are the sites of Đerdap (Lepenski vir), Bačka (Donja Branjevina), Pomoravlje (Divostin), Kosovo (Rudnik) and, possibly, the lower course of the River Sava (Lug-Zvečka and Dobanovci) (Perić 2001). According to Jovanović, Vojvodina was an area in which two branches of farming colonization crossed paths – one coming from the central Balkans, and the other from the Lower Danube region – where there was a belt with mixed elements of material culture that subsequently became characteristic of the Körös and Criş cultural groups (Jovanović 1974, 43).
When the Starčevo Culture is observed from the point of view of both its chronological and geographical distributions, a feature that becomes noticeable is conservatism in both style and typology, except perhaps in its final phase (Nikolić 2005, 45). This conservatism makes classification of a site in a particular periodization phase more difficult, especially if significant ornaments and shapes are not present. Particularly problematic are periodizations based mostly on painted pottery, which neglected the fact that coarse pottery had its own evolution, too, as pointed out by Dimitrijević (Dimitrijević 1974, 68). However, it would appear that not enough progress has been achieved yet with relative chronology, based on all pottery finds. In recent times, all classifications have been subject to criticism and revision, particularly in light of new finds made in recent excavations and absolute radio-carbon dates, which will certainly have considerable impact on the relative and internal chronology of the Starčevo Culture. The periodizations developed nearly 60 years ago are still being used. Those divisions were based on a small number of sites which had been explored, most of them

Galovo, pintadera, kat.br. 87
Galovo, pintadera, cat. no. 87

1979, 132), pri čemu u formiranju starčevačke kulture ulogu ima i istovremena komponenta lokalnog karaktera, odnosno dio sjevernobalkansko-panonskog kompleksa (Garašanin 1979, 142). Termin Protostarčevo Garašanin izbjegava jer smatra da se elementi na osnovi kojih je izdvojena grupa ne mogu vezati za matično područje kasnije starčevačke kulture, već za ranoneolitičke grupe balkansko-anatolskog kompleksa (Garašanin 1996, 145). Prema S. Periću, tumačenje M. Garašanina mora se odbaciti budući da su, osim fine monokromne keramike i bijelo slikane keramike kao jasnih balkansko-anatolskih elemenata, na lokalitetima ravnopravno zastupljeni i elementi sjevernobalkansko-panonskog kompleksa. Nadalje, većina utvrđenih oblika keramike je zajednički element kulturnih grupa starijeg neolitika oba kompleksa i svih faza starčevačke kulture, te, prema rezultatima dosadašnjih istraživanja, smatra da se Protostarčevo (Gura Bacului) i starčevačka grupa mogu tretirati kao jedinstvena kulturna pojava bez obzira što prva pripada starijem neolitiku, a potonja razvijenim fazama neolitika (Perić 1999). Karakteristike te faze su monokromna fina keramika i bijelo slikanje. Dodatni argument tezi da te dvije grupe treba tretirati kao jedinstvenu kulturu je i prisutnost barbotina. Problematično je izdvajanje monokromne faze (Perić 1999). U postojanje monokromne faze sumnja i Pavlû (1989), i njezin nedostatak na lokalitetima smatra rezultatima lokalnih uvjeta, ili općenite rijetkosti takvog materijala, a ne dokazom o postojanju najranijeg horizonta bez slikanja. Ta se najranija faza neolitika na području Srbije javlja u dvije regije s jasno grupiranim lokalitetima – Đerdap i Pomoravlje te na nekoliko izoliranih punktova (Rudnik na Kosovu, Starčevo u Banatu i Donja Branjevina i Magareći Mlin u Bačkoj) (Perić 1999, 12). Mezolitički supstrat utvrđen je samo na đerdapskoj grupi naselja, a za područje Kosova nikakvih podataka nema. U Bačkoj postoje podaci o mezolitičkim nalazima, no prikupljenima s površine, bez konteksta i istraživanja. Nalazi su prikupljeni kod Hajdukova, u blizini ranoneolitičkog lokaliteta Nosa-Biserna Obala na sjeveru Bačke, te iz pjeskovitog profila ciglane u Bačkoj Palanci

partially, at the time. The use of those periodizations implies that characteristics observed at the sites in question can be seen in all regions in which the Starčevo Culture had been present, and that results of recent excavations can easily be fitted into the existing schemes, and their relative-chronology position established in respect of other sites. According to the interpretation by D. Nikolić, only two development phases of the Starčevo Culture can be found in the territories of Serbia and Croatia: Starčevo Linear B and Spiraloid, according to Dimitrijević's periodization, i.e. Starčevo II and III according to Garašanin (Nikolić 2005, 63-65). This has been corroborated by recent excavations in the territory of northern Croatia (Balen et al. , in print).

The emergence and genesis of the Starčevo Culture has been the subject of many papers and discussions. Definitions and terminology relating to the Early Neolithic vary from one author to another. According to Srejović, the first appearance of Starčevo Culture protagonists in the Balkans was recorded in the surroundings of Đerdap. This period has been identified by Srejović as Proto-Starčevo I, and equated to Starčevo I according to D. Garašanin and Miločjić (Srejović 1969, 176). Srejović uses the term 'Proto-Starčevo' precisely with the intention of emphasizing the genetic link with the later Starčevo group (Perić 1999, 14). The Proto-Starčevo Culture, in the form in which we know it today, was an important stabilization factor. The following Starčevo-Criş Culture was its universal successor, which spread over the boundaries of the Proto-Starčevo cultural zone only once it had developed further (PAVUK 1993, 236).

On the other hand, Jovanović offers two components that had influenced the formation of the Starčevo Culture: farmers from the central Balkans and from the lower Danube region (Jovanović 1974, 43). M. Garašanin defined the earliest component of the Early Neolithic as the Gura Bacului group. This group would have preceded the Starčevo II phase, and, as a distinct component of the Balkan-Anatolian Early Neolithic complex, directly influenced the formation of the Starčevo Culture (Garašanin 1979a, 132). A contemporary local component, a part of the north-Balkan and Pannonian complex, also played a role in the formation of the Starčevo Culture (Garašanin 1979a, 142). Garašanin avoids the term 'Proto-Starčevo', as he believes that elements used as the basis for defining this group cannot be related to the core area of the later Starčevo Culture, but rather to the area of the Early Neolithic group of the Balkan-Anatolian complex (Garašanin 1996, 145). According to S. Perić, M. Garašanin's interpretation must be disregarded, because, in addition to fine monochrome pottery and white-painted pottery as clear Balkan-Anatolian elements, the sites have yielded an equal quantity of finds with characteristics of the north-Balkan and Pannonian complex. Furthermore, most of the identified pottery shapes are common to Early Neolithic cultural groups belonging to both complexes and all phases of the

Selci Đakovački - Kaznica - Rutak, figurina, kat.br. 122
Selci Đakovački - *Kaznica - Rutak, figurine, cat. no. 122*

(Brukner 1974, 23). Najstarija se faza starčevačke kulture (Starčevo I) istovremeno javlja na najmanje 4 (a možda i 5) područja. To bi bili Đerdap (Lepenski vir), Bačka (Donja Branjevina), Pomoravlje (Divostin), Kosovo (Rudnik) te, možda, donji tok rijeke Save (Lug-Zvečka i Dobanovci) (Perić 2001), a prema mišljenju K. Minichreiter (2007; 2010), ta se faza može pratiti i na području današnje Hrvatske. Te se pojave mogu objasniti ako se proces neolitizacije Balkana ne promatra kao proces širenja jednim «autoputom» nego prihvaćanjem novih populacija i tehnoloških noviteta u raznim dijelovima u približno isto vrijeme (Brukner 1997, 246).

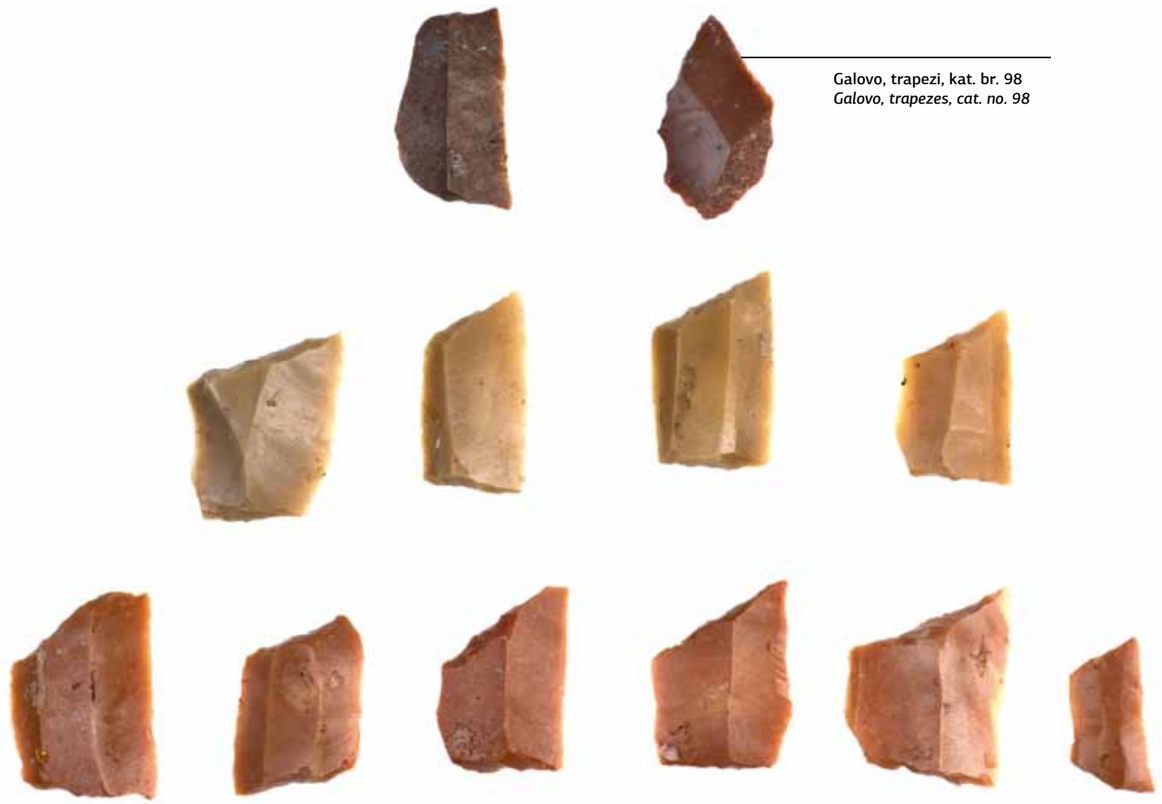
Položaj starčevačkih naselja diktiran je dostupnostima prirodnih resursa. To je, prije svega, voda, potrebna za opskrbu stanovnika i stoke, navodnjavanje, iskorištavanje plovnih putova za trgovinu, ribolov koji je i dalje važna komponenta u prehrani i sl. Naselja su se uvijek osnivala uz veće ili manje riječne tokove, na povišenim riječnim terasama, blagim padinama koje se spuštaju do izvora vode

Starčevo Culture, and therefore the results of the explorations to date indicate that the Proto-Starčevo (Gura Bacului) and Starčevo groups can be treated as a single cultural phenomenon, regardless of the fact that the former belongs to the Early Neolithic, and the latter to the later phases of the Neolithic (Perić, 1999). Characteristics of those phases include fine monochrome pottery and white painted decoration. An additional argument in support of the thesis that the two groups should be taken as a single culture is the presence of barbotine. Singling-out of the monochrome phase is problematic (Perić 1999). Pavlû (1989) also doubts that a monochrome phase existed, and he believes that it was missing from various sites because of the local conditions, or a general lack of such material, and that this cannot be taken as a proof of existence of an initial horizon without painting.

This earliest phase of the Neolithic has been recorded in Serbia in two regions, with clearly clustered sites, around Đerdap and in the Morava valley, and in several isolated locations (Rudnik in Kosovo, Starčevo in Banat and Donja Branjevina and Magareći Mlin in Bačka) (Perić 1999, 12). The Mesolithic substrate has been identified only in the Đerdap group of settlements, while there are no such data for the region of Kosovo. In Bačka, there are data on Mesolithic finds, but those have been surface finds, discovered away from any context or excavation. Finds have also been collected near Hajdukovo, in the vicinity of the Early Neolithic site of Nosa-Biserna Obala in northern Bačka, and in the sandy profile of the brick factory in Bačka Palanka (Brukner 1974, 23).

The earliest phase of the Starčevo Culture ("Starčevo I") occurred simultaneously in at least 4 (and possibly 5) regions. These are the sites of Đerdap (Lepenski vir), Bačka (Donja Branjevina), Pomoravlje (Divostin), Kosovo (Rudnik) and, possibly, the lower course of the River Sava (Lug-Zvečka and Dobanovci) (Perić 2001). According to Minichreiter (2007, 2010), this phase can also be observed in the territory of present-day Croatia. Such phenomena can be explained if the process of neolithization of the Balkans is viewed not as expansion along a single 'road', but rather as acceptance of new populations and technological innovations in various regions at approximately the same time (Brukner 1997, 246).

The location of Starčevo settlements was dictated by the availability of natural resources. This was primarily water, necessary for people and cattle, for irrigation, the use of waterways for trade, for fishing – which continued to play an important role in the diet – and so on. Settlements were always established near river courses, on elevated river terraces, gentle slopes descending towards water sources, or in plains on freely-draining ridges in the vicinity of water sources. Those settlements were never isolated, but grouped, with a distance of 3 to 5 km between them (Minichreiter 1992, 37). A possible cause of a higher concentration of settlements in a given area, which can be



Galovo, trapezi, kat. br. 98
Galovo, trapezes, cat. no. 98

ili u ravnicama na ocjeditim gredama u blizini izvora vode. Naselja nisu nikada izolirana, nego u grupama na udaljenosti 3-5km (Minichreiter 1992, 37). Uzrok veće koncentracije naselja na jednom području, koje se može interpretirati kao grupiranje stanovništva, može biti i posljedica periodičkog napuštanja i vraćanja u naselje, ovisno o «iscrpljenosti» obradive zemlje u okolici. Povratak stanovništva zabilježen je u naseljima Divostin, Grivac i Gračanica (Srejović 1994) te Donja Branjevina (Whittle *et al.* 2002, 83). Smatra se da je većina starčevačkih naselja bila naseljavana kratkotrajno, bilo da su se u njih vraćali nakon nekog vremena ili selili dalje te da zbog toga nije bilo potrebe za gradnjom kvalitetnih i izdržljivih objekata, nego su uglavnom gradili jednostavne nadzemne objekte ili objekte ukopane u zemlju, a pokrivene jednostavnim krovom od slame i pruća. Česte selidbe se možda mogu objasniti sustavom rotacije. Stanovnici bi iskrčili šumu, zasadili usjeve, a kad bi zemlja počela pokazivati znakove iscrpljivanja, ponovo bi spalili, ostavili zemlju „ na ugaru“, te otišli nekamo drugamo dok se zemlja ne oporavi (Childe 1957, 49). Smatra se da su zemunice u naseljima na području savsko-dravskog međuriječja bile glavni stambeni objekti. Za razliku od lokaliteta u donjem Podunavlju i centralnoj Srbiji, nadzemni su stambeni objekti vrlo rijetki, poput, primjerice, nadzemne kuće u Vinkovcima u Dugoj ulici 23 te novootkrivene

interpreted as population grouping, is the periodic abandonment of, and return to, a settlement, linked to the 'exhaustion' of arable land in the surroundings. Such return of the population has been observed in the settlements of Divostin, Grivac and Gračanica (Srejović 1994), as well as Donja Branjevina (Whittle et al. 2002, 83). It is believed that the majority of Starčevo settlements were used for short periods of time, and their population either returned after some time or moved on. Thus, there was no need to build houses of high quality and durability, and the houses built were either simple above-ground structures or dugouts, with simple roofs made of straw and twigs. The frequent moves can perhaps be explained by the rotation system. People would clear the forest, plant crops, and when the land showed signs of exhaustion they would burn it, let it lie fallow, and go somewhere else until the land recovered (Childe 1957, 49). It is believed that dugouts were the main residential structures in the settlements of the region between the Sava and Drava rivers. In contrast to the sites in the lower Danube basin and central Serbia, above-ground residential houses are very rare here. Examples include houses in Vinkovci, at 23 Long Street (Duga ulica), and the recently discovered house in Galovo (Dizdar and Krznarić-Škrivanko 1999-2000, 12, Minichreiter 2010). Dimitrijević attributes the rare occurrence of above-ground houses to the Mesolithic tradition (Dimitrijević, 1979, 256), but thus far this claim has not been substantiated. In

nadzemne kuće u Galovu (Dizdar, Krznarić Škrivanko 1999-2000, 12; Minichreiter 2010). Rijetkost nadzemnih objekata S. Dimitrijević pripisuje mezolitičkoj tradiciji (Dimitrijević 1979a, 256), no dosad nisu nađeni dokazi za potkrepu te tvrdnje. U Transdanubiji je također nađena nadzemna starčevačka kuća na lokalitetu Vörs Máriaasszony-sziget (Kalicz *et al.* 2002, 20). Naselja su uglavnom jednoslojna i periodički naseljena. Određena grupa vezala se za određeni prostor, a ne za određenu lokaciju, a tijekom cijelog neolitika je trajala prilagodba na stalno mjesto za život. Objekti su zadovoljavali osnovne potrebe, no bez većeg ulaganja u njih (Whittle 1996, 52). Zemunice su bile uglavnom nepravilnog oblika, s malim rupama za kolce za konstrukciju krova i zidova (ne deblje od 10 cm u promjeru) (Bailey 2000, 57). Stvarni uzroci kratkotrajnosti naselja ne mogu se utvrditi bez serije istraženih lokaliteta velike površine. Takav sustav naseljavanja tipičan za rasprostiranje Starčevo-Körös-Criş kompleksa vrlo se razlikuje od ranoneolitičkih sustava telova na jugu (Whittle 1998). Dok su naselja na telovima poprilično uniformna, jednoslojna naselja su daleko raznolikija i u obliku, i u veličini, i u planiranju (Chapman 1989, 36). Dio te raznolikosti je i u lošim uvjetima

očuvanja naselja zbog djelovanja pluga i erozije. Prijedlozi za objašnjenje „polusjedilačkog načina života“ je i prakticiranje transhumantnog stočarstva kod određenih skupina (Kaiser, Voytek 1983, 330). Jednoslojna naselja u pravilu su veća nego na telovima, primjerice, starčevačka naselja u Šumadiji zauzimaju prostor od 0,2 do 12 ha, dok je većina telova 0,15-0,3 ha (Chapman 1989, 36). Sustav naseljavanja je mogao biti takav da se gradilo jedno dugotrajnije naselje koje je služilo kao baza za odlaske na kraća putovanja i ekspedicije na kojima su se onda također stvarala kratkotrajnija naselja (Bailey 2000, 57). Za razliku od naselja na jugu, vrlo rijetko dolazi do «preklapanja» starijih i mlađih objekata, kreće se uvijek ispočetka. Naselja su bila kratkotrajna i nisu bila naseljavana duže od 100 do 200 godina. Nakon napuštanja postaju «nevidljiva», pa zbog toga i postoji toliki broj lokaliteta (Borić 2008, 123). Pokapanje unutar naselja, te higijenski problemi time uvjetovani, mogli su isto imati ulogu u napuštanju naselja (Chapman 1994). Najpogodniji okoliš za naseljavanje su bili rubovi šuma u blizini rijeka. Upravo je takav okoliš najbogatiji „neovisnim“ izvorima hrane (ribe, rakovi, školjke, puževi, divljač) (Bökönyi 1989, 14). Starčevačka naselja gotovo su uvijek na povišenim gredama i terasama, dok su ona Körös kulture pretežno nizinska i na plavnim područjima nizine Alföld (Gronenborn 1999, 145). Iako nema vertikalne stratigrafije (osim na lokalitetima Rudnik, Gladnica, Vinkovci Hotel te Slavonski Brod - Galovo), širok raspon ^{14}C datuma, kao i posude s različitim načinima ukrašavanja na nekim lokalitetima, znače opetovano vraćanje populacije na isti

Transdanubia, an above-ground Starčevo house has been found at the site of Vörs Máriaasszony-sziget (Kalicz et al. 2002, 20). The settlement sites are mostly single layer, and reflect periodic settlement. A given group was attached to a certain region, but not to an individual location, and the adjustment to a permanent place of living occurred gradually during the Neolithic. The houses satisfied the basic needs, but not much was invested in them (Whittle 1996, 52). Dugouts were mostly irregular in shape, with small holes for poles (not more than 10 cm in diameter) used to support the roof and walls (Bailey 2000, 57). The real reason for the short time-span of settlements cannot be established without exploring a range of sites that encompassed large surfaces. This system of settlement, characteristic of the Starčevo-Körös-Criş complex, is rather different from the Early Neolithic systems of tells in the south (Whittle 1998). While settlements on tells were rather uniform, the single-layer settlements were much more diverse in terms of their shape, size and planning (Chapman 1989, 36). Some of the diversity can be explained by the poor state of preservation of the settlements, due to ploughing and erosion. One of the proposed explanations of the 'semi-sedentary life-style' is the practice of transhumant herding by some groups (Kaiser and Voytek 1983, 330). The single-layer settlements are generally larger than those on tells; for example, the Starčevo settlements in Šumadija cover between 0.2 and 12 ha, while the surface area of most tells is 0.15-0.3 ha (Chapman 1989, 36). The inhabitation system could involve the construction of a single longer-term settlement which served as a base for short journeys and expeditions, during which short-term settlements were put up (Bailey 2000, 57). Unlike in settlements in the south, here 'overlapping' of earlier and later structures is very rare – people always started from scratch. The settlements were short-lived, and they were not used for more than 100 to 200 years. Once they were abandoned, they became 'invisible', and this is the reason for such a large number of archaeological sites (Borić 2008, 123). Furthermore, burials within the settlements, and related hygienic issues, could also impact settlement abandonment (Chapman 1994). The most favourable environment for inhabitation was forest edges in the vicinity of rivers. Such habitats were the richest in 'independent' food sources (fish, crayfish, shellfish, snails, game) (Bökönyi 1989, 14). Starčevo settlements were nearly always located on elevated ridges and terraces, while settlements of the Körös Culture were usually in lowlands and in alluvial areas of the Alföld plain (Gronenborn 1999, 145). Although there is no vertical stratigraphy (with the exceptions of the sites of Rudnik, Gladnica, Vinkovci Hotel and Galovo in Slavonski Brod), the wide range of radio-carbon dates, and pottery with various decoration techniques discovered at some sites, indicate that their inhabitants kept returning to the same location. Once a site was identified as favourable, it

Čaglin – Ivančevac, 2010., peć starčevačke kulture
Čaglin – Ivančevac, 2010, Starčevo culture kiln

položaj. Jedanput ubiciran kao pogodan, koristi se kroz nekoliko generacija, a informacije o povoljnom položaju prenose se usmenom predajom.

Prva pojava zemljoradničkih sjedilačkih populacija na tlu današnje kontinentalne Hrvatske reprezentirana je starčevačkom kulturom. Zbog nedovoljne istraženosti Slavonije supstrat i prethodnici starčevačke kulture na ovom su prostoru potpuna nepoznanica, što je još 1969 naglasio S. Dimitrijević (Dimitrijević 1969b, 9), a stanje se gotovo nepromijenjeno zadržalo i do danas. Prvi nalazi starčevačke kulture na tlu Hrvatske potječu iz 1894. godine, a pronađeni su prilikom kopanja temelja vukovarske gimnazije (Dimitrijević 1969b, 12). Prvi pregled starčevačkih nalaza s područja istočne Hrvatske napravio je R. R. Schmidt u monografiji «Die Burg Vučedol» pri čemu je koristio naziv «starčevačka kultura» u smislu «sjevernobalkanske keramike stupnja A» (Schmidt 1945; Dimitrijević 1969b, 10). Do danas je na području između Save i Drave poznato oko 100 lokaliteta starčevačke kulture, no samo na malom broju su se provodila arheološka iskopavanja, većina ih je evidentirana prilikom rekognosciranja (Minichreiter 2007, 14). Oko stotinu lokaliteta poznato je i na području današnje Srbije (Nikolić 2005, 21). Naselja su pretežito jednoslojna, s jednom fazom po određenoj periodizaciji. Izuzetak su naselja Rudnik i Gladnica (Nikolić 2005, 57) te Vinkovci i Slavonski Brod – Galovo (Dimitrijević 1979a; Minichreiter 2007). Najstarija prapovijesna naselja počinju se izgrađivati na suhim kopnenim površinama pokrivenim praporom na granici s močvarno-barskim prostorima, koji su se protezali na lijevoj obali Save u širini od 1 do 5 km prema sjeveru od njenog današnjeg korita (Minichreiter 2000, 59). Nositelji starčevačke kulture naselja su smještali na visokim terasama uz veće riječne tokove (Erdut, Vinkovci, Sarvaš, Vukovar, Slavonski Brod), na niskim brežuljcima uz dolinu s vodotocima (Bukovlje, Kneževi vinogradi, Pepelane, Podgorač) ili na blago povišenim terenima u ravnici uz manji vodotok (primjerice Gornja Vrba, Lipovac, Vrpolje, Zadubravlje). Naselja nikad nisu izolirana, odnosno daleko jedna od drugih (Minichreiter 1992c, 37). Većina lokaliteta je grupirana uz rijeke (što se uklapa u *modus vivendi* nosilaca starčevačke kulture, i općenito trend ranog neolitika). Zadubravlje, Slavonski Brod - Galovo, Igrač uz obalu Save, Virovitica – Drava; Ivandvor, Tomašanci u blizini rijeke Vuke, Vinkovci na Bosutu, Šagovina Cernička (Šumetlica, potok Trnava). Te su zakonitosti ustanovljene na temelju analize 60-ak lokaliteta starčevačke kulture (Minichreiter 1992c, 26). Za datiranje lokaliteta u okvirima relativne kronologije na području Hrvatske koristi se periodizacija S. Dimitrijevića. Starčevački lokaliteti istraženi u novije vrijeme u okolici Đakova (na trasi koridora Vc istraženo je 5 starčevačkih naselja – Sredanci, Tomašanci, Stari Perkovci, Novi Perkovci, Selci Đakovački – Kaznica-Rutak) i Virovitice svi pripadaju kasnijim fazama starčevačke kulture, sudeći prema keramičkom materijalu i apsolutnim datumima (Sekelj Ivančan, Balen 2006; Gerometta 2009; Leleković 2008; Hršak, Pavlović 2007).

Prema postojećim apsolutnim datumima trajanje starčevačke kulture obuhvaća vremenski raspon između 6200. i 5400. pr. Kr. (Whittle *et al.* 2002, 64). Najraniji neolitički lokaliteti na središnjem Balkanu datirani su oko 6200. pr. Kr. Upravo u to doba datiran je i početak gradnje trapezoidnih kuća na Lepenskom Viru i Padini (Borić 2008, 8). Datiranje tri uzorka kosti s Blagotina dalo je datume oko 6400. pr. Kr., što su najraniji datumi za starčevačku kulturu (Whittle *et al.* 2002). Rezultati apsolutnog datiranja postoje za 6 lokaliteta s područja Hrvatske: Zadubravlje, Slavonski Brod-Galovo, Virovitica-Brekinja, Tomašanci-Palača i Đakovački Selci–Kaznica-Rutak kod Đakova, Sopot kod Vinkovaca.

Za naselje Zadubravlje ^{14}C kronometrijskom metodom analizirano je 5 uzoraka ugljena. Četiri datuma potječu iz jama, dok je jedan iz bunara. Rezultat datiranja bunara znatno odskače ne samo od ostalih datuma na lokalitetu nego i od većine apsolutnih datuma za starčevačku kulturu, a iznosi

was used by several generations, and information about it was conveyed by word of mouth.

The Starčevo Culture represents the first appearance of a sedentary farming population in the territory of today's continental part of Croatia. Due to the low level of exploration, there is no information about any substrates or predecessors of the Starčevo Culture in this region, as emphasized by Dimitrijević back in 1969 (Dimitrijević 1969, 9); that situation has remained nearly unchanged to this day. The first finds of the Starčevo Culture were discovered in the territory of Croatia in 1894, during the digging of the foundations for the Vukovar grammar school (Dimitrijević 1969, 12). The first overview of the Starčevo Culture finds recovered in eastern Croatia was made by R. R. Schmidt in the monograph "Die Burg Vučedol", where he used the term 'Starčevo Culture' to indicate 'northern-Balkan pottery of phase A' (Schmidt 1945, Dimitrijević 1969, 10). To date, around 100 archaeological sites of the Starčevo Culture have been identified in the area between the Sava and Drava rivers, but just a few of them have been excavated, while the others have only been recorded during field surveys (Minichreiter 2007, 14). Around a hundred sites have been identified in the territory of today's Serbia, too (Nikolić 2005, 21). The majority of those settlements consist of a single layer and belong to one phase from a given periodization. The exceptions in this respect are the settlements of Rudnik and Gladnica (Nikolić 2005, 57), and Vinkovci and Galovo in Slavonski Brod (Dimitrijević 1979, Minichreiter 2007). The earliest prehistoric settlements were set up on dry land surfaces covered with loess, beside the edges of marshland, which stretched in a width of 1-5 km along the left bank of the Sava, to the north from its present-day course (Minichreiter 2000, 59). Protagonists of the Starčevo Culture established their settlements on high terraces alongside large river courses (Erdut, Vinkovci, Sarvaš, Vukovar, Slavonski Brod), on low hills on the edges of plains with water courses (Bukovlje, Kneževi Vinogradi, Pepelane, Podgorač) or on slightly elevated locations within plains, near small water courses (for example, Gornja Vrba, Lipovac, Vrpolje, Zadubravlje). The settlements were never isolated, or distant from one another (Minichreiter 1992, 37). Most of them were grouped alongside rivers (which corresponds to the modus vivendi of the protagonists of the Starčevo Culture and of the Early Neolithic in general): Zadubravlje, Galovo in Slavonski Brod, Igrač on the bank of the Sava; Virovitica on the Drava; Ivandvor, Tomašanci near the River Vuka; Vinkovci on the Bosut; Šagovina Cernička (Šumetlica, the Trnava brook). These patterns have been identified on the basis of the analysis of around 60 archaeological sites of the Starčevo Culture (Minichreiter 1997, 26). The relative dating in the territory of Croatia is done using the periodization by Dimitrijević. The Starčevo Culture sites excavated recently in the surroundings of Đakovo (5 settlements of the Starčevo Culture have been excavated on the route of corridor Vc: Sredanci, Tomašanci, Stari Perkovci, Novi Perkovci, Selci Đakovački – Kaznica-Rutak) and Virovitica all belong to later phases of the Starčevo Culture, based on the pottery finds and absolute dates (Sekelj Ivančan, Balen 2006, Gerometta 2009, Leleković 2008, Hršak,Pavlović 2007).

According to the existing absolute dates, the Starčevo Culture spanned the period between 6200 and 5400 BC (Whittle et al. 2002, 64). The earliest Neolithic sites in the central Balkans have been dated to around 6200 BC, which corresponds to the beginning of the construction of trapezoidal houses at Lepenski Vir and Padina (Borić 2008, 8). Dating of three bone samples from Blagotin resulted in dates around 6400 BC, and these are the earliest dates of the Starčevo Culture (Whittle et al. 2002).

Absolute dates have been obtained for six sites in the territory of Croatia: Zadubravlje, Galovo in Slavonski Brod, Virovitica-Brekinja, Tomašanci-Palača, Đakovački Selci–Kaznica-Rutak near Đakovo, and Sopot near Vinkovci.

The radio-carbon chronometric method was used to analyse five coal samples from the settlement of Zadubravlje. Four samples were taken from pits, and one from a well. The date obtained for the well sample deviates significantly not only from other dates

Selci Đakovački - Kaznica - Rutak, posuda za zalihe, kat.br. 124
Selci Đakovački - Kaznica - Rutak, storage vessel, cat. no. 124

6610.-6430. cal BC (Z-2924). Ostali su rezultati u rasponu od 5930.–5040. cal BC: zemunica 6, 5720.-5530. (68,2%; Z-2921); zemunica 9, 5720.-5530. (68,2%; Z-2922); zemunica 10, 5930.-5740. (55,5%; Z-2923); i zemunica 12, 5370.-5040. (68,2%; Z- 2925) (Krajcar Bronić *et al.* 2004, 10).
Za lokalitet Slavonski Brod - Galovo datirano je 9 uzoraka ugljena. SJ 89 6070.-5770. cal BC (Z-3568), SJ 149 6000.–5740. cal BC (Z-3584), SJ 389 5850.-5710. cal BC (Z-3587), zemunica 09 (peć) 5810.-5620. cal BC (Z-2936), zemunica 205 5800.-5175. cal BC (Z-3574), zemunica 205 5790.-5660. cal BC (Z-3575), zemunica 155 5760.-5630. cal BC (Z-3588), zemunica 37 5380.-5290. cal BC (Z-3583), zemunica 015 5300.-4960. cal BC (Z-3574) (Minichreiter, Krajcar-Bronić 2006). Rezultati datiranja oba lokaliteta pokazuju da objekti nisu istovremeni i da se svi dijelovi naselja nisu koristili istovremeno. Datumi upućuju na barem dvije faze naselja (Krajcar-Bronić, Minichreiter 2007, 716), a po svoj prilici i tri. Na lokalitetu Tomašanci – Palača dobiveni datumi su u rasponu od 5660.–5300. cal BC, dok su na lokalitetu Virovitica – Brekinja u rasponu od 5520.–5080. cal BC te tako datiraju naselja u kasnu fazu starčevačke kulture (Balen, Gerometta 2011, 84; Balen *et al.*, u tisku). Na lokalitetu Sopot kod Vinkovaca otkriven je objekt starčevačke kulture ukopan u predzdravični sloj, a datiran je u 6060.–5890. cal BC (Beta-251910) (Krznarić Škrivnako 2011, 215). Na lokalitetu Đakovački Selci–Kaznica-Rutak datirana su dva uzorka ugljena. Oba uzorka uzeta su iz jama i rezultati su za SJ 199 5305.–5200. cal BC (KIA 36070, 57,2%) i za SJ 471 5895.–5735. cal BC (KIA 36074, 95,4%). Datumi upućuju na barem dvije faze naselja.
Materijalna kultura najviše je zastupljena keramičkim posuđem pečenim oksidacijski, tj. uz prisutnost kisika, što keramici daje crvenu ili oker boju. U najvećoj mjeri zastupljeno je posuđe grube fakture s nekoliko funkcionalnih oblika od kojih se ističu zaobljeni lonci te posude na nozi i zdjele. Posuđe grube fakture često je s vanjske strane ukrašeno urezivanjem, utiskivanjem, ubadanjem ili plastičnim modeliranjem (Minichreiter 2007, 84), dok se u kasnom stupnju na keramici javlja kanelirani barbotin. Fino keramičko posuđe poput lonaca manjih dimenzija, zdjela i zdjela na nozi finije fakture i glatke površine često je ukrašeno pravocrtnim i krivocrtnim slikanim motivima bijelom i tamnom bojom (Minichreiter 2007, 92). Česti su i nalazi drugih keramičkih predmeta simboličkog značenja kao što su antropomorfne figurine, prikazi životinja, amuleti te žrtvenici na četvrtastom postolju, dok se od ostalih uporabnih keramičkih predmeta nalaze utezi, pršljeni i kalemovi.

at this site, but also from the majority of absolute dates for the Starčevo Culture: it is 6610-6430 cal BC (Z-2924). The other results range between 5930 and 5040 cal BC: dugout 6 – 5720-5530 (68.2%; Z-2921); dugout 9 – 5720-5530 (68.2%; Z-2922); dugout 10 – 5930-5740 (55.5%; Z-2923); and dugout 12 – 5370-5040 (68.2%; Z-2925) (Krajcar-Bronić et al. 2004, 10).
At the site of Galovo in Slavonski Brod, nine charcoal samples were taken for dating. The results obtained are: SU 89 – 6070-5770 cal BC (Z-3568), SU149 – 6000-5740 cal BC (Z-3584), SU 389 – 5850-5710 cal BC (Z-3587), dugout 09 (kiln) – 5810-5620 cal BC (Z-2936), dugout 205 – 5800-5175 cal BC (Z-3574), dugout 205 – 5790-5660 cal BC (Z-3575), dugout 155 – 5760-5630 cal BC (Z-3588), dugout 37 – 5380-5290 cal BC (Z-3583), dugout 015 – 5300-4960 cal BC (Z-3574) (Minichreiter and Krajcar Bronić 2006). The results of dating of the two settlements demonstrate that the structures in them were not contemporary, and that various parts of the settlements were not used at the same time. The dates suggest at least two phases of inhabitation (Krajcar Bronić and Minichreiter 2007, 716), and probably even three.
Samples from the site of Tomašanci-Palača yielded dates of 5660-5300 cal BC, while dates for the site of Virovitica-Brekinja are 5520-5080 cal BC, putting these settlements into the late phase of the Starčevo Culture (Balen and Gerometta 2011, 84; Balen et al., in print). At the site of Sopot near Vinkovci, a Starčevo Culture structure has been discovered dug into the layer immediately above the subsoil; it has been dated to 6060-5890 cal BC (Beta-251910) (Krznarić-Škrivanko 2011, 215). At the site of Đakovački Selci–Kaznica-Rutak, two coal samples have been dated, both taken from pits. The results obtained are 5305-5200 cal BC for SU 199 (KIA 36070, 57.2%) and 5895-5735 cal BC for SU 471 (KIA 36074, 95.4%). These dates suggest at least two phases of inhabitation.
The material culture is represented mostly by pottery produced by oxidation firing, that is, with oxygen, resulting in a red or ochre colour of the pottery. The prevalent pottery is coarsely made, with several functional shapes, among which prominent places are held by globular pots and footed vessels and bowls. Coarse ware is frequently decorated on the outside with incisions, impressions, punctures and plastic modelling (Minichreiter 2007, 84), with fluted barbotine appearing on pottery from the late phase. Fine pottery, such as smaller pots, bowls and footed bowls, whose structure was finer and surfaces smooth, was often decorated with motifs rendered with white and dark straight and curved lines (Minichreiter 2007, 92). Other types of ceramic objects imbued with symbolic meaning have also been found frequently (anthropomorphic figurines, representations of animals, amulets and altars on rectangular pedestals), while other utilitarian ceramic objects include weights, spindle whorls and spools.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

TIHOMILA TEŽAK-GREGL

KULTURA LINEARNOTRAKASTE KERAMIKE

THE LINEAR BAND CULTURE

Prva sjedilačka poljoprivredna zajednica, dakle neolitička kultura u punom značenju toga pojma, u srednjoj i zapadnoj Europi još je u 19. st. prema karakteristično ukrašenom keramičkom posuđu nazvana trakastom ili linearnotrakastom keramikom (*Bandkeramik ili Linearbandkeramik*). Sam pojam *Bandkeramik* prvi se puta u arheološkoj literaturi pojavio 1884. g. kada je F. Klopfleisch tim nazivom označio prapovijesnu keramiku ukrašenu urezanim trakastim motivima kako bi je razlikovao od vrpčaste keramike ili *Schnurkeramik* i megalitske keramike (Klopfleisch 1884, 92). To se ime unatoč nekim drugim pokušajima do danas zadržalo, vrlo često pod uobičajenom kraticom LBK (dakle od njemačkoga *Linearbandkeramik*) čak i u angloameričkoj literaturi, stoga ćemo se dalje i u ovome radu koristiti spomenutom kraticom.[1] M. Hoernes, G. Wilke, O. Menghin, W. v. Jenny, F. Tompa podrazumijevali su pod pojmom *Bandkeramik* niz različitih kultura koje su ležale uz Dunav ili su nastale pod neposrednim utjecajem iz toga prostora, a spajale su ih dvije zajedničke osobine: spirala kao dominantan urezani ukrasni motiv na keramičkom posuđu i glačana kamena sjekira kalupastog tipa (*Schuleistenbeil*). Za ovo su oruđe smatrali da je glavno poljodjelsko oruđe i da kao takvo dokazuje prvu poljoprivredu u srednjoj i zapadnoj Europi. No kasnije je ta pretpostavka napuštena zahvaljujući analizama tragova uporabe na kalupastim klinovima te s obzirom na činjenicu da se takve izrađevine pronalaze u različitim dimenzijama, od gotovo minijaturnih do golemih primjeraka pa se danas smatra kako je riječ o tesarskom oruđu za obradu drva. Toj ideji u prilog ide i činjenica da su se naselja linearnotrakaste keramike nalazila smještena između velikih šumskih prostranstava koja je trebalo krčiti kako bi se dobilo obradivo tlo te da je drvo vrlo često korišteno kao građevinski materijal.

Kada danas govorimo o linearnotrakastoj keramici onda zapravo govorimo o kompleksu neolitičkih kultura rasprostranjenom na golemu prostoru od zapadne Mađarske (Transdanubije), jugozpadne Slovačke, Češke, sjeverne i istočne Austrije, Njemačke do južne Nizozemske, istočne Belgije i rječnih dolina srednje i sjeverne Francuske (Pariški bazen) na zapadu te južne i dijela središnje Poljske, Transilvanije, Moldavije i zapadne Ukrajine na istoku. Sjeverna granica rasprostiranja linearnotrakaste keramike poklapa se sa sjevernom granicom prapornoga područja, odnosno s južnom granicom pješčano-glinenih tala morenskih naslaga sjevernoeuropske nizine. U južnim područjima svoga rasprostiranja linearnotrakasta keramika nije najstarija neolitička pojava, ali to ne umanjuje njezinu važnost u tim krajevima.

[1] Primjerice Gordon Childe ju je nazvao Danubian I a kulturom (Childe 1929). U literaturi se pojavljuju i nazivi *Spiralkeramik, Spiralmäanderkeramik, volutová keramika, céramique linéaire, céramique rubanee, linear pottery culture, ceramika wstęgowa* itd.

The first sedentary agricultural community, and thus the first Neolithic culture in the full meaning of that term, in central and western Europe was designated already in the nineteenth century as the Linear or Linear Band Ware culture (Bandkeramik or Linear Pottery Culture) based on the typical decorations on its pottery. The very term Bandkeramik first appeared in the archaeological literature in 1884, when F. Klopfleisch used it to describe the prehistoric pottery decorated with incised linear motifs in order to distinguish it from Corded Ware, or Schnurkeramik and Megalithic pottery (Klopfleisch 1884, 92). This designation, despite some other attempts, has been retained to the present, very often under the customary abbreviation LBK (thus, from the German Linearbandkeramik) even in Anglo-American sources, so that I shall continue to use this abbreviation herein.[1] M. Hoernes, G. Wilke, O. Menghin, W. v. Jenny and F. Tompa understood the term Bandkeramik to refer to a series of different cultures located along the course of the Danube or that emerged under its immediate influence in this region, linked by two common features: spirals as the dominant incised motif on pottery vessels and polished stone last-shaped adzes (Schuleistenbeil). They believed that this implement was the primary agricultural tool and that as such it proves the first instance of agriculture in central and western Europe. However, this hypothesis was later discarded thanks to analysis of traces of use on shoe-last celts and given the fact that such implements can be found in various dimensions, from virtually miniature to enormous examples, so that currently it is believed that these were carpentry tools used to work on wood. This idea is also bolstered by the fact that Linear Band Ware settlements were situated between large forested expanses that had to be cleared in order to obtain arable land and by the fact that lumber was often used as a construction material.

When we speak of Linear Band Ware today, then we are actually speaking of a complex of Neolithic cultures dispersed over a broad swath of territory from western Hungary (Transdanubia), south-west Slovakia, Bohemia and Moravia, northern and eastern Austria, and Germany to the southern Netherlands, eastern Belgium and the river valleys of central and northern France (the Paris basin) in the west, and southern and parts of central Poland, Transylvania, Moldova and western Ukraine in the east. The northern boundary of Linear Band Ware distribution overlapped with the northern boundary of the loess zone, and the southern boundary of the sandy-clay sediments of the moraine deposits of the northern European lowlands. In the southern areas of its extent, Linear Band Ware was not the oldest Neolithic phenomenon, but that does not diminish its important in these regions.

[1] *For example, Gordon Childe called it the Danubian I a culture (Childe 1929). In the relevant literature, the terms Spiralkeramik, Spiralmäanderkeramik, volutová keramika, céramique linéaire, céramique rubanee, Linear Pottery culture, ceramika wstęgowa, etc. also appear.*

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

S obzirom na golemo područje rasprostiranja čitav se kompleks često dijeli u dvije velike skupine, odnosno kruga:
a) veći, zapadni koji se prostire u Holandiji, Njemačkoj, Belgiji, zapadnoj Francuskoj, Švicarskoj, Austriji, Češkoj, Moravskoj, Poljskoj, zapadnoj Mađarskoj, jugozapadnoj Slovačkoj, zap. Ukrajini, Transilvaniji, Moldaviji, središnjoj Hrvatskoj
b) manji istočni koji obuhvaća istočnu Mađarsku, jugoistočnu Slovačku, zapadni Erdelj, jugozapadni dio Ukrajine, sjeverni Banat. Ranije se taj krug nazivao i istočnokarpatskom linearnotrakastom keramikom, a danas prevladava naziv istočna linearna keramika.

Granica između istočnoga i zapadnoga kruga ide kroz srednju Slovačku i južnije područjem između Dunava i Tise. Istočnom krugu J. Lichardus je pripisao i nalaze korenovske kulture s područja središnje Hrvatske, no danas ih ipak smještamo u zapadni krug (Težak-Gregl 1993a).

Zajednička obilježja oba kruga ogledaju se ponajprije u istovrsnoj tehnologiji proizvodnje keramike što znači da u oba kruga postoji identičan način pripreme i obrade sirove gline, obrade površine posuđa, istovjetan način pečenja te jednaka tehnika ukrašavanja. Razlike su uočljive u oblikovanju posuđa, prisutnosti, odn. odsutnosti slikanja te u motivima ukrasa iako se u osnovi zasnivaju na pojedinačnim ili paralelnim urezanim linijama. Sličnosti pokazuje i pogrebni ritus te opći razvoj koji se može pratiti od početne, formativne ili protolinearne faze, preko starije i srednje faze do mlađe faze u kojoj dolazi do stvaranja i diferenciranja novih, manjih, lokalno orijentiranih skupina.

Teorije o podrijetlu i nastanku LBK možemo općenito podijeliti na one koje se oslanjaju na migracijske ili kolonizacijske modele, na one koje zastupaju ideju o autohtonosti te integracijske (Lukes 2004, 21-29). Do devedesetih se godina 20. st. postanak LBK uglavnom sagledavao kao posljedica daljnje kolonizacije, odnosno populacijskih kretanja s periferije već postojećih neolitičkih naselja jugoistočne Europe. Smatralo se da njezina pojava u srednjoj i zapadnoj Europi predstavlja jasan prekid s tamošnjim autohtonim skupljačima-lovcima kojima je nedostajala društvena složenost i tehnološko znanje da bi samostalno prešli sa skupljačko-lovačke privrede na proizvodnu. U prilog takvomu tumačenju navodio se visok stupanj uniformnosti u različitm područjima rasprostiranja LBK – sličan izbor lokacija za naselja, gradnja dugačkih nadzemnih kuća, glačane kamene sjekire, keramičko posuđe, što se sve može tumačiti kao rezultat migracije ljudi iz neolitičkih naselja na rubnim područjima sjevernoga Balkana. Zagovornici ovakvog razvoja dokaze su nalazili u arheološkom materijalu LBK, u prvome redu u keramici kojoj i po oblicima i po ukrasu analogije vide u keramici starčevačke, odnosno kulture Körös-Çris. Uporaba glačanog

Given its enormous area of distribution, the entire complex is divided into two large groups, or spheres:
a) the larger, western section which extends into Holland, Germany, Belgium, western France, Switzerland, Austria, Moravia, Poland, western Hungary, south-west Slovakia, western Ukraine, Transylvania, Moldova and central Croatia;
b) the smaller, eastern section encompasses eastern Hungary, south-east Slovakia, western Transylvania, south-west Ukraine and northern Banat. Earlier this sphere was also called Eastern Carpathian Linear Band Ware, while today the term Eastern Linear Ware predominates.

The boundary between the eastern and western spheres runs through central Slovakia and the southern zone between the Danube and Tisza Rivers. J. Lichardus also attributed the Korenovo culture finds from central Croatia to the eastern sphere, but currently he places them in the western sphere (Težak-Gregl 1993a).

The common features of both spheres are reflected primarily in the identical pottery production technology, which means that identical methods for the preparation and rendering of clay, working of vessel surfaces, identical firing methods and the same decoration techniques existed in both spheres. Differences are apparent in the formation of vessels, the absence of painting and in decoration motifs, even though they are essentially based on individual or parallel incised lines. Similarities are also discernable in burial rites and the general development which may be followed from the initial, formative or proto-Linear phase, through the older and middle phases, to the younger phase, in which the creation of differentiated new, smaller, locally oriented groups emerged.

Theories on the origin and emergence of the LBK may be generally divided into those which emphasize migration or colonization models, and those which advocate the idea of indigenity and integration (Lukes 2004, 21-29). Until the 1990s, the origin of the LBK was generally viewed as the result of further colonization, i.e., population movements from the peripheries of already existing Neolithic settlements in south-east Europe. It was believed that its appearance in central and western Europe constituted a clear break with the local indigenous hunter-gatherers who lacked the social cohesion and technological expertise to independently make the transition from a hunter-gatherer economy to a one based on production. The high degree of uniformity in different parts of the LBK's territory of distribution was cited as evidence for this interpretation: a similar selection of sites for settlements, construction of long, above-ground houses, polished stone adzes, and ceramic ware, all of which may be interpreted as a result of migrations from Neolithic settlements in the outlying regions of the northern Balkans. The advocates of this type of development found evidence in the archaeological materials of the LBK, first and foremost in the pottery, in which they saw analogies to the

Kukunjevac - Brod, kameni predmet, kat. br. 151
Kukunjevac - Brod, stone object, cat. no. 151

kamenog oruđa kao i stranih, iz daleka dobavljenih sirovina sljedeći su argument, kao i uzgoj istih vrsta biljaka i životinja. Konačno, teoriju potvrđuje i brzo širenje kulture na nova područja. Moguće razlike i varijacije pripisuju se prilagodbi pridošlih populacija na novi okoliš i nove izvore sirovina (Lukes 2004, 23). U ovim su tumačenjima zanemarene bilo kakve tradicije mezolitičkih zajednica. Dijametralno suprotne su teorije o autohtonom podrijetlu koje posebno naglašavaju ulogu lokalnoga mezolitičkog stanovništva u formiranju LBK. Pristalice autohtonih teorija smatraju da lokalne mezolitičke populacije prihvaćaju neolitizaciju zahvaljujući kontaktima s neolitičkim populacijama i kulturnoj difuziji što se odvija u pograničnim zonama njihovih područja. Prvotne nasumične i sporadične kontakte slijede razmjena informacija, različitih dobara, ali i partnera. Neolitizacija se potom širi već postojećim mezolitičkim komunikacijskim mrežama. Dakle, mezolitičke populacije selektivno i postupno usvajaju pojedine segmente neolitičkog načina života u okvirima svojih tradicija (Lukes 2004, Zvelebil 2004b). Tome bi u prilog govorila i sve uočljivija razlika među pojedinim ranim LBK zajednicama u različitim aspektima života. Neki pak autori rješenje nalaze u kombinaciji prethodnih pristupa. To znači da manje skupine doseljenika u potrazi za novim obradivim površinama naseljavaju mezolitičko područje po modelu žabljega skoka (Zvelebil 2004b). I ovaj model ističe važnost kontaktnih zona u pograničnim područjima. Neolitičke populacije razmjenjuju svoje neolitičke proizvode, primjerice keramiku i glačana kamena oruđa za sirovine, krzna i druge proizvode mezolitičkih populacija. Kroz to dolazi do miješanja populacija pri čemu one neolitičke imaju prevladavajuću ulogu (Lukes 2004; Zvelebil 2004b). Potonje dvije teorije u osnovi su vrlo slične jer se zasnivaju na kontaktima i integraciji mezolitičke i neolitičke tradicije, no razlikuju se po tome kojoj komponenti daju prevagu, mezolitičkoj ili neolitičkoj. U autohtonim teorijama mezolitičke populacije uspijevaju očuvati svoje tradicije, dok je u integracijskim teorijama njihova uloga marginalizirana (Lukes 2004, 29). Neki pak autori u tumačenju nastanka LBK posebno ističu tzv. srednjoeuropsku ekološko-kulturnu barijeru (Bánffy 2004). Naime, plodnu regiju Karpatske kotline Dunav i Tisa ne dijele samo okomito na zapadni dio, odnosno

shapes and ornamentation of Starčevo and Körös-Çris pottery. The use of polished stone implements as well as those made of non-local raw materials obtained from distant regions and the raising of the same species of plants and animals serve as the next argument to back this theory. Finally, this theory is also reinforced by the rapid spread of the culture to new areas. Possible differences and variations are ascribed to adaptations by newly-arrived populations to new environments and new sources of raw materials (Lukes 2004, 23). These interpretations overlook any traditions of Mesolithic communities. Theories on an indigenous origin that stress the role of local Mesolithic populations in the formation of the LBK are diametrically opposed. Adherents of the indigenous theories believe that local Mesolithic populations accepted Neolithization thanks to contacts with Neolithic populations and cultural diffusion that proceeded in the boundary zones of their territories. The initial random and sporadic contacts were followed by exchanges of information, various goods and even partners. Neolithization then spread along already existing Mesolithic communication networks. Thus, Mesolithic populations selectively and gradually assumed individual segments of the Neolithic lifestyle within the framework of their own tradition (Lukes 2004; Zvelebil 2004b). Evidence for this would be the increasingly apparent differences between individual early LBK communities in different aspects of life. Some scholars saw a solution in a combination of the preceding approaches. This means that smaller groups of newly-arrived migrants seeking new arable surfaces settled the Mesolithic area based on the leapfrog model (Zvelebil 2004b). Even this model underscores the importance of contact zones in boundary zones. Neolithic populations exchanged their Neolithic products, such as pottery and polished stone implements, for raw materials, pelts and other products from Mesolithic populations. This led to an intermingling of populations, wherein the Neolithic played the dominant role (Lukes 2004; Zvelebil 2004b). The former two theories are essentially quite similar, because they are based on contacts and integration between the Mesolithic and Neolithic traditions, but they differ in terms of those components that are given greater emphasis, either the Mesolithic or Neolithic. According to the indigenous theories, the Mesolithic populations managed to preserve their traditions, while according to the

Transdanubiju i istočni dio, odnosno Veliku mađarsku ravnicu, nego je u 6. tisućljeću pr. Kr. jasno uočljiva podjela na južni dio nastanjen nositeljima starčevačke i kulture Körös te sjeverni, o naseljenosti kojega se vrlo malo zna iako novija istraživanja na tom području sve više otkrivaju mezolitička nalazišta. Postavlja se pitanje zašto su obje neolitičke zajednice, zastale na granici koja nije nikakva prirodna prepreka? Ali upravo u tom prostoru prestaje klima, tlo i sirovine koje su presudne u egzistenciji spomenutih neolitičkih zajednica. Ovaj zastoj prodora neolitičkih skupina južnog podrijetla dao je vremena lokalnim mezolitičkim grupama koje su živjele sjevernije, da upoznaju i ovladaju najprije dijelom, a potom i većinom neolitičkih novina, a da pritom nisu u potpnosti asimilirane od neolitičkih pridošlica (Bánffy 2004). Takav razvoj događaja potvrđuju novija istraživanja u Transdanubiji gdje je u naseljima početne faze najranije LBK zastupljen nizak postotak keramike s pravom linearnom ornametikom nasuprot prevladavajućim obilježjima starčevačke keramografije (sendvičasti presjek, kanelirani barbotin, ukras otiskivanjem prsta i nokta, bikonični oblici), no litika pokazuje izrazito mezolitičke tradicije kako u tehnici obradbe i oblikovanja tako i u korištenju određenih sirovina (primjerice szentgalskog radiolarita).
Područje nastanka i najstarije LBK tzv. zapadnog kruga jest Transdanubija, pod kojim pojmom podrazumijevamo ne samo zapadnu Mađarsku nego i istočnu Austriju, jugozapadnu Slovačku i južnu Moravsku. Ondje je moguće razlikovati dvije faze unutar najstarijeg razvojnog stupnja: početnu, odnosno fazu nastanka, datiranu između 5700./5600. i 5400. g. pr. Kr. (Zvelebil 2004b) kojoj pripadaju stupnjevi Nitra-Hurbanovo i Bicke-Bina po periodizaciji J. Pavuka (Pavuk 1980) i najstarija faza periodizacije R. Tichoga (Tichy 1960), odnosno formativna faza LBK u području oko Balatona i Becsehely (Banffy, Oross 2009, 227), potom fazu širenja po modelu „žabljeg skoka“ u područja Češke, Bavarske, Saske, Franačke i južne Poljske između 5400. i 5200. g. pr. Kr. Ova faza obuhvaća regionalne pojave poznate u literaturi kao stupanj Flomborn, Ačkovy, Protonotenkopf, Zofipole i dr. Srednja ili klasična faza poznata je kao Notenkopf keramika. Kasnu fazu nakon 5000. g. pr. Kr. obilježuje sve izraženija regionalizacija i pojava novih keramičkih stilova kao što su Zseliz/Želiezovce, Šarka, Hinkelstein i dr.. Sve te skupine pokazuju postupno udaljavanje od tradicija LBK i transformaciju u kasnoneolitičke zajednice ubodnotrakaste keramiku, lenđelske kulture, rössenske i dr. Naselja LBK pretežito su smještana na plodnim tlima u blizini vode, u dolinama rijeka, ali ne i isključivo. Većina se nalazila okružena šumovitim predjelima koji su upravo u ovo postglacijalno razdoblje prekrivali veći dio srednjoeuropskoga i zapadnoeuropskoga prostranstva. Naselja su manje ili više stabilna s određenim kontinuitetom trajanja od generacije do

*integration theories their role was marginalized (Lukes 2004, 29). In the interpretation of the LBK's emergence, some scholars particularly highlight the so-called Central European ecological-cultural barrier (Bánffy 2004). Namely, the fertile Carpathian basin is not only divided by the Danube and Tisza Rivers vertically into a western section, i.e., Transdanubia, and an eastern section, i.e., the Great Hungarian Plain, for in the sixth millennium BC a clear division was apparent into a southern section inhabited by the exponents of the Starčevo and Körös culture, and a northern section, about which little is known of its human habitation, although more recent research in this region has yielded an increasing number of Mesolithic sites. The question arises as to why both Neolithic communities stopped at a boundary which does not constitute any manner of natural barrier. But this was in fact the terminal point of the climate, soil and raw materials so crucial to the existence of the aforementioned Neolithic communities. This halt in the forward movement of Neolithic groups of southern origin gave time to local Mesolithic groups who lived farther north to become familiar with and then master first some and then most Neolithic novelties, without being entirely assimilated by Neolithic newcomers (Bánffy 2004). Such a turn of events has been confirmed by more recent research in Transdanubia, where a low percentage of pottery with genuine linear ornamentation is present in settlements of the earliest LBK's initial phase in comparison to the predominant features of Starčevo ceramography (sandwiched cross-section, fluted barbotine, finger and nail impression ornaments, biconical shapes), but the lithics display a marked Mesolithic tradition both in the rendering technique and formation and in the use of specific raw materials (Szentgál-type radiolarites, for example).
The territory in which even the oldest LBK of the so-called western sphere appeared is the Transdanubia, which means not only western Hungary but also eastern Austria, south-west Slovakia and southern Moravia. Here it is possible to distinguish two phases within the oldest developmental phase: the initial, or emergent phase, dated between 5700/5600 and 5400 BC (Zvelebil 2004b), which encompasses the Nitra-Hurbanovo and Bicke-Bina phases according to J. Pavuk's periodization (Pavuk 1980) and the oldest phase of R. Tichy's periodization (Tichy 1960), and then the formative LBK phase in the area around Balaton and Becsehely (Banffy, Oross 2009, 227), followed by the phase of dissemination based on the "leapfrog" model in Bohemia and Moravia, Bavaria, Saxony, Franconia and southern Poland between 5400 and 5200 BC. This phase includes the regional phenomenon known in the literature as the Flomborn, Ačkovy, Protonotenkopf, Zofipole, etc. phase. The middle or classic phase is known as Music Note pottery. The late phase after 5000 BC was characterized by increasing regionalization and the appearance of new pottery styles, such as Zseliz/Želiezovce,*

generacije. Tipično naselje LBK čini nekoliko karakterističnih dugačkih kuća koje su udaljene jedna od druge i time se struktura naselja LBK razlikuje od tipičnih ranoneolitičkih naselja jugoistočne Europe u kojima su kuće vrlo blizu jedna drugoj (Lenneis 2014, 154). Svaka je kuća imala svoju okućnicu, prateće gospodarske objekte, a prazni prostori među kućama služili su kao radni prostori. U neposrednoj se blizini nalaze polja te groblje. Istovremene duge kuće u jednom naselju obično imaju istu orijentaciju iako su desetak metara udaljene jedna od druge, najčešće su orijentirane u smjeru sjeverozapad-jugoistok. Duljina kuća varira od 6 do 40 m, a širina od 5 do 8 m. Tloris tipične dugačke kuće obično pokazuje 5 redova paralelnih stupova. Tri unutarnja niza vjerojatno su nosila krovnu konstrukciju, dok su vanjski činili zidove, obično izvedene u pleternoj tehnici. Uz vanjske su zidove često vidljivi rovovi u kojima su bili zabodeni stupovi (Whittle 1996, 163). Zidovi od pletera premazani su blatom, a sedlasti krov načinjen od slame, trske ili kore. Kuće se mogu sastojati i od središnje prostorije kojoj se na užim stranama dodaje prigradnja. Iako se nekad smatralo da prostrane dugačke kuće nastava šira obiteljska zajednica ili klan, neki autori smatraju da je i takve kuće nastanjivala tek osnovna obitelj od 6 do 8 članova, a da je drugi dio kuće služio kao spremište. Pretpostavka o korištenju dijela kuće kao tora ili staje za stoku nije potvrđena analizama sedimenata u kojima nisu utvrđeni tragovi fosfata i životinjske balege. Zemlja za premazivanje zidova kopana je u neposrednoj blizini kuće, a jame koje su pritom nastale mogle su poslužiti kao spremišta ili za odlaganje otpada. Takvi sustavi jama oko kuća u prošlosti su bili krivno tumačeni kao ukopani stambeni prostori (Buttler, Haberey 1936). Iako se na temelju otkrivenog većeg broja kućnih osnova u pojedinom naselju činilo da su LBK naselja bila vrlo velika, pokazalo se da sve one ne pripadaju istovremenim kućama. Naime, nova se kuća nije gradila na mjestu stare koja je postala neupotrebljiva nego se gradila pored nje. Tako nastaju naselja s više stambenih horizonata, ali koji se očituju u horizontalnoj stratigrafiji. Ovakav tip uske, dugačke kuće smatra se autohtonom invencijom srednjoeuropske populacije jer se razlikuje od svih poznatih planova kuća jugoistočne Europe, starijih od 5300. g. pr. Kr. (Lenneis 2004, 151). Najstarija takva kuća, otkrivena na lokalitetu Brunn II datirana je u 5620. g. pr. Kr. No, iako u arhitekturi pokazuje tipična LBK obilježja, u keramičkom materijalu istoga lokaliteta još prevladavaju starčevačka obilježja. Identična je situacija uočena i na mađarskom lokalitetu Pityerdomb (Lenneis 2004, 151).
Temelj ranoneolitičkog gospodarstva u matičnom području LBK čine one iste kultivirane biljke koje susrećemo kao glavne kulture i na Bliskom istoku i u jugoistočnoj Europi: jednozrna pšenica (einkorn), dvozrna pšenica (emmer), leća, mahunarke

Šarka, Hinkelstein and others. All of these groups exhibited a move away from the LBK tradition and transformation into Late Neolithic communities with Stroke-ornamented Ware, the Lengyel culture, the Rössen culture, etc.
LBK settlements were mostly situated on fertile soils near water, in river valleys, but not exclusively. Most were surrounded by wooded tracts which actually covered most expanses of central and western Europe in this postglacial period. The settlements were more or less stable with a certain continuity in duration from generation to generation. A typical LBK settlement consisted of several typical longhouses located rather far apart from one another, so that the structure of LBK settlements differed from typical Early Neolithic settlements in south-east Europe, in which the houses were very close to each other (Lenneis 2014, 154). Each house had its own yard and the accompanying outbuildings, while the empty areas between houses was used as work space. Fields and graveyards were situated in the immediate vicinity. Coterminous longhouses in a single settlement normally had the same orientation, even though they were set roughly ten meters apart, most often in a northwest-southeast direction. The length of the houses varied from 6 to 40 meters, while the width ranged from 5 to 8 meters. The floor-plan of a typical longhouse normally exhibited 5 rows of parallel posts. The three internal rows probably bore the roof structure, while the external rows composed the walls, normally rendered in a cross-tie technique. The holes into which the posts were inserted are often visible along the external walls (Whittle 1996, 163). The cross-tied walls were plastered with mud, while the saddle roof was made of straw, reeds or tree bark. The houses may have included a central room to which additions were constructed on the narrower sides. Even though it was once believed that the spacious longhouses were dwellings for a wider familial community or clan, some scholars believed that such houses were also inhabited by a nuclear family with 6 to 8 members, and that the rest of the house was used for storage. The hypothesis that parts of the houses were used as pens or barns was not confirmed by analyses of the sediment, in which no traces of phosphates or animal faeces were found. The mud used to coat the walls was dug out in the immediate vicinity of the houses, and the pits made by this activity may have been used for storage or to discard waste. In the past, such systems of pits around houses were misinterpreted as dugout residential spaces (Buttler, Haberey 1936). Even though the discovery of a high number of house foundations in an individual settlement created the impression that LBK settlements were quite large, it was shown that they were not all coterminous. This is because new houses were not built on the site of previous houses that became unusable, rather they were built next to them. So settlements with several residential horizons thus emerged, which was manifested in the horizontal stratigraphy. This type

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

i konoplja te uzgoj goveda, ovaca/koza i svinja u prvome redu radi dobivanja mesa na što upućuju ostatci juvenilnih primjeraka životinja. Nalazi kostiju divljih životinja, jelena, divljeg goveda ili medvjeda u naseljima svjedoče o još uvijek prakticiranom lovu, ali on nema više egzistencijalno značenje, nego vjerojatnije predstavlja neku slobodnu, možda društveno prestižnu aktivnost. Njive i vrtovi obrađuju se drvenim motikama i štapovima za kopanje, a ne kalupastim klinovima kako se nekad mislilo. Plodno tlo dobiva se krčenjem šuma, a paljenjem se povećava i njegova plodnost. No, uz kultivirane biljke, nalaze se i različite vrste divljih trava i korova, a još uvijek se skupljaju i divlji plodovi.
Keramika LBK uniformna je na velikom području, osobito u starijim fazama kulture. Izrađivana je od lokalne gline, tankih je stijenki i pečena je na niskoj temperaturi. Oblici su uglavnom zatvoreni, prevladavaju kuglaste ili kalotaste zdjele sa zaobljenim ili ravnim dnom, jajoliki lonci za zalihe, lonci s ljevkastim vratom. Najranija je keramika siromašno ukrašena širokim urezanim linijama koje postupno u daljnjim razvojnim fazama postaju sve tanje i brojnije i tvore složenije motive. Svoj najklasičniji izričaj doseže u tzv. stupnju „Notenkopf“ koji obilježuju nizovi paralelnih crta ispresijecanih kružnim udubinama pa tako podsjećaju na notno crtovlje.
U neposrednoj blizini naselja, a katkad i u njegovu napuštenu dijelu pokapali su se pokojnici. Iako ima pojedinačnih, parcijalnih i paljevinskih ukopa, prevladava inhumacija, odnosno kosturni ukopi u zgrčenom položaju na lijevom ili desnom boku u sklopu većih grobalja. Mnoga od njih ostavljaju dojam prostornoga reda, kao da su grobovi mrtvih poredani

of narrow long house is believed to have been an indigenous invention of the central European population, because it differs from all known floor-plans of houses in south-east Europe dated prior to 5300 BC (Lenneis 2004, 151). The oldest such house, discovered at the Brunn II site, was dated to 5620 BC. However, even though the architecture exhibits typical LBK traits, Starčevo features still predominate in the pottery materials from the same site. An identical situation was observed at the Hungarian Pityerdomb site (Lenneis 2004, 151).
The foundation of the Early Neolithic economy in the LBK's core territory consisted of the same cultivated plants that could also

Kutina - Dobrovac, posuda za zalihe, kat. br. 154
Kutina - Dobrovac, storage vessel, cat. no. 154

poput kuća živih, čak dijele i sličnu orijentaciju. Moguće je uočiti i određeno grupiranje grobova. Iako uz neka naselja LBK vidimo vrlo velik broj grobova, na desetke pa i stotine, čini se da se ipak tako nisu pokapali svi pripadnici zajednice nego samo odabrani pojedinci i u određenim vremenskim razmacima (Whittle 1996, 168-169). Koji su to pojedinci bili, odnosno kojim su se kriterijem rukovodili pri odabiru dotičnih osoba, nemoguće je utvrditi jer u grobovima nalazimo pokojnike svih uzrasta i spola. Uz njih su polagani dijelovi nošnje i nakit (zrna za ogrlice i pokrivala za glavu, narukvice i pojasne kopče, privjesci), ali i žrvnjevi, kalupasti klinovi, vrhovi strelica, minerali za dobivanje boje, meso te keramičke posude. Nakit je načinjen od kamena, puževa, kosti, ali osobito je brojan onaj izrađen od školjke spondilus koja je sredozemnog podrijetla i morala je prevaliti daleki put do grobova pripadnika LBK zajednica.

Istočna linearna keramika

Kao što je već rečeno pod ovim se nazivom objedinjuju kulture rasprostranjene u istočnoj Mađarskoj, jugoistočnoj Slovačkoj, sjeverozapadnoj Rumunjskoj. U Mađarskoj se ova kultura često naziva i alföldskom linearnotrakastom keramikom (skraćeno ALK). U sjevernom Potisju moguće je izdvojiti dvije osnovne skupine linearne keramike: slikanu keramiku istočnoga Potisja (koje obuhvaća i istočnoslovačku nizinu) i urezanu keramiku zapadnoga Potisja koje u Slovačkoj obuhvaća kotlinu Košica, Šariša te područje Gemer. S. Šiška (1989) u sklopu kulture istočne linearne keramike rasprostranjene u jugoistočnoj Slovačkoj razlikuje lokalne skupine i tipove koje razvrstava u razvojne stupnjeve od protolinearnoga (Košice-Červeny rak) i starijega (Barca, Kopčany), preko srednjega (Gemer, tip Domica) do mlađega (Tiszadob, Raškovce Bükk). Sličnu podjelu samo s nešto drugačijim nazivima za istočnu su Mađarsku razradili N. Kalicz i J. Makkay (1977). Oni također izdvajaju protolinearni stupanj Szátmar u kojemu su još jasno vidljivi elementi tipični za kulturu Körös. Slijedi stupanj Alföld vrlo ujednačen na čitavu prostoru Velike mađarske nizine i zapravo identičan istočnoslovačkom stupnju Barca, dok u mlađoj fazi dolazi do izraženije diferencijacije i stvaranja niza regionalnih skupina (Tiszadob, Szilmeg, Esztár, Szarvas-Érpart). Najmlađi horizont istočne linearne keramike čine Bükk kultura u sjevernom dijelu i Szakálhát u južnom dijelu.

Korenovska kultura

Najjužniji izdanak kompleksa kultura linearnotrakaste keramike obuhvaća središnju Hrvatsku, a nazvan je prema lokalitetu Malo Korenovo kod Bjelovara. Većina danas poznatih nalazišta

be found among the main cultures of both the Middle East and South-eastern Europe: single-grain wheat (einkorn), awned wheat (emmer), lentils, legumes and hemp, and the raising of cattle, sheep/goats and hogs in the first place to secure meat, which is indicated by the remains of juvenile examples of these animals. The finds of wild animal bones - deer, wild oxen or bears – in settlements testifies to the continued practice of hunting, but it no longer had existential importance, rather it more likely represented some form of freedom, and perhaps a socially-prestigious activity. Fields and gardens were cultivated with wooden hoes and digging sticks, and not shoe-last as previously thought. Fertile soil was obtained by clearing forests, while burning increased its fertility. However, besides plant cultivation, there were also various species of wild grasses and weeds, and wild plant products were still gathered.
LBK pottery was uniform over a broad area, particularly in the culture's older phases. It was usually made of local clay, fired at a low temperature and had thin walls. The shapes are generally closed, with a preponderance of spherical or calotte-shaped bowls with rounded or flat bottoms, oval storage pots, and pots with funnelled necks. The earliest pottery was meagrely decorated with broadly incised lines which gradually, in further developmental phases, became increasingly thinner and more numerous, creating more complex motifs. It achieved its most classical expression in the so-called Music Note (Notenkopf) phase, which was characterized by rows of parallel lines intersected with circular impressions, thus resembling music note symbols.
The deceased were interred in the immediate vicinity of settlements, and sometimes even in abandoned parts of a settlement itself. Although there are individual, partial and incineration burials, inhumation, i.e. skeletal burials, predominated. The bodies were laid in a contorted position on the left or right side as part of larger cemeteries. Many of them leave the impression of planned arrangement, as though the graves of the deceased were laid out like the houses of the living, even sharing the same orientation. Also notable is a certain grouping of the graves. Even though a high number, dozens and even hundreds, of graves can be observed next to some LBK settlements, it would appear that not all members of the community were interred in them, rather only select individuals, and only at specific chronological intervals (Whittle 1996, 168-169). Who these individuals were, and what criteria governed the selection of these persons cannot be ascertained, because deceased of all ages and both sexes were found in the graves. Parts of attire and jewellery (beads for necklaces and head coverings, bracelets and belt buckles, pendants), as well as grindstones, mould-shaped pegs, arrowheads, dye minerals, meat and ceramic vessels were deposited next to the deceased. The jewellery is made of stone, snail shells and bone, and items made of spondylus shells are

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

korenovske kulture smještena je u bjelovarskom, moslavačkom i virovitičkom području te u južnoj Transdanubiji, dakle u prostoru u kojemu bilježimo najzapadniji i najkasniji prodor starčevačke kulture. Pojedinačni nalazi korenovske keramike u Turopolju, ukazuju i na moguće šire područje njezina rasprostiranja, osobito u smjeru juga prema sjevernoj Bosni i sjevernoj Dalmaciji. U tom je smislu indikativan import korenovske keramike na lokalitetu danilske kulture u Smilčiću (Batović 1979, 540).
Nositelji korenovske kulture za svoja su naselja birali prirodna uzvišenja, terase ili padine neposredno uz tekuće vode ili usred močvarnog terena. Međutim, u dosadašnjim istraživanjima otkriveni su samo različiti ukopani objekti pa se nastambe korenovske kulture uglavnom rekonstruiraju kao zemunice po čemu ova kultura ne slijedi uobičajeni obrazac arhitekture karakterističan za LBK. Posebno je zanimljiv lokalitet u Kaniškoj Ivi gdje se za dvije jame s obzirom na njihovu veličinu, dubinu i nalaze u njima (primjerice u jami 6 su pronađeni tragovi ognjišta) može pretpostaviti da su služile kao stambeni prostor, dok je većina ostalih, manjih, vjerojatno nastala kao posljedica vađenja gline, a one pliće, ali izduljene mogle su služiti kao radni prostor izvan nastambi. Iako je u svim jamama prevladavala keramika s obilježjima korenovske kulture, odmah je uočena i prisutnost tipične starčevačke keramike, štoviše u jami 6 bila je i brojnija. U Kaniškoj je Ivi prvi put, dakle, na istom mjestu, pa čak i u istim objektima ustanovljena istovremena prisutnost dviju neolitičkih pojava, starčevačke kulture, nešto starije i daleko prisutnije u većini krajeva sjeverne Hrvatske, te korenovske kulture, ograničene na manji prostor središnje Hrvatske. S obzirom da je u svim jamama bilo tipične starčevačke keramike, ne možemo govoriti samo o utjecaju ili možda uvozu pojedinih posuda od susjedne populacije, nego moramo pretpostaviti obostrano korištenje istoga lokaliteta. Starčevačka je keramika opredijeljena u stupanj spiraloid B periodizacije S. Dimitrijevića (Težak-Gregl 1991, 6-7; Marković 1994, 71), dok je korenovska omogućila Dimitrijeviću određenje rane faze kulture, tj. stupanj A (Dimitrijević 1979a, 318-319). Slična je situacija uočena i na lokalitetu Kapelica-Solarevac nedaleko od Kutine (Težak-Gregl, Burić 2011).
Kakav je bio odnos spomenutih dviju zajednica, starčevačke i korenovske? Iako je opće prihvaćena pretpostavka o oblikovanju linearnotrakaste keramike pod utjecajem starčevačke i Körös kulture, proces formiranja linearnotrakaste keramike nije se odvijao na našem prostoru. Korenovska kultura nije najstarija manifestacija LBK niti ima protolinearno obilježje (Dimitrijević, 1979a, 312-314; Težak-Gregl 1993a, 35-36, 75-76). Ona je jedan njezin razvijeni i već jasno definirani stupanj u kojemu supstratne komponente nisu više

particularly numerous. These shells were Mediterranean in origin and must have covered a considerable distance to end up in the graves of members of LBK communities.

Eastern linear pottery

As already noted, this term unifies the cultures spread over eastern Hungary, south-east Slovakia and north-west Romania. In Hungary, this culture is often also called the Alföld Linear Pottery (ALP) culture. In the northern Tisza River basin, two basic linear pottery groups may be distinguished: the painted pottery of the eastern Tizsa Basin (which also encompasses the eastern Slovakian plain) and incised pottery of the western Tisza Basin, which in Slovakia includes the Košice Basin, Šariš and the Gemer region. S. Šiška (1989) distinguished between local groups and types within the Eastern Linear Pottery culture distributed in south-east Slovakia, which he classifies into developmental phases from the proto-Linear (Košice-Červeny rak) and older (Barca, Kopčany), through the middle (Gemer, Domica type) to younger (Tiszadob, Raškovce Bükk). A similar division, only with a slightly different terminology for eastern Hungary, was made by N. Kalicz and J. Makkay (1977). They also distinguished the proto-Linear Szátmar phase, in which typical Körös culture elements are still visible. This is followed by the Alföld phase, which is very uniform in the entire Great Hungarian Plain and actually identical to the eastern Slovak Barca phase, while in the younger phase there was a more notable differentiation and the creation of a series of regional groups (Tiszadob, Szilmeg, Esztár, Szarvas-Érpart). The youngest horizon of Eastern Linear Pottery is the Bükk culture in the northern part and Szakálhát in the southern part.

Korenovo culture

The southernmost complex of the Linear Pottery culture encompasses central Croatia, and it is named after the Malo Korenovo site near the town of Bjelovar. Most of the currently known Korenovo culture sites are situated in the Bjelovar, Moslavina and Virovitica areas and in southern Transdanubia, thus in the territory in which the westernmost and most recent penetration of the Starčevo culture have been recorded. Individual finds of Korenovo pottery from Turopolje also indicate a possibly wider area of its distribution, particularly in the southward direction toward northern Bosnia and northern Dalmatia. In this sense, the import of Korenovo pottery at a Danilo culture site in Smilčić is indicative (Batović 1979, 540).
The people of the Korenovo culture chose natural rises, terraces or slopes immediately adjacent to flowing water or amidst wetlands as locations for their settlements. However, in all previous research, only various below-ground structures have

tako izrazite kao kod starije transdanubijske linearne keramike ili pak u istočnom krugu skupine Szatmár.
Osim na dvadesetak lokaliteta na području središnje Hrvatske, nalazi korenovske keramike zasad su zabilježeni i u južnoj Transdanubiji u Mađarskoj. No, ondje oni nikada ne dolaze samostalno nego se uvijek miješaju s nekim drugim kulturama. Primjerice, korenovski nalazi na lokalitetu Petrivente dolaze uglavnom u tvorevinama pripisanima sopotskoj kulturi, a u Becsehely kasnoj fazi grupe Keszthely linearnotrakaste keramike (Kalicz, Kreiter, Tokai 2007, 30).
U okvirima korenovske kulture do sada nije pronađen niti jedan grob. Najčešći i najkarakterističniji nalazi su oni keramički, u prvome redu posuđe i tek rijetko žrtvenici ili figuralna plastika. Za svoje su keramičko posuđe nositelji korenovske kulture rabili domaću glinu koju su nalazili u neposrednom okolišu, miješali su je i gnjeli s riječnim ili potočnim pijeskom u kojem se ponekad nalaze i prilično krupna zrnca različitih kamenčića. Od tako pripremljene gline oblikovali su kalotaste zdjele zaobljena dna, polukuglaste ili kuglaste zdjele s pojačanim

Kutina - Kaniška Iva, posuda, kat. br. 165
Kutina - Kaniška Iva, vessel, cat. no. 165

been discovered, so Korenovo culture dwellings have generally been reconstructed as pit houses, although this culture did not adhere to the architectural formula typical of the LBK. Particularly interesting is the Kaniška Iva site, where two pits, based on their size, depth and the finds in them (for example, traces of a hearth in pit 6), may be assumed to have been used as dwellings, while most of the remaining, smaller pits were probably made as a result of clay extraction, and the shallower and more oblong ones may have been used as working spaces outside of the dwellings. Even though pottery with Korenovo culture features predominated in all pits, the presence of typical Starčevo pottery was immediately observed, and in pit 6 it was even more numerous. Thus, at Kaniška Iva, in the same place and even in the same dwellings, the simultaneous presence of two Neolithic phenomena was ascertained: the Starčevo culture, somewhat older and far more present in most parts of northern Croatia, and the Korenovo culture, confined to a limited area in central Croatia. Since there was typical Starčevo pottery in all pits, one cannot speak solely of the influence or perhaps import of vessels from neighbouring populations, rather the mutual use of the same site must be assumed. The Starčevo pottery has been determined as belonging to the spiraloid B phase according to S. Dimitrijević's periodization (Težak-Gregl 1991, 6-7; Marković 1994, 71), while the Korenovo led Dimitrijević to place it in the culture's early phase, i.e., phase A (Dimitrijević 1979a, 318-319). A similar situation was also observed at the Kapelica-Solarevac site not far from Kutina (Težak-Gregl, Burić 2011).
What was the relationship between these two communities, the Starčevo and Korenovo? Although the hypothesis that Linear Band Ware was formed under the influence of the Starčevo and Körös culture is generally accepted, the process of formation of Linear Band Ware did not proceed in Croatia's territory. The Korenovo culture is not the oldest manifestation of the LBK nor does it have proto-Linear features (Dimitrijević,1979a, 312-314; Težak-Gregl 1993a, 35-36, 75-76). It is one of the LBK's developed and already clearly-defined phases in which the substratal components were no longer as notable as in the older Transdanubian linear pottery or even in the eastern sphere of the Szatmár group. Besides roughly twenty sites in central Croatia, Korenovo pottery has also been recorded in southern Transdanubia in Hungary. However, it never appears there independently, but rather only intermingled with other cultures. For example, the Korenovo finds at the Petrivente site largely appear in units ascribed to the Sopot culture, while in Becsehely they belong to the late phase of the Keszthely Linear Band Ware group (Kalicz, Kreiter, Tokai 2007, 30).
Thus far, not a single grave has been found within the framework of the Korenovo culture. The most common and most typical finds are those made of ceramic, first and foremost pottery vessels

ravnim dnom ili na niskoj prstenastoj nozi kao i velike jajolike lonce za čuvanje zaliha hrane. Neki lonci imaju i masivne ručke. Grubo posuđe najčešće je pečeno oksidacijski tj. uz pristup zraka, što se odražava u svijetlim, žućkastim, oker ili crvenkastim bojama površine. Samoj obradbi površine nije pridavana posebna pozornost, ona je hrapava ili tek ovlaš zaglađena vlažnim dlanom, busenom trave ili snopom slame. Finije posuđe, koje je možda služilo za posluživanje hrane, oblikovano je od dobro izrađene gline pomiješane s vrlo finim i sitnim pijeskom, ima sivu ili tamnosivu površinu, ali u presjeku je oker ili ciglastocrvene boje. To znači da je i ono u osnovi pečeno oksidacijski, tj. uz pristup kisika, a tek pri samom kraju pečenja uskraćen je dovod zraka pa posude dobivaju tamnu boju na površini. Ono što tu keramiku čini prepoznatljivom jest način ukrašavanja. Sastoji se od nizova paralelnih linija urezanih nekim šiljatim predmetom u još meku glinu prije pečenja posuda. Te linije mogu biti vodoravne, ukošene, okomite, cik-cak prelomljene, mogu tvoriti motive u obliku slova A ili V, mogu biti zakrivljene i stvarati motive lukova ili girlandi, spirala, spiralnih kuka itd. Ova urezana ornamentika najčešće obavija čitavo tijelo posude.
Iako korenovska kultura nedvojbeno pripada velikom srednjoeuropskom kompleksu kultura linearnotrakaste keramike, ona u sjevernoj Hrvatskoj nema ono značenje kakvo ima većina drugih kultura navedenoga kompleksa u srednjoj Europi, a to znači da nije nosilac početaka neolitizacije – ovdje je to starčevačka kultura. Značajan je, međutim, određeni zaokret koji u sjevernoj Hrvatskoj nastupa s korenovskom kulturom, a to je sve izraženija orijentacija upravo prema prostoru srednje Europe, a ne isključivo prema jugoistoku, što je bilo obilježje ranijih neolitičkih razdoblja. Povezivanje sa srednjoeuropskim panonsko-podunavskim prostorom nastavit će se i kasnije, nakon korenovske kulture, ali ni jugoistočni utjecaji neće jenjati. Tako se prostor sjeverne Hrvatske, slično kao i južni dijelovi mađarske Transdanubije, pokazuje kao svojevrstan posrednik između dva prapovijesna svijeta, balkansko-anadolskog i srednjoeuropskog.

and only rarely altars or figural sculpted pieces. The people of the Korenovo culture used clay found in the immediate vicinity for their pottery; they mixed and kneaded it with sand from rivers or streams in which various rather large pebbles can sometimes be found. Using clay made in this fashion, they made calotte-shaped bowls with rounded bases, semi-spherical or spherical bowls with reinforced flat bases or on with a low, ring-shaped foot, as well as oval pots for the preservation of stored foodstuffs. Some pots also have massive handles. Coarse vessels were most often oxidation fired, i.e., with aeration, which is reflected in the light, yellowish, ochre or reddish hues on their surfaces. No particular attention was accorded to the actual working of the surfaces, as they are coarse or superficially smoothed with a moist palm, a clump of grass or a sheaf of straw. Finer vessels, which may have been used to serve food, were moulded from well-rendered clay made with very fine and tiny sand. They have gray or dark gray surfaces, but the cross-section is ochre or brick-red in colour. This means that these were also essentially fired with oxidation, i.e., with the presence of oxygen, while the flow of air was only cut off just before firing was complete, so the vessels acquired a dark hue on their surfaces. What makes this pottery recognizable is the decoration method. It consists of rows of parallel lines incised by a pointed object into the still soft clay prior to firing. These lines may be horizontal, diagonal, vertical, or angular zigzag, they may form motifs shaped like the letter A or V, they have be curved and create arc or garland motifs, spirals, spiral hooks, etc. This incised ornamentation most often covers the entire vessel surface.
Even though the Korenovo culture undoubtedly belonged to the large central European complex of Linear Band Ware, in northern Croatia it did not have the same significance as the majority of other cultures of this complex in central Europe, which means that it did not drive the beginnings of Neolithization – here that role was played by the Starčevo culture. Significant, however, was a certain turnabout which came with the Korenovo culture in northern Croatia, and this was the increasingly marked orientation toward central Europe, and not exclusively toward the south-east, which was a feature of earlier Neolithic periods. The linkage with the Central European Pannonian-Danubian sphere continued even later, after the Korenovo culture, although even the south-eastern influences did not dissipate. Thus, northern Croatia, similar to the southern parts of the Hungarian Transdanubia, emerged as something of a mediator between two prehistoric worlds, the Balkan-Anatolian and Central European.

MARCEL BURIĆ

VINČANSKA KULTURA

THE VINČA CULTURE

Kratkom vožnjom dvadesetak minuta automobilom od vreve središta Beograda prema istočnoj periferiji grada, istom onom rutom kojom Dunav žuri prema Đerdapskoj klisuri, stiže se u selo Vinča. Danas je to selo nalik mnogim sličnima, razbacanim po široj beogradskoj regiji ali ovo se od drugih značajno razlikuje po arheološkom nasljedstvu koje čuva. Naime, na sjevernoj strani sela, neposredno uz Dunav, prije više od sedam tisuća godina nastalo je naselje koje će imati vrlo važnu ulogu u razumijevanju onoga što je čovjek na europskom tlu postigao u okviru napretka kojeg karakterizira sijanje žitarica, glačanje kamenog oruđa, proizvodnja keramike i udomljavanje životinja. Sve su te tekovine obuhvaćene sjedilačkim načinom života zajednica na jednome mjestu, odnosno seoskim životom, dakle jednom riječju - neolitikom. Iako su navedene tradicije na ovim prostorima otkrivene više od tisuću godina ranije, u razdoblju kasnoga neolitika uzdignute su na razinu na kojoj su ljudi, za ondašnje prilike, relativno lagodno živjeli. Na tome je, dakle mjestu, stvoreno naselje po kojemu je cijela jedna arheološka kultura[1] dobila ime – vinčanska kultura.

Međutim, priča o vinčanskoj kulturi ne počinje u Vinči. Najstariji nalazi koji joj pripadaju otkriveni su još tijekom 1875. godine kada je prilikom arheološkog iskopavanja na djelomično uništenom lokalitetu pored sela Turdaş u Rumunjskoj, otkriveno višeslojno naselje (Markotić 1984: 27). U to vrijeme onaj dio keramografskog materijala koji je pripadao vinčanskoj kulturi, nije joj bio pripisan jer ona još nije bila definirana i izdvojena kao samostalna pojava. Sličan je slučaj s prvim iskopavanjima u Srbiji na čijem se području nalazi glavnina naselja koja pripadaju tom kulturnom krugu. Prvo poznato iskopavanje s tog područja datira iz 1900., a obavljeno je kod Jablanice u okolici Aranđelovca (Nikolić, Vuković 2008, 41).[2] No, punu arheološku afirmaciju, europsku prepoznatljivost i znanstvenu objavu vinčanska kultura

[1] Budući da u tako ranim razdobljima ne poznajemo etnike, a kamoli narode, arheološka kultura je termin kojime se označava pripadnost većeg broja zajednica koje žive sličnim načinom života u nekoj regiji, a čiji je zajednički nazivnik način proizvodnje i ukrašavanja keramike. U tome razdoblju keramički repertoar najčešće je zastupljen od svih kategorija nalaza na arheološkim lokalitetima toga tipa. Gordon V. Childe, kojeg ćemo kasnije spomenuti, dao je 1929. godine jednu od najranijih definicija pojma *kultura* koju on vidi kao pravilnost u formi i pojavnosti kuća, posuda, rituala, ornamenata itd. (Childe 1929, v-vi). U tome vrlo važnom djelu za povijest arheologije, opširno piše i o vinčanskoj kulturi koju je podijelio na dvije faze (I i II), međutim, što je još važnije, uspoređuje vinčansku kulturu s okolnim kulturama u Rumunjskoj i Mađarskoj te tako stvara temelje prvim periodizacijama vinčanske kulture (onima koje su ostavile traga) koje će se pojaviti desetak godina kasnije. Također, prvi je vinčanski materijal uzeo kao neku vrstu „jedinične vrijednosti“ kojom je uspoređivao druge podunavske kulture obuhvativši ih jedinstvenim imenom Danubian (Childe 1929, 27 – 111). Njegova podjela vinčanskog materijala na navedeni način imat će dalekosežne posljedice za učvršćivanje vinčanske kulture kao relativno-kronološke osnove neolitičkih kultura srednje i jugoistočne Europe.

[2] za isto iskopavanje M. Garašanin navodi da je izvršeno 1901. godine (Garašanin 1979b, 144).

A short 20-minute drive from the hustle and bustle of central Belgrade towards the eastern outskirts of the city – following the same route the Danube takes as it speeds towards the Djerdap Gorge – brings you to the village of Vinča. Nowadays the village resembles many others scattered around the Belgrade periphery, but what sets this village apart from all the others is the archaeological heritage kept in it. In the northern section of the village, by the bank of the Danube, a settlement was formed, more than seven thousand years ago, which has played a very important role in our understanding of human accomplishments made in Europe within the overall progress marked by the sowing of cereals, polishing of stone tools, production of pottery and domestication of animals. All these attainments were elements of the sedentary life of communities which lived in a single place and practiced a rural life-style – that is, of the Neolithic. Although the above traditions have been discerned among the remains discovered from periods preceding the Neolithic by more than a thousand years, in the Late Neolithic they were raised to a level which allowed people to live relatively comfortably, given the circumstances of the time. The settlement which developed at this spot gave name to an entire archaeological culture[1] – the Vinča Culture.

However, the story of the Vinča Culture does not begin in Vinča. The oldest finds attributed to it were discovered in as early as 1875, during the archaeological excavation at the partially destroyed site by the village of Turdaş in Romania, which resulted in the discovery of a multilayer settlement (Markotić 1984, 27). At that time, the uncovered ceramic material which belonged to the Vinča Culture was not attributed to it, because it had not yet been defined and identified as a separate phenomenon. Something similar occurred during the first excavations in Serbia, where the majority of settlements belonging to this cultural circle are located. The first known excavation in this territory took place in 1900, in the vicinity of Jablanica near Aranđelovac (Nikolić,

[1] *In those early periods there were no ethnicities, much less nations, and the term 'archaeological culture' is used to denote affiliation of various communities which practised similar life styles in a given region, and shared methods of pottery production and decoration. Among the finds discovered at archaeological sites from this period, the ceramic repertoire is the most frequent category of finds. In 1929, Gordon V. Childe, who will be mentioned further below, gave one of the earliest definitions of the term culture, described by him as recurring forms and appearances of houses, vessels, rites, ornaments etc. (Childe 1929, v-vi). In his book, central to the history of archaeology, he described the Vinča Culture in detail and divided it into two phases, I and II. More importantly, though, he compared the Vinča Culture to other cultures in the surrounding territories of Romania and Hungary, laying foundations for the first periodizations of the Vinča Culture (those that left a mark), which appeared some ten years later. Furthermore, he took the first finds from Vinča as some kind of 'unit value' and compared its culture with others in the Danube region, which he encompassed under the name 'Danubian' (Childe 1929, 27-111). The said division of the material from Vinča had far-reaching consequences on reinforcing the position of the Vinča Culture as the basis for the relative chronology of Neolithic cultures of central and south-eastern Europe.*

doživjela je tek početkom iskopavanja na lokalitetu koji joj je dao ime, a koji je još i danas najveće i najbogatije nalazište te kulture. Vinčanska kultura se rasprostire velikim dijelom jugoistočne Europe. Na sjeveru od porječja rijeke Mureş u Rumunjskoj njena se naselja spuštaju Banatom u područje gdje joj se nalazi središnji i najsnažniji utjecaj (Vojvodina, istočni Srijem, Šumadija), te dakako, lokalitet po kojem je nazvana. Dalje se širi dolinom Morave na jug jednim krakom u područje Kosova, a drugim sve do Ovčeg polja u Makedoniji. Također u istočnoj Bosni i Hercegovini nalazimo vinčanske lokalitete kao i na krajnjem istoku Hrvatske.

Vinčanska kultura, kao dominantna keramička manifestacija na cijelom spomenutom području, relativno ga je gusto ispunila svojim naseljima tako da se lokaliteti broje u stotinama. Najvažnije koje treba spomenuti, kako zbog povijesti istraživanja, tako i zbog znanstvenog značaja su već spomenuti Turdaş, Tărtăria, Parța i Uivar u Rumunjskoj. U Srbiji kao najvažnije valja istaknuti Iđoš, Jakovo-Kormadin[3], Gomolava, Vinča, Banjica, Stubline, Supska, Selevac, Divostin, Drenovac, Pločnik, Gradac, Pavlovac itd. Nekoliko važnih lokaliteta nalazi se na Kosovu, kao što su Predionica i Kosovska Mitrovica (*Fafos*). Najvažniji lokalitet u Bosni i Hercegovini je Gornja Tuzla, iako su se u novije vrijeme pokazali značajni nalazi duž granice BiH i Srbije. U Hrvatskoj je za sada poznat samo jedan lokalitet sa vinčanskim horizontom života, a to je Bapska-Gradac. Ovaj podatak u ovom trenutku ipak treba uzeti sa izvjesnom rezervom, budući da postoje lokaliteti na području Baranje, na istočnim padinama Banskog Brda uz samu obalu Dunava, koji su istraživani u manjoj mjeri, a pokazuju neke obrise vinčanskih lokaliteta (figuralna plastika). Tako je na lokalitetu Kneževi Vinogradi – Osnovna škola kao slučajan nalaz, poznata glava vrlo tipične vinčanske figure (Šimić 2012, 209).

Kneževi vInogradi - Osnovna škola, antropomorfna figurina , MSO-16615
Kneževi vinogradi – Osnovna škola (primary school), anthropomorphic figurine, MSO-16615

[3] iz kojega AMZ ima značajnu i brojnu kolekciju vinčanskih figura.

Vuković 2008, 41).[2] *However, the Vinča Culture was established as an archaeological culture, recognized at the European level and scientifically published, only when the excavation of the eponymous site began; today this site is still the largest and richest site of this culture. The Vinča Culture was present in a large part of south-eastern Europe: from the River Mureş basin in Romania in the north, through Banat to the region in which its influence was central and most strongly felt (Vojvodina, eastern Syrmia, Šumadija), and, obviously, in the site which gave it its name. Further on, it spread southwards through the Morava Valley and from there branched out to Kosovo, and on the other side as far as Ovče Polje in Macedonia. Vinča Culture sites can also be found in eastern Bosnia and Herzegovina, and in the easternmost region of Croatia.*

The Vinča Culture, the dominant pottery phenomenon in this entire region, covered it rather densely with its settlements, resulting in hundreds of archaeological sites. The most important ones that merit mentioning, both from the point of view of the history of excavation and of their scholarly importance, are the above-mentioned Turdaş, Tărtăria, Parța and Uivar, in Romania. In Serbia, the most important sites are Iđoš, Jakovo-Kormadin,[3] *Gomolava, Vinča, Banjica, Stubline, Supska, Selevac, Divostin, Drenovac, Pločnik, Gradac, Pavlovac et al. Some important sites are located in Kosovo: for example, Predionica and Kosovska Mitrovica (Fafos). The most important site in Bosnia and Herzegovina is Gornja Tuzla, but recently some important finds have been made in the surroundings of Srebrenica. In Croatia, thus far only one site has been discovered which contains a Vinča Culture horizon: Gradac in Bapska. We should reserve out judgement on this, however, since there are sites in the Croatian Banat, on the eastern slopes of Bansko Brdo hill on the very bank of the Danube, which have not been extensively explored, but have shown some features of Vinča Culture sites: figural plastics. For example, one chance find made at the site of Kneževi Vinogradi (Elementary School) is the famous head of a typical Vinča figure (Šimić 2012, 209). Given that this site belongs to the Sopot Culture, which traditionally produced anthropomorphic figures very different from Vinča Culture figures, one might assume that more extensive excavation of this and surrounding sites could provide proof of a Vinča Culture horizon of life in this region, similar to that at Gradac in Bapska. Furthermore, in the Late Neolithic layer at the site of Kneževi Vinogradi, a copper fragment has been uncovered, as the oldest evidence of metallurgy in the territory of Croatia, and this should also be linked to a certain extent to the bearers of the Vinča Culture (Šimić 2006b, 42; Burić 2014, in print).*

[2] *M. Garašanin writes that this excavation took place in 1901 (Garašanin 1979b, 144).*

[3] *The AMZ has a rich collection of Vinča Culture figures originating from here.*

Budući da sopotska kultura, kojoj pripada lokalitet, vrlo tradicionalno proizvodi antropomorfne figure značajno različite od vinčanskih, može se pretpostaviti da bi veća istraživanja na tom i lokalitetima u okolici možda dala podatke o vinčanskim horizontima života na tom prostoru. Isto kako je to slučaj sa Gradcom u Bapskoj. Nije nevažno spomenuti da je na lokalitetu u Kneževim Vinogradima u kasnoneolitičkom sloju otkriven i nalaz fragmenta bakra, najstariji primjer metalurgije na tlu Hrvatske, što se također u izvjesnoj mjeri valja povezivati sa nositeljima vinčanske kulture (Šimić 2006b, 42; Burić 2014, *u tisku*).

Vrijeme njena nastanka stručnjaci stavljaju u doba oko 5300. godine prije Krista s trajanjem od oko narednih tisuću godina. Neolitičko naselje u Vinči, na položaju koji je u literaturi poznat i pod imenom Belo Brdo, pripada kategoriji osobito važnih tipova naselja koja su naseljavana kroz više stotina godina, u ovome slučaju kako smo rekli, cijelo jedno tisućljeće. Takva naselja smo već spomenuli, a nazivamo višeslojnima ili naseljima *tell* tipa. Naziv dolazi od arapske riječi koja označava brdo, s obzirom na to da tisućljetni život na jednome mjestu rezultira stvaranjem umjetnog brdašca koje može sezati do deset i više metara u visinu kada govorimo o europskim telovima.[4] Takvo naselje, odnosno, niz naselja jedno iznad drugoga, iznimno je vrijedan izvor arheoloških podataka o načinu života ljudi, posebno kada se govori o dugom vremenskom periodu tijekom kojega su kulture ili kultura koja je na njemu zastupljena više ili manje mijenjala svoje obrise. Veliko zanimanje za lokalitet Belo Brdo traje već više od stotinu godina. Za to postoji više razloga. Jedan od njih je taj što je lokalitet u ranim danima arheološke znanosti doživio sustavno istraživanje značajne površine na kojoj je otkriveno iznimno mnogo podataka o svakodnevnom životu u razdoblju neolitika. Tu činjenicu valja zahvaliti direktoru beogradskog Narodnog muzeja i prvom profesoru arheologije na sveučilištu u Beogradu Miloju M. Vasiću. Taj je karizmatični arheolog početkom prošlog stoljeća od geologa J. Žujovića dobio na uvid neobične i vrlo lijepo izrađene kamene i keramičke posude koje su u velikom broju doslovno same ispadale iz velikog prapornog profila na vinčanskoj obali Dunava. Došavši u Vinču, Vasić se uvjerio da se zaista radi o impresivnom arheološkom lokalitetu te je smjesta započeo s pripremama za istraživanje koje je započelo 1908. godine. Lokalitet je bio toliko bogat izrađevinama neolitičkih stanovnika da je broj nalaza pohranjenih u Narodnom muzeju prije 1908. godine dosegnuo više tisuća inventarnih jedinica (Nikolić, Vuković 2008, 41). Vasićeva iskopavanja trajala su preko dvadeset pet godina, a više od deset metara vinčanskih slojeva postavilo je naselje i

[4] najpoznatiji i najveći telovi danas se nalaze u širem području Bliskog Istoka gdje dosežu visine od više desetina metara.

Scholars have set the inception of this culture at around 5300 BC, and established that it lasted for approximately a thousand years. The Neolithic settlement of Vinča, located at a site the literature sometimes calls Belo Brdo, belongs to the category of particularly important settlement types which were inhabited for several hundreds of years – in this particular case, for an entire millennium. Such settlements, already mentioned, are described as multilayer settlements, or settlements of the tell type. The term comes from the Arabic word for mound, given that a thousand years of living at the same spot results in the creation of an artificial hill which can be as much as 10 or more metres high, in the case of European tells.[4] *Such a settlement, or rather a line of settlements lying over one another, is an exceptionally valuable source of archaeological data about the way in which people lived, especially in cases in which the settlement lasted for a long period of time, during which the culture (or cultures) present in it changed its features. The site of Belo Brdo has attracted a lot of interest for more than a hundred years, and this for several reasons. One of the reasons is that a significant surface area within the site was excavated systematically in the early days of archaeological science, resulting in an exceptionally large amount of data concerning daily life in the Neolithic period. Credit for this goes to Miloje M. Vasić, director of the Belgrade National Museum and the first professor of archaeology at the University of Belgrade. At the beginning of the 20th century, the charismatic archaeologist was shown, by geologist J. Žujović, some unusual and beautifully-rendered stone and ceramic vessels, which were literally falling in great numbers out of the large loess profile in the Vinča bank of the Danube. When he arrived at Vinča, Vasić realised that this was indeed an impressive archaeological site and immediately began preparing an excavation, which was launched in 1908. The site yielded so many artefacts made by its Neolithic population that by 1908 the number of finds stored in the National Museum reached several thousands of inventory numbers (Nikolić, Vuković 2008, 41). Vasić carried out his excavations over more than 25 years, and the layers, more than 10 metres thick, put the settlement of Vinča and the entire Vinča Culture on the archaeological map as the most important culture of the Late Neolithic in eastern Europe.*

However, as he excavated this abundant site, Vasić discovered pottery, architectural and artistic objects of exceptional quality, such as had not been seen before. The exceptional technology of pottery production – visible equally on vessels and figures – was such an accomplishment that, after several excavation campaigns, Vasić began doubting that this had been a Stone Age site. In those days, Troy and Knossos were the most prominent sites in

[4] *The biggest and most famous tells can be found in the wider region of the Near East, where they can be several dozens of metres high.*

Vinča-Belo Brdo, iskopavanja 1911. g. (prema Nikolić, Vuković 2008, sl. 8)
Vinča-Belo Brdo, excavations in 1911 (after Nikolić, Vuković 2008, Fig. 8)

Vinča-Belo Brdo, iskopavanja 1930. g. (prema Nikolić, Vuković 2008, sl. 16)
Vinča-Belo Brdo, excavations in 1930 (after Nikolić, Vuković 2008, Fig. 16)

cijelu vinčansku kulturu na arheološku kartu kao najznačajniju kulturu kasnog neolitika u istočnoj Europi.
Međutim, Vasić je iskopavajući to prebogato nalazište otkrivao keramičke, arhitektonske i umjetničke predmete vrhunske kvalitete kakvi do tada nisu bili viđeni. Iznimna tehnologija pripreme keramičkih proizvoda, bilo da se radi o posudama ili o figurama, bila je takvih dosega da je nakon nekoliko istraživačkih kampanji Vasić posumnjao da se radi o naselju iz razdoblja kamenog doba. Budući da su u to vrijeme Troja i Knos bili najistaknutiji lokaliteti egejskog područja, nalazišta koja su također dala sjajne arheološke nalaze, on je Belo Brdo povezao upravo sa njima. Velike amfore za spremanje zaliha, osebujni keramički recipijenti itd. bili su mu argument da u njima vidi sličnost sa Trojom (Vasić 1906; Palavestra 2012; Burić 2014, *u tisku*). Kako je iskopavanje, koje je trajalo gotovo do sredine 1930-ih godina, napredovalo, Vasić se sve više udaljavao od točne datacije naselja u Vinči. Na kraju, po završetku svojih istraživanja, bio je siguran da je velik dio svojeg profesionalnog života istraživao grčku jonsku koloniju smještenu na desnoj obali Dunava, duboko u europskom kontinentu. Kvaliteta života koja je vidljiva u artefaktima sa Vinče za njega je mogla biti samo proizvod brončanodobnog naselja dunavskih ribara, datiranog u 6. st. pr. Kr. Iako su za takvu pogrešnu dataciju važne i neke druge tadašnje okolnosti (Burić 2014, *u tisku*), njena korekcija dolazila je iz pera Vasićevih učenika nakon 1930. godine (Garašanin, Srejović, Korošec itd.). Danas je, naravno, Vasićeva pogreška ispravljena, a naselje u Vinči ispravno datirano, međutim ova pripovijest o njegovom datiranju naselja i danas većinom skrivenog pod slojevima u Belom Brdu, zorno ilustrira kakve su vrhunske proizvode bili u stanju proizvesti njegovi žitelji prije 7000 godina. Bilo kako bilo, tijekom navedenih istraživanja, lokalitet koji je na svjetlo dana donosio majstorski izvedene keramičke izrađevine, su posjećivali najveći suvremeni europski arheolozi i o njemu pisali u svojim radovima (kao npr. Holste, G.V. Childe). Kronologijom vinčanske kulture bavili su se brojni autori. Od onih iz najranijih dana treba spomenuti O. Menghina, te već spomenute F. Holstea i G.V. Childea. U tom

the Aegean which had yielded some brilliant archaeological finds, so Vasić linked Belo Brdo to them. Large storage amphorae, peculiar pottery receptacles etc. provided justification for his associating this site with Troy (Vasić 1906; Palavestra 2012; Burić 2014, in print). As the excavation progressed (and it lasted almost until the middle of the 1930s), Vasić grew more and more remote from the correct dating of the Vinča settlement. Eventually, at the end of his exploration, he was convinced that he had spent a large portion of his professional life excavating a Greek Ionian colony on the right bank of the Danube, deep inside the European mainland. He believed that the quality of life reflected in Vinča artefacts could only have been a product of a Bronze Age settlement of Danube fishermen, dated to the 6th c. BC. Although some other circumstances had contributed to this erroneous dating (Burić 2014, in print), it was corrected by Vasić's students after 1930 (Garašanin, Srejović, Korošec etc.). Nowadays, clearly, Vasić's mistake has been corrected and the settlement at Vinča properly dated; nonetheless, this story about the dating of the settlement, which still lies mostly hidden under the Belo Brdo layers, illustrates the supreme quality of the products which its population was capable of producing more than 7000 years ago. In any case, during the excavation, the site revealed some masterfully-produced pottery products, prompting the interest of some of the greatest of European archaeologists, who visited it and wrote about it in their works (e.g. Holste, G. V. Childe). The chronology of the Vinča Culture has been addressed by many authors. Among the early ones, O. Menghin and the previously-cited F. Holste and G. V. Childe are certainly worth mentioning. Particularly important was Holste's perodization, which he based on the published material from Vinča (Garašanin 1951, 157; Garašanin 1979b, 150). On that occasion, the horizons present at the site were divided into four main phases (A-D), and this served as the foundation for V. Milojčić's periodization, one of the two most important ones, adhered to by most scholars to this date. In addition to Milojčić, also worth mentioning are M. Garašanin, J. Korošec, B. Jovanović and S. Dimitrijević (Garašanin 1979b, 149, 150).
A large number of settlements in which members of the Vinča

je okviru naročito važna Holsteova periodizacija, koju je on objavio temeljem publiciranog materijala iz Vinče (Garašanin 1951, 157; Garašanin 1979b, 150). Horizonti života na tome lokalitetu tom su prilikom podijeljeni na četiri glavne faze (A – D), što je bio temelj za periodizaciju V. Milojčića, jednu od dvije najvažnije periodizacije kojima se većina stručnjaka služi i danas. Osim Milojčića valja istaknuti M. Garašanina, J. Korošca, B. Jovanovića i S. Dimitrijevića (Garašanin 1979b, 149, 150). Velik broj naselja u kojima su živjeli pripadnici vinčanske kulture pripada tipu višeslojnih naselja (tel). Kada se govori o središnjem balkanskom prostoru, pa tako i vinčanskom, takva su naselja vezana uglavnom za kasni neolitik, dakle upravo za razdoblje trajanja te kulture. To su sela sagrađena redovito u blizini vodenih tokova, na strateški dominantnom, često povišenom prostoru. Jedan od razloga za to svakako je trgovina koja je osjetno cvala u tom razdoblju. Neka od njih imala su obrambeni sustav u obliku rovova (Vinča, Valač, Gradac, Uivar, Bapska itd.). Kuće vinčanske kulture karakteristične su za neolitičko razdoblje: kvadratna osnova sa zidovima građenim od drveta (kao armature) i glinene mase pomiješane sa organskim materijalom (kao žbuke). Podnice su bile od nabijene i zaravnane zemlje, no ima slučajeva kada su podnice bile popločene drvenim gredama (Vinča, Jakovo-Kormadin, Obrež, Banjica) (Tripković 2013, 76). Na nekim lokalitetima zabilježeni su unutar prostorija tragovi namještaja, a poznate su i kuće koje su imale neku vrstu gornjeg kata ili barem galerije (Tripković 2013, 68). Kao jedno od središta kuće smatra se peć stoga su peći bile brižljivo i kvalitetno građene (Tripković 2013, 78, 79). Evolucijom same kulture vidljiva je tendencija povećavanja kuća kada im dimenzije dosežu 20x10 m (Garašanin 1979b, 155 – 157).
Grobovi u vinčanskoj kulturi dio su velike „enigme" neolitičkog razdoblja jugoistočne Europe. Naime, u usporedbi sa brojem i veličinom naselja, grobovi su razmjerno rijetki. Najveći broj njih otkriven je ispod podova kuća u samim naseljima, međutim to su pojedinačni slučajevi. Ipak, kada se govori o vinčanskoj kulturi, bilježimo postojanje dvije važnije *nekropole*, u Botošu i Gomolavi, kada je prilikom iskopavanja otkriveno 18, odnosno 23 skeletna groba (Garašanin 1973, 73; Garašanin 1979b, 160).
U korpusu nalaza s Belog Brda, ali i drugih vinčanskih lokaliteta, posebno mjesto zauzimaju antropomorfne figure. Ta je figuralna plastika, nenadmašena u neolitičkoj umjetnosti Starog kontinenta, *Crème de la Crème* vinčanskih proizvoda koji još i danas predstavljaju nerazriješenu enigmu čemu su zaista služili i zašto su ih „vinčanci" proizvodili u tolikom broju (samo ih je Vasić u Vinči iskopao preko tisuću što cjelovitih, što fragmentiranih) (Tasić 2008, 140). Značajna razlika od „uobičajenih" neolitičkih figura, na kojima

Jakovo Kormadin, figurina, AMZ P-16492
Jakovo Kormadin, figurine, AMZ P-16492

Culture lived belong to the multilayer-settlement type (tell). In the case of the central Balkans, including the Vinča area, such settlements are associated mostly with the Late Neolithic – precisely the time when this culture was present in the region. The villages were usually established in the vicinity of water courses, in some strategically dominant and often raised position. One of the reasons for the selection of such locations was certainly trade, which flourished in this period. Some of the settlements were enclosed by defensive ditches (Vinča, Valač, Gradac, Uivar, Bapska etc.). Vinča Culture houses are typical of the Neolithic period: a square base with walls made of wood (used as the frame) and clay mass mixed with some organic material (used as plaster). The flooring consisted of packed and levelled earth, but in some cases also covered with wooden beams (Vinča, Jakovo-Kormadin, Obrež, Banjica) (Tripković 2013, 76). At some of the sites, traces of furniture have been identified in some of the rooms, and there are also houses which used to have some kind of an upper floor, or at least a gallery (Tripković 2013, 68). One of the focal points within the house was the stove, which was therefore constructed carefully (Tripković 2013, 78, 79). As the culture evolved, houses tended to be bigger, and their dimensions reached 20x10 m (Garašanin 1979b, 155 – 157).
Vinča Culture graves are a part of the big 'enigma' of the Neolithic period in south-eastern Europe. In comparison to the number and size of settlements, graves are relatively rare. The majority of those that have been discovered were located under house floors within the settlements, but those were just individual graves. Nonetheless, there are two important necropolises associated with the Vinča Culture, those at Botoš and Gomolava. In them, 18 and 23 (respectively) skeletal graves have been uncovered (Garašanin 1973, 73; Garašanin 1979b, 160).
Within the collection of finds from Belo Brdo, and from other Vinča Culture sites, a special place is held by anthropomorphic figures. The figural plastic, unprecedented in the Neolithic art of

Vukovar, figurina, AMZ P-19845
Vukovar, figurine, AMZ P-19845

prevladavaju ženski likovi, odnosno njihovi spolni atributi i prilična nezainteresiranost za dubinske antropološke detalje, u plastici vinčanske kulture sasvim su obrnuti. Detalji odjeće/nošnje, nakita, prikazi kompleksnih likova kao što su kentauri i hermafroditi, a posebice detalji lica i maski prikazanih na glavama, fascinantni su dosezi vinčanske skulpture. Vinčanska figuralna plastika, slažu se svi koji se bave tim razdobljem, predstavlja osim umjetničkog dometa, najbolji indirektan opis kompleksnosti i izrazito visoke društvene organizacije naselja koja su toj kulturi pripadala. Nadalje, vrhunska keramika vinčanske kulture upravo bliješti glačanim sjajem svojih tamnih, najčešće crnih stijenki posuda, govori o stupnju keramičke proizvodnje koji nije bio ni približno dosegnut u prethodnoj starčevačkoj kulturi. Budući da se mnogi lokaliteti nalaze u okvirima viših ili nižih telova, ostaci izgorenih kuća u kojima su boravili žitelji takvih neolitičkih naselja često su vrlo dobro sačuvani, stoga nam je poznat raspored njihovih prostorija, smještaj peći i niz drugih arhitektonskih detalja. To posebno vrijedi za eponimni lokalitet koji bilježi preko deset metara slojeva koji pokrivaju vrijeme trajanja vinčanske kulture. Na Belom Brdu posebno je zanimljiva rana metalurgija, koja je zapravo i najranija metalurgija Europe. U više navrata u naseobinskim slojevima otkriveni su sitni fragmenti bakrene rude. Metalurške aktivnosti su u to doba bile na samom začetku. Dugi niz godina smatrano je da je vinčanska kultura svjedočila metalurgiji tek u drugoj fazi svoje egzistencije (Garašanin 1979b, 149), no danas je poznato da je metalurgija, svakako u svojim različitim razvojnim stupnjevima, bila poznata i ranije, odnosno tijekom cijelog trajanja vinčanske kulture (Antonović 2002, 27; 2006, 85, 86; 2009, 166 i dalje). Ranu pojavu bakrenih nalaza u najdubljim slojevima u Vinči naglašava već spomenuti Childe skrećući pažnju stručnjaka na pojavu tako neočekivano ranih metalnih predmeta (Childe 1929, 30). Danas postoje mišljenja koja dvije fascinantne kategorije vinčanskih nalaza, figuralnu antropomorfnu plastiku i metalurgiju, pokušavaju interpretirati kao integrirani fenomen. Naime, iza maskiranih lica na figurama pokušavaju se utjeloviti pridošlice u vinčansku kulturu, nositelji božanskih i magičnih znanja tj. oni koji kamen pretvaraju u metal, dakle metalurzi (Schier 2005, 54-61; 2010, 85-95, Abb. 7). Sve navedeno u većoj ili manjoj količini bilo je otkriveno već prilikom Vasićevih iskopavanja (1908.-1934.). Time je on zanimljivim nalazima „upakiranim“ u vješte marketinške poteze, potpuno nepoznate za ondašnje prilike, osigurao financijska sredstva za dugogodišnji istraživački rad na terenu. Na taj je način uz iskopavanje, što je osobito važno, osigurao i novac kojime je tiskana velika monografija u četiri sveska. Tako je *Praistoriska Vinča I - IV* i danas nezaobilazno štivo svim stručnjacima koji se bave vinčanskom kulturom i kasnim neolitikom jugoistočne Europe. Žitelji vinčanske kulture, vidjeli smo, imali su znanja za proizvodnju vrsnih metalnih predmeta (posebno u kasnijoj fazi), mističnih antropomorfnih figura, vrlo kvalitetnih kuća za stanovanje, vrhunski proizvedene keramike... svega potrebnog da u mnogočemu nadograde osnovne tekovine neolitika ukorijenjene još u starčevačkoj kulturi. Svakako su to i učinili.

Kasnim neolitikom područje jugoistočne Europe ući će u jedno od najsjajnijih razdoblja svoje prošlosti. Općenito govoreći, temelji privrede, arhitekture, prehrane i način života nisu se principijelno promijenili od osvita neolitika. Međutim, društva su se u tome razdoblju razvila i postala značajnije kompleksna. Trgovina koja se odvijala dolinama rijeka je bitno uznapredovala, kontakti između naselja bivali su intenzivniji, a sve to rezultiralo je bržim razmjenama ideja, tehnologija i znanja. Takvim razvojem standard života mijenjao se u skladu sa specijalizacijom, odnosno podjelom rada, koja je organizirana da zadovolji prvenstveno trgovinske potrebe. U takvome ozračju, reflektira se spomenuta kompleksnost koja donosi napredak na mnogim poljima života. Razvija se umjetnost, obrada zemlje, gradnja naselja i sve što smo već spomenuli. Zajednice su više okrenute „prema van“, padaju mnoge granice stoga možemo reći da se krajem neolitika na tom području dobro živi. Naravno, u okvirima prapovijesti. Međutim, još nije sasvim razjašnjeno što se dogodilo s tako tehnološki i duhovno naprednom kulturom i njenim nositeljima. Odmah nakon polovine petog tisućljeća prije Krista, tisuću godina nakon što je nastala, vinčanska je kultura nestala. S njom je nestao taj miran, možemo reći, tradicionalan način poljodjelskog života, a time je nestalo i neolitika kao epohe. Na njeno su mjesto došle kulture razvijenog bakrenoga doba čija se materijalna ostavština u mnogočemu ne može uspoređivati s vinčanskom. Zavladalo je jedno drugo vrijeme u

the old continent, crème de la crème among the Vinča artefacts, represents an unresolved enigma to this very day as to what its real purpose was and why the figures were produced by the Vinča population in such large numbers. (Vasić himself uncovered more than a thousand figures at Vinča, both intact and fragmented) (Tasić 2008, 140). While most of the 'usual' Neolithic figures represent female characters, featuring their sexual attributes with relatively little interest in deep anthropological details, the characteristics of the plastic figures produced by the Vinča Culture are rather the opposite. Rendering of details of clothes/attire, jewellery, depictions of complex characters such as centaurs and hermaphrodites, and particularly detailed facial features and masks worn on heads are fascinating achievements of Vinča sculpture. All experts dealing with this period agree that, in addition to its artistic attainment, the Vinča Culture figural plastic is the best indirect description of the complexity and high level of social organization of the settlements which belonged to this culture. Furthermore, the supreme pottery produced by the Vinča Culture literally gleams with the polished gloss of the dark, usually black, walls of its vessels, and testifies to the level of pottery production, which was nowhere near as high during the preceding Starčevo Culture. Given that many sites have been discovered within tells, be they higher or lower, the remains of burnt houses that had been used for living by inhabitants of these Neolithic settlements are often very well preserved, allowing us to identify the layouts of individual rooms, the location of the oven and other architectural features. This is true particularly of the site of Vinča, in which the archaeological layers are more than 10 m thick and encompass the entire period of the Vinča Culture. Especially interesting are finds relating to the early metallurgy at Belo Brdo, which was the earliest European metallurgy. On several occasions, small fragments of copper ore have been discovered in the settlement layers. This was the period of the very beginning of metallurgic activity. For many years it was believed that the Vinča Culture saw the first use of metal only in its second phase (Garašanin 1979b, 149), but today we know that metallurgy – in different phases of its development – was known earlier, during the entire duration of the Vinča Culture (Antonović 2002, 27; 2006, 85, 86; 2009, 166ff). The early emergence of copper finds in the deepest layers at Vinča had already been highlighted by Childe, who called on the experts to notice the appearance of such unexpectedly early metal objects (Childe 1929, 30). Nowadays, there are views according to which the two fascinating categories of the Vinča finds – the figural anthropomorphic plastic and metallurgy – belong to the same integral phenomenon. The masked faces of figures embody newcomers to the Vinča Culture, carriers of divine and magical knowledge, those who can turn stone into metal, that is, metallurgists (Schier 2005, 54-61; 2010, 85-95, Abb. 7). To a greater or lesser extent, all of the above had already been discovered during Vasić's excavation (1908-1934). Thus he applied skilful marketing, completely unknown in those days, to the interesting finds, to secure finances for the many years of his field exploration. In addition to excavation, the money was used to print a substantial four-volume monograph. Up to this day, Prehistoric Vinča I-IV (Praistoriska Vinča I-IV) has been an essential piece of literature for all experts dealing with the Vinča Culture and the Late Neolithic of south-eastern Europe. We have said that members of the Vinča Culture possessed knowledge needed to produce excellent metal objects (especially in the later phase of the culture), mystic anthropomorphic figures, high-quality houses and supremely-made pottery – all that was necessary to further develop many of the attainments of the Neolithic which were already rooted in the Starčevo Culture. And they undoubtedly did it.

With the onset of the Late Neolithic, the region of south-eastern Europe entered one of the most brilliant periods in its history. Generally, the foundations of the economy, architecture, diet and way of life had not radically changed since the dawn of the Neolithic. But in this period societies evolved and became more complex. The trade that took place in river valleys progressed significantly, contacts between settlements became more intensive, and all of this brought about a quicker exchange of ideas, technologies and knowledge. This development resulted in changes in the standard of living, which depended on one's specialization, that is, division of labour, organized primarily to serve the needs of trade. In such an environment, the above-mentioned complexity brought about progress in many fields of life: art, land cultivation, settlement construction and other areas that have already been discussed. The communities were more and more 'outward-looking', many boundaries were erased, and we can therefore say that, in this region, life in the Late Neolithic was good. From a prehistoric point of view, of course. However, it still remains unclear what happened to this technologically and spiritually advanced culture and its bearers. Just after the middle of the 5th millennium BC, a thousand years after it first appeared, the Vinča Culture disappeared. Its peaceful, so-to-say traditional, agricultural lifestyle was gone with it, marking the end of the Neolithic era. It was replaced by cultures of the developed Copper Age, whose material heritage in many aspects cannot be compared to that of the Vinča Culture. This was a different era, and the enduring life by the ancestral hearths no longer played an important role.

What do we know about the Vinča Culture of Croatia? Traces of Vinča Culture settlements in the territory of Croatia are scarce. It is worth clarifying at this point the difference between a site belonging to a culture and finds attributable to the culture discovered at another site. A site can contain finds of the Vinča

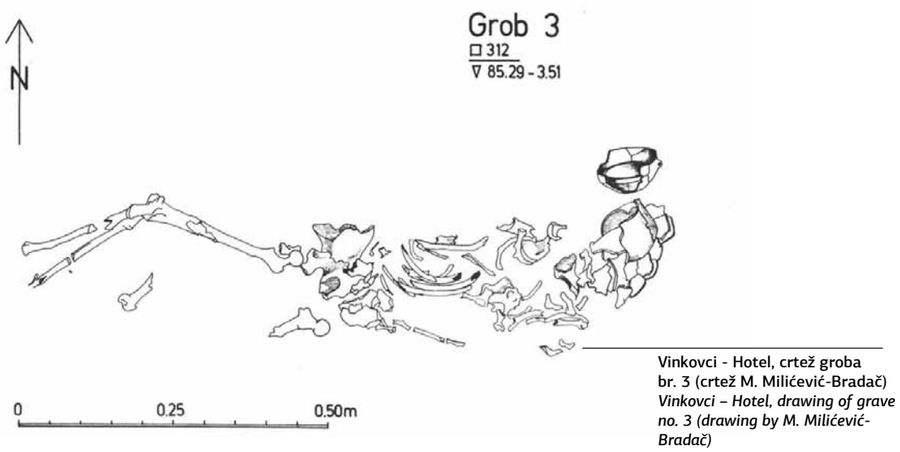
DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

kojemu dugotrajan život na ognjištima vlastitih predaka više nije imao veliku važnost.

Kakve su spoznaje o vinčanskoj kulturi u Hrvatskoj? Tragovi naselja vinčanske kulture na tlu Hrvatske vrlo su oskudni. Odmah na početku valja razjasniti razliku između lokaliteta koji pripada nekoj kulturi i nalaza te kulture na nekom lokalitetu. Naime, neko nalazište može imati nalaze vinčanske kulture kao što su to figure ili keramika (npr. Vinkovci), međutim to ne znači da su Vinkovci bili u kulturnom smislu sastavni dio vinčanskog područja, tj. da je tamošnje naselje u nekom vremenskom razdoblju pripadalo vinčanskoj kulturi. To tek znači trgovačke i mnoge druge kontakte, u ovom slučaju Vinkovaca s vinčanskim područjem. Tako gledano u Hrvatskoj za sada imamo samo jedan poznati lokalitet čiji (barem) jedan odsjek života pripada vinčanskoj kulturi. To je nalazište Gradac kod današnjeg sela Bapska na krajnjem istoku Hrvatske. Međutim, kako rekosmo, vinčanske keramike ima i na nekim drugim lokalitetima. Primjer s Vinkovcima nije se ovdje našao slučajno. Na mjestu današnjeg hotela Slavonija a i značajno šire oko njega, u samome srcu grada, nalazio se veliki tel. U istraženom dijelu toga naselja, onome koji se nalazio točno na mjestu spomenutog hotela, otkriven je jedan grob koji je arheolozima pokazao što se dogodilo na tlu Hrvatske pojavom vinčanske kulture u Srbiji. U tom je grobu pokopana mlada osoba, čije je tijelo bilo položeno na polomljene fragmente keramike starčevačke kulture. Taj nalaz ne bi bio značajno poseban da se u području pokojnikove ili pokojničine glave nisu nalazile dvije, gotovo potpuno sačuvane,

Culture, such as figures and pottery (e.g. Vinkovci), but this does not mean that Vinkovci lay within the Vinča Culture distribution zone, and that the settlement there belonged, for a certain period of time, to the Vinča Culture. It only testifies to trade and many other contacts, in this case between Vinkovci and the Vinča Culture territory. Bearing this in mind, only one site has been discovered in Croatia to date, which, during (at least) one part of its existence, belonged to the Vinča Culture. This is the site of Gradac near the present-day village of Bapska in the far east of Croatia. But, as stated above, Vinča pottery has been discovered in some other sites. The example of Vinkovci was not cited by accident. At the location of today's Hotel Slavonia and the wide area surrounding it, in the very centre of the town, there used to be a large tell. A grave was discovered in the explored section of the settlement (exactly at the location of the hotel), which has shown archaeologists what was happening in the territory of Croatia at the time when the Vinča Culture emerged in Serbia. The grave contained the remains of a young person, whose body was laid on broken fragments of Starčevo Culture pottery. This find would not be particularly significant if it was not for the two pottery vessels of the early phase of the Vinča Culture discovered, almost completely preserved, by the deceased's head. Apart from several other fragments, those vessels are the only Vinča Culture pottery discovered at this site. Some of the grave goods suggest that the deceased was a very important person (Burić 2009b; Burić, Težak-Gregl 2010).
The same meaning that the Vinča Culture had for its distribution zone, described above, was held by the Sopot Culture in the regions of Slavonia and western Syrmia. Its emergence has been



Vinkovci - Hotel, crtež groba br. 3 (crtež M. Milićević-Bradač)
Vinkovci – Hotel, drawing of grave no. 3 (drawing by M. Milićević-Bradač)

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

keramičke posude rane vinčanske faze. Osim još nekoliko fragmenata, one su sve što je na tome mjestu nađeno od vinčanske keramike. Neki prilozi u grobu daju naslutiti da se radilo o važnoj osobi (Burić 2009b; Burić, Težak-Gregl 2010). Ono što vinčanska kultura znači za njezino, gore navedeno područje, to sopotska znači za Slavoniju i zapadni Srijem. Njeni nastanak interpretiramo kao snažan kulturni utjecaj upravo vinčanske kulture na starčevačke starosjedioce (Dimitrijević 1979a, 263 i dalje). Budući da vinčanska sa svojim naseljima nije došla do Vinkovaca, već imamo ovako sporadične nalaze u obliku keramičkog importa, ovaj nam kadar iz zagrobnog života kazuje što se zbivalo na površini, među živima. Rana sopotska keramika pokazuje prijelaz iz kuglastih starčevačkih oblika posuda u vinčanske bikonične. Dakle, starosjedilački majstori-keramičari koji izrađuju starčevačke posude dolaze pod utjecaj nove tehnologije pečenja, oblikovanja i mode ukrašavanja posuda koje onda imitiraju na svojim proizvodima. Taj susret dviju različitih tehnika proizvodnje vrlo je uočljiv i što je najvažnije, kronološki potvrđen nalazom groba 3 i njegova konteksta. Rezultat je očit – nastanak sopotske kulture.
Tako je vinčanska kultura odigrala važnu ulogu u integraciji istočnohrvatskog prostora u okrilje kulturno najkompleksnije i najnaprednije regije našeg kontinenta.
Kada se govori o prisutnosti vinčanske kulture na tlu Hrvatske valja reći da je S. Dimitrijević 1960-ih godina izdvojio još jedan lokalitet kao nalazište koje je njoj moglo pripadati. Radi se o položaju Berendijev vinograd, danas sastavnom dijelu Vukovara, koji se nalazi na samoj obali Dunava. Budući da upravo na tome mjestu Dunav snažno skreće iz smjera sjever-jug u smjer istok-zapad i pri tome jako erodira svoju desnu obalu, veliki dio visoke praporne terase obrušio se na strmu obalu. Obilazeći položaj Dimitrijević je izdvojio vinčansku keramiku koje je bilo u izobilju i pretpostavio da bi se ovdje moglo raditi o nalazištu koje je moglo sadržavati vinčanski horizont života. Međutim, tog nalazišta više nema jer je potpuno uništeno Dunavom. Nažalost, ti nalazi koji su prikupljeni i deponirani u Gradski muzej u Vukovaru uništeni su tijekom Domovinskog rata, stoga jedino svjedočanstvo koje nam je ostalo o keramici s Berendijevog vinograda ostaje nekoliko fotografija vinčanskih fragmenata koji se čuvaju u Arhivu Odsjeka za arheologiju na Filozofskom fakultetu u Zagrebu (Burić 2009b, 54, Tab. 34). Na kraju, jedini do sada poznati nam lokalitet koji sadrži sloj vinčanskog života na tlu Hrvatske jest Gradac u Bapskoj.
Taj lokalitet i Arheološki muzej u Zagrebu vrlo su tijesno povezani. Naime, prvi arheolozi koji su prikupljali i deponirali nalaze iz Bapske bili su Josip Brunšmid i Viktor Hoffiller, nekadašnji ravnatelji Narodnog muzeja, odnosno muzejske ustanove koja se danas naziva Arheološki muzej u Zagrebu.

explained as a result of the strong influence of the Vinča Culture on the indigenous Starčevo Culture population (Dimitrijević 1979a, 263ff). Since settlements of the Vinča Culture did not spread as far as Vinkovci, and in this region there are only sporadic finds of pottery imports, this picture of a burial reveals what was happening at the surface, among the living. The early Sopot Culture pottery shows the transition from the rounded Starčevo Culture vessel shapes to the Vinča Culture's biconic receptacles. This means that the indigenous pottery masters who produced Starčevo Culture vessels were influenced by a new technology of pottery firing, shaping and decorating, which they began imitating in their production. The encounter of two different production techniques can easily be observed and, more importantly, it has been confirmed chronologically by the discovery of grave 3 and its context. The result is evident – the emergence of the Sopot Culture. Thus, the Vinča Culture played an important role in the integration of the territory of eastern Croatia into the culturally most complex and most advanced region of our continent.
When the presence of the Vinča Culture in the territory of Croatia is discussed, it should be said that in the 1960s S. Dimitrijević cited another site as possibly belonging to this culture. This was the site of Berendi's vineyard, nowadays within the town of Vukovar, located at the very bank of the Danube. At this spot the Danube makes a sharp turn from a north-south direction to an east-west one, and strongly erodes its right bank, causing a large part of the high loess terrace to fall down onto the steep river bank. When he visited this location, Dimitrijević identified a large amount of Vinča Culture pottery and assumed that this could be a site with a Vinča horizon. However, the site does not exist any longer, as it has been completely destroyed by the Danube. Unfortunately, the finds that had been collected and stored in the Vukovar Town Museum were destroyed during the Croatian Homeland War, and thus several photographs of the Vinča pottery fragments kept in the Archive of the Department of Archaeology of the Zagreb Faculty of Humanities and Social Sciences are the only testimony of the pottery discovered in Berendi's vineyard (Burić 2009b, 54, T. 34).
In the end, the only site containing a layer of the Vinča life discovered to date in the territory of Croatia is Gradac in Bapska. The site has had close ties with the Archaeological Museum in Zagreb. The first archaeologists who collected and stored finds from Bapska were Josip Brunšmid and Viktor Hoffiller, former directors of the National Museum – the museum institution nowadays known as the Archaeological Museum in Zagreb. They collected archaeological material through their museum commissioners in Bapska, whose first notes mention Bapska as a site as early as the 1870s, making it one of the earliest known prehistoric sites in Croatia. The museum also stores precious notes and letters from the earliest days of collection

Posao prikupljana materijala obavljali su preko svojih muzejskih povjerenika u Bapskoj čiji prvi natpisi spominju Bapsku kao lokalitet još 1870-ih godina, čineći je time jednim od najstarijih poznatih prapovijesnih lokaliteta u Hrvatskoj. Muzej također čuva dragocjene bilješke i pisma iz tih najstarijih dana prikupljanja arheoloških nalaza iz Bapske (Burić 2009c, 489 - 507). Osim muzejskih povjerenika Mate Epnera i Mate Vohalskog, pučkoškolskih učitelja iz Bapske, koji su prvi s površine, zajedno sa svojim učenicima, prikupljali arheološke nalaze, jedan od prvih koji je spomenuo Bapsku kao lokalitet jest već citirani Gordon V. Childe. On navodi Bapsku u svom popisu lokaliteta koji pripadaju lenđelskoj kulturi, ali spominje lokalitet kao groblje što je netočno (Childe 1929, 82), opisujući velike posude za zalihe kakve se mogu naći u Bapskoj (Childe 1929, 84) i jednu cilindričnu posudu crne boje koju je vidio u zagrebačkom muzeju (Childe 1929, 105). Nadalje, također navodi jednu figuru (Childe 1929, 285, 286) koju također spominje i M. Hoernes u svojoj glasovitoj knjizi *Urgeschichte der Bildenden Kunst in Europa*, međutim u ovome se slučaju radi o nalazu iz kasnijih razdoblja (Burić 2009b, 80). Nalazi koje je Childe vidio u Zagrebu pripadaju zbirci koju su muzeju donirali muzejski povjerenici, ali i iz prvih istraživanja na Gradcu koje je uz pomoć mještana Bapske obavio V. Hoffiller 1911. godine. Taj isti materijal vidio je i R. R. Schmidt, profesor arheologije i geologije s njemačkog sveučilišta u Tübingenu, koji je autor prvih cjelovitih istraživanja na glasovitom lokalitetu Vučedol kod Vukovara. Privučen raznolikošću materijala, za vrijeme iskopavanja Vučedola dolazi u Bapsku i provodi malo probno iskopavanje u svrhu provjere debljine arheoloških slojeva. Tada je prvi puta ustanovljeno da lokalitet ima pet metara slojeva, stoga jedno manje poglavlje u svojoj monografiji *Die Burg Vučedol* (Zagreb, 1945) posvećuje i Gradcu u Bapskoj. To je prva, iako prilično sumarna, znanstvena objava arheoloških nalaza s tog lokaliteta. Nakon njega svoje kratko, ali vrlo važno istraživanje obavlja S. Dimitrijević ljeti 1964. godine. To iskopavanje iznjedrilo je materijal na temelju kojega je Bapska postala jedan od ključnih lokaliteta na kojima je Dimitrijević zasnivao svoju periodizaciju kasnog neolitika istočne Hrvatske, odnosno sopotske kulture (Dimitrijević 1968). Definirao je pet-metarske arheološke slojeve i uvidio da otprilike donja tri metra nalazišta pripadaju sopotskoj, a gornja, gotovo dva metra vinčanskoj kulturi (Dimitrijević 1968). Moderno iskopavanje Bapska je čekala do 2007. godine koje, tada započeto, traje još i danas.

of archaeological finds in Bapska (Burić 2009c, 489-507). In addition to museum commissioners Mato Epner and Mato Vohalski, elementary school teachers from Bapska, who, together with their pupils, collected the first surface finds, one of the first people to mention Bapska as an archaeological site was the previously-quoted Gordon V. Childe. He entered Bapska in his list of Lengyel Culture sites, but made a mistake describing the site as a graveyard (Childe 1929, 82). He described large storage vessels that could be found at Bapska (Childe 1929, 84) and a black cylindrical vessel which he had seen in the Zagreb museum (Childe 1929, 105). Furthermore, he also mentioned a figure (Childe 1929, 285, 286) which was also cited by M. Hoernes in his famous book Urgeschichte der Bildenden Kunst in Europa. However, in this case, the find belonged to a later period (Burić 2009b, 80). The artefacts Childe had seen in Zagreb belonged to a collection donated to the Museum by museum commissioners, and originating from the first excavations at Gradac, carried out by V. Hoffiller in 1911, with the help of villagers. The same material was seen by R. R. Schmidt, professor of archaeology and geology at the German University of Tübingen, who carried out the first comprehensive exploration of the famous site of Vučedol near Vukovar. He was attracted by the diversity of the finds, and, during the excavation campaign at Vučedol, he came to Bapska and made a small test excavation aimed at verifying the thickness of archaeological layers. On this occasion it was first established that the site consisted of five metres of layers, and Schmidt devoted a small chapter of his monograph Die Burg Vučedol (Zagreb, 1945) to Gradac in Bapska. This was the first – albeit rather summary – scientific publication of archaeological finds discovered at this site. In the summer of 1964, S. Dimitrijević carried out his short, but very significant, exploration. The excavation resulted in the discovery of material that made Bapska one of the key sites used by Dimitrijević when he developed his periodization of the Late Neolithic of eastern Croatia, that is, of the Sopot Culture (Dimitrijević 1968). He identified the five metres of archaeological layers and established that the bottom layer, of approximately three metres, belonged to the Sopot Culture, and the upper layer, of nearly two metres, to the Vinča Culture (Dimitrijević 1968). Bapska had to wait until 2007 for a modern excavation campaign. The campaign launched in that year is still ongoing.

Metallurgy of the Vinča Culture

Alongside pottery production and the making of highly characteristic anthropomorphic and zoomorphic figures, one of the most interesting features of the Vinča Culture is its metallurgy. In the Late Neolithic period, for the first time, man made significant changes to the world around him, adapting it to

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Metalurgija vinčanske kulture

Pored vrhunske izrade keramičkih posuda i vrlo karakterističnih antropomorfnih i zoomorfnih figura, jedna od najzanimljivijih pojava u vinčanskoj kulturi jest metalurgija.
U kasnom neolitiku čovjek prvi puta značajnije mijenja svijet koji ga okružuje prema svojim potrebama. Ne radi se o promjenama društvenog uređenja, načina gradnje naselja ili gospodarstva, već o dubljem zadiranju u kemijsku strukturu prirode. Kemijski procesi mijenjaju prirodu i okoliš u kojemu živi, no on sada više nije samo promatrač, nego u nekim od tih procesa aktivno sudjeluje, mijenja ih, pa čak u određenoj mjeri kontrolira. Vrhunac tadašnje čovjekove interakcije u kemijske procese vidimo u njegovim prvim znanjima o metalurgiji. Nakon pretvaranja zemlje u keramiku, žita u kruh i sl., pojavljuje se „pretvaranje" kamena (rude) u metal. Danas se većina stručnjaka slaže da je metalurgija djelatnost koja se vjerojatno razvila na više međusobno izoliranih područja (Amzallag 2009, 497). Događanja koja su u JI Europi uslijedila nakon inicijalne metalurgije uvjetovala su intenzitet migracija i trgovina kakve ranije nisu bile poznate. Sjedilački život, koji je tradicionalno vezan za neolitički način života, tada se počeo približiti svome kraju jer će nadolazeće bakrenodobno razdoblje ponovo biti u znaku većih pomicanja zajednica, no ovoga puta ne za hranom i novim obradivim površinama, već za metalnom rudom. Vinčanska kultura suvremenik je svih tih događaja, tj. prvog rudarenja i prve metalurgije u Europi. Iako nikada nije bila u potpunosti metalurški orijentirana, metalurgija je ipak odigrala određenu ulogu u njenim zajednicama (Burić 2009b). Balkanski poluotok bogat je nalazištima metalnih ruda. Njihova prisutnost nije mimoišla ni neolitičke populacije koje su naseljavale taj dio Europe. U drugoj polovini 20. st. prevladavalo je mišljenje da je vinčanska kultura svjedočila metalurgiji tek u svojoj razvijenoj, odnosno kasnoj fazi (Garašanin 1979b, 161, 162; Jovanović 1979, 32). Međutim, metalne rude na neolitičkim su lokalitetima prisutne još iz nešto ranijeg razdoblja. Na nalazištima iz vrlo ranog perioda sjedilačkog života kao što su Lepenski Vir, Divostin, Zmajevac (kod Smederevske Palanke) itd., grumeni malahita, jednog od minerala bakra, otkriveni su u slojevima starčevačke kulture. Međutim, njihova pojava u tim ranim horizontima ne tumači se kompleksnom pojavom kao što je prerada metala. Malahit i azurit, jedan zelene, a drugi plave boje, u tom su razdoblju upotrebljavani kao privjesci ili grumeni obojanog kamena koje se koristilo najčešće u dekorativne svrhe (Antonović 2006, 85). Gledano iz njihove perspektive, ti su predmeti bili od „kamena", atraktivnih boja, ali ipak od kamena. Bakreni oksidi jednostavnim termičkim i mehaničkim obradama postajali su perle, limovi i žice od bakra. Među najstarije nalaze toga

his needs. These changes did not regard social organization, development of settlements, or the economy, but rather involved a deeper impingement on the chemical structure of nature. Chemical processes modified nature and man's living environment, but he was no longer just an observer; he took active part in some of the processes, altered them, and to a certain extent even controlled them. The culmination of man's interference with chemical processes at the time is reflected in his first knowledge of metallurgy. Having turned earth into pottery, grain into bread, etc., he starts 'turning' stone (ore) into metal. Nowadays most experts agree that metallurgy is an activity which probably emerged in several mutually distinct areas (Amzallag 2009, 497). The events which occurred in south-east Europe following the initial appearance of metallurgy caused an unprecedented increase in the intensity of migration and trade. The sedentary lifestyle traditionally associated with the Neolithic was coming to its end, as the subsequent Copper Age would again be marked by large-scale movements of communities, this time searching not for food and arable land, but for metal ores. The Vinča Culture was contemporary to all these events: that is, to the first mining and metallurgy in Europe. Although the Vinča Culture was never completely oriented towards metal production, metallurgy played an important role in its communities (Burić 2009b).
The Balkan peninsula is rich in metal ore deposits, which were also observed by Neolithic populations living in this part of Europe. In the second half of the 20th century, the prevailing view among scholars was that metallurgy emerged only in the developed (or late) phase of the Vinča Culture (Garašanin 1979b, 161, 162; Jovanović 1979, 32). However, metal ores are also present at Neolithic sites from a somewhat earlier period. At the sites originating from the very early period of sedentary life, such as Lepenski Vir, Divostin, Zmajevac (near Smederevska Palanka) etc., nuggets of malachite – one of the copper minerals – have been found in Starčevo Culture layers. Still, their appearance in these early horizons is not explained by any complex activity, such as metal processing. At that time, malachite and azurite – green and blue respectively – were used as pendants or lumps of coloured stone whose function was decorative (Antonović 2006, 85). From their perspective, these items were made of 'stone,' albeit stone of attractive colour. Copper oxides were turned into beads, sheets or wires using simple thermic and mechanical processing. One of the oldest finds of this kind (such as beads), are those discovered in eastern Turkey, in layers of the so-called Pre-pottery Neolithic A and B (PPN A, B), at the sites of Çayönü Tepesi, Asıklı Höyük (9th millennium BC), and in layers of the somewhat later Pottery Neolithic (Çatalhöyük) etc. (Hauptmann, Özdoğan 2007, 30; Rosenberg 2007, 54; Esin 2007, 214, 215). Before the middle of the 20th c., this region

tipa uopće, npr. perle, ubrajamo nalaze iz istočne Turske otkrivene u slojevima tzv. pretkeramičkog neolitika A i B (PPN A, B) na lokalitetima kao što su Çayönü Tepesi, Asıklı Höyük (9. tisućljeće pr. Kr.), te nešto kasnijeg keramičkog neolitika (Çatalhöyük) itd. (Hauptmann, Özdoğan 2007, 30; Rosenberg 2007, 54; Esin 2007, 214, 215). To je područje još prije sredine 20. st. bilo smatrano kao ishodište ekstraktivne metalurgije[5], no te su se ideje počele temeljito preispitivati kasnih 1960-ih godina kada su predstavljeni modeli koji su pretpostavljali nastanak metalurgije nezavisno na više točaka euroazijskog prostora (Amzallag 2009, 497; Radivojević *et al.* 2010, 2775). Zanimljiva je činjenica da je baš vinčanska kultura naselila najveći broj rudišta jugoistočne Europe (Antonović 2006, 89; Borić 2009, 191). Uzimajući u obzir današnje spoznaje o kronološkim okvirima nastanka ekstraktivne metalurgije u Europi, to svakako nije iznenađujuća činjenica, iako vinčanska kultura još uvijek ima izrazite obrise tradicionalne neolitičke kulture. Pitanje koje se oko ove problematike u arheološkoj struci ističe više je nego očito: zašto vinčanska populacija, koja prva poznaje osnove metalurgije, nikada nije iskoristila to kapitalno znanje, transformirala se u grupe zajednica temeljenim na visokoakumulacijskom gospodarstvu metala i tako kao predvodnik ušla u novo razdoblje u kojemu će sve biti podređeno turbulentnoj trgovini i bogaćenju, odnosno, osiromašenju? Za sve to imala je i prostora i vremena. Tisuće kvadratnih kilometara kulturnog jedinstva, inovativne keramografije, tehnologije i tisuću godina postojanja trebali su biti dovoljni da se dosegne taj slijedeći stupanj razvoja, tj. eneolitik u punom smislu metalurgije. Međutim, osim u okviru nekoliko primjera, nije bilo tako. Vinčanska kultura bila je i ostala tradicionalna neolitička kultura. Čak i krajem njena trajanja, kada je to možda bilo pitanje opstanka, nije došlo do te transformacije. U usporedbi sa drugim ranim metalurškim društvima situacija je slična: u svojim početnim fazama metalurgija nije imala većih društvenih i socijalnih posljedica, kako je npr. slučaj sa Iberskim poluotokom. Suvremeniji pogledi na razvoj kompleksnih društva (onih koji su značajnije stratificirani u socijalnom smislu), tumače da metalurgija predstavlja samo jedan od čimbenika koji su doprinijeli njihovu razvoju. U svakom slučaju, ono što svakako vrijedi ovdje naglasiti jest to da vrijeme njena trajanja i područje koje je pokrivala vinčanska kultura jesu jedan od najstarijih metalurških područja euroazijskog prostora (Gaul 1942, 400; Antonović 2002, 27; Antonović 2006; Amzallag 2009, 497, 498; Radivojević *et al.* 2010). Osim što su u novije vrijeme interdisciplinarnim metodama potvrđena izvorišta metalnih ruda od kojih su proizvedeni pojedini metalni nalazi

[5] metalurgija koja, između ostalog, podrazumijeva umijeće i vladanje metodama kojima se dobivao čišći i kvalitetniji metal

was considered the starting point of extractive metallurgy,[5] but this view was extensively revised in the late 1960s, when new models were presented, suggesting that metallurgy emerged in several distinct places within the Eurasian region (Amzallag 2009, 497; Radivojević et al. 2010, 2775). Interestingly, bearers of the Vinča Culture inhabited the majority of metal ore deposits in south-east Europe (Antonović 2006, 89; Borić 2009, 191). Taking into consideration today's understanding of the chronological framework within which extractive metallurgy appeared in Europe, this is not surprising, although the Vinča Culture still bore distinct features of a traditional Neolithic culture. The question posed among archaeologists concerning this issue is more than evident: why the Vinča population, the first to acquire the basics of metallurgy, never used this capital knowledge and transformed itself into groups of communities based on high-yield economy based on metal, which would have allowed it to have a leading position at the onset of a new era in which everything would be subordinated to turbulent trade and acquisition of wealth, or impoverishment. There was plenty of space and time to achieve this. Thousands square kilometres of cultural unity, innovative pottery production, technology, and a thousand years of existence should have been sufficient to reach the next level of development: that is, the Calcholithic. Yet, except for a few examples, this was not the case. The Vinča Culture was and remained a traditional Neolithic culture. At the very end of its existence, when this could have been a matter of survival, even then the transformation did not occur. If compared to other early metal-producing societies, the situation is found to be similar: in its early phases, metallurgy did not cause any major societal or social consequences, as it did in the Iberian peninsula, for example. Some contemporary views of the development of more complex societies (those which had greater social stratification) claim that metallurgy was just one of the factors that contributed to their development. It is certainly worth pointing out here that the period of time and the territory it covered make the Vinča Culture one of the oldest metallurgical regions in Eurasia (Gaul 1942, 400; Antonović 2002, 27; Antonović 2006; Amzallag 2009, 497, 498; Radivojević et al. 2010). In recent years, sources of metal ores used to produce certain metal objects discovered at Vinča Culture sites have been identified using interdisciplinary methods (Radivojević et al. 2010). In addition, as early as the late 1960s and early 1970s, mines were discovered which contained some pottery items belonging to Vinča miners who extracted ores there (Borić 2009, 194). The most abundant source of information is one of the most important and most famous of mines – though not the only one of its kind: Rudna Glava, in the vicinity of Majdanpek in the mining

[5] Metallurgy which implies, inter alia, skill and mastering of methods used to obtain metal of higher purity and quality.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

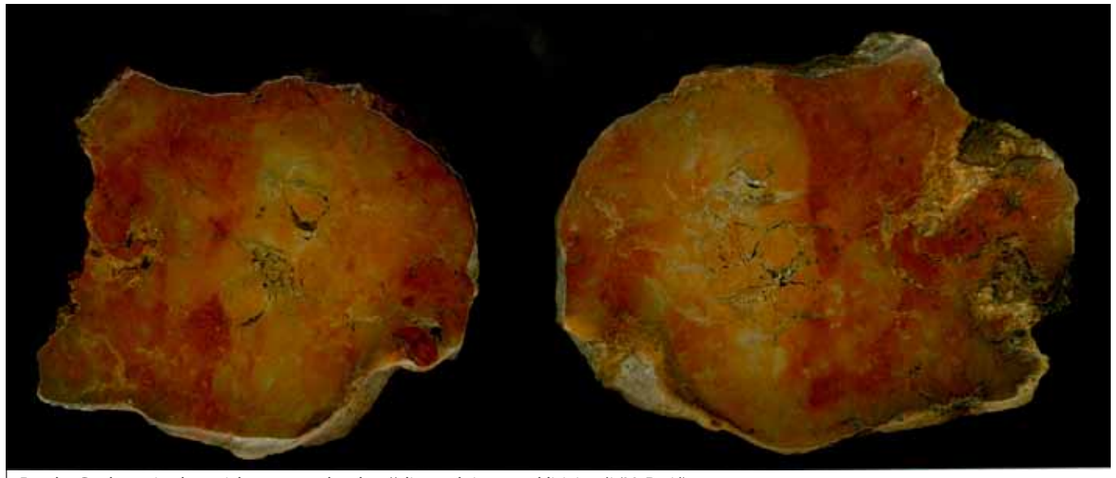
GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

sa vinčanskih lokaliteta (Radivojević *et al.* 2010), još su kasnih 1960-ih i ranih 1970-ih godina prošlog stoljeća otkriveni rudokopi sa nalazima keramike koja pripada vinčanskim rudarima koji su u njima vadili rudu (Borić 2009, 194). Najviše spoznaja dolazi iz jednog od najvažnijih i najpoznatijih, ali ne i jedinog rudnika Rudna Glava u okolici Majdanpeka u istočno-srpskom rudnom bazenu[6] (Garašanin 1979b, 162; Jovanović 1979, 31; Borić 2009, 192, 194).
Najraniji poznati metal vinčanske kulture dolazi iz eponimnog nalazišta, a zabilježio ga je njegov prvi istraživač Miloje M. Vasić (Vasić 1932, 5). U tim najranijim slojevima radi se o predmetima od malahita (Antonović 2006, 86), bakrenog karbonata ($Cu_2CO_3(OH)_2$), koji često dolazi, kao što je to slučaj na području vinčanske kulture, odnosno istočno-srpskog rudogorja, zajedno sa azuritom. Valja odmah istaći da u ranim fazama metalurgije treba povući jasnu crtu između žarenja i omekšavanja rude čime se dolazi do prvih obrisa bakra, dakle spomenutih jednostavnih metalnih predmeta, međutim lijevanja i pravog pretvaranja rude u metalni predmet željenog oblika još nema (Durman 1983, 21; Antonović 2006, 87, 88; Amzallag 2009: 498). Radi toga što se nisu oblikovali lijevanjem nego kovanjem i brušenjem, tehnikama koje se drastično ne razlikuju od onih kojima se obrađivao kamen (Durman 1983, 21), znatno je ograničen broj oblika u koje su se mogli iskovati. Međutim, baš to ograničenje oblika, tj. mehaničkih svojstva metala, ih stavlja u spomenutu kategoriju rane ili hladne metalurgije (žice, šila, prsteni okruglog ili kvadratnog presjeka, perle, gumbi), dok se ona prava s topljenim bakrom, odnosno, lijevanjem (lijevane sjekire, dlijeta itd.), neće razviti do razvijene faze vinčanske kulture. Sve dok su bakreni alati rađeni hladnim kovanjem, ta se metalurgija nije drastično razlikovala od obrade i proizvodnje kamenih alata, no kad metalurg prelazi na višu razinu, npr. lijevanje *à cire perdue*[7], to zauvijek odvaja tu proizvodnju od one koja je sličila i vjerojatno evoluirala iz tisućljetne obrade kamena (Durman 1983, 21). Kada govorimo o najranijim eksperimentiranjem metalom, posebno kada govorimo o Belom Brdu, također treba naglasiti da se u zaleđu tog lokaliteta nalazi brdo Avala sa položajem Šuplja Stena, gdje su žitelji eponimnog lokaliteta vadili cinabarit – živin sulfid (HgS), koji se primarno koristio za dobivanje crvenog pigmenta. Proizvodnja pigmenata za bojanje keramike (a vjerojatno i drugih materijala), vjerojatno je prvi razlog što je čovjek

[6] ponekad se u literaturi spominje kao Timočki eruptivni bazen (Jovanović 1979, 30).
[7] tehnologija lijevanja u kalupe u kojima je željeni predmet modeliran u vosku, dakle dostizanje temperature topljenja bakra od nešto više od 1000 °C. Model od voska se oblijepi kalupom od zemlje u koji se zatim lijeva tekući metal koji zamjenjuje vosak i dobiva se gotov proizvod u metalu. U prijevodu: tehnika izgubljenog voska.

basin of eastern Serbia[6] (Garašanin 1979b, 162; Jovanović 1979, 31; Borić 2009, 192, 194).
The earliest known metal produced by the Vinča Culture comes from the eponymous site, and it was recorded by its first explorer, Miloje M. Vasić (Vasić 1932, 5). The earliest layers contained objects made of malachite (Antonović 2006, 86), copper carbonate (Cu2CO3(OH)2), which is often accompanied by azurite, as is the case in the territory of the Vinča Culture: that is, in the mining region of eastern Serbia. It should be noted that, in the early phases of metallurgy, a clear line should be drawn between the roasting and softening of ore, resulting in the first outlines of copper (such as the above-mentioned simple metal objects), and the casting and real transformation of ore into a metal object of desired shape, which was not yet present (Durman 1983, 21; Antonović 2006, 87, 88; Amzallag 2009, 498). Since objects were produced not by casting, but rather by hammering and grinding – techniques not much different from those applied in stone processing (Durman 1983, 21) – the number of shapes that could be obtained was very limited. And it is precisely this limitation of possible shapes, that is, of the mechanical properties of metal, that puts these finds into the category of early or cold metallurgy (wires, awls, rings of a circular or square cross-section, beads, buttons), while the real metallurgy involving molten copper, that is, casting (cast axes, chisels etc.), emerged only in the developed phase of the Vinča Culture. For as long as copper tools were made by cold hammering, the metallurgy was not much different from the production and processing of stone tools. But once the metallurgist reached the next phase, for example, casting à cire perdue,[7] *metal production was forever removed from what resembled – and probably evolved from – thousands of years of stone processing (Durman 1983, 21). When the earliest experimenting with metal is discussed, and especially when the Belo Brdo site is mentioned, one should emphasize that, in the hinterland of that site, there is Mount Avala, containing the mine of Šuplja Stena, from which inhabitants of the eponymous settlement extracted cinnabar (mercury sulphide, HgS), which was used primarily for the production of red pigment. The production of pigment for painting pottery (and probably other materials, too), could have been the first motive prompting man's experimenting with oxides, minerals and carbonates, resulting in his learning about their chemical properties and, eventually, in the production of metal objects. However, a significant portion of the red-painted pottery of the Late Neolithic in the region discussed was painted using haematite, the iron oxide most frequently found in nature. The most recent excavation of the site of Gradac near*

[6] Sometimes cited in the literature as Timok Eruptive Basin (Jovanović 1979, 30).
[7] Lost-wax casting – a casting technology whereby the desired object is first modelled in wax, and then the wax model is covered by a clay mould. Molten metal – the melting point for copper is just above 1000 °C – is poured into the mould, where it replaces the wax, and thus the final metal object is obtained.



Bapska-Gradac, snimak presjeka grumena barskog željeza otkrivenog u blizini peći (M. Burić)
Bapska-Gradac, image of cross-section of a siderite nugget discovered near the cave (M. Burić)

započeo spomenute eksperimente sa oksidima, mineralima i karbonatima, što je dovelo do upoznavanja sa njihovim kemijskim obilježjima i konačno do proizvodnje metalnih predmeta. Međutim, značajan dio crveno bojane keramike kasnog neolitika regije o kojoj govorimo bojan je hematitom, u prirodi najrasprostranjenijim oksidom željeza. Najnovija istraživanja na lokalitetu Gradac kod Bapske pokazala su da su i na tome nalazištu također prisutni takvi prvi kontakti sa željeznim karbonatima. Naime, unutar konteksta jedne kuće, otkrivena je kupolasta zidana peć u blizini čije se ruševine pronašao grumen željeznog karbonata, tzv. barsko željezo. Radi se o jednoj od najčešćih varijanti samorodnog željeza, koje nastaje relativno kompleksnim kemijskim procesima u močvarnim uvjetima, a jedna su od najjednostavnijih sirovina za dobivanje hematita[8]. Pored nalaza crveno bojane keramike, u Bapskoj su otkriveni i tragovi bojanja arhitekture, kao najstariji do sada poznati i na taj način ukrašeni arhitektonski elementi na tlu Hrvatske, a grumen barskog željeza također prvi takav nalaz pouzdano otkriven u slojevima kasnog neolitika.

Kao što je već ranije naglašeno, još iz faze najranijeg neolitika poznati su pojedinačni nalazi predmeta od malahita, a broj takvih nalaza se povećava kada se govori o razdoblju kasnog neolitika. Iz te razvojne faze, koja obuhvaća vinčansku kulturu, poznat je izvjestan broj lokaliteta koji su pružili pokazatelje o pravim, lijevajućim metalurškim aktivnostima, međutim, kada se govori o vinčanskoj metalurgiji, dva lokaliteta predstavljaju točke od posebne važnosti za tu temu. Prvi od njih je Pločnik, zapadno od Niša u južnoj Srbiji, gdje su tragovi topljenja otkriveni u značajnijim količinama (Antonović 2006, 88). Dok ti podaci nedvojbeno svjedoče o metalurškoj aktivnosti, Pločnik je neusporedivo značajniji po svoje četiri „ostave“[9] koje su ukupno sadržavale 45 bakrenih predmeta, no u ovom

Bapska has revealed that such first contacts with iron carbonates were also made at that location. Within the context of a house, a dome-shaped kiln was discovered, and, in its vicinity, a lump of iron carbonate, the so-called bog iron. This is one of the most common variants of native iron, created through relatively complex chemical processes in bog conditions, and it is one of the simplest raw materials from which haematite can be obtained.[8] In addition to red-painted pottery, traces of paint were also discovered on architectural elements at Bapska, making them the oldest decorated architectural elements discovered in Croatia to date. The above-mentioned lump of bog iron is also the first such find certainly made in late Neolithic layers.

It has already been mentioned that individual finds of malachite have been made dating from the earliest Neolithic. Among the Late Neolithic material, the number of such finds increases. A certain number of sites from this developmental phase – which includes the Vinča Culture – have offered indications of the existence of some real casting activities. As far as the Vinča Culture is concerned, two sites are especially prominent. The first is Pločnik, west of Niš in southern Serbia, where significant quantities of traces of melting have been discovered (Antonović 2006, 88). Such finds undoubtedly speak of metallurgical activity, but Pločnik is much more important for its four 'hoards'[9], containing a total of 45 copper objects – cast, massive and sometimes decorated copper axes, hammers and chisels, and a smaller number of decorative objects (Grbić 1928, 15; Jovanović 1971, 25; Stalio 1973, 158; Jovanović 1979, 34, 37, 38; Antonović 2002, 34, 35). The site was discovered by chance, with the first of the four hoards identified during the construction of the railway in 1926. More recent exploration, undertaken since the second half of the 1990s, suggests that metal items can also be found within closed contexts of the Pločnik houses. In other words, these are not just traces of waste resulting from the metal production

[8] na provedenoj analizi i preliminarnim rezultatima obrade, te snimci spomenutog grumena, najtoplije zahvaljujem kolegi Hrvoju Posiloviću (Hrvatski geološki institut)

[9] iako se u literaturi ti nalazi uglavnom navode kao ostave, postoje izvjesne sumnje da su to bile ostave, već se moglo raditi o nalazima unutar naselja koje pokriva preko 20 hektara (Borić 2009, 211)

[8] I am very grateful to my colleague Hrvoje Posilović (Croatian Geological Survey) for the analysis carried out and its preliminary results, as well as the picture of the lump mentioned.

[9] Although in literature these finds are mostly cited as hoards, there are some doubts as to whether they were really hoards, or possibly finds within a settlement which covered more than 20 hectares (Borić 2009, 211)

Belovode, Srbija, fragment bakrenog privjeska. (prema Šljivar 2006, 96, sl. 4)
Belovode, Serbia, fragment of copper pendant (after Šljivar 2006, 96, Fig. 4)

se slučaju radi o lijevanim, masivnim i ponekad dekoriranim bakrenim sjekirama, čekićima i dlijetima, te nešto manji broj ukrasnih predmeta (Grbić 1929, 15; Jovanović 1971, 25; Stalio 1973, 158; Jovanović 1979, 34, 37, 38; Antonović 2002, 34, 35). Lokalitet je otkriven slučajno, pronalaženjem prve od četiriju ostava prilikom gradnje željezničke pruge 1926. godine. Novija istraživanja koja se obavljaju od druge polovine 1990-ih pokazuju da nalaza metala ima u zatvorenim kontekstima pločničkih kuća. Dakle, ne radi se samo o tragovima otpadaka iz procesa proizvodnje metala, već o nalazima gotovih predmeta, koji su u tome smislu relativno rijetki, budući da je metal, s jedne strane skup, a sa druge, vrlo prikladan za recikliranje, stoga mu je upotreba u tome smislu neograničena. Upravo zbog mogućnosti gotovo potpune reciklaže, ljudi su sa sobom nosili i odnosili čak i uništene artefakte jer su se lako mogli pretopiti i ponovo koristiti u istu ili neku drugu svrhu. Stoga ih nalazimo u relativno malom broju. Indirektno, ti nalazi, a tu svakako uključujemo i „ostave“, pokazuju iznimno razvijenu metalursku djelatnost koju po količini metala otkrivenoj na tom kompleksu možemo smjestiti u vjerojatno najsnažnija metalurška proizvodna središta jugoistočne Europe.

Drugi lokalitet koji valja istaći je Belovode. U ranoj fazi istraživanja lokaliteta Belovode na rijeci Mlavi pokraj Petrovca, otkriveni su topljeni bakreni fragmenti koji su za sada najstariji zabilježeni topljeni bakar unutar konteksta vinčanske kulture (Antonović 2006, 88; Borić 2009, 208; Radivojević *et al.* 2010). Lokalitet pokriva fascinantnu površinu od oko 100 hektara dok mu debljina kulturnog sloja doseže tri metra. Keramički nalazi upućuju da se radi o ranijim vinčanskim razvojnim fazama (Vinča A – B2), a u blizini naselja nalaze se Rudna Glava i Ždrelo kao dva glavna izvora bakrene rude. U najstarijim slojevima vinčanskog naselja nađeni su mnogi fragmenti metala koji unutar svojih kronoloških okvira predstavljaju također jednu od najstarijih metalurških pozicija u Europi (Borić 2009, 208, 209).

Kako je već rečeno, nositelji vinčanske kulture su, a to je posebno vidljivo u slučaju Belovoda, imali znanja i sirovine za bavljenje ozbiljnom metalurškom djelatnošću i to u vrlo ranoj fazi razvoje kulture. Iako se prava lijevana metalurgija (Pločnik i Belovode) javlja doduše u razvijenoj fazi, ukupna količina metalnih nalaza zapravo je razmjerno mala s obzirom na površinu kulture i broj lokaliteta koji se broji troznamenkastim brojem. Dakako, jedno od ključnih pitanja je za koga su sjekire i dlijeta rađeni. U to doba osvita metalurgije, tržište je malo,

process, but also finished products, which are relatively rare, given that metal was not only expensive, but also apt for recycling, and as such it could be used endlessly. Because of this possibility of nearly complete recycling, people took with them even objects that were destroyed, because they could recast them and use them again for the same or a different purpose. Thus, we can find only a small number of such items. These finds – including the 'hoards' – point indirectly to a developed metallurgical activity which, judging by the quantity of metal discovered within this complex, can be put among the strongest metal production centres of south-east Europe.

The second site to be highlighted is Belovode. In the early phase of the excavation of Belovode, by the River Mlava near Petrovac, molten copper fragments were discovered. To date, these are the earliest recorded molten copper finds within a Vinča Culture context (Antonović 2006, 88; Borić 2009, 208; Radivojević et al. 2010). The site covers a fascinating surface area of around 100 hectares, and the cultural layer in it is as much as three metres thick. Pottery finds suggest that the site was used in the early developmental phases of the Vinča Culture (Vinča A-B2), and the sites of Rudna Glava and Ždrelo are in the vicinity, as two main sources of copper ore. Many metal fragments have been uncovered in the earliest layers of the Vinča Culture, and those, too, are among the oldest metallurgical positions in Europe within their chronological frameworks (Borić 2009, 208, 209).

As noted above, bearers of the Vinča Culture – especially in the case of Belovode – had both knowledge and raw materials which enabled them to engage seriously in metallurgy, already in the very early phase of this culture. Although real cast metal production (Pločnik and Belovode) was only present in the developed phase, the total number of metal finds is relatively small, given the surface area over which the culture was present and the number of sites, expressed in triple digits. Clearly, one of the key questions is who these axes and chisels were made for. At the time of the dawn of metallurgy, the market was small; and, given the effort and knowledge invested in such products, there was also a relatively small number of people who could afford them. Furthermore, what was the purpose of these products? Despite their shine and the material they were made of, in terms of their mechanical properties, they were inferior to the more effective and much cheaper stone. A chisel made of, or example, chert, is much more effective on wood than a copper axe, which is much softer than chert and thus wears more easily. And a large number of axes show no signs of ever being used. Therefore, they served as symbols – at least some of them. Whose symbols? Who wore them? Obviously, there are no direct proofs for this, but bearing in mind what has been said above, one can assume that axes and other items were decorating dignitaries from the highest social classes. This assumption is corroborated by the

Uivar, Rumunjska,
maska od pečene zemlje
(prema Schier 2010)
Uivar, Romania,
mask made of baked earth
(after Schier 2010)

a s obzirom na ukupan trud i znanje koji su uloženi u takve proizvode, izvjesno je da je broj onih koji su si takav proizvod mogli priuštiti također relativno malen. Nadalje, čemu su ti proizvodi služili? Unatoč blještavilu i materijalu od kojega su izrađeni, ti predmeti po mehaničkim svojstvima zaostaju za efektivnošću i znatno nižom nabavnom cijenom koju ima kamen. S dlijetom od npr. rožnjaka može se mnogo toga više načiniti na drvetu nego sa bakrenom sjekirom, koja je, u usporedbi sa rožnjakom, znatno mekša stoga podložnija trošenju. Tako je kod velikog broja sjekira situacija baš takva da na njima nema tragova upotrebe. Dakle, one su, barem u izvjesnom postotku, predstavljale simbol. Čiji, tko ga je nosio? Naravno, direktnih dokaza nema, međutim nakon svega navedenog za pretpostaviti je da su sjekire i ostali predmeti resili odličnike iz najgornjih socijalnih staleža. To možemo argumentirati iznimno bogatim grobom 43 iz Varne, lokaliteta na crnomorskoj obali Bugarske koji se, iako njoj ne pripada, datira u kasnu fazu vinčanske kulture. Grob sa 990 odvojenih zlatnih objekata, koji su ukupno težili gotovo 1,5 kilograma predstavlja jedan od najstarijih ukopa s tolikim prestižnim prilozima. Međutim, osim zlata, pokojnik je imao bakrene i kamene sjekire i dlijeta, koji su bez sumnje simbolizirale gornji stalež u zajednici. Budući da je razdoblje vinčanske kulture doba izrazitih procesa socijalne stratifikacije, takav prikaz moći i bogatstva je u tome smislu razumljiv. S druge strane, njima su se mogli ponositi i majstori-ljevači, jedan novi društveni sloj koji je stasao u tome razdoblju. Već smo spomenuli vinčanske keramičke figure na kojima su prikazani ljudi čija su lica pokrivena maskama. Imamo ih u neusporedivo većem broju no samih metalnih nalaza, na gotovo svim nalazištima vinčanske kulture. Jedna od najzanimljivijih je fragmentirana, „prava“ glinena maska u prirodnoj veličini, iskopana na lokalitetu Gomila (Uivar) u rumunjskom Banatu. Otkrivena je u jednoj

very rich grave 43 at Varna, a site on the Bulgarian Black Sea coast, dated to the late phase of the Vinča Culture, although it does not belong to it. The grave, containing 990 individual gold objects with a total weight of nearly 1.5 kilograms, is one of the oldest burials with so many prestigious grave goods. In addition to gold, the deceased was accompanied by copper and stone axes and chisels – certainly symbolizing the community's upper class. This display of power and wealth is understandable, considering that the period of the Vinča Culture was a time of strong social stratification. On the other hand, these products would have made master casters proud – a new social class which emerged in this period. Vinča pottery figures have already been mentioned; they represent people whose faces are covered with masks. They have been found in much larger numbers than metal finds, and at nearly all Vinča Culture sites. One of the most interesting figures is a fragmented 'real' life-size clay mask, uncovered at the site of Gomila (Uivar) in the Romanian Banat. It was found in a burnt house (H2b-1), in a horizon dated to the early 5th millennium BC cal. (Schier 2010, 88, 89). The mask is very similar to many that make up parts of figures of Vinča production. (Perhaps the best example is the find from Belo Brdo in Schier 2010). Given its size, comparable to that of a human head, it can be assumed that such masks were indeed worn during some festivities or rituals. The key discovery in support of the idea on rituals with people wearing masks is a 13-cm-high figure found at Liubcova (Romania). It represents a person holding a realistic face mask (entirely similar to that from Uivar) in the left hand, and a receptacle in the right hand – probably a drinking jug. The figure directly supports the link between ritual feasts and masks. Unfortunately, the figure's head is missing, and it would be interesting to see what it looked like, given that the person it represents holds a mask in his/her hand, and does not wear it on the head. Schier points out that the representation of a person from Liubcova and the mask from

Liubcova, Rumunjska,
antropomorfna figura sa maskom
i vrčem u rukama. (prema Schier 2010)
Liubcova, Romania, anthropomorphic
figure with mask,
holding jug (after Schier 2010)

spaljenoj kući (H2b-1), u horizontu koji je datiran u početak 5. tis. pr. Kr. (Schier 2010, 88, 89). Maska je posve slična mnogim figuralnim prikazima znanim iz vinčanske produkcije (možda je najbolji primjer nalaz iz Belog Brda, vidi: Schier 2010).
U svojoj prirodnoj veličini u odnosu na veličinu ljudske glave daje s pravom pretpostaviti da su se maske zaista nosile prilikom određenih proslava ili rituala. Ključan doprinos ovoj ideji o ritualima sa maskama na licu jest nalaz 13 cm visoke figurice iz Liubcove (Rumunjska). Figura prikazuje osobu koja u lijevoj ruci drži realističnu masku za lice, posve nalik uivarskoj, a u desnoj posudu, vjerojatno vrč za pijenje. Direktan je prilog vezi između ritualnih gozbi i maski. Glava joj, na žalost nedostaje, a bilo bi zanimljivo vidjeti kako je izgledala, jer je osobi koju figura prikazuje maska u ruci, a ne na glavi. Schier naglašava da su prikaz osobe iz Liubcove i maska iz Uivara odvojeni konteksti s različitih lokaliteta koji prikazuju isti socijalni događaj (Schier 2010, 92, 94). Dakle, ljudi iza maski nisu samo tema vinčanske figuralne plastike, već suvremena im realnost iz svakodnevnog života, koju ova dva nalaza uvjerljivo potvrđuju. Ako pretpostavimo da nema dvojbi da su unutar vinčanskih zajednica zaista postojali rituali vezani za nošenje maski, iznova otvoreno ostaje pitanje koga predstavljaju? Neke nove ljude, došljake koji donose znanja o metalurgiji, koji su u društvenim strukturama na vrhu piramide, a na njemu su se zatekli jer imaju gospodarski vrijedno znanje o metalurškim vještinama? Elita koja proizvodi za elitu? Možda ipak neke druge događaje (Crnobrnja 2011)? Za sada, to je vrlo teško preciznije reći. Bez sumnje možemo smatrati da je razvojem metalurških aktivnosti ugled metalurga u zajednicama rastao. U društvenoj ih je hijerarhiji postavio visoko na vrh, a tajna metalurgije garantirala im je povlašteni status. U očima „običnih“ ljudi, oni su bili „čarobnjaci“ koji su kamen pretvarali u metal. U svoju bi radionicu ulazili s naramkom kamena (rude), a iz nje izlazili s blještavim sjekirama besprijekorno uglačanih linija.
U svakome slučaju, dokazi o vrlo ranoj ekstraktivnoj metalurgiji, te posebice nalazi pločničkih ostava pokazuju naglu ekspanziju proizvodnje metalnih predmeta među

Uivar are distinct contexts within two different sites which depict the same social event (Schier 2010, 92, 94). In other words, people wearing masks are not just a topic of Vinča figural plastics, but rather their contemporary reality present in their daily lives, as confirmed amply by these two finds. If we assume that rituals which implied wearing masks existed within Vinča Culture communities beyond doubt, the question that remains unanswered is: who do they represent? Some new people, newcomers who brought knowledge of metal production, who were at the top of the social pyramid precisely because they had this economically valuable knowledge of metallurgical skills? An elite producing for the elite? Or perhaps some other events after all (Crnobrnja 2011)? For the time being, this question eludes a precise answer. We can definitely assume that the development of metallurgy brought higher reputation to metallurgists in their communities. They were raised very high in the social hierarchy, and the secret of metal production granted them a privileged status. In the eyes of 'ordinary' people, they were 'wizards' who could turn stone into metal. They would take an armful of stone (that is, ore) into their workshop, and come out with shiny axes of flawlessly polished lines.
In any case, evidence of some very early extractive metallurgy, and especially the discovery of the Pločnik hoards, indicates a quick expansion of the production of metal objects, primarily axes and chisels, but also bracelets, other types of jewellery, pendants etc. These were goods of the highest quality and price, intended only for the selected ones, that is for those that could afford them. This whole story illustrates the 5th millennium BC as the age of the first elites, characterized by immense economic development, featuring social prestige and long-distance trade. The metallurgy of south and south-east Europe integrated this region into the area of elites which shared similar economic and trade interests, and these interests were their main economic preoccupation. Since the focus of trade – which had been, presumably, surplus of agricultural products – had shifted towards this new activity, the strategic relations had also changed and centred on potential ore deposits and metal production. Metallurgy is therefore a high-yield branch of the economy. Exchange based on the primary relation of a vessel for a vessel, or a bag of one kind of surplus produce for a bag of another kind, obtained direct competition. Metal production quickly asserted itself as a much more lucrative activity, which resulted in the development of trade links across south-east Europe. However, such radical economic changes had a range of significant side effects, reflected in the deep transformation of communities and their environment. There was an intensive division of labour – or, to put it simply, society was divided into classes. A whole range of social changes which occurred within this context radically changed the organization and economic orientation of communities, eventually bringing about the collapse

kojima prednjače sjekire i dlijeta, međutim poznati su i nalazi narukvica, ostalog nakita, privjesaka i sl. To je roba najviše kvalitete i cijene, namijenjena samo odabranima, odnosno onima koji si ju mogu priuštiti. Cijela ova pripovijest ilustrira razdoblje 5. tis. pr. Kr. kao doba prvih elita, karakterizirano silnim gospodarskim razvojem kojim dominira društveni prestiž i trgovina na daljinu. Prostor južne i jugoistočne Europe metalurgijom se integrira u područje elita koje imaju slične gospodarsko-trgovačke interese, a ti su interesi njihova glavna gospodarska preokupacija. Stoga, budući da se fokus trgovine koji je do tada, pretpostavljamo, bio višak poljoprivrednog proizvoda pomaknuo prema novoj djelatnosti, strateški odnosi su se promijenili i usmjerili na potencijalna rudišta i proizvodnju metala. Metalurgija je stoga visoko-akumulacijska grana gospodarstva. Razmjena na temelju primarnog odnosa posuda za posudu ili vreća poljoprivrednog viška za vreću drugog poljoprivrednog viška kao osnova robne razmjene, dobila je direktnu konkurenciju. Proizvodnja metala vrlo se brzo nametnula kao mnogo unosniji posao koji je trgovački povezao prostor jugoistočne Europe, međutim tako temeljite gospodarske promjene imale su i značajne popratne efekte u obliku velikih promjena u samim zajednicama i prostoru oko njih. Došlo je do intenzivne podjele rada, odnosno, jednostavno rečeno, do pojave klasa u društvu. Niz društvenih promjena koje su vezane uz taj kontekst iz temelja su promijenile organizaciju i gospodarsku orijentaciju zajednica, što je na koncu rezultiralo kolapsom neolitičke epohe. Europa je time ušla u razdoblje metalne prapovijesti. Neolitička „pastorala“, razdoblje mirnog i prilično linearnog rasta zauvijek je nestalo i čovjek se takvom načinu života nikada više neće vratiti. Također, to razdoblje rane metalurgije utrti će put razvoju i bogatstvu nešto kasnijih, brončanodobnih zajednica egejskog područja, iz čijeg vremena datiraju Mikena, Troja, Tirint itd. Međutim, kada te, već potpuno urbane i civilizirane zajednice krenu u dominaciju egejskim područjem (a i šire), izumitelji metalurgije i pripadnici prve elite koju je ona iznjedrila, već će više od tisuću petsto godina počivati u svojim grobovima.

of the Neolithic era. Europe entered the period of prehistoric metal age. The Neolithic 'pastoral,' the period of peaceful and fairly linear growth, was gone forever, and man was never to return to this lifestyle. Furthermore, the period of early metallurgy would pave the way to the development and wealth of somewhat later Bronze Age communities of the Aegean, with cultures such as Mycenae, Troy, Tyrin etc. But at the time when these completely urban and civilized communities began their domination over the Aegean (and the wider region), the inventors of metallurgy and members of the first elite resulting from it would have been lying in their graves for more than 1500 years.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

JACQUELINE BALEN, LEA ČATAJ

SOPOTSKA KULTURA

THE SOPOT CULTURE

Sopotska kultura predstavnik je klasične zemljoradničke neolitičke poljoprivrede koja se razvila na temeljima kasne starčevačke kulture. Rasprostirala se u većem dijelu sjeverne Hrvatske tijekom srednjega i kasnoga neolitika.
Neolitičke nalaze slavonsko-srijemskog prostora koji se javljaju nakon starčevačkih, V. Milojčić objedinio je u nazivu slavonsko-srijemska kultura, a za istu je pojavu koristio i nazive bapsko-lenđelska kultura i lenđelsko-slavonska grupa (Milojčić 1949, 82-90). Navedeni se termini u stručnoj literaturi koriste do 1968. g. (npr. Korošec 1957, 198-199; Garašanin 1959, 26-29; Korošec 1962, 30-31). S. Dimitrijević preuzima ime bapsko-lenđelska kultura (Dimitrijević 1961, 18-21), dok A. Benac ovu pojavu naziva posavska kulturna grupa ili posavsko-slavonska kultura (Benac 1962, 1964).
Arheološka istraživanja u Bapskoj 1964. g. pokazala su da u gornjim slojevima prevladavaju nalazi vinčanske kulture, pa S. Dimitrijević uvodi naziv sopotsko-lenđelska kultura: eponimni lokalitet Sopot kod Vinkovaca smatrao je najznačajnijim lokalitetom ove kulture, a samu je kulturu smatrao srodnom lenđelskim kulturama Mađarske, Slovačke i Češke (Dimitrijević 1968).
Mađarski znanstvenici uvidjeli su sličnost nalaza s lokaliteta Bicske, Hidas i Izmény s onima sopotsko-lenđelske provenijencije u susjednoj Hrvatskoj. Kako bi se naglasila povezanost lokaliteta s južne i sjeverne strane Drave predlažu naziv Sopot-Bicske. Iako lenđelska kultura slijedi sopotsku, radi se o dvije različite kulture te stoga smatraju ranije odabran naziv neprimjerenim (Kalicz, Makkay 1972). Srodne pojave na prostoru sjeverne Hrvatske, Transdanubije i južnog dijela zapadne Slovačke povezane su u Sopot-Bicske-Bina horizont (Pavúk 1976), za koji se kasnije uvodi pojam protolenđelske kulture (Pavúk, Šiška 1981).
Termin sopotska kultura, koji je danas u upotrebi, uveo je S. Dimitrijević (1971), a opće je prihvaćen u domaćoj i stranoj literaturi (npr. Marković 1994; Krznarić Škrivanko 1997; Simon 2003; Mihaljević 2006; Šimić 2006a; Regenye 2002; Horváth, Simon 2003, 49-54; Kalicz, Kreiter, Tokai 2007 i dr.).

Rasprostranjenost

U prvoj monografskoj objavi sopotske kulture definirana je njezina rasprostranjenost u zapadnom Srijemu, Slavoniji, bjelovarskom i križevačkom kraju te bosanskom Posavlju oko ušća rijeke Bosne, a pretpostavlja se njezina prisutnost i dalje prema zapadu (Dimitrijević 1968, 12).
S. Dimitrijević (1979a, 266-267) kao matično područje rasprostiranja navodi prostor od poteza Ilok – Sremska Rača na istoku do rijeke Orljave, Donjeg Miholjca i Našica na zapadu gdje graniči s korenovskom kulturom. Kao područje klasične

The Sopot Culture is a representative of the typical agricultural Neolithic economy which developed on the foundations of the Late Starčevo Culture. It was present in most of northern Croatia during the Middle and Late Neolithic.
The Neolithic finds of Slavonia and Syrmia subsequent to the Starčevo finds were united by V. Milojčić under the name of 'Slavonian-Syrmian Culture'. The same author used the names 'Bapska-Lengyel Culture' and 'Lengyel-Slavonia group' to describe the same phenomenon (Milojčić 1949, 82-90). These terms were used in archaeological literature until 1968 (e.g. Korošec 1957, 198-199; Garašanin 1959, 26-29; Korošec 1962, 30-31). S. Dimitrijević took over the designation 'Bapska-Lengyel Culture' (Dimitrijević 1961, 18-21), while A. Benac named the phenomenon the 'Posavina cultural group' or the 'Posavina-Slavonia Culture' (Benac 1962, 1964).
The 1964 archaeological excavation in Bapska revealed that finds discovered in the upper layers were predominantly of the Vinča Culture, prompting Dimitrijević to introduce the designation 'Sopot-Lengyel Culture'. Dimitrijević believed that the eponymic site of Sopot near Vinkovci was the most important site of this culture, and that the culture itself was related to the Lengyel cultures of Hungary, Slovakia and the Czech Republic (Dimitrijević 1968).
Hungarian scholars recognized similarities between finds from the sites of Bicske, Hidas and Izmény, and those of Sopot-Lengyel provenance from neighbouring Croatia. In order to emphasize the bond between the sites to the south and north of the River Drava, they proposed the name 'Sopot-Bicske'. Although the Lengyel Culture succeeded the Sopot Culture, those were nonetheless two different cultures, and therefore the previously selected name was deemed inappropriate (Kalicz, Makkay 1972). Related phenomena in the territories of Croatia, Transdanubia and the southern part of western Slovakia were linked into the Sopot-Bicske-Bina horizon (Pavúk 1976), later labelled the 'Proto-Lengyel Culture' (Pavúk, Šiška 1981).
The term 'Sopot Culture' – used nowadays – was introduced by Dimitrijević (1971), and it has been generally accepted in both Croatian and foreign literature (e.g. Marković 1994; Krznarić Škrivanko 1997; Simon 2003; Mihaljević 2006; Šimić 2006a; Regenye 2002; Horváth, Simon 2003, 49-54; Kalicz, Kreiter, Tokai 2007 etc.).

Distribution

In the first monograph publication of the Sopot Culture, its distribution zone is said to include western Syrmia, Slavonia, the Bjelovar and Križevci regions, and the Bosnian part of the Sava valley surrounding the mouth of the River Bosna, while it is assumed that it was also present further to the west (Dimitrijević 1968, 12).

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

sopotske kulture Z. Marković (1994, 82) spominje prostor istočne Slavonije od okolice Našica i Đakova do Vukovara i Iloka. Kao krajnju zapadnu granicu sopotske kulture u njezinoj kasnoj fazi, S. Dimitrijević (1979a, 266-267) navodi brdski sklop Medvednica – Kalnik.
Širenje sopotske kulture imalo je za posljedicu stvaranje novih regionalnih tipova, svojevrsne simbioze s njoj susjednim kulturnim manifestacijama čiji teritorij djelomično zauzima. Svoj izvorni oblik izgleda da je sačuvala tek na prostoru sjeverne Bosne između rijeka Tinje i Vrbasa (Dimitrijević 1979a, 298). Na prostoru sjeverozapadne Hrvatske dolazi do *sopotizacije korenovske kulture* kojom nastaje njezin brezovljanski tip (Dimitrijević 1979a, 334). U Transdanubiji, gdje sopotska kultura prodire na prostor grupa Keszthely i Zselíz linearnotrakaste kulture, nastaje tip Sopot-Bicske u kojem su vidljive sličnosti s vinčanskom i lenđelskom kulturom (Kalicz, Makkay 1972, 13; Dimitrijević 1979a, 298-299). S malog broja lokaliteta u okolici Našica i Donjeg Miholjca poznat je tip Ražište s vidljivim utjecajima iz kruga linearnotrakaste i vinčanske kulture (Marković 1985a). Na prostoru između Križevaca i Virovitice, također na temelju nalaza s malog broja lokaliteta, uočeno je postojanje tipa Pepelana koji se datira u III. stupanj sopotske kulture (Marković 1994, 80). U IV., eneolitičkom, stupnju sopotske kulture, na prostoru sjeverozapadne Hrvatske i zapadne Slavonije prisutan je tip Seče, prvotno definiran kao zasebna kultura, koji pokazuje veliku sličnost s neslikanim lenđelskim grupama u Mađarskoj i Slovačkoj te s kasnom moravskom slikanom keramikom (Marković 1985b; 1990, 90-93; 2011).
J. Pavúk smatra da sopotsku kulturu treba ograničiti na savsko-dravsko međuriječje te da je njezina samostalna pojava u Transdanubiji upitna (Pavúk 1976). Prema N. Kaliczu, ona je prisutna i u istočnoj Transdanubiji pa čak i u susjednoj Slovačkoj (Kalicz 1988, 107). Prema novijim razmišljanjima mađarskih autora, sopotska se kultura, kao strani utjecaj, u Transdanubiji pojavljuje tijekom stupnja I-B i II. Razlikuju se zapadna grupa, slična brezovljanskom tipu i bliska ranim fazama lenđelske kulture te istočna grupa čiji odnos s lenđelskom kulturom nije toliko jasan (Regenye 2002). Na tragu tog razmišljanja, u jugoistočnoj je Transdanubiji tzv. protolenđelski horizont povezan sa sopotskom kulturom. Nalazi iz istočnog dijela tog prostora pripisani su Bicske, a oni iz zapadnog brezovljanskom tipu (Horváth, Simon 2003, 49). Postojanje sopotske kulture danas je potvrđeno kako u velikom dijelu Transdanubije tako i istočno od Dunava (Fajsz) te sjeverno na prostoru današnje Slovačke (Svodin) (Kalicz, Kreiter, Tokai 2007, 31).
Iako je sopotska kultura izdvojena prije više od 50 godina, a čak je i prvo arheološko istraživanje u Hrvatskoj izvedeno

Dimitrijević (1979a, 266-267) puts its core distribution zone in an area stretching from the Ilok-Sremska Rača line, in the east, to the River Orljava, Donji Miholjac and Našice, in the west, where it borders on the Korenovo Culture. Z. Marković (1994, 82) outlines the distribution zone of the classic Sopot Culture as the region of eastern Slavonia, from the surroundings of Našice and Đakovo to Vukovar and Ilok. Dimitrijević (1979a, 266-267) mentions the range of hills from Medvednica to Kalnik as the westernmost boundary of the Sopot Culture in its late phase.
The expansion of the Sopot Culture resulted in the creation of new regional types, which were some kind of symbiosis with neighbouring cultural phenomena whose territory it partially occupied. It would appear that the Sopot Culture kept its original features only in northern Bosnia, between the rivers Tinja and Vrbas (Dimitrijević 1979a, 298). In north-western Croatia, the Korenovo Culture was Sopotized, which gave rise to the Brezovljani type (Dimitrijević 1979a, 334). In Transdanubia, where the Sopot Culture penetrated the territory of the Keszthely and Zselíz groups of Linear Pottery (LBK), the Sopot-Bicske type developed, which displays similarities with the Vinča and Lengyel cultures (Kalicz, Makkay 1972, 13; Dimitrijević 1979a, 298-299). At a small number of sites in the surroundings of Našice and Donji Miholjac, the Ražište type has been identified, with recognizable influences from the circle of LBK and Vinča cultures (Marković 1985a). In the territory between Križevci and Virovitica – again on the basis of finds from a small number of sites – the Pepelane type has been recognized, dated to phase III of the Sopot Culture (Marković 1994, 80). In phase IV – the Eneolithic phase – of the Sopot Culture, the Seče type was also present in the territory of north-western Croatia and western Slavonia, at first identified as a separate culture. It displays great similarities with non-painted Lengyel groups in Hungary and Slovakia, and with late Moravian painted pottery (Marković 1985b; 1990, 90-93; 2011).
J. Pavúk believes that the Sopot Culture should be limited to the region between the rivers Sava and Drava, and that its independent presence in Transdanubia is questionable (Pavúk 1976). According to N. Kalicz, it was present not only in eastern Transdanubia but also in neighbouring Slovakia (Kalicz 1988, 107). The recent considerations of Hungarian authors suggest that the Sopot Culture appeared in Transdanubia, as a foreign influence, during phases I-B and II. They differentiate between a western group, similar to the Brezovljani type and close to the early phases of the Lengyel Culture, and an eastern group, whose relation to the Lengyel Culture is less clear (Regenye). In line with that thesis, in south-eastern Transdanubia, the so-called Proto-Lengyel horizon has been linked to the Sopot Culture. Finds from the eastern part of that region have been attributed to the Bicske type, and those from the western part to the Brezovljani type (Horváth, Simon 2003, 49). To date, the existence of the Sopot

upravo na jednom lokalitetu kasnije pripisanom toj kulturi (1897. V. Celestin istražuje Hermanov vinograd u Osijeku), broj arheološki iskopavanih lokaliteta do prije dvadesetak je godina bio poprilično malen. Dobar je dio nalaza dospio u muzeje kao donacija raznih ljubitelja starina ili kao rezultat terenskih pregleda potencijalnih nalazišta.
Već se nekoliko godina na prostoru sjeverne Hrvatske provode brojna sustavna arheološka istraživanja sopotskih lokaliteta: Bapska-Gradac (Burić 2007; 2008; 2009a), Osijek-Filipovica (Hermanov vinograd) (Šimić 2008b), Čepin-Ovčara/Tursko groblje (Šimić 2005; 2006; 2007b), Sopot (Krznarić Škrivanko 2003b; 2006b; 2007; 2008; 2009a), Brezovljani (Okroša Rožić 2007; 2008; 2009; 2010), Nova Kapela-Ravnjaš (Mihaljević 2007a; 2008a; 2009), Nova Gradiška-Slavča (Mihaljević 2007b; 2008b) i dr.
Topografsku sliku sopotskih nalazišta uvelike su obogatila i novija zaštitna arheološka istraživanja: Kneževi Vinogradi-Osnovna škola (Dujmić 2010), Kaznica-Rutak (Hršak, Pavlović 2007), Ivandvor-šuma Gaj (Balen 2007; Balen *et al.* 2009), Grabrovac-Ciglana (Hršak 2010), Stari Perkovci-Debela šuma (Filipec, Šiša Vivek 2007), Novi Perkovci-Krčavina (Marković, Botić 2007; 2008), Donji Slatinik-Gaji (Vrkić 2010), Donji Slatinik-Praulje (Nodilo 2010), Rosulje-Žabljak (Mihaljević 2010a), Vidovci-Glogovi (Mihaljević 2010b), Vidovci-Rosulje (Mihaljević 2010c), Dubovo-Košno (Marijan 2006; 2007), Kruševica-Njivice (Miklik-Lozuk 2005; 2006), Belišće (Šimić 2007a) i dr.

Periodizacija i apsolutna kronologija

Na temelju stratigrafskih podataka s nekoliko višeslojnih nalazišta sjeverne Hrvatske (Klokočevik, Otok i Sopot), S. Dimitrijević je podijelio sopotsku kulturu na stariju, srednju i mlađu fazu, odnosno na stupnjeve I-A, I-B, II i III. Analizu slojeva nadopunio je podacima dobivenim na lokalitetima Bapska, Ervenica, Trbušanci i Gornja Bebrina (Dimitrijević 1968, 30-31; 1979, 273-284).
Kasnija su istraživanja ukazala na nešto dulje trajanje sopotske kulture i postojanje još jednog njenog stupnja. Ovaj finalni horizont (stupanj IV- tip Seče sopotske kulture) ranog eneolitika paralelan je s Lenđelom III i Tiszapolgar kulturom (Marković 1985b).
Na osnovi apsolutnih datuma dobivenih iz nekoliko sopotskih nalazišta na prostoru istočne Hrvatske napravljena je kronološka podjela stupnjeva sopotske kulture, odnosno pokušalo se uskladiti apsolutne datume s relativnom kronologijom S. Dimitrijevića (uz dodatnu podjelu stupnja II na A i B). Po toj podjeli stupanj I B datiran je od 5480. do 5070. g. pr. Kr., stupanj II A od 5030. do 4770. g. pr. Kr., II B od 4800. do 4250. g. pr. Kr. te III. stupanj od 4340. do 3790. g. pr. Kr. (Obelić *et al.* 2004).
Problem navedene periodizacije, čime su se u novije vrijeme bavili neki autori (Velušček 2006; Balen *et al.* 2009; Marković 2012), naročito je vidljiv u „predugom" trajanju sopotske kulture. Naime, datumi dobiveni za materijal koji po podjeli S. Dimitrijevića pripada III. stupnju sopotske kulture, preklapaju se s datumima dobivenim za lasinjsku kulturu na čitavom prostoru njezina rasprostiranja (4300.-3900. g. pr. Kr.; Balen 2009). Također, po toj je podjeli potpuno zanemaren eneolitički stupanj IV. sopotske kulture, koji je istovremen Tiszapolgar kulturi i Lenđelu III. Iz navedene periodizacije vidljivo je i dosta visoko datiranje I B faze po S. Dimitrijeviću, što dovodi u pitanje postojanje stupnja I A, definiranog isključivo na osnovi nalaza iz Klokočevika.
Recentna iskopavanja sopotskih lokaliteta uz obilje keramičke građe, pružila su mogućnost i većim serijama C14 datuma, prema kojima ranu fazu sopotske kulture (Sopot I), koju imamo zabilježenu na lokalitetima Dubovo-Košno (Obelić *et al.* 2004), Slavča kod Nove Gradiške (Mihaljević 2013) i Radovanci, možemo datirati od cca 5300.-5000. g. pr. Kr. Najveći broj datuma dobiven je za klasičnu fazu sopotske kulture (stupnjevi IB-III) i kreću se od cca 5000. do 4500./4400. g. pr. Kr. (Balen *et al.* 2009; Marković, Botić 2008; Krznarić-Škrivanko 2011; Mihaljević 2013).
Dobru kronološku orijentaciju, važnu za datiranje stupnja III sopotske kulture, predstavlja lokalitet Bapska. Nova arheološka istraživanja, koja se na tom lokalitetu vode kontinuirano od 2006. godine, usmjerena su upravo na sloj koji pripada kasnoj vinčanskoj kulturi (Vinča D), koja je istovremena Sopotu III, koji je na lokalitetu datiran od 4681. do 4450. g. pr. Kr. (Burić 2009c).
Eneolitičku fazu sopotske kulture (Sopot IV) imamo potvrđenu na nalazištu Slavča kod Nove Gradiške (Mihaljević 2013). Tome možemo priključiti i „niske" datume sopotske kulture dobivene iz uzoraka ugljena s eponimnog lokaliteta Sopot kod Vinkovaca. Mišljenja smo da upravo oni pripadaju Sopot IV fazi, odnosno razdoblju ranoga eneolitika, a neki možda čak i lasinjskoj kulturi, a ne Sopot III fazi. Naime, istraživanjima vođenim tijekom 2004. ustanovljeni su kanali i stupovi smjera sjever–jug, dakle, sasvim suprotne orijentacije od starijih sopotskih nadzemnih objekata, koji su ih i presjekli. Iz zapune jednoga kanala dobiven je datum 4250.-4030. g. pr. Kr. (Krznarić Škrivanko 2009b, 58).

Culture has been ascertained in a large part of Transdanubia and also east of the Danube (Fajsz) and to the north, in the territory of present-day Slovakia (Svodin) (Kalicz, Kreiter, Tokai 2007, 31).
Although the Sopot Culture was identified more than 50 years ago, and even the very first archaeological excavation in Croatia was carried out at a site which was later attributed to this culture (in 1897, when V. Celestin explored the site of Herman's Vineyard in Osijek), the number of explored archaeological sites was rather low until some twenty years ago. A large number of finds ended up in museums thanks to donations by various antiquity lovers or due to field surveys of potential archaeological sites.
For several years now, a number of systematic archaeological excavations of the Sopot Culture sites have been carried out in northern Croatia: Bapska-Gradac (Burić 2007; 2008; 2009a), Osijek-Filipovica (Herman's Vineyard) (Šimić 2008b), Čepin-Ovčara/Tursko groblje (Šimić 2005; 2006; 2007b), Sopot (Krznarić Škrivanko 2003b; 2006b; 2007; 2008; 2009a), Brezovljani (Okroša Rožić 2007; 2008; 2009; 2010), Nova Kapela-Ravnjaš (Mihaljević 2007a; 2008a; 2009), Nova Gradiška-Slavča (Mihaljević 2007b; 2008b) etc.
The topographic picture of Sopot sites has been greatly enhanced by recent archaeological rescue excavations, too: at the Primary School in Kneževi Vinogradi (Dujmić 2010), Kaznica-Rutak (Hršak, Pavlovi ć2007), Gaj forest near Ivandvor (Balen 2007; Balen et al. 2009), Grabrovac-Ciglana (Hršak 2010), Stari Perkovci-Debela Šuma (Filipec, Šiša Vivek 2007), Novi Perkovci-Krčavina (Marković, Botić 2007; 2008), Donji Slatinik-Gaji (Vrkić 2010), Donji Slatinik-Praulje (Nodilo 2010), Rosulje-Žabljak (Mihaljević 2010a), Vidovci-Glogovi (Mihaljević 2010b), Vidovci-Rosulje (Mihaljević 2010c), Dubovo-Košno (Marijan 2006; 2007), Kruševica-Njivice (Miklik-Lozuk 2005; 2006), Belišće (Šimić 2007a) etc.

Periodization and absolute chronology

On the basis of stratigraphic data originating from several multi-layered sites in northern Croatia (Klokočevik, Otok and Sopot), Dimitrijević divided the Sopot Culture into the earlier, middle and later phases, that is, into phases I-A, I-B, II and III. He supplemented the layer analysis with data obtained at the sites of Bapska, Ervenica, Trbušanci and Gornja Bebrina (Dimitrijević 1968, 30-31; 1979a, 273-284).
Later exploration has suggested that the Sopot Culture lasted somewhat longer and had an additional phase. This final horizon of the early Eneolithic (phase IV – the Seče type of the Sopot Culture) was parallel with the Lengyel III and Tiszapolgar cultures (Marković 1985b).
On the basis of absolute dates obtained for several Sopot sites in eastern Croatia, a chronological division of the Sopot Culture into phases has been devised: that is, an attempt was made to harmonize the absolute dates with the relative chronology by Dimitrijević (with an additional break-up of phase II into A and B). According to this division, phase IB has been dated to 5480-5070 BC, phase IIA to 5030-4770 BC, phase IIB to 4800-4250, and phase III to 4340-3790 BC (Obelić et al. 2004).
The problem with this periodization – recently discussed by several authors (Velušček 2006; Balen et al. 2009; Marković 2012) – lies primarily in 'too long' a duration for the Sopot Culture.
The dates obtained for the material which belongs to phase III of the Sopot Culture, according to Dimitrijević's periodization, overlap with dates obtained for the Lasinja Culture in its entire distribution zone (4300-3900 BC; Balen 2008). Furthermore, the above periodization completely overlooked the Eneolithic phase (phase IV) of the Sopot Culture, contemporary to the Tiszapolgar Culture and Lengyel III. In addition, this periodization dated phase IB according to Dimitrijević rather early, which brings into question the existence of phase IA, identified solely on the basis of finds from Klokočevik.
The recent excavations of Sopot Culture sites have yielded an abundance of pottery finds, and also an opportunity to obtain larger series of radio-carbon dates. According to those, the early phase of the Sopot Culture (Sopot I), evidenced at the sites of Dubovo-Košno (Obelić et al. 2004), Slavča near Nova Gradiška (Mihaljević 2013) and Radovanci, can be dated to approximately 5300-5000 BC. The largest number of dates was obtained for the classical phase of the Sopot Culture (phases IB-III), and those range between 5000 and 4500/4400 BC (Balen et al. 2009; Marković, Botić 2008; Krznarić-Škrivanko 2011; Mihaljević 2013).
The site of Bapska serves as an important chronological orientation point, pertinent for dating phase III of the Sopot Culture. The latest archaeological excavation – continuously carried out at the site since 2006 – has focused on the layer that belongs to the late Vinča Culture (Vinča D), contemporary to Sopot III, and dated to the period between 4681 and 4450 BC at this site (Burić 2009c).
The Eneolithic phase of the Sopot Culture (Sopot IV) has been confirmed at the site of Slavča near Nova Gradiška (Mihaljević 2013). We can add to that some 'late' Sopot Culture dates obtained for the coal samples from the eponymic site of Sopot near Vinkovci. We believe that those are representative of the Sopot IV phase, that is, the Early Eneolithic period, and some of them might also belong to the Lasinja Culture rather than the Sopot III phase. The 2004 exploration identified some trenches and posts positioned in a north-south direction, which is entirely opposite to the orientation of older Sopot above-ground structures, which also cut though them. The material filling one of the trenches provided a date between 4250 and 4030 BC (Krznarić Škrivanko 2009b, 58).

Kruševica - Njivice, 2005., stambeni objekti sopotske kulture
Kruševica – Njivice, 2005, Sopot culture residential structures

Naselja

Izbor položaja naselja prapovijesnih zajednica, pa tako i one sopotske, bio je uvjetovan njihovim načinom života, odnosno privređivanja. Kako se radi o klasičnoj neolitičkoj populaciji, od velike je važnosti bila blizina vodene površine i pogodnost krajolika za poljoprivredu, ali i prehranu stoke te blizina izvora sirovina poput gline, kamena za izradu oruđa i kvalitetnog drva.
U ranoj fazi sopotske kuture naselja su veoma često smještena na prirodnim uzvišenjima uz obale rijeka i potoka (Bapska, Čepin-Ovčara/Tursko groblje, Sarvaš, Klokočevik) koja su preferirali i pripadnici starčevačke kulture. Ovakva se mjesta odabiru za podizanje naselja i u srednjoj fazi (Bogdanovci, Gradac-Pašnjak, Nova Gradiška-Slavča, Novoselci-Pašnjak, Samatovci, Vinkovci-Ervenica, Vinkovci-Trbušanci...) kada postaju popularna naselja u močvarnim i vodoplavnim područjima (Brođanci-Vinograd, Ivanovac-Koloďvar, Klisa-Ekonomija, Orolik-Gradina, Osijek-Hermanov vinograd, Otok-Mandekov vinograd, Privlaka-Gradina, Sopot, Tenja-Vedrik i Veliko brdo...) (Dimitrijević 1979a, 271-272; Marković 1985a, 39; Krznarić Škrivanko 1997; Mihaljević 2006; Šimić 2012).
Naselja su često dugotrajna s nekoliko vidljivih slojeva sukcesivnog naseljavanja te poprimaju odlike telova: Bapska, Klokočevik, Pepelana, Osijek-Hermanov vinograd, Privlaka-Gradina, Podgrađe-Grac, Sarvaš, Sopot, Stari Mikanovci-Damića gradina i Čanića stan, Vinkovci-Otok i dr. u Hrvatskoj (Dimitrijević 1969, 54-55; Krznarić Škrivanko 2012; Šimić 2012) te Fajsz s lijeve strane Dunava u Mađarskoj (Kalicz, Kreiter, Tokai 2007, 31).
Smatra se da je fenomen telova iz prednje Azije u drugoj polovini 7. tis. pr. Kr. došao u jugoistočnu Europu, a u Panonskoj nizini najveću je raširenost dosegnuo u kasnom neolitiku. Prostor koji je zauzimala sopotska kultura pripadao je zapadnom rubnom dijelu njihova rasprostiranja. Telovi se, kao mjesta dugotrajnog naseljavanja, često smatraju centralnim naseljima šireg prostora oko kojeg su

Settlements

The locations that prehistoric communities – including the Sopot – selected for their settlements were conditioned by their lifestyles, more precisely, by their economies. For this typical Neolithic population, the closeness of a body of water was very important, as was a landscape favourable for tilling and feeding stock, and the closeness of raw materials such as clay, stone for the production of tools, and high-quality timber.
In the early phase of the Sopot Culture, settlements were often raised on natural elevations along river and stream banks (Bapska, Čepin-Ovčara/Tursko groblje, Sarvaš, Klokočevik), on positions favoured previously by members of the Starčevo Culture, too. The same locations were selected for settlements of the middle phase as well (Bogdanovci, Gradac-Pašnjak, Slavča near Nova Gradiška, Novoselci-Pašnjak, Samatovci, Ervenica and Trbušanci in Vinkovci...), in the period in which settlements in marshland and alluvial areas became popular, too (Brođanci-Vinograd, Ivanovac-Koloďvar, Klisa-Ekonomija, Orolik-Gradina, Herman's Vineyard in Osijek, Mandek's Vineyard in Otok, Privlaka-Gradina, Sopot, Tenja-Vedrik, Veliko brdo...) (Dimitrijević 1979a, 271-272; Marković 1985a, 39; Krznarić Škrivanko 1997; Mihaljević 2006; Šimić 2012).
Many of these settlements were used for long periods of time, and contain several visible layers of successive inhabitation, thus assuming the characteristics of tells: Bapska, Klokočevik, Pepelana, Herman's Vineyard in Osijek, Privlaka-Gradina, Podgrađe-Grac, Sarvaš, Sopot, Damića Gradina and Čanića Stan in Stari Mikanovci, Otok in Vinkovci, and others in Croatia (Dimitrijević 1969, 54-55; Krznarić Škrivanko 2012; Šimić 2012) and Fajsz on the left bank of the Danube, in Hungary (Kalicz, Kreiter, Tokai 2007, 31).
The phenomenon of tells is believed to have arrived in south-east Europe from Asia in the second half of the 7th millennium BC. Its distribution in the Pannonian Plain was widest in the Late Neolithic. The region covered by the Sopot Culture belonged to

Osijek-Filipovica - Hermanov vinograd, 2013., stambeni objekti sopotske kulture
Osijek-Filipovica – Herman's vineyard, 2013, Sopot culture residential structures

koncentrirana i kratkotrajna naselja, a svjedoče sjedilačkom načinu života njihovih stanovnika (Gogâltan 2003; Link 2009). U Hrvatskoj su u blizini dugotrajnih naselja s nekoliko slojeva obitavanja zabilježena i jednoslojna ravničarska naselja otvorenog tipa (Dubovo-Košno, Ivankovo-Palanka, Mirkovci-Malat, Nuštar-Žežnica, Vinkovci-Barica, Vinkovci-Ervenica, Vinkovci-Pjeskana...) (Dimitrijević 1979a, 272; Marijan 2006, 47; Krznarić Škrivanko 2012).
Najveći broj telova grupiran je oko rijeka: primjerice Bosuta (Andrijaševci, Nijemci, Orolik-Gradina, Podgrađe-Grac, Privlaka-Gradina, Sopot i dr.), Vuke (Gaboš, Nuštar-Zverinjak i dr.), Dunava (Aljmaš), Drave (Sarvaš) te u širem arealu plavne zone i močvarnom području (Brođanci-Vinogradi/Franjin Bostan, Ivankovo, Ivanovac-Koloďvar, Komletinci, Osijek-Filipovica/Hermanov vinograd, Retkovci, Slakovci, Stari Mikanovci-Čanića stan i Damića gradina, Tenja-Vedrik i Veliko brdo, Vinkovci-Otok i dr.) (Krznarić Škrivanko 2012; Šimić 2012).
Sopotski su telovi u pravilu elipsoidnog oblika dužine uglavnom veće od 100 m: Vinkovci-Otok 165x155 m, Sopot 155x115 m, Hermanov vinograd 120x120 m, Stari Mikanovci-Damića gradina 117x125 m, Stari Mikanovci-Čanića stan 70x50 m, Podgrađe-Grac 50x60 m, Retkovci 85x75 m, Komletinci 100x85 m (Dimitrijević 1969, 54-55; Marković 1985a, 39; Krznarić Škrivanko 1997; Šimić 2006a; Krznarić Škrivanko 2006a; 2012, 13-36). Debljina kulturnog sloja najčešće iznosi 2-4 m, a ponekad se od okolnog terena izdižu i do 15 m visine. U najvećem broju slučajeva nastanjeni su samo u vrijeme sopotske kulture iako su zbog povišenog položaja ponekad meta naseljavanja u mlađim razdobljima (Dimitrijević 1979a, 272; Krznarić Škrivanko 2006a, 12).
Sopotski su telovi utvrđeni opkopom, zemljanim bedemom i palisadom, a često im već postojeći vodeni tokovi služe kao zaštita. Na obrambenu funkciju naselja ukazuje i čest položaj u teško pristupačnim močvarnim područjima. Javljaju se u srednjoj fazi kulture, a u njezinoj kasnoj fazi utvrđena se

the western edge of the tell distribution zone. As places of long-term inhabitation, tells are often taken as central settlements of wider regions, surrounded by some short-term settlements, and they testify to the sedentary lifestyle of their populations (Gogâltan 2003; Link 2009). In Croatia, in the vicinity of long-term settlements consisting of several layers, single-layer open-type settlements in plains have also been recorded (Dubovo-Košno, Ivankovo-Palanka, Mirkovci-Malat, Nuštar-Žežnica, Barica, Ervenica and Pjeskana in Vinkovci...) (Dimitrijević 1979a, 272; Marijan 2006, 47; Krznarić Škrivanko 2012).
The majority of tells are grouped in the vicinity of rivers, such as the Bosut (Andrijaševci, Nijemci, Orolik-Gradina, Podgrađe-Grac, Privlaka-Gradina, Sopot etc.), the Vuka (Gaboš, Nuštar-Zverinjak etc.), the Danube (Aljmaš) and the Drava (Sarvaš), and in a wider zone of alluvium and marshland (Brođanci-Vinogradi/Franjin Bostan, Ivankovo, Ivanovac-Koloďvar, Komletinci, Filipovica-Herman's Vineyard in Osijek, Retkovci, Slakovci, Čanića Stan and Damića Gradina in Stari Mikanovci, Vedrik and Veliko brdo in Tenja, Otok in Vinkovci etc.) (Krznarić Škrivanko 2012; Šimić 2012).
Generally, the Sopot tells are ellipsoid and more than 100 m long: Otok in Vinkovci, 165x155 m; Sopot, 155x115 m; Herman's Vineyard, 120x120 m; Damića Gradina in Stari Mikanovci, 117x125 m; Čanića Stan in Stari Mikanovci, 70x50 m; Podgrađe-Grac, 50x60 m; Retkovci, 85x75 m; Komletinci, 100x85 m (Dimitrijević 1969, 54-55; Marković 1985a, 39; Krznarić Škrivanko 1997; Šimić 2006a; Krznarić Škrivanko 2006a; 2012, 13-36). The cultural layer is usually 2-4 m thick, and sometimes these tells rise above the surrounding terrain by as much as 15 m. Most of these locations were lived in only during the Sopot Culture, though their elevated positions were in some cases targeted for settlement in later periods, too (Dimitrijević 1979a, 272; Krznarić Škrivanko 2006a, 12).
The Sopot tells were fortified by trenches, earth ramparts and palisades, and they often used existing water courses for protection. The defence function of such settlements is also

Sopot, 2000., stambeni objekt
Sopot, 2000, residential structure

naselja pretežno grade u istočnoj Slavoniji i Srijemu dok je u zapadnom području njezinog rasprostiranja veći broj naselja otvorenog tipa (Dimitrijević 1969, 55; 1979, 270-272). Vinkovački je kraj, zbog sustavnih terenskih pregleda koji se odvijaju posljednjih nekoliko godina, ali i zbog poprilično broja otprije poznatih lokaliteta (do sada ubicirano njih 38) pogodan za sagledavanje mreže naselja i njihovog međusobnog odnos. Tako je, primjerice, uočeno da je prosječna udaljenost između naselja oko 4 km, dok su dva nalazišta od eponimnog lokaliteta Sopota udaljeni tek 2-3 km (Krznarić Škrivanko 2012, 38). Posebno je zanimljiv lokalitet Privlaka-Gradina, koji se sastoji od tri ovalna tela, a odnos između ovih naselja, koje S. Dimitrijević (1979a, 272) naziva naseobinskom kompozicijom u obliku vijenca, nije posve jasan. Veoma im je sličan i lokalitet Slakovci-Gradina, danas četverokutna oblika, s tri naseobinska platoa (Krznarić Škrivanko 2012, 26).
Osnovna karakteristika sopotskog stanovanja su nadzemni objekti kakvi su karakteristični za raniju starčevačku i suvremenu vinčansku (Jovanović 1965, 123; Brukner 1965, 138), ali i lenđelsku (Ruttkay 1985, T.11; Težak-Gregl 1993, 17-18) kulturu. Ipak, neka nalazišta rane faze kulture koriste jamsko-zemunični način stanovanja, kakvi su nađeni na lokalitetu Vinkovci-Ervenica (Krznarić Škrivanko 1997, 205-208). Ražište-tip slijedi starčevački i korenovski jamski način stanovanja, dok brezovljanski poznaje i nadzemne i jamske objekte (Dimitrijević 1968, 52-53; 1979, 270-273; Marković 1993, 117-118). Ostaci manjih rupa od stupova oko zemunica ili u njihovim stijenkama, a ponekad i usjeci za polaganje greda u stijenkama zemunica, svjedoče o krovnom pokrovu (Marković 1985a, 41-44; Krznarić Škrivanko 1997, 206-208). Naselja s jamskim i nadzemnim objektima, kako ravničarska neutvrđena (primjerice Dubovo-Košno) tako i ona utvrđena tel tipa (primjerice Sopot), pokazuju zbijeni raster kuća. S obzirom na gradnju od lako zapaljivih materijala (drvo, trska) i blizinu objekata, u naseljima je veoma lako dolazilo do požara (Krznarić Škrivanko 2006a; Marijan 2007). Na temelju rezultata istraživanja nekolicine lokaliteta (Sopot, Otok-Mandekov vinograd, Vinkovci-Trbušanci), S. Dimitrijević (1969, 55) je zaključio kako je na središnjem prostoru tela postojao svojevrsni trg, jer na tom dijelu nisu pronađeni tragovi objekata. Središnji, prazan prostor ustanovljen je i na lokalitetu Kruševica-Njivice.
Sopotske kuće u pravilu su pravokutnog tlocrta, a duljina im u većini slučajeva prelazi 10 m. Često imaju unutarnju podjelu prostora (dvije-tri prostorije), a ponekad i trijem. Zidovi su građeni od stupova između kojih je bilo isprepleteno šiblje oblijepljeno ilovačom pomiješanom s pljevom. Ponekad se javljaju i kuće od horizontalno poslaganih poluoblica (Sopot, Vinkovci-Otok). Kuće su imale krov na dvije vode koji je najvjerojatnije bio pokriven trskom (Dimitrijević 1979a, 271; Krznarić Škrivanko 2003a; Marijan 2006).
U kućama se, osim keramičkih posuda, često nalaze žrvnjevi, tragovi tkalačkih stanova, ognjišta, brusovi, kamena i koštana oruđa te brojni nalazi koji nam govore o intenzivnom životu i svakodnevnim kućnim radinostima koje su se u njima odvijale. Veličina kuća i njihov inventar sugerira da su bile prilagođene životu jedne obitelji (Krznarić Škrivanko 2003a; 2006a).

Pokapanje

Ukopi koji se mogu pripisati sopotskoj kulturi izuzetno su rijetki. Unatoč nepoznatim okolnostima nalaza iz 1972., S. Dimitrijević je slučajno otkriven ukop na lokalitetu Silos zbog navodno priložene bikonične posude pripisao II. stupnju sopotske kulture i povezao ga s naseljem na položaju Ervenica u Vinkovcima (Dimitrijević 1979a, 237). Međutim, riječ je o ukopu koji pripada starijoj fazi srijemske kulture zapadnobalkanskog kulturnog kompleksa, odnosno datira se u drugu polovinu 5. st. pr. Kr. (Dizdar 1999, 39, 112, kat. br. 141). Istraživanjem 1997. na spomenutom naselju, u jami 1, otkriven

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Selci Đakovački - Kaznica - Rutak, 2006., grob sopotske kulture
Selci Đakovački - Kaznica - Rutak, 2006, Sopot culture grave

suggested by their frequent location in marshland that was not easily accessible. They emerged during the middle phase of this culture, and in its later phase such fortified settlements were built mostly in eastern Slavonia and Syrmia, while in the western part of its distribution zone most settlements were open-type (Dimitrijević 1969, 55; 1979a, 270-272).
Thanks to the systematic field surveys undertaken in the past several years, and a relatively large number of sites identified in the past (38 sites having been located to date), the region of Vinkovci is favourable for analysing the settlement network and relations between various settlements. For example, it has been observed that the average distance between two settlements was around 4 km, while two sites are only 2-3 km away from the eponymic site of Sopot (Krznarić Škrivanko 2012, 38). The site of Privlaka-Gradina is particularly interesting: it consists of three oval tells, and the relations among those settlements, described by Dimitrijević (1979a, 272) as of 'wreath-shaped settlement composition', are not entirely clear. Also very similar is the site of Slakovci-Gradina, with three settlement plateaus, although nowadays this site is rectangular (Krznarić Škrivanko 2012, 26).
The main feature of Sopot housing was above-ground structures, similar to those characteristic of the earlier Starčevo and contemporary Vinča cultures (Jovanović 1965, 123; Brukner 1965, 138), and also of the Lengyel Culture (Ruttkay 1985, T. 11; Težak-Gregl 1993, 17-18). Nonetheless, in some settlements of the early Sopot phase, people lived in pit dwellings and dugouts, as revealed by the site of Ervenica in Vinkovci (Krznarić Škrivanko 1997, 205-208). The Ražište type continued with the Starčevo and Korenovica pit dwellings, while the Brezovljani type used both above-ground and pit dwellings (Dimitrijević 1968, 52-53; 1979, 270-273; Marković 1993, 117-118). The discoveries of small holes made by posts surrounding the dugouts or incorporated into their walls, and occasionally also fissures in the dugout walls made to fix beams, testify to the existence of roofs (Marković 1985a, 41-44; Krznarić Škrivanko 1997, 206-208).
Settlements with pit dwellings and above-ground houses – both those unfortified in the plains (e.g. Dubovo-Košno) and those fortified of the tell-type (e.g. Sopot) – display dense clustering of houses. Given that materials used for construction were highly inflammable (wood, reed) and built structures stood closely together, fires erupted very easily (Krznarić Škrivanko 2006a; Marijan 2007). On the basis of results from excavation of several sites (Sopot, Mandek's Vineyard in Otok, Trbušanci in Vinkovci), Dimitrijević (1969, 55) concluded that in the centre of a tell there was some kind of square, because no traces of any structures had been found in those areas. Such an empty central space has also been identified at the site of Kruševica-Njivice.
Sopot Culture houses usually had a rectangular ground plan, and the majority of them were more than 10 m long. Their interior was often divided (into 2-3 rooms), and sometimes there was also a porch. The wattle-and-daub walls were plastered with loam mixed with chaff. Some of the houses were also built with horizontally-laid half-timbers (Sopot, Otok in Vinkovci). Houses had pitched roofs, probably covered with thatch (Dimitrijević 1979a, 271; Krznarić Škrivanko 2003a; Marijan 2006).
Finds discovered in houses, in addition to pottery, often include millstones, traces of looms, fireplaces, whetstones, tools made of stone and bone, and many others, demonstrating the intensity of life in the settlement and everyday activities which were performed in the houses. Most of the houses, as well as their inventories, suggest that they were adjusted to a single family (Krznarić Škrivanko 2003a; 2006a).

Burial

Burials that can be ascribed to the Sopot Culture are very rare. Regardless of the unknown circumstances of the find made in 1972 at the site of Silos, Dimitrijević attributed the chance discovery of a burial to phase II of the Sopot Culture and linked it to the settlement at the location of Ervenica in Vinkovci, basing his conclusion on a biconical vessel allegedly found as a grave

Osijek-Filipovica - Hermanov vinograd, 2013., grob sopotske kulture
Osijek-Filipovica – Herman's vineyard, 2013, Sopot culture grave

je parcijalni ukop dječje lubanje sa životinjskim kostima, lijepom i dijelovima ljudskih lubanja te prilogom lončića. Ovaj nalaz je datiran u razdoblje Sopot IB i objašnjen kao žrtva za prosperitet naselja (Krzarić-Škrivanko 1997, 208, 211, T. 1, 1). Isto tako unutar naselja na položaju Hermanov vinograd kod Osijeka (Filipovica), koje pripada II. i III. stupnju sopotske kulture, u prijašnjim istraživanjima pronađena su dva ukopa, međutim, za jednog od njih postoji opravdana sumnja pripada li sopotskoj kulturi (Šimić 1999, 32). Tijekom istraživanja 2013. godine na pomenutom lokalitetu pronađeno je također nekoliko ukopa.

Ukopi pokojnika u zgrčenom položaju na boku potječu i s lokaliteta Kaznica-Rutak (Hršak, Pavlović 2007), Stari Perkovci-Debela šuma (Filipec i dr. 2009, 21) te Belišće (Šimić 2007a). Također, jedan slučajan nalaz potječe iz Radovanaca u Požeškoj kotlini. Prema iskazima svjedoka bio je položen u blago zgrčenom položaju u istoj razini s pronađenom keramikom sopotske kulture koja je bila u neposrednom dodiru s kostima (Balen, Potrebica 2006, 24-26). Apsolutni datum potvrdio je sopotsku pripadnost (OxA-23499, 5304.-5067. g. pr. Kr.).

Na prostoru Požeške kotline, na lokalitetu „Grabaračke livade" kod sela Zarilca, otkriven je još jedan ukop koji, možda, možemo pripisati nosiocima sopotske kulture. Naime, prilikom zaštitnih istraživanja na tom lokalitetu tijekom 1976. i 1977. godine ekipa Muzeja Požeške kotline izvijestila je o pronalasku veće nekropole iz kasnog brončanog doba (28 grobova) na prostoru koje je pronađen i ženski skelet koji je pripisan razdoblju ranog brončanog doba (Sokač-Štimac 1977a, 38-39). Iako je u slučaju Zarilca nepobitno riječ o višeslojnom nalazištu, sav materijal koji se spominje u opisu nekropole

good (Dimitrijević 1979a, 237). However, this burial belongs to an early phase of the Syrmia Culture of the Western Balkan cultural complex, and it has been dated to the second half of the 5th c. BC (Dizdar 1999, 39, 112, Cat. No. 141). The 1997 excavation of the said site resulted in the discovery of a partial burial of a subadult skull in pit 1, laid in the grave together with animal bones, daub, parts of human skulls and a small pot as a grave good. The find has been dated to the Sopot IB period and explained as a sacrificial offering made for the prosperity of the settlement (Krzarić-Škrivanko 1997, 208, 211, T. 1, 1). Similarly, within the settlement at the site of Herman's Vineyard near Osijek (Filipovica), which belongs to phases II and III of the Sopot Culture, two burials have been discovered in earlier excavations. However, the Sopot Culture attribution of one of them has been reasonably challenged (Šimić 1999, 32). The 2013 excavations of the said site resulted in the discovery of several burials.

The burials of bodies in a contracted position, lying on their sides, have also been recorded at the sites of Kaznica-Rutak (Hršak, Pavlović 2007), Stari Perkovci-Debela šuma (Filipec et al. 2009, 21) and Belišće (Šimić 2007a).

Furthermore, a similar chance find has been made in Radovanci in the Požega Valley. According to eyewitnesses, the body was laid in a slightly contracted position, at the same depth as the discovered pottery ascribed to the Sopot Culture, which was in direct contact with the bones (Balen, Potrebica 2006, 24-26). The absolute date has confirmed the attribution to the Sopot Culture (OxA-23499, 5304-5067 BC).

Another burial which could possibly be attributed to the protagonists of the Sopot Culture has been discovered in the Požega Valley, at the site of Grabaračke Livade near the village of Zarilac. During the rescue excavation of 1976 and 1977 at that site, the team of the Požega Valley Museum reported the discovery of a large necropolis originating from the Late Bronze Age (28 graves). Within the necropolis perimeter, a female skeleton was found and attributed to the Early Bronze Age (Sokač-Štimac 1977a, 38-39). Although the site of Zarilac is undoubtedly a multi-layered site, all the finds mentioned in the necropolis description suggest the characteristic Sopot shapes, rather than features that could be attributed to the Late Bronze Age (Sokač-Štimac 1984, 117). On the basis of the said description, and on the basis of the comprehensive list of material published (Sokač-Štimac 1977b, T. I-VI), we are inclined to assume that this was actually a Sopot Culture settlement, and that the contracted female skeleton derived from it. Certainly, without revisionary exploration and direct dating of the skeleton, this remains just a hypothesis.

Novi Perkovci - Krčavina, lonac, kat. br. 169
Novi Perkovci - Krčavina, pot, cat. no. 169

Brezovljani, posuda, kat.br. 20
Brezovljani, vessel, cat. no. 20

ukazuje na karakteristične sopotske oblike, a ne na nalaze koji bi se mogli povezati s kasnim brončanim dobom (Sokač-Štimac 1984, 117). Na temelju tog opisa, kao i na temelju cjelokupnog korpusa objavljene građe (Sokač-Štimac 1977b, T. I-VI), skloni smo pretpostaviti da je zapravo riječ o sopotskom naselju kojemu pripada i opisani zgrčeni skelet ženske osobe. Dakako, bez revizijskog istraživanja i neposrednog datiranja skeleta, ostajemo u okvirima hipoteze.

Materijalna kultura

KERAMIČKA PROIZVODNJA

Tehnologija izrade sopotske keramike ostaje gotovo nepromijenjena tijekom cijelog trajanja kulture. Kao karakteristični oblici u svim njenim razvojnim stupnjevima i tipovima javljaju se bikonični tipovi zdjela, lonaca i lončića. Bikonične zdjele karakteristika su sopotske kulture i javljaju se u svim njenim stupnjevima, u nekoliko različitih oblika (Dimitrijević 1968, 31-52). Prepoznatljivi su oblici svakako i konične zdjele i zdjele (kupe) na šupljoj zvonastoj, cilindričnoj ili zaobljenoj nozi. Bikonično oblikovane zdjele i posude na nozi prevladavaju u kasnoj starčevačkoj kulturi (Minichreiter 1992, 49), a u lenđelskoj su kulturi bikonične zdjele jedan od najzastupljenijih oblika (Kalicz 1995, 75).

Ukrašavanje bradavičastim i rogolikim aplikacijama, koje je prisutno u svim njezinim stupnjevima (Dimitrijević 1968, T. II.2, T. IX.8, T. XVI.4; Krznarić Škrivanko 1997, T. 1.4; Marković, Botić 2008, T. 2.7, T. 3.1, T. 4.5), i u nekim regionalnim tipovima (Ražište: Marković 1985a, T. 1.8, T. 4.5, T. 5.1; Bicske: Kalicz, Makkay 1972, Fig. 6.11), sopotska je kultura vjerojatno preuzela od kasne starčevačke kulture (Dimitrijević 1979a, 275). Na samom početku sopotske kulture javlja se duborez kao nov način ukrašavanja koji će postati zaštitni znak sopotske kulture.

Svojim širenjem od stupnja I-B, sopotska kultura zadire u prostor susjednih kulturnih pojava poput korenovske, linearnotrakastih i lenđelskih kultura. Međusobnim

Material culture

POTTERY PRODUCTION

Sopot pottery production technology remained unchanged throughout the duration of this culture. The characteristic shapes that were present in all the developmental phases and types of the Sopot Culture are biconical bowls, pots and small pots. The biconical bowls are a distinguishing feature of the Sopot Culture, and appear in all its stages, in several diverse forms (Dimitrijević 1968, 31-52). Further recognizable shapes are conical bowls and footed bowls (chalices) standing on a foot that could be bell-shaped, cylindrical or round. Biconical bowls and footed vessels were predominant in the late Starčevo Culture (Minichreiter 1992, 49), and in the Lengyel Culture biconical bowls were one of the most frequent pottery shapes (Kalicz 1995, 75).

Decoration consisting of nipple-like and horn-like appliques was probably taken over from the late Starčevo Culture (Dimitrijević 1979a, 275). It was present in all the phases (Dimitrijević 1968, T. II.2, T. IX.8, T. XVI.4; Krznarić Škrivanko 1997, T. 1.4; Marković, Botić 2008, T. 2.7, T. 3.1, T. 4.5) and some regional types of the Sopot Culture (Ražište: Marković 1985a, T. 1.8, T. 4.5, T. 5.1; Bicske: Kalicz, Makkay 1972, Fig. 6.11). At the very beginning of the Sopot Culture, deep engraving appeared as a new method of decoration, and it became a Sopot Culture trademark.

As it began its expansion in phase IB, the Sopot Culture penetrated the territory of neighbouring cultural manifestations such as the Korenovo, LBK and Lengyel cultures. The interplay of various cultures and acceptance of diverse cultural influences resulted in the development of several regional types of the Sopot Culture.

Two genetic sources participated in the creation of the Ražište type of the Sopot Culture: the complex of Linear Pottery (LBK) cultures, and the Sopot and Vinča cultures. The influence of the circle of the LBK is reflected in globular and semi-globular shapes of bowls, right-angled handles, incised garlands consisting of two lines, zoomorphic appliques. The elements derived from the Sopot and Vinča cultures are biconical bowls, bowls with bell-shaped

Pepelana, figurina, kat. br. 211
Pepelana, figurine, cat. no. 211

Brezovljani, figurina, kat. br. 26
Brezovljani, figurine, cat. no. 26

prožimanjem različitih kultura i prihvaćanjem drugačijih kulturnih utjecaja nastalo je nekoliko regionalnih manifestacija sopotske kulture.

U formiranju Ražište-tipa sopotske kulture sudjelovala su dva genezna izvora: kompleks kultura linearnotrakaste keramike te sopotska, odnosno vinčanska kultura. Utjecaji iz kruga linearnotrakaste keramike kuglasti su i polukuglasti oblici zdjela, koljenaste drške, urezane girlande sastavljene od dviju linija, zoomorfne aplikacije. Elementi sopotske i vinčanske kulture bikonične su zdjele, zdjele na zvonastoj nozi, vjedra s kljunastim izljevom, zoomorfne aplikacije, trake s ubodima i urezima te, možda, crveno slikanje. Za razliku od klasične sopotske kulture, u Ražište-tipu zastupljenije su zaobljene od bikoničnih zdjela. Konične zdjele ponekad su na niskoj nozi kakva je karakteristična za starčevačku kulturu (Marković 1984, 14-15; 1985a, 51-56; 1994, 77-78). Za ovaj tip sopotske kulture karakteristično je ukrašavanje urezanim lučnim ornamentom, najčešće u gornjem dijelu posude (Marković 1985a, 50). Ovaj je ukras prisutan i u kulturama linearnotrakaste keramike (Neustupný 1956, Obr. 176.6; Rataj 1956, Obr. 124. 3, 18; Kalicz 1988, Abb. 10.5), vinčanskoj (Garašanin 1979, T. XXXIV.1, 2, 4) i klasičnoj sopotskoj kulturi (Dimitrijević 1968, T. 6.12; Marković, Botić 2008, 20-22, T. 5.2, T. 6.9 itd.). Linearnotrakasti elementi ne pokazuju prevelike sličnosti s korenovskom kulturom pa se pretpostavlja da su došli iz mađarske Transdanubije. Ražište-tip datira se u I-B stupanj te prijelaz I-B na II stupanj klasične sopotske kulture (Marković 1984, 14-15; 1985a, 51-56; Težak-Gregl 1993, 44-45; Marković 1994, 77-78).

U keramografiji brezovljanskog tipa sopotske kulture zamjećuju se sopotski i korenovski elementi te utjecaj srednjoeuropskih kultura. U gruboj se fakturi proizvode zdjele i amfore koje mogu biti ukrašene plastičnim trakama s otiskom prsta, životinjskim protomama te otiskivanjem prsta ili nokta

foot, buckets with beak-shaped spouts, zoomorphic appliques, bands with punctures and incisions, and, possibly, red painting. In the Ražište type, unlike the classical Sopot Culture, globular bowls outnumbered biconical ones. The conical bowls occasionally had a low foot, characteristic of the Starčevo Culture (Marković 1984, 14-15; 1985a, 51-56; 1994, 77-78). The decoration typical of this type of the Sopot Culture consisted of incised arched ornaments, usually in the upper part of the vessel (Marković 1985a, 50).
The same decoration is present in the Linear Pottery cultures (Neustupný 1956, Obr. 176.6; Rataj 1956, Obr. 124. 3, 18; Kalicz 1988, Abb. 10.5), the Vinča Culture (Garašanin 1979, T. XXXIV.1, 2, 4) and the classical Sopot Culture (Dimitrijević 1968, T. 6.12; Marković, Botić 2008, 20-22, T. 5.2, T. 6.9 etc.). The linear-band elements do not display major similarities to the Korenovo Culture, and it is therefore assumed that they had arrived from Hungarian Transdanubia. The Ražište type has been dated to phase IB and the turn of phase II of the classical Sopot Culture (Marković 1984, 14-15; 1985a, 51-56; Težak-Gregl 1993, 44-45; Marković 1994, 77-78).
The pottery of the Brezovljani type of the Sopot Culture displays elements of the Sopot Culture and the Korenovo Culture, as well as influences of Central European cultures. The coarsely-made bowls and amphorae could be decorated with plastic bands featuring finger imprints, animal protomes and finger or nail imprints in one or more lines. The fine-pottery shapes include primarily biconical bowls and small pots, and also conical footed bowls (chalices), where the foot can be very low, as in the Ražište type. The proportion of S-profiled bowls is somewhat higher than in the classical Sopot Culture. The pottery is polished, with high shine, and red-painted vessels are more frequent than they are in the classical Sopot Culture. Occasionally, vessels are decorated with red horizontal and vertical lines. The characteristic feature of this type is a mottled pottery surface. Some of the special pottery shapes include cylindrical vessels on tongue-like legs, animal

Čepin-Ovčara/Tursko groblje, antropomorfna noga, kat. br. 63
Čepin-Ovčara/Tursko groblje, anthropomorphic leg, cat. no. 63

Vinkovci-Ervenica/Poljski jarak, noga figurine, kat. br. 293
Vinkovci-Ervenica/Poljski jarak, leg of figurine, cat. no. 293

u jednom ili više redova. Kod fine su keramike najzastupljenije bikonične zdjele i lončići, ali i konične zdjele (kupe) na nozi koja, kao i kod Ražište-tipa, može biti veoma niska. Zamjetan je nešto veći postotak S-profiliranih posuda nego u klasičnoj sopotskoj kulturi. Često je fino glačana, visokog sjaja, a oslikavanje posuda crvenom bojom javlja se češće nego u klasičnoj sopotskoj kulturi. Sporadično su posude crveno oslikane horizontalnim i vertikalnim trakama. Karakteristika ovog tipa je mrljasta površina keramike. Od posebnih oblika može se izdvojiti cilindrična posuda na jezičastim nožicama, životinjska figura s recipijentom na leđima te antropomorfne figurice (Dimitrijević 1979a, 336-340; Marković 1994, 78-80; Balen, Potrebica 2006; Mihaljević 2006).

Pepelana-tip sopotske kulture nešto je mlađa pojava, a u keramičkoj produkciji zamjetne su sličnosti s lenđelskim kulturama, primjerice u slikanju koje je izvedeno crvenom, bijelom i žutom bojom. Od oblika posuda najzastupljeniji su zaobljeni i bikonični oblici zdjela te lonci i lončići, kao i konične zdjele (kupe) na nozi, koja ponekad može biti probušena. Prisutne su i posude na više nogu, glinene žlice, posude s ručkama do oboda, aplikacije u obliku životinjskih glava te antropomorfne statue (Minichreiter 1990, 27-29; Marković 1990, 42; 1994, 80-81).

Seče-tip sopotske kulture obilježava razdoblje ranog eneolitika zapadne Slavonije i sjeveozapadne Hrvatske. Od oblika grube keramike zastupljeni su lonci i lončići, polukuglaste i bikonične zdjele, konične zdjele (kupe) na šupljoj nozi, bute, čaše, šalice i žlice. Ponekad su ukrašeni aplikacijama, otiskom prsta ili kratkim zarezima ispod oboda. Fina je keramika sive, crvene i oker boje, uglačani, sjajni primjerci su crnosive ili crnosmeđe boje. Od oblika su zastupljene bikonične, konične i zaobljene zdjele, vrčevi, amfore i lončići te konične zdjele (kupe) na šupljoj kraćoj ili duljoj cilindričnoj ili zvonastoj nozi. Prisutne su i zdjele s ručkama koje spajaju obod i prijelom posude, tanjuri,

figures with a receptacle on their backs and anthropomorphic statuettes (Dimitrijević 1979a, 336-340; Marković 1994, 78-80; Balen, Potrebica 2006; Mihaljević 2006).
The Pepelana type of the Sopot Culture emerged somewhat later, and its pottery production displays similarities to the Lengyel cultures – for example, red-, white- or yellow-painted pottery. The most frequent vessel shapes are globular and biconical bowls, pots and small pots, and conical bowls (chalices) on a foot which was occasionally perforated. There are also bowls on several legs, clay spoons, vessels with handles set by the rim, appliques shaped like animal heads and anthropomorphic statuettes (Minichreiter 1990, 27-29; Marković 1990, 42; 1994, 80-81).
The Seče type of the Sopot Culture is characteristic of the Early Eneolithic period in western Slavonia and north-west Croatia. Among the coarse pottery shapes there were pots and small pots, semi-globular and biconical bowls, conical bowls (chalices) on a hollow foot, hanging pots, cups and spoons. Receptacles are occasionally decorated with appliques, finger imprints or short incisions made under the rim. The fine pottery is grey, red or ochre, while polished and shiny pieces are black-grey or black-brown. The most frequent shapes are biconical and conical bowls, jugs, amphorae and small pots, conical bowls (chalices) on a hollow foot, which could be short or long, cylindrical or bell-shaped. There are also bowls with handles linking the bowl's rim and shoulder, plates, bowls on several squat legs, and spoons. The decoration is rendered by channelling, incising, deep engraving, branding, plastic appliques, shallow indentation and painting (Marković 1990, 42-44; 1994, 90).
In addition to the standard pottery vessels, the Sopot Culture sites have also contained anthropomorphic and zoomorphic figures. The anthropomorphic figures are largely coarse, with cylindrical bodies, and occasionally with marked sexual attributes. In rare cases bodies are rendered flatter and the work is finer. Sometimes such figures are decorated with lines of horizontal incisions,

Gorjani - Kremenjača, žrtvenik, kat. br. 100
Gorjani - Kremenjača, altar, cat. no. 100

posude na više čepastih nogu, žlice. Ukrašavanje je izvedeno žlijebljenjem, urezivanjem, duborezom, žigosanjem, plastičnim aplikacijama, plitkim udubljivanjem i slikanjem (Marković 1990, 42-44; 1994, 90).
Osim standardne keramičke produkcije na sopotskim se lokalitetima nalazi i antropomorfna i zoomorfna plastika. Antropomorfna je plastika uglavnom grube izrade, valjkastog tijela, ponekad s naznačenim seksualnim atributima, a rjeđe plosnatog tijela i finije izrade. Ponekad je ukrašena nizovima horizontalnih zareza koji, možda, predstavljaju odjeću. Jedan antropomorfni amulet, koji predstavlja adoranta, ukrašen je trakastom spiralom (Dimitrijević 1979a, 285-287; Skelac 1997; Marković, Botić 2008, 19-20).
Mnogo se češće pronalazi zoomorfna plastika, koja može biti ukrašena duborezom, urezivanjem ili ubadanjem. Predstavljene su životinje svinja, ovan, jarac, moguće i ptica (Dimitrijević 1979a, 287; Šimić 2006a).
Zoomorfne aplikacije na trbuhu posude prisutne su u I-B/II (Marković, Botić 2008, T. 9.7) i II. stupnju klasične sopotske kulture (Dimitrijević 1968, T. 12.5), u Ražište- (Marković 1985a, T. 1.1, T. 2.2 itd.), brezovljanskom (Marković 1994, 79) i Bicske-tipu (Kalicz, Makkay 1972, Fig. 6. 20-21; Kalicz *et al.* 2007, Abb. 6.11) te u kasnijem tipu Pepelana (Marković 1994, T. 17.3).

Posude na više nogu i žrtvenici pronađeni su na nekolicini sopotskih nalazišta, a uglavnom im se pripisuje kultna namjena (Dimitrijević 1979a, 287-288; Marković, Botić 2008, 20).
Od ostalih keramičkih proizvoda često se nalaze i utezi, pršljeni, kalemi te kugle za praćku, uobičajeni inventar neolitičkih nalazišta (Dimitrijević 1979a, 287-290; Krznarić Škrivanko 2006a). Na nekim je kalemovima prikazano shematizirano lice pa postoji mišljenje kako se radi o amuletima (Šimić 2006a, 42).

KAMENE RUKOTVORINE
Litički su nalazi na sopotskim lokalitetima zastupljeni u velikom broju, ali broj sustavnih analiza još je uvijek poprilično malen.
Prema dosadašnjim spoznajama, sirovina za izradu lomljevine

possibly representing clothing. One anthropomorphic amulet, representing a worshipper, is decorated with a spiral band (Dimitrijević 1979a, 285-287; Skelac 1997; Marković, Botić 2008, 19-20).
The zoomorphic figures are much more frequent. They are decorated by deep engraving, incising or pointing. The animals represented are pig, ram, buck, and possibly also bird (Dimitrijević 1979a, 287; Šimić 2006a).
Zoomorphic appliques on the bellies of vessels are present in phases I-B/II (Marković, Botić 2008, T. 9.7) and II of the classical Sopot Culture (Dimitrijević 1968, T. 12.5), in the Ražište type (Marković 1985a, T. 1.1, T. 2.2 etc.), Brezovljani type (Marković 1994, 79) and Bicske type (Kalicz, Makkay 1972, Fig. 6. 20-21; Kalicz et al. 2007, Abb. 6.11), as well as in the later Pepelana type (Marković 1994, T. 17.3).

Altars, and vessels on several legs, have been discovered at several sites of the Sopot Culture, and most of them have been interpreted as cult objects (Dimitrijević 1979a, 287-288; Marković, Botić 2008, 20).
Other pottery objects that have been found frequently include weights, spindle whorls, spools and sling bullets – the usual inventory of Neolithic sites (Dimitrijević 1979a, 287-290; Krznarić Škrivanko 2006a). Some of the spools display a schematic representation of a face, giving rise to the opinion that those were amulets (Šimić 2006a, 42).

STONE ARTEFACTS
Lithic finds are abundant at the Sopot Culture sites, but the number of their systematic analyses has been rather small. According to the information available to date, the raw material for the production of flaked lithic tools was usually collected in the settlements' surroundings, with raw material from distant regions being rarely present. The tools were mostly made of various types of chert. An important role was also played by obsidian, produced in a centre located at Samatovci near Osijek (Marković 1994, 86; Balen, Burić 2006, 36). Among the flaked lithic material, the most frequent finds are flakes, blades, cores and debris. The majority of tools consist of processed blades and scrapers, often on blades. A smaller number of burins, drills and arrows with hafting tang have also been recorded (Krznarić Škrivanko 1999, 89; Vrdoljak,

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Osijek-Filipovica - Hermanov vinograd, 2013., materijalna ostavština sopotske kulture
Osijek-Filipovica – Herman's vineyard, 2013, Sopot culture material remains

Čepin - Ovčara, 2006., nalaz ostave od spondylusa
Čepin – Ovčara, 2006, find of spondylus hoard

uglavnom je prikupljana u blizini naselja, dok je sirovina iz udaljenijih krajeva slabije zastupljena. Oruđe se najčešće izrađivalo od raznih vrsta rožnjaka, a važnu je ulogu imao i opsidijan, čiji se veći proizvodni centar nalazio u Samatovcima kod Osijeka (Marković 1994, 86; Balen, Burić 2006, 36). Od lomljevine najzastupljeniji su odbojci, sječiva, jezgre i krhotine. Najveći broj oruđa čine sječiva s obradom i grebala, često na sječivima. U manjem se broju javljaju dubila, svrdla i strelice s trnom za nasad (Krznarić Škrivanko 1999, 89; Vrdoljak, Mihaljević 1999, T.2; Šošić, Karavanić 2003; Balen *et al.* 2009, 30-33). Zbog malenog broja jezgri koje su pronađene u naseljima, pretpostavlja se da je inicijalna priprema rađena na drugom mjestu. Velik dio obrade ipak se odvijao i unutar naselja, na što ukazuje veća količina drugotnih odbojaka (Šošić, Karavanić 2003).
Glačane kamene izrađevine poprilično su uniformne kroz sve faze sopotske kulture, a najčešće su se radile od pješčenjaka i rožnjaka, u nešto manjoj mjeri od amfibolita, bazalta, tufa, serpentinita i drugih stijena. Od oruđa su zastupljene sjekire, sjekire s rupom za nasad, dlijeta, tesle te batovi. Kao batovi su sekundarno upotrebljavane i sjekire, tesle te dlijeta (Težak-Gregl 2001a, 12-13; Balen, Kurtanjek, Balen 2002; Balen, Burić 2006, 37-38; Rajković 2011).
Od oruđa abrazivne površine javljaju se rastirači, brusevi i žrvnjevi, najčešće rađeni od pješčenjaka (Balen, Burić 2006, 38).

PREDMETI OD KOSTI I ŠKOLJAKA
Od koštanih nalaza pronalaze se šila, igle s ušicom, bodeži od jelenjih parožaka te spatule (Dimitrijević 1979a, 292; Krznarić Škrivanko 2006a). Brojnošću se svakako ističu nalazi s lokaliteta Hermanov vinograd (vidi u katalogu), gdje su pronađeni harpuni, koštane udice, različite vrste igla, šila, spatula, motika itd.
Privjesci od *spondilusa* nerijetko se nalaze na sopotskim nalazištima, uglavnom je riječ o pojedinačnim nalazima, među kojima se svakako ističe nalaz ostave s lokaliteta Čepin – Ovčara (Šimić 2007b).

Mihaljević 1999, T.2; Šošić, Karavanić 2003; Balen et al. 2009, 30-33). The small number of cores discovered in settlements has given rise to the assumption that the initial preparation was done in a different location. Still, a large part of the processing took place within the settlement, as evidenced by large amounts of other flakes (Šošić, Karavanić 2003).
Polished stone products originating from all phases of the Sopot Culture are rather uniform. Usually they were made of sandstone and chert, and to a smaller extent also of amphibolites, basalt, tuff, serpentine and other rocks. The tools produced include axes, axes with hafting hole, adzes, chisels and bats. Axes, adzes and chisels also had secondary usage as hammers (Težak-Gregl 2001a, 12-13; Balen, Kurtanjek, Balen 2002; Balen, Burić 2006, 37-38; Rajković 2011).
The group of tools with abrasive surface included handstones, whetstones and grindstones, usually made of sandstone (Balen, Burić 2006, 38).

OBJECTS MADE OF BONE AND SHELL
The discovered objects made of bone include awls, needles with eyes, daggers made of deer antler tine, and spatulas (Dimitrijević 1979a, 292; Krznarić Škrivanko 2006a). The finds from the site of Herman's Vineyard are particularly abundant (see the catalogue), and among them there are harpoons, bone hooks, various types of needles, awls, spatulas, hoes etc.
Pendants made of Spondilus shell have often been found at Sopot Culture sites. Most of them have been individual finds, and the one that definitely stands out is the hoard discovered at the site of Čepin-Ovčara (Šimić 2007b).

PENNY BICKLE

LENĐELSKA KULTURA

THE LENGYEL CULTURE

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Uvod

S početkom 5. tisućljeća pr. Kr. srednje i kasnoneolitička lenđelska kultura poznata je po keramici s crvenim, žutim i bijelim slikanjem, trapezoidnim kućama te složenim sustavima palisada i jaraka (rondeli). Iako je kultura dobila ime prema naselju i groblju pronađenom u Lengyelu u južnoj Mađarskoj (Tolnanska županija), najranije pojave ove arheološke kulture pronađene su u sjevernoj Hrvatskoj i Sloveniji (Tringham 1971; Milisauskas 1978; Kalicz 1993; Bánffy 1997; Obelić *et al.* 2004). U vrijeme kada je bila najrasprostranjenija, lenđelska je kultura obuhvaćala prostor južno od rijeke Drave, sjeverno duž zapadne obale Dunava do južne Poljske, dostižući gornju dolinu Dnjestra u istočnoj i Donjoj Austriji i Moravskoj (istok republike Češke) na zapadu, gdje je poznata kao kultura moravske slikane keramike (Kalicz 1993; Neugebauer-Maresch 1995; Whittle 1996; Bánffy 1997; Bogucki 1988; Bogucki, Grygiel 1993). Lenđelska kultura vrlo je važna za razumijevanje različitih pravaca razvoja u razdobljima neolitika i eneolitika jer je smještena na granici između središnje i jugoistočne Europe. Na svojim kulturološkim i zemljopisnim ekstremima, lenđelska kultura premostila je jaz između vinčanske kulture na jugu, koju karakteriziraju naselja tel tipa i keramičke figurine, te kulture ljevkastih pehara (TRB) na sjeveru, koju karakteriziraju grobovi pod humkom s više prostorija i druge vrste spomenika – odnosno jaz između dvije regije s vrlo različitim oblicima neolitičkog života.

Razne neolitičke kulture živjele su paralelno s lenđelskom, pa je moguće zamisliti složene interakcije, iako su unutar ove kulturne grupe ustanovljene različite lokalizirane regionalne tradicije, uključujući ranije spomenutu moravsku slikanu keramiku, Aichbühl, i rani Jordanów u Češkoj, te Brześć Kujawski grupu u Poljskoj (Neustupný 1968; Bogucki 1988; Neugebauer-Maresch 1995). U mnogim regijama lenđelska kultura pokazuje kontinuitet iz prethodnih kultura, posuđuje od njihovih stilova arhitekture i keramike te dijeli prakse preživljavanje i rituala. Shodno tome, trenutno preferirano objašnjenje za širenja lenđelske kulture diljem istočne i srednje Europe je lokalna adaptacija, koja zamjenjuje prethodno preferirane modele migracije (Whittle 1996; Bánffy 1997). Ako su domorodačke neolitičke grupe prihvaćale lenđelsku kulturu kao novi način života, to bi moglo objasniti brojne regionalne varijacije. Ipak, veća regionalnost je također i glavno obilježje 5. tisućljeća pr. Kr. u srednjoj Europi, osobito u usporedbi s ranim neolitikom druge polovine 6. tisućljeća pr. Kr., kada se kultura linearnotrakaste keramike (LTK) rasprostirala od Ukrajine, preko srednje Europe, i zapadno sve do Pariza. Na kraju trajanja lenđelske, druge kulture koje su koristile metal počinju se širiti diljem kontinenta,

Introduction

Beginning early in the 5th millennium BC, the middle and late Neolithic Lengyel culture is known for its pottery painted in red, yellow and white, trapezoidal longhouses and elaborate palisaded and ditched enclosures or rondels. Although the culture is named for the settlement and cemetery found at Lengyel in southern Hungary (Tolna County), the earliest formations of this archaeological culture are found in northern Croatia and Slovenia (Tringham 1971; Milisauskas 1978; Kalicz 1993; Bánffy 1997; Obelić et al. 2004). At its greatest extent, Lengyel settlements could be found from south of the Drava river northwards along the west bank of the Danube to southern Poland, reaching the upper Dniester valley in the east and lower Austria and Moravia (eastern Czech Republic) in the west, where it is known as the Moravian Painted Ware culture (Kalicz 1993; Neugebauer-Maresch 1995; Whittle 1996; Bánffy 1997; Bogucki 1988; Bogucki, Grygiel 1993). The Lengyel culture is an important period for understanding the different trajectories of development during the Neolithic and Copper Ages because it occupies the frontier between central and south-eastern Europe. At its cultural and geographical extremes the Lengyel culture bridged the gap between the Vinča culture to the south, characterised by tell settlements and ceramic figurines, and the Funnel beaker (or TRB) culture to the north, associated with chambered cairns and other monuments — two regions with very different forms of Neolithic life.

Varied Neolithic cultures lived alongside the Lengyel, with which complex interactions can be envisioned, while within this cultural group itself separate and more localised regional traditions have been identified, including the Moravian Painted Ware, mentioned above, Aichbühl and early Jordanów in Bohemia, and the Brześć Kujawski group in Poland (Neustupný 1968; Bogucki 1988; Neugebauer-Maresch 1995). In many regions the Lengyel culture demonstrates continuity from previous cultures, borrowing from their styles of architecture and pottery, as well as having shared subsistence and ritual practices. Correspondingly, the favoured explanation for the spread of the Lengyel culture across east-central Europe is now one of local adoption, replacing the previous preference for models of migration (Whittle 1996; Bánffy 1997). If indigenous Neolithic groups were taking up the Lengyel culture as a new way of life, this perhaps explains the numerous regional variations. However, more regionality is also a general feature of the 5th millennium across central Europe, especially when compared to the early Neolithic of the latter half of the 6th millennium, when the Linearbandkeramik (or LBK) culture stretched from the Ukraine, across central Europe, reaching as far westwards as Paris. At the end of the Lengyel culture's duration, metal producing cultures began to spread further across the continent but are also pre-empted by the

Rekonstrukcija naselja iz skupine Brześć Kujawski na lokalitetima Osłonki, Konary, i Miechowice u njihovom prirodnom okruženju (prema Grygiel 2008., uporabljeno uz dopuštenje; autor računalno izrađene slike: Jędrzej Bulas). ***Reconstruction of settlements of the Brześć Kujawski Group at Osłonki, Konary, and Miechowice in their environmental setting (after Grygiel 2008, used with permission; computer-generated image by Jędrzej Bulas).***

ali ih je lenđelska pretekla u proizvodnji bakrenih ukrasa pronađenih u kontekstu grobova (Bogucki 1988). Smatra se da su ovi predmeti uglavnom dobavljeni razmjenom s drugim kulturama, a ne da su ih proizvodile lenđelske grupe, ali takvo korištenje metalnih predmeta omogućilo je širenje znanja i tehnologija o proizvodnji metala koji je uslijedio u bakrenom i brončanom dobu. Sljedeće poglavlje bavit će se kronologijom, svakodnevicom i kulturnim kontaktima lenđelske kulture, uz podrobna objašnjenja glavnih vrsta nalaza koje su dostupne arheolozima.

Kronologija

Kronologija lenđelske kulture većinski se temelji na promjenama u stilovima ukrašavanja keramike koje obilježavaju važne trenutke u njezinom razvoju i širenju (Neustupný 1968; Kalicz 1993; Neugebauer-Maresch 1995). Ukratko, glavne tehnike ukrašavanja mijenjaju se od urezanih linija ispunjenih crvenim, bijelim i žutim uzorcima (nanošeno nakon pečenja) u ranijim fazama, do postupnog gubljenja urezanih linija i smanjivanja raspona boja na bijelu, i, konačno, do potpunog gubljenja ukrasa u posljednjim fazama kulture, što je karakteristika i drugih neolitičkih kultura (Kalicz 1993; Bánffy 1997; 2002). Na temelju keramike ustanovljene su četiri glavne faze: protolenđel, Lenđel I., II. i III. (Kalicz 1993), s time da se posljednja faza (III.) zbog svojih prijelaznih osobina ponekad naziva i epilenđelom (Stadler, Ruttkay 2007). Nije moguće ustanoviti sve faze u svim regijama gdje se lenđelska kultura rasprostirala. Protolenđel je ustanovljen samo na južnim obalama Drave (današnja Hrvatska i Slovenija), a karakterizira ga složena mješavina različitih elemenata preostalih od lokalnih regionalnih kultura iz te i okolnih regija, ali detalji o točnoj kronologiji ovog razdoblja još nisu poznati. Najčešće se smatra da je lenđelska kultura na ovom prostoru nastala od sopotske kulture, iako, te dvije kulture pokazuju bilateralni razvoj, a na nekim lokalitetima čak i miješanje. Ranija istraživanja u regiji daju naslutiti da je sopotska kultura bila usko vezana uz lenđelsku, stoga je Dimitrijević (1968) predložio naziv 'sopotsko-lenđelska kultura'. Ipak, sada znamo da je sopotska kultura na jugoistoku materijalno povezana s vinčanskom. Primjerice, eponimno nalazište Sopot

appearance of copper ornaments in Lengyel funerary contexts (Bogucki 1988). These objects are mainly thought to have been traded from other cultures, rather than made by Lengyel groups themselves, but such use of metal objects created the passage for the spread of the knowledge and technology of metal production which followed in the Copper and Bronze Ages. This chapter will explore the chronology, daily life and cultural connections of the Lengyel culture, detailing the main forms of evidence available to archaeologists.

Chronology

The chronology of the Lengyel culture is largely determined from the changes in the decorative styles of ceramics, which mark many of the major developments of its duration and expansion (Neustupný 1968; Kalicz 1993; Neugebauer-Maresch 1995). In outline, the main decorative techniques changed from incised lines with red, white and yellow painted patterns (applied after firing) in the earlier phases, to a gradual loss of the incised lines, then the paint colour was reduced to white only and, finally, in the last stages of the culture, pot decoration was lost altogether - a characteristic of other Copper Age cultures (Kalicz 1993; Bánffy 1997; 2002). From the ceramics four main phases have been identified; Protolengyel, Lengyel I, II and III (Kalicz 1993), with the final phase (III) sometimes named the Epilengyel because of its transitional qualities (Stadler, Ruttkay 2007). Not all phases are present in every region across the Lengyel distribution. The Protolengyel is only found on the southern banks of the Drava (modern day Croatia and Slovenia). It demonstrates a complex mixture of different elements from the preceding local regional cultures in and around this region, but the exact chronology of this period is far from understood in detail. Most frequently, the Lengyel culture is thought to have originated in this area from the Sopot culture, though, the two cultures may show bilateral development and even mixing on certain sites. Earlier investigations in the region had suggested that Sopot had important ties to the Lengyel culture, with Dimitrijević (1968) proposing the name Sopot-Lengyel. However, it has now been shown that the Sopot culture also shares strong material ties with the Vinča culture to the south-east. For example, the eponymous site of Sopot consists of an elliptical tell settlement surrounded

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

sastoji se od eliptičnog tel naselja koje je okruženo zaštitnim jarkom i palisadom (Obelić *et al.* 2004), a moguće je da je bilo istovremeno s lenđelskim fazama u Mađarskoj (Osztás *et al.* 2012). Prije sopotske kulture, na prostoru Transdanubije rasprostirale su se grupe LTK, a na nekoliko je lokaliteta pronađena izmiješana vinčanska i LTK keramika. Dakle, iako precizne kronologije za ovo razdoblje tek treba napraviti, čini se da se Lenđel pojavljuje u regiji gdje su se susreli i miješali graditelji LTK dugih pravokutnih kuća te vinčanskih telova.

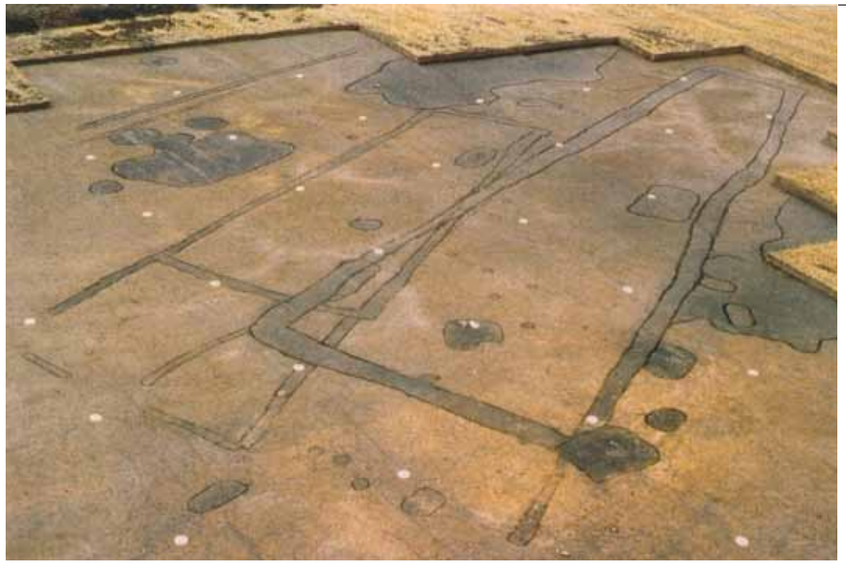
Prema Marciniaku (2005, 26), Lenđel je 'znatna reformacija podunavske tradicije, ali i dalje pokazuje starije prakse i tradicije'. Ovaj skup različitih kulturalnih tradicija vidljiv je i u kasnijim kronologijama lenđelske kulture. Od faze I., lenđelska se kultura širila prema sjeveru, prvo u jugozapadnu Transdanubiju (današnja zapadna Mađarska; Kalicz 1993), a zatim, nešto kasnije, do Slovačke, Austrije i Moravske, prije nego što je dosegnula sjevernu granicu u Poljskoj u fazi II. (Marciniak 2005, 27). Ove faze često se naziva klasičnim Lenđelom. Kako se kultura širila, dolazila je u kontakt s drugim grupama. U Češkoj i južnoj Poljskoj lenđelske se grupe preklapaju s kulturom ubodnotrakaste keramike (SBK, post-LTK kultura u ovoj regiji; Whittle 1996, 177; Neustupný 2008), a od faze III. poljski lenđelski lokaliteti istovremeni su s onima TRB (Bogucki 1988; Grygiel 2008; Marciniak 2013). Dunav je u cijelosti formirao istočnu granicu lenđelske kulture u Transdanubiji, a dalje od njega javlja se Tisza kultura sa sličnim razvojnim procesom (Bánffy 2007). Tisza kultura (of the Tisza river valley) razvila se iz kasnih inačica LTK kulture u toj regiji i pokazuje sličan, gotovo paralelan razvoj lenđelskoj kulturi (Raczky 2002). Tijekom faze I., posude Tisza kulture pronalaze se samo na lokalitetima na sjeveroistočnoj periferiji lenđelskog prostora u Mađarskoj, ali je broj posuda jako velik (Kalicz 1993, 314). Iako su stilovi ukrašavanja keramike slični, a na lenđelskim posudama uključuju urezane uzorke, posude ukrašene u Tisza stilu može se prepoznati i prema tipologiji i prema tehnici, što ostavlja pitanje porijekla tih posuda neodgovorenim. Možda su uvezene s prostora Tisza kulture, ili su, pak, imitacije koje su izrađivali lenđelski keramičari ili pak grupe Tisza kulture koje su živjele na otvorenim lenđelskim naseljima (Kalicz 1993, 214). U finalnim fazama lenđelske kulture, eneolitičke zajednice živjele su na području Tise (tiszapolgár kultura; Raczky 2002).

Iako keramika može dati detaljne relativne sekvence, apsolutna kronologija iziskuje radiokarbonsko datiranje. Neformalna procjena postojećih radiokarbonskih datuma iz lenđelskih konteksta sugerira trajanje od otprilike više od pola tisućljeća, a datumi padaju u raspon od 4900. do 4300. g.

by a ditched and palisade enclosure (Obelić et al. 2004), and may possibly be contemporary to the Lengyel phases in Hungary (Osztás et al. 2012). Before the Sopot culture, Transdanubia was occupied by late groups of the LBK and at a few sites, contexts containing both Vinča and LBK pottery have been found. Thus while precise chronologies have yet to be determined for this period, the picture that is thus emerging sees the Lengyel begin in the region where the Danubian longhouse-dwelling Neolithic of the LBK met and mixed with the Vinča tell-builders.

As Marciniak (2005, 26) argues, the Lengyel was a 'considerable reformation of the Danubian tradition, but still referenc[ed] earlier practices and traditions'. This assemblage of different cultural traditions can also be seen in the subsequent chronology of the Lengyel culture. From phase I, the Lengyel culture expands northwards, moving first into south-west Transdanubia (modern day western Hungary; Kalicz 1993) and then a little later, on up to Slovakia, Austria and Moravia, before reaching to its northern extent into Poland from phase II (Marciniak 2005, 27). These phases are often referred to as Classic Lengyel. As the culture expanded, it came into contact with other groups. In Bohemia and southern Poland, Lengyel groups overlap with the Stichbandkeramik (or SBK – a post-LBK culture found in this region; Whittle 1996, 177; Neustupný 2008), while from phase III, Polish Lengyel sites are contemporary with the TRB (Bogucki 1988; Grygiel 2008; Marciniak 2013). The Danube, on the whole, formed the eastern boundary of the Lengyel culture in Transdanubia, beyond which the Tisza culture, with its similar sequence of development, is found (Bánffy 2007). The Tisza culture (of the Tisza river valley) originated out of the late variants of the LBK found in the region and shows a similar, almost parallel development to the Lengyel culture (Raczky 2002). During phase I, Tisza vessels are only found at sites on the north-eastern periphery of the Lengyel distribution in Hungary but the numbers of pots are high (Kalicz 1993, 314). While the ceramic decorative styles are similar, consisting of incised patterns frequent on Lengyel pots, those belonging to the Tisza style can be distinguished in both typology and technique, leaving the question of whether they are imported from Tisza sites, imitations made by Lengyel potters or Tisza groups living at Lengyel settlements open (Kalicz 1993, 214). In the final stages of the Lengyel culture, Copper Age communities are living in the Tisza region (the Tiszapolgár culture; Raczky 2002).

While the ceramic sequences can provide detailed relative sequences, an absolute chronology requires radiocarbon dating. Informal assessment of the existing radiocarbon dates from Lengyel contexts suggest a duration of approximately more than half a millennia, estimated roughly as falling between 4900 and



Duge kuće iz skupine Brześć Kujawski na lokalitetu Miechowic u Poljskoj; udaljenost između bijelih točaka je 5 metara (prema Grygiel 2008., uporabljeno uz dopuštenje).
Longhouses of the Brześć Kujawski Group at Miechowice, Poland; distance between white dots is 5 meters (after Grygiel 2008, used with permission).

pr. Kr. - iako neke procjene kraj trajanja kulture stavljaju na prijelaz 4. tisućljeća pr. Kr. (Bánffy 1997; Marciniak 2005). U usmjerenijim studijama datacija materijala kratkog životnog vijeka iz konteksta moravske slikane keramike, Stadler i Ruttkay (2007, 130) su procijenili da se ta kultura javila u Austriji oko 4800. g. pr. Kr., i završila oko 4115. g. pr. Kr. (ili oko 4045. g. pr. Kr., ako se uključi i epilenđel). Budući da početak i završetak grupa povezanih s Lenđelom nije morao biti istovremen posvuda, izgledno je da najraniji početni datum za protolenđel treba tražiti južno od Drave. Slično, završni datum je također u nekim regijama pomaknut u 4. tisućljeće pr. Kr.. Primjerice, Marciniak (2005) tvrdi da je Brześć Kujawski grupa kasnog Lenđela u južnoj Poljskoj u potpunosti prestala postojati oko 3650. g. pr. Kr., što bi značilo da se lenđelski način života nastavio u nekim regijama, dok je u onim južnima već bio napušten. Preciznija radiokarbonska kronologija trenutno nije dostupna, iako se intenzivno radi na tome diljem područja gdje se lenđelska kultura rasprostirala. Te spoznaje bacit će novo svjetlo i na unutrašnju kronologiju lenđelske kulture, i na to u kakvom je odnosu njezin razvoj sa susjednim istovremenim grupama.

Naselja i arhitektura

Tijekom cijelog trajanja kulture, lenđelska naselja smještana su na plodno područje, na uzvišene terase malih dolina rijeka iznad plavnog područja (Bogucki 1982; 1988; Pavúk 1991). Mnoga ranoneolitička naselja smještana su na ovakve pozicije, pojačavajući kontinuitet ranijih praksi naseljavanja. Ipak, čini se da su u nekim regijama ranije naseljeni prostori napušteni. Pavúk (1991, 354) je u Slovačkoj ustanovio da su lenđelska naselja smještana na više nadmorske visine od onih ranije kulture, i to bliže planinama koje su u to vrijeme imale veću količinu padalina godišnje. U Češkoj se, primjerice, u to vrijeme povećao broj naselja smještenih na vrhovima koji su zaštićeni strmim padinama (Neustupný 2008). Kalicz (1993) sugerira da

4300 cal BC - though some estimates place the culture's end at the turn of the 4th millennium (Bánffy 1997; Marciniak 2005). In a more focused study on dating short life materials from Moravian Painted Ware contexts, Stadler and Ruttkay (2007, 130) estimated that this culture began in Austria about 4800 cal BC and ended c.4115 cal BC (or c.4045 cal BC if the Epilengyel is included). As the beginning and end of the Lengyel-related groups may not have been the same everywhere, this would suggest that an earlier start date for the Protolengyel south of the Drava was likely. Similarly, the end date has also been pushed forward into the 4th millennium in some regions. For example, Marciniak (2005) argues the Brześć Kujawski group of the late Lengyel fully ends at 3650 cal BC in southern Poland. This would see the Lengyel way of life persisting in some regions, while already abandoned in others to the south. A more precise chronology is not currently available from radiocarbon dating, though work is well underway across the Lengyel distribution that will shed light both on the internal chronology of the Lengyel culture and how its development relates to those of its neighbouring, contemporary groups.

Settlement and Architecture

Thoughout its duration, Lengyel settlements were located on fertile soils, on the upper terraces of small river valleys above the floodplain (Bogucki 1982; 1988; Pavúk 1991). This is where many of the early Neolithic sites were located, reinforcing the continuity from preceding settlement practices. However, in some regions it seems that areas of early occupation were abandoned. In Slovakia, Pavúk (1991, 354) found that Lengyel sites were located at higher elevations than those belonging to earlier cultures, closer to mountainous areas that would have had greater annual rainfall. In Bohemia, the number of sites located on hilltops, surrounded by steep slopes, increased during this time (Neustupný 2008). Kalicz (1993) suggests that such sites may have been associated with lithic collection. Even those sites located in the

Skupina grobova br. 14 tijekom iskapanja groblja na lokalitetu Alsónyék-Bátaszék u jugozapadnoj Mađarskoj (Arheološki institut, HAS i Archeosztráda Ltd., uporabljeno uz dopuštenje).
Grave group 14 under excavation at the Alsónyék-Bátaszék cemetery, South-west Hungary (Institute of Archaelogy, HAS and Archeosztráda Ltd., used with permission).

su ta naselja možda bila povezana sa skupljanjem litike. Čak i oni lokaliteti koji su smješteni u istom kontekstu kao i ranija neolitička naselja mogli su biti na povišenom te se čak 50% lenđelskih lokaliteta nalazi na povišenom položaju (Marciniak 2005, 27). Nije sasvim jasno zašto je tomu tako. Ako se klima promijenila na prijelazu iz 6. u 5. tisućljeće pr. Kr. (kako se predlaže), onda bi prijelaz na povišeni položaj mogao značiti da su grupe pratile uvjete optimalne za zemljoradnju. Ipak, kada bi to bilo točno, klima je trebala postati suša, što bi natjeralo lenđelske zajednice da traže područja u kojima je ranije bilo previše padalina. Današnji modeli sugeriraju da je klima bila vlažnija nakon 5050. g. pr. Kr. (Gronenborn 2009), što bi značilo da su se zajednice selile u područja manje pogodna za zemljoradnju tijekom Lenđela. Ovo bi, pak, sugeriralo promjenu u percepciji i načinu iskorištavanja okoliša. Neustupný (2008) smatra da je povišenim položajima pridavan ritualni značaj, s osobitim naglaskom na vertikalne promjene u okolišu od faze Lenđel nadalje. U suprotnosti s time, tijekom LTK vremena koristila su se uniformna mjesta za naselja, dok su lenđelske skupine iskorištavale raznovrsnije oblike reljefa.

Naselja su se obično sastojala od različitog broja velikih trapezoidnih dugih kuća, pokazujući time i kontinuitet i promjenu u odnosu na klasične LTK kuće iz ranog neolitika. Trapezoidni oblik javlja se krajem LTK (osobito na zapadnim granicama; Coudart 1998), ali unutrašnji raspored lenđelskih kuća je različit, odnosno nedostaje mu trodijelni sustav modula kojeg je Moddermann (1988) definirao za LTK. Moddermann (1988) i drugi (e.g. Lüning 2000; Bradley 2001) predlažu upotrebu dijelova LTK kuća za različite aktivnosti. Smanjenje u unutrašnjoj strukturi dovelo je do stvaranja većih otvorenih prostora u lenđelskim kućama, što je možda odraz manje formalne podjele prostora ovisno o aktivnostima, kao, na primjer, podjele između prostora za život i spavanje, te prostora za pohranjivanje hrane i držanje životinja. U novim

same contexts as early Neolithic sites may have been on higher ground, with as many as 50% of Lengyel sites located in elevated positions (Marciniak 2005, 27). Why this should be is less clear. If the climate had changed around the turn of the 6th to 5th millennium (as has been suggested), then perhaps the move to higher ground meant groups were following the optimal conditions for farming. To follow this argument, however, the climate would need to have become drier thereby forcing Lengyel communities to seek out areas where rainfall had previously been too high. Current models suggest the weather was wetter after c.5050 cal BC (Gronenborn 2009), therefore suggesting that communities were moving into areas less favourable for farming during the Lengyel. This could suggest, rather, a change in how the landscape was conceived as well as how it was exploited. Neustupný (2008) suggests that there was a ritual significance attached to higher places, with greater emphasis placed on the vertical changes in landscape from the Lengyel period onwards. Certainly, in contrast, with the uniform site location during the LBK, more variable landscapes were being exploited by Lengyel groups.

Settlements usually consisted of varied numbers of large trapezoidal longhouses, showing both continuity and change from the classic LBK longhouses of the early Neolithic. The trapezoidal shape was found from towards the end of the LBK (particularly in its western distribution; Coudart 1998), but the internal layout of the Lengyel houses is different, lacking the tripartite system of modules identified by Moddermann (1988) for the LBK. Moddermann (1988) and others (e.g. Lüning 2000; Bradley 2001) have suggested that the sections of the LBK house were used for different activities. The decrease in internal structure led to larger open spaces within the Lengyel house, perhaps suggesting that there was less formal division between different activity areas, such as between the living and sleeping spaces, and the areas used for storage and the stalling of animals. At the recent excavations at Alsonyék-Bátaszék, southern Hungary,

istraživanjima na lokalitetu Alsonyék-Bátaszék u južnoj Mađarskoj, ustanovljeno je oko 118 planova kuća; strukture su građene na stupovima, sa samo jednom ili dvije unutrašnje prostorije, u dužini od 14 do 22 m (Osztás *et al.* 2012). Bogucki (1995) je u Brześć Kujawski grupi ustanovio sličan raspon dužina (15–25 m), ali na drugim prostorima koje zauzima lenđelska kultura postoji veća varijabilnost u dužini kuća (Pyzel 2013). Iako su poznate dugačke kuće, one su znatno kraće od varijacija dužina koje se pojavljuju u LTK kontekstima, a koje variraju od 7 do, pa čak i više od, 45 m (Moddermann 1988; Coudart 1998; Bickle 2013). Daljnja raznolikost u arhitektonskim stilovima vidljiva je kroz upotrebu pojedinačnih rupa od stupova ili jaraka za oblikovanje vanjskih zidova kuća; iako neki mađarski primjeri iz Alsonyék-Bátaszéka imaju vanjske zidove oblikovane pomoću jaraka, oni su se većinom sastojali od pojedinačnih stupova. Nasuprot tome, lenđelske kuće sa sjevernijih područja imale su jarke na sva četiri vanjska zida, što ukazuje na strukturu nalik palisadi (Pavúk 2003; Pyzel 2013). Zsuzsanna M. Virág i András Figler (prema Osztás *et al.* 2012) navode da slične konstrukcije, koje su pronađene na lokalitetima Gyor-Szabadrétdomb i Mosonszentmiklós-Pálmajor (Mađarska), imaju mnogo toga zajedničkog s planovima kasnih lenđelskih kuća u Austriji, što znači da bi takve varijacije mogle biti odraz promjene arhitektonskog stila kroz vrijeme.

Konstrukcija nalik na palisadu mogla bi odražavati neki drugi aspekt naselja lenđelske kulture, a to je zatvoreni prostor. Kao i arhitektura dugih kuća, zatvoreni prostori u Lenđel fazi pokazuju i kontinuitet i promjenu u odnosu na ranije neolitičke skupine. Okrugli i polukružni jarci pojavljuju se od razvijene faze LTK, kada su konstruirani na raznim dijelovima naselja, dok su u drugim slučajevima stavljani samo na jednu stranu sela. Ponekad su tvorili puni prsten, a ponekad su samo djelomično okruživali neko područje. Zatvaranje prostora nastavlja se i u fazi Lenđel, ali izgled postaje detaljnije propisan, što je rezultiralo manjim brojem mogućih varijacija (Pásztor *et al.* 2008, 910). 'Rondel'' je termin za takvu vrstu zatvorenog prostora; obično postoje dva ili više nasuprotno postavljena ulaza u jarcima i unutrašnjim prstenovima palisada (Whittle 1996). Svrha ovakve vrste zatvaranja prostora nije sasvim jasna, jer, iako su višestruki prsteni jaraka i palisada obično znak kompleksnih sustava obrane, česti i brojni ulazi njihovu efikasnost za pružanje zaštite dovode u pitanje. Osim toga, mnogi zatvoreni prostori, poput onih iz Svodína (Slovačka) i Těšetice-Kyjovice (Moravska), dva najpoznatija istražena primjera, unutar rondela nemaju vidljive tragove naselja (Němejcová-Pavúkcová 1986; Podborský 1988). Situacija nije nužno posvuda bila takva, ali pojava kuća

approximately 118 house plans came to light; the structures were post-built, with one or two internal divisions, ranging from 14m to 22m long (Osztás et al. 2012). In the Brześć Kujawski group, Bogucki (1995) found a similar range of lengths (15–25m), though elsewhere in the Lengyel distribution house length may see greater variability (Pyzel 2013). Although longer houses are known, this is a substantial reduction in the variability of lengths known from the LBK, which range from 7m up to and beyond 45m (Moddermann 1988; Coudart 1998; Bickle 2013). Further regionality in architecture styles may be seen in the use of individual postholes or bedding trenches to form the outer walls of the houses; while the Hungarian examples from Alsonyék-Bátaszék have some trenches marking the external walls, mainly they consisted of postholes. In contrast, those Lengyel longhouses known from the north have bedding trenches around all four walls, suggesting a more palisade-like construction (Pavúk 2003; Pyzel 2013). Zsuzsanna M. Virág and András Figler (from Osztás et al. 2012) argue similar constructions found at Gyor–Szabadrétdomb and Mosonszentmiklós–Pálmajor (Hungary) have much in common with the late Lengyel house plans in Austria, suggesting that such variations may represent change in architecture styles over time.

The palisade-like construction style may echo another aspect of settlement practice during the Lengyel culture, the enclosure. As with the longhouse architecture, enclosures constructed during the Lengyel period show both continuity and change from the earlier Neolithic groups. Circular and sub-circular causewayed ditches are found from the developed phase of the LBK, where they were constructed in a variety of settings associated with settlements: sometimes they enclosed abandoned or contemporary settlements, while in other cases they were set off to one side of the longhouse village. They could form a completely ring or only partially encircle an area. In the Lengyel period enclosure continues, but the layout becomes proscribed to a greater degree resulting in a significant decrease in variation (Pásztor et al. 2008, 910). The term rondel is used to describe this type of enclosure; often two or more opposing entrances are present in the ditches and internal rings of palisades (Whittle 1996). The purpose of this form of enclosure is not known for certain. While the multiple rings of ditches and palisades are evocative of complex defensive systems, the frequent and numerous entrances question their efficiency at providing security. Besides, many enclosures, including Svodín (Slovakia) and Těšetice-Kyjovice (Moravia), two of the most famous examples excavated, have no evidence of settlement within their respective rondels (Němejcová-Pavúkcová 1986; Podborský 1988). This need not have been the same everywhere, but instances of houses located within enclosures are rare. Pavúk (1991, 351) notes just one house at the site of Źlkovce, (Váh valley, Slovakia). Therefore, while associated with

unutar ograđenog prostora je rijetka. Pavúk (1991, 351) je zabilježio samo jednu kuću na lokalitetu Źlkovce (dolina Váha, Slovačka). Stoga, iako ih se povezuje s kućanskim aktivnostima obavljanim na istom mjestu, zatvoreni prostori vjerojatno nisu imali obrambenu ulogu a stricto sensu, zbog čega je bolje prihvaćeno objašnjenje da se radi o ritualnoj ili monumentalnoj svrsi. Pravilnost u tlocrtu, uz prisutnost posebnih skupova nalaza poput zbirki glinenih figurina, i definirane orijentacije, moguće usklađene s kretanjima sunca ili mjeseca u određenom dijelu godine (Pásztor *et al.* 2008), sugeriraju da su ovo bila mjesta za formalizirane, možda i kultne aktivnosti. Druge interpretacije govore o mjestima za nalaženje, poljoprivrednim kalendarima i centrima ekonomske moći. Bez obzira na to kojem se mišljenju priklonili, jasno je da u usporedbi s prethodnom LTK, gdje su zatvoreni prostori zadovoljavali mnoge potrebe, do vremena lenđelske kulture zatvorene konstrukcije, rondeli, postaju regulirana praksa.

Zatvoreni prostor ili rondeli nisu pronađeni na svakom lokalitetu i to, uz varijacije u veličini naselja, sugerira da je jedan lokalitet mogao dominirati određenom regijom (Whittle 1996, 187). Naselja su varirala od onih s mnogo kuća do onih sa jednom ili dvije izolirane kuće (nazvanih 'gospodarstvo'; Bogucki 1995, 64), što ukazuje na regionalnu hijerarhiju u kojoj središnja mjesta zauzimaju važniju političku i ritualnu ulogu. Predložena hijerarhija možda se odražava i u nekim od bogatijih grobova (Pavúk 1991, 356). Ipak, ona može biti pokazatelj mreža suradnje među naseljima, u kojima bi svako naselje imalo drugačiju ulogu u ritualu, preživljavanju ili distribuciji sirovina. Dokazi iz naselja, dakle, u nekim aspektima više variraju (npr. smještaj naselja), ali mogu pokazivati i više pravilnosti (npr. smještaj zatvorenog prostora) od prethodnog LTK razdoblja, a pojedinačne razlike i specijalizacije mogle su biti izraženije. Marciniak (2013) se priklanja ovoj interpretaciji tvrdeći da je na razini kućanstva u lenđelskoj kulturi postojala veća specijalizacija oko strategija preživljavanja.

Preživljavanje i privreda

Aktivnosti vezane uz prehranu i preživljavanje pružaju uvid u društvenu organizaciju ranih poljoprivredničkih zajednica. Briga o biljkama i životinjama sačinjavala je velik dio svakodnevice, a godina je mogla biti organizirana oko važnih događaja u poljoprivrednom ciklusu, poput žetve ili razdoblja u kojem domaće životinje dobivaju mlade. Dakle, promjene u dokazima privrednih praksi od ranog do kasnog neolitika ne samo da bilježe promjene u prehrani, već sugeriraju i postojanje odgovarajućih promjena u opsegu i organizaciji poljoprivrednih aktivnosti. Baza preživljavanja lenđelske kulture primarno je bila poljoprivreda, uz kombinaciju uzgajanja žitarica i

domestic activity from the same location, enclosures are unlikely to have fulfilled a defence rôle stricto sensu *and a ritual, or even monumental, purpose has been the largely favoured explanation. Regularity in lay-out, alongside the presence of special deposits, such as collections of clay figurines, and selected orientations, perhaps aligned on the movements of the sun or moon at certain times of the year (Pásztor et al. 2008), suggest that these were places of formalised, perhaps even, cult activities. Other suggestions include meeting places, calendars for the agricultural cycle and centres of economic power. Whatever the preferred explanation it seems clear that in contrast to the preceding LBK, where enclosure appeared to fulfil many requirements, by the time of the Lengyel culture, the construction enclosures or rondels had crystallised into a more regularised practice.*

However, enclosures or rondels were not found at every site and this, coupled with the variation in settlement size suggests that one site may have dominated within a region (Whittle 1996, 187). Sites could vary from many houses down to one or two isolated houses (often called farmsteads; Bogucki 1995, 64), hinting at a regional hierarchy with central places occupying a more politically and ritually significant rôle. This is suggested hierarchy may be echoed in some of the richer graves (Pavúk 1991, 356). However, it might also be indicative of collaborative networks of settlements, with each site fulfilling a different rôle in ritual, subsistence or the distribution of raw materials. The settlement evidence, therefore, is both more variable in some aspects (e.g. site location) but could also show more intense regularity (enclosure lay-out for example) than the preceding LBK period and individuals differences or specialisms may have been more pronounced. Marciniak (2013) is sympathetic to this view, arguing that, on the level of the household, there was increased subsistence specialism in the Lengyel culture.

Subsistence and economy

Diet and subsistence activities can provide insights into the social organisation of early farming societies. Caring for plants and animals would have constituted a large part of daily life and the year may well have been organised around major events in the agricultural cycle, such as the harvest or when domestic animals were producing young. Therefore changes in the evidence for economic practices from the early to later Neolithic not only record dietary differences, but also suggest that there may have been corresponding changes in the scale and organisation of agricultural activities. The subsistence base of the Lengyel culture was primarily agricultural, with a mixture of cereal growing and animal husbandry. As in the early Neolithic, Lengyel communities grew emmer, einkorn and barley as their main crops and cattle, followed by pig, sheep and goats, were the chief species of

Grob br. 6537 s groblja na lokalitetu Alsónyék-Bátaszék u jugozapadnoj Mađarskoj. Mjesto ukopa odrasle žene (u dobi od 40 do 49 godina) okruženo je četirima velikim jamama za stupove, što možda ukazuje na postojanje drvene građevine oko groba (Arheološki institut, HAS i Archeosztráda Ltd., uporabljeno uz dopuštenje).
Grave 6537, from the Alsónyék-Bátaszék cemetery, South-west Hungary. The interment of an adult female (aged 40-49) is surrounded by four large postholes, possibly indicating a wooden structure around the grave (Institute of Archaelogy, HAS and Archeosztráda Ltd., used with permission).

stočarstva. Kao i u ranom neolitiku, populacija lenđelske kulture uzgajala je dvozrnu pšenicu, jednozrnu pšenicu i ječam kao glavne usjeve, te goveda, svinje, ovce i koze, čiji ostaci su pronađeni među nalazima kostiju (Bogucki 1988; 2008; Bogaard 2004). Uz tradicionalne životinje koje žive u stadima, među kostima s lenđelskih lokaliteta pronađeni su ostaci divljih goveda, jelena, srna, veprova, divljih konja, dabrova, medvjeda i mnogih drugih malih sisavaca poput lisica, jazavaca i kuna (Bogucki 2008). U prehrani su se koristile i ribe te jezerske kornjače (Bogucki 2008). Uz glavne usjeve, u arheološkim kontekstima lenđelske kulture pronađeni su i ostaci brojnih divljih biljnih vrsta. Dakle, većinski uzgajani spektar prehrane bio je dopunjavan nastavljenim, ako ne i povećanim, konzumiranjem divljih resursa (premda, vidi niže). Ove promjene mogle bi sugerirati novi društveni i simbolički pristup divljim i uzgojenim biljkama i životinjama u lenđelskoj kulturi.

Srednji ili kasni neolitik srednje Europe često karakterizira povećanje broja divljih životinja u odnosu na prethodna razdoblja (npr. Bökönyi 1974; Bartosiewicz 2005), a ta se pojava objašnjava kao strategija za prevladavanje loših žetvi (Whittle 1985, 142). Ipak, kada se analizira lokalitet po lokalitet, slika je zapravo vrlo raznolika. Divlje životinje pronađene su u različitim omjerima, tvoreći od preko 50% (Pécsvárad-Aranyheđ, Mađarska, Bökönyi 1974) do nešto iznad 5% (Osłonki, Poljska, Bogucki 2008, 1634) nalaza. Iako je stoka često dominantna vrsta u ostacima faune, ta frekvencija je često manja nego u prethodnim LTK vremenima, i tvori između 30% i 60% (Marciniak 2005). Svinje i ovce/koze također se pojavljuju u različitim omjerima, od 10 do 30%, odnosno od 20 do 40% (Bogucki 2008, 1634). Stoga, možda lenđelsku kulturu bolje karakterizira varijabilnost u faunalnim ostacima nego što

domestic animals found in the animal bone assemblages (Bogucki 1988; 2008; Bogaard 2004). Alongside the traditional herd animals, Lengyel animal bone assemblages also include aurochs (wild cattle), red deer, roe deer, wild boar, wild horse, beaver, brown bear and numerous other small mammals such as fox, badgers, pine martins (Bogucki 2008). Fish and pond tortoise were also exploited (Bogucki 2008). As well as the main crops, a vast number of wild plants have been recorded in archaeological contexts from the Lengyel period. The broadly domestic profile of the diet was therefore complemented by the continued, if not increased, consumption of wild resources (though see below). These changes may well indicate new social and symbolic approaches to wild and domestic plants and animals in the Lengyel culture.

Frequently, the middle or later Neolithic in central Europe is characterised as seeing an increase in wild animals in the faunal record from the preceding period (e.g. Bökönyi 1974; Bartosiewicz 2005). This has been explained as a strategy pursued to overcome poor harvests (Whittle 1985, 142). However, when analysed on a site-by-site basis, the picture is actually very varied. Wild animals are found at differing rates, varying from between more than 50% (at Pécsvárad-Aranyhegy, Hungary, Bökönyi 1974) to just more than 5% (at Osłonki, Poland, Bogucki 2008, 1634). While cattle are often the most dominant species in the faunal record, the frequency at which this species occured is often lower than that of the preceding LBK, fluctuating between 30% and 60% (Marciniak 2005). Pigs and sheep/goats similarly occur at varied rates, with percentages of 10-30% and 20-40% respectively (Bogucki 2008, 1634). Therefore, perhaps the Lengyel culture is better characterised by greater variability in animal bone assemblages than in the earlier LBK (Bogucki 1988; 2008) — rather than a straight-forward increase in the consumption of wild animals.

je to bio slučaj u ranijem LTK vremenu (Bogucki 1988; 2008) – a ne izravno povećanje u konzumiranju divljih životinja. Sve se ovo dobro uklapa u cjeloviti prijelaz na veću varijabilnost i jače regionalno orijentirane kulturne tradicije kasnog neolitika srednje Europe.

Marciniak (2013) smatra da spomenuta varijabilnost govori u prilog sve većem stupnju specijalizacije koji se dogodio paralelno s razvojem europskog neolitika, odnosno s načinima iskorištavanja životinja koji su 'ekonomski isplativiji'. Mesarske aktivnosti sugeriraju da su se domaće životinje uzgajale za svakodnevnu upotrebu, a ne za sporadične gozbe, te da se životinje nisu koristile samo kao izvor mesa. Bogucki (2008, 1650-1), na temelju dokaza iz regije Brześć Kujawski, smatra da su se svinje i stoka osobito pojačano koristile za ono što Sherratt (1981) naziva sekundarnim proizvodima, poput kravljeg mlijeka, loja i koža (cf. Marciniak 2011). Ipak, tek treba uspostaviti jesu li takvi proizvodi bili glavni razlog uzgajanja životinja ili nusprodukt suživota s domaćim životinjama koje su se primarno koristile zbog mesa (Bogucki 2008). Ova varijabilnost može sugerirati i to da su pojedinačna naselja, a možda čak i kućanstva, sama uzgajala domaće životinje, uz manje dijeljenja u sklopu širih mreža potpore (Marciniak 2013). Glavni usjevi dvozrne pšenice, jednozrne pšenice i ječma slični su onima iz LTK vremena, a sekundarno dodavanje leće i graška također je uočeno u ranoneolitičkim kontekstima (Bogaard 2004). Gluza (1983) je uočio da većina trava koje su pronađene uz nagorene ostatke žitarica na lokalitetu Mogila 62 (Krakov) klija u proljeće, što znači da se u tom godišnjem dobu obavljalo sijanje žitarica. Smatra se da je sijanje usjeva u tom razdoblju godine način da se spriječi oštećivanje mladih biljaka u godišnjim poplavama koje se obično događaju u kasnu zimu i rano proljeće. Ipak, Bogaard (2004, 167) je otkrio da su intenzivna vrtna kultivacija žitarica i jesenska sjetva prakticirane tijekom i ranog i srednjeg neolitika srednje Europe. Umjesto velikih polja, korištena je intenzivna zemljoradnja na malim komadima zemlje nalik na vrtove, i to tijekom nekoliko generacija (Bogaard 2004; vidi i Reed u ovoj publikaciji), gdje je svako kućanstvo imalo svoj komad zemlje. Unatoč tome što je ovakav način zemljoradnje zabilježen i u ranom neolitiku, on možda govori u prilog Marciniakovoj tezi (2013) da je, suprotno od hijerarhijski organiziranih i umreženih naselja, preživljavanje u srednjem i kasnijem neolitiku organizirano na lokaliziranoj bazi.

This fits well with the overall move to greater variability and more regionally circumspect cultural traditions in the later Neolithic across central Europe.

Marciniak (2013) argues that this variability speaks to the greater degree of specialisation that took place as the European Neolithic developed, with animals managed in ways that were 'economically more efficient'. As well as butchery practices suggesting domestic animals were being kept for more day-to-day meat consumption, rather than one off feasting episodes, animals were often exploited for more products than their meat alone. Bogucki (2008, 1650-1) argued, on the basis of evidence from the Brześć Kujawski region, that in particular pigs and cattle were increasingly exploited for what Sherratt (1981) termed secondary products, such as cow's milk, tallow and hides (cf. Marciniak 2011). However, whether such products were the main aim of stock keeping, or a fortunate by-product of living with domestic animals used in the first instance for the their meat remains to be seen (Bogucki 2008). This variability may also suggest that individual settlements, and perhaps even households, were managing animals on their own, with less sharing across broader support networks (Marciniak 2013).

The main cereal crops of emmer, einkorn and barley are similar to the LBK, and the secondary addition of lentils and pea is also seen in early Neolithic contexts (Bogaard 2004). Gluza (1983) found that the majority of weeds found associated with charred crop remains at the site Mogila 62 (Kraków) were spring-germinating, suggesting that cereals had been planted during this season. Sowing crops at this time of year is often thought to avoid the young plants being damaged by annual flood waters, which are usually present in the late winter and early spring. However, Bogaard (2004, 167) has found that intensive garden cultivation of cereals and autumn sowing was practiced throughout both the early and middle Neolithic of central Europe. Rather than large fields, small garden-like plots of land would have been intensely farmed over several generations (Bogaard 2004; see also Reed this volume), perhaps with one plot belonging to each household. Although this style of crop husbandry was seen from the early Neolithic, it may further support the suggestion of Marciniak (2013) that, in contrast to the networked hierarchy suggested for settlement organisation, subsistence was organised on a far more local basis during the middle and later Neolithic.

Everyday Objects and Exchange

Alongside the pottery, a wide range of tools made from bone, antler and chipped stone characterise the everyday objects found at Lengyel settlement sites. These are accompanied by a number of other objects that could be said to be more associated with

Predmeti za svakodnevnu upotrebu i razmjena

Osim keramike, naselja lenđelske kulture karakterizira i širok spektar alatki od kosti, roga i cijepane litike. Uz njih je pronađen i niz drugih predmeta kojima je pretpostavljena ritualna funkcija. Sječiva su najbrojnija skupina alatki od cijepane litike, a slijede ih strugala, šiljci, ulomci sječiva i odbojci (Kalicz 1993). Ove alatke mogle su se koristiti za različite aktivnosti kao što je obrada različitih materijala (npr. drvo i koža), mesarenje životinja i žetvu (na nekim sječivima ustanovljen je sjaj srpa; Kalicz 1993). Alatke od roga i kosti čest su nalaz na prostoru rasprostiranja lenđelske kulture, na nekim lokalitetima su izrazito brojni, a na nekima su čak pronađeni i harpuni od roga (Kalicz 1993, 315). Dok su kost i rog bili lako dostupni zbog zemljoradnje i lova, sirovine za proizvodnju cijepane litike morale su biti donesene u naselje iz bližih, ali i udaljenijih krajeva. Sirovina je vjerojatno na krajnje odredište stizala u raznim oblicima, kao jezgra, poluproizvod i gotovi proizvod (Mateiciucová 2008).

Osim onih iz sfere kućanstva, mnogi predmeti pokazuju da su lenđelske zajednice aktivno sudjelovale u ritualnim ili kultnim aktivnostima (Bánffy 1997). Figurine različitih oblika, i zoomorfne i antropomorfne, pronalažene su diljem prostora rasprostiranja lenđelske kulture, iako su rjeđi na sjevernim granicama, a čini se da su snažno povezane sa stilom vinčanske kulture (Grygiel 2008, 691). Usprkos smanjenju broja, neke figurine su ipak pronađene, poput one jantarne s lokaliteta Brześć Kujawski (Cyrek *et al.* 1983), kojoj možemo pridodati 'oltarne predmete' u kojima su se mogle prinositi male žrtve u vidu trava, začina ili zrnja žitarica (Bánffy 1997, 78). Ovi predmeti najčešće su pronalaženi u kontekstima kuća ili pak u jamama u naseljima, a ne u ritualnim kontekstima (Bánffy 1997, 72). Uz rondele, o kojima je bilo riječi ranije, ovo signalizira različita područja društvenih i ritualnih aktivnosti; unutar kućanstva, ali i aktivnosti koje su uključivale veći dio zajednice i koje su se odvijale u zatvorenim prostorima. Ovi predmeti pokazuju jake južnoeuropske utjecaje kroz paralele s vinčanskom kulturom, a pronalaženi su u većim količinama u odnosu na LTK nalaze (Ruttkay 1992). Širenje lenđelske kulture moglo je širiti i sve veći interes za proizvodnju figurina i uz njih povezanih praksi prema sjeveru.

Dodatne veze između grupa lenđelske kulture vidljive su kroz mreže razmjene (Mateiciucová 2008). U Mađarskoj su se kvarciti uzimali s planina Bákony i Meczek, kremen s planine Volhynie, a opsidijan s planine Tokaj u masivu Zémplin, što je odraz bliskih kontakata s kasnoneolitičkim grupama u istočnoj Mađarskoj o kojima smo ranije govorili (Kalicz

ritual practice. Blades constitute the most frequent category of chipped stone tools, followed by scrapers, points, sickles and flakes (Kalicz 1993). These tools would have been used for a wide range of different activities including the processing of different materials (woods and hide, for example), the butchery of animals and the harvesting of crops (sickle gloss has been identified on some blades; Kalicz 1993). Antler and bone tools are also frequent across the distribution of the Lengyel culture, at some sites they occur in huge numbers and, in some places, antler harpoons have been discovered (Kalicz 1993, 315). While bone and antler may have been readily available from farming and hunting activities, the raw materials for the lithic technology would have been brought into the settlement both from the local area and further away. It is likely that these raw materials reached their final destination in a variety of forms; nucleus, semi-finished and finished items (Mateiciucová 2008).

Aside from the domestic sphere, a further range of objects show that Lengyel communities actively participated in ritual or cultic activities (Bánffy 1997). Figurines of various forms, both zoomorphic and anthropomorphic, have been found across the Lengyel distribution, though they become much rarer in the culture's northern reaches, and appear to have strong ties to the style of the Vinča culture (Grygiel 2008, 691). Despite their decrease in numbers some figurines are attested, such as the amber example found at the site of Brześć Kujawski (Cyrek et al. 1983). To these we can also add the 'alter pieces', that may have held a small libation of herbs, spices or cereal grains (Bánffy 1997, 78). These objects are most frequently found within the household or, rather, in settlement pits rather than in ritual contexts (Bánffy 1997, 72). Alongside the rondels discussed above, this seems to signal different areas of social and ritual activity; both within the household as well as the more community-wide activities that took place at or in enclosures. These objects also show a strong southern European influence with parallels to the Vinča culture and are found in increased numbers than in the LBK (Ruttkay 1992). The spread of the Lengyel culture may therefore have carried northwards a greater interest in producing figurines and the practices associated with them.

Further connections between groups of the Lengyel culture can also be seen in the exchange networks (Mateiciucová 2008). In Hungary, quartzites were sourced from the Bákony and Meczek mountains, flint from Volhynie and obsidian from the Tokaj Mountain in the Zémplin hills, reflecting the close contacts with late Neolithic groups in eastern Hungary discussed above (Kalicz 1993; Mateiciucová 2008). Polished stone tools, which became increasingly perforated over time, were made from local Carpathian amphibolite sources (Pavúk 1994). The Lengyel

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

1993; Mateiciucová 2008). Glačane kamene alatke, koje su s vremenom sve češće probušene, izrađivale su se od sirovine iz lokalnih karpatskih ležišta amfibolita (Pavúk 1994). Lenđelska naselja iz Moravske su, pak, sirovine nabavljala iz udaljenijih krajeva. Jurski kremen stizao je iz 300 km udaljenog područja oko Krakova, a druge vrste kremena iz Donje Poljske, udaljene 350 km, te iz drugih ležišta u Bavariji (Trampota 2012). Diljem Moravske brojnost uvezene litike je varirala, a ta se varijabilnost nastavila i u kasnije faze (Trampota 2012, 449). Baš kao što je litika cirkulirala diljem lenđelskog teritorija, materijal se donosio i s područja izvan tog kruga, što ukazuje na brojne kontakte. Školjka spondylus, koja se koristila za izradu perli za ogrlice te za druge osobne ukrase, a koju se često nalazi u grobovima, potječe s Jadranskog ili Egejskog mora (Séfériadès 2010; Chapman, Gaydarska, u tisku). Na dalekom sjeveru uz južnu obalu Baltika se u kontekstima Ertebølle grupe (lovci-sakupljači) pronalaze koštani amuleti koji su gotovo identični onima s mnogih lenđelskih lokaliteta u poljskim nizinama (Czerniak 1980; Bogucki 1982, 108). Jednako tako, keramika lenđelskog stila pronađena je u kasnomezolitičkim kontekstima na obali Baltika, npr. u Dąbkiju u sjevernoj Poljskoj, otprilike 400 km od najbližih lenđelskih grupa. Razmjena s mezolitičkim grupama na sjeveru možda je dovela do proizvodnje jedinstvenih koštanih i alatki od rogova u Brześć Kujawski grupi na širem lenđelskom prostoru (Bogucki 2008; Czekaj-Zastawny *et al.* 2013).
Čini se da se na zapadu preklapaju lenđelska i kultura ubodnovrpčaste keramike (Whittle 1996, 177), što znači da mnoge grupe diljem Europe nisu bile izolirane, što pokazuje i poznati primjer lokaliteta Vikletice (Češka), gdje je LTK posuda pronađena uz posude ukrašene u stilu Hinkelstein i ubodnovrpčaste keramike (Zapotocka 1986). Sjekire od alpskog jadeita pronađene su u lenđelskim kontekstima na lokalitetima Golianovo u Slovačkoj, Kamegg u Donjoj Austriji, i Alsónyék-Kanizsa u Mađarskoj, oko 950 km od talijanskog ležišta Mont Viso, time prelazeći rascjep koji je u to vrijeme postojao u Europi između cirkulacije alpskog jadeita na zapad i bakra na istok (Pétrequin *et al.* 2011; Klasen *et al.* 2012, 1281, Fig. 1, 1295). Na jugu su vinčanske i kasnoneolitičke zajednice mogle utjecati na lenđelsku materijalnu kulturu (Bánffy 2002), kao što pokazuju nalazi keramike lenđelskog stila, primjerice iz faze II. na Gomolavi, pronađene neposredno iznad vinčanskih slojeva (Borić 2009, 236). I širenje bakra bilo je dijelom ovih mreža, a mali broj bakrenih predmeta koji se pojavljuju u kontekstu kulture ljevkastih pehara (TRB) mogao je onamo stići zahvaljujući lenđelskim kontaktima (Bogucki 1982). Bakreni ukrasi pronađeni su u grobovima na lokalitetu Brześć Kujawski, ali su očito nestali u kasnijim fazama (Grygiel, Bogucki 1993). Na temelju rečenoga, moguće

settlements from Moravia, however, sourced material from further away, with Jurassic flints travelling over 300km from the Krakow area and chocolate flint coming more than 350km from Lesser Poland, as well as other sources in Bavaria (Trampota 2012). The amount of imported of lithics varied, however, across the Moravian region and this variability continued into the later phases (Trampota 2012, 449). As well as the circulation of lithics throughout the Lengyel territories, material was also brought in from outside the region demonstrating a variety of contacts. Spondylus *shells, used to make beads for string necklaces and other items of personal adornment, often found in graves, would have been sourced from the Adriatic or Aegean (Séfériadès 2010; Chapman, Gaydarska forthcoming), while in the far north bone armlets found in Ertebølle (hunter-gatherer) contexts along the south Baltic coast are almost identical to those found at many Lengyel period sites in the Polish Lowlands (Czerniak 1980; Bogucki 1982, 108). Reciprocally, Lengyel style pottery is found in late Mesolithic contexts on the Baltic coast, e.g. at Dąbki, northern Poland, some 400km from the nearest Lengyel groups and exchange with the Mesolithic groups to the north may have led to the Brześć Kujawski group having an unique bone and antler assemblages within the broader Lengyel area (Bogucki 2008; Czekaj-Zastawny et al. 2013).*

To the west, Lengyel and Stichbandkeramik groups appear to overlap (Whittle 1996, 177), suggesting that the number of different groups across Europe were by no means isolated — as the well-known case from Vikletice (Bohemia), where an LBK pot was found accompanied by pots decorated in the styles of the Hinkelstein and SBK cultures (Zapotocka 1986), demonstrates. Alpine Jadeitite axes have been found in Lengyel contexts in Slovakia, at Golianovo, Lower Austria, at Kamegg, and Hungary, at Alsónyék-Kanizsa, some 950km from their Italian source at Mont Viso, crossing the divide that existed in Europe at this time between the circulation of Alpine Jade in the west and copper in east (Pétrequin et al. 2011; Klassen et al. 2012, 1281, Fig. 1; 1295). To the south, Vinča and later copper age communities may have influenced Lengyel material culture (Bánffy 2002), with mixed pottery assemblages containing Lengyel-style pottery amongst others evident at phase II of the Gomolava tell, occurring on top of Vinča layers (Borić 2009, 236). The spread of copper was also caught up in these networks, and the small number of copper objects that appear in the Funnel Beaker (TRB) contexts may be thanks to Lengyel contacts (Bogucki 1982). Copper ornaments were found in graves at the Brześć Kujawski site, but seemingly disappeared in the late phases (Grygiel, Bogucki 1993). A high amount of exchange of objects, ideas and possibly even people must therefore be envisaged for Europe at this time, despite the more restricted geographical spread of cultural groups

je zamisliti značajnu razmjenu predmeta, ideja, a moguće i ljudi, u to vrijeme na prostoru Europe, usprkos zemljopisno ograničenijem širenju kulturnih grupa i njihovih lokalno organiziranih strategija preživljavanja u usporedbi s ranim neolitikom.

Pogrebne prakse

Navedeno mnoštvo veza i pristupa sirovinama moglo je doprinijeti velikoj različitosti lenđelskih identiteta, bilo da su bili izraženi kroz uzorke naseljavanja, regionalno određene stilove ili čak u grobovima i pokapanju mrtvih. Kroz cijelu pretpovijest, čini se, nije bilo velike razlike između prostora za mrtve i onog za žive, a mrtvi su se često pokapali u jamama unutar samog naselja, pojedinačno ili u malim skupinama (Neugebauer-Maresch 1995, 94). U Transdanubiji su velika groblja također pronađena u ili uz naselja, a u slučaju lokaliteta Alsónyék-Bátaszék, broj ukopa prelazi 2000 individua (Oztász *et al.* 2012). Dvostruki ili višestruki ukopi rjeđi su, ali ipak prisutni (Neugebauer-Maresch 1995). Najčešća pojava su pojedinačni ukopi u zgrčenom položaju na lijevom ili desnom boku, koji su orijentirani u smjeru istok-zapad ili zapad-istok, tako da je većina pokojnika gledala na jug. Uz pokojnike je često pokopan niz grobnih priloga, iako je djeci prilagano manje predmeta nego odraslima (Siklósi 2007). Prilozi uključuju keramiku, glačani kamen, osobne ukrase od kamena, kosti, školjaka i bakra (Whittle 1985, 199). Bakreni predmeti su pretežno stavljani u grobove, što sugerira da su primarno bili u asocijaciji s ritualnim, a ne profanim aktivnostima (Bogucki 1988). U bogatim muškim grobovima ili uz cjelovite kosture pasa pronađeni su predmeti izrađeni od životinjskih kostiju, primjerice parovi veprovih kljova (Zalai-Gaál *et al.* 2009; Zalai-Gaál *et al.* 2011).

Grobni prilozi variraju s obzirom na spol pokojnika. U muškim su grobovima pronađene glačane kamene alatke poput buzdovana, sjekira i dlijeta, zatim veprove mandibule i kljove u obliku privjesaka, dok se u ženske grobove prilažu alatke od kosti i roga te osobni ukrasi od školjke spondylus i jelenjih zubi. Bogati niz predmeta, koji su se prilagali mrtvima, daje naslutiti varijaciju u društvenom statusu i pristupu određenim egzotičnim materijalima, iako su ostali grobni prilozi mogli biti povezani s dobi pokojnika i prolaženje određenih obreda (Siklósi 2007). Na lokalitetu Alsónyék-Bátaszék mali broj grobova je sadržavao rupu od stupa na svakom uglu rake, što ukazuje na neku vrstu strukture unutar groba (Zalai-Gaál *et al.* 2012). Sve to sugerira da su rituali vezani uz pokapanje bili prilično razrađeni, možda kao odraz ne samo varijacije u statusu, već također i razlike u vjerovanjima diljem područja rasprostiranja lenđelske kulture.

and their more locally organised subsistence strategies when compared to the early Neolithic.

Funerary Practices

These myriad of different connections and access to raw materials may have contributed to the more strongly differentiated identities found in the Lengyel, whether expressed through settlement patterns, regionally specific styles or even within graves and the burial of the dead. Throughout prehistory, there seems not to have been a strong distinction drawn between areas for the dead and those for the living, with dead often buried in pits within the settlement itself, alone or in small clusters (Neugebauer-Maresch 1995, 94). In the Transdanubian region, large cemeteries were also placed across and by settlements, and in the case of Alsónyék-Bátaszék the number of burials runs to over 2000 individuals (Oztász et al. 2012). Double or multiple burials and cremations are less frequent but present within the burial assemblage (Neugebauer-Maresch 1995). Rather, most frequently, single inhumations placed in a crouched position on their left or right hand sides and oriented east-west or west-east, that most individuals faced south. The dead were often accompanied by a range of grave goods, though children did receive less objects than adults (Siklósi 2007), including ceramics, polished stone, personal ornamentation made from stone, bone, shell and copper (Whittle 1985, 199). Copper objects are largely placed in graves suggesting that they were primarily associated with ritual rather than profane activities (Bogucki 1988). Objects made from animal bone such as the pairs of boar tusks associated with rich male burials or complete dog skeletons (Zalai-Gaál et al. 2009; Zalai-Gaál et al. 2011), have also been found.

The range of grave goods has been found to vary with the sex of the deceased. Male burials were associated with polished stone objects such as mace heads or stone-last adzes as well as stone chisels, wild boar mandibles and tusks fashioned as pendants, while females grave goods included bone and antler tools and personal ornamentation made from Spondylus *and deer teeth. The rich array of objects that accompanied the dead suggest some variation in social status and access to certain exotic materials, though other grave goods may have been associated with the age of the deceased and the passing of certain rites of passage (Siklósi 2007). At Alsónyék-Bátaszék a small percentage of graves contained a posthole at each corner of the grave, suggesting some form of internal structure to the grave (Zalai-Gaál et al. 2012). Such features suggest that the rites associated with burying the dead may have been quite elaborate, perhaps reflecting not only variation in status, but also differences in belief across the distribution of the Lengyel culture.*

Zaključak

Lenđelska kultura zauzima graničnu ulogu u pretpovijesti Europe, i geografski i kronološki. Kao jedna od brojnih post-LTK kultura, predstavlja razvoj neolitika u Podunavlju u niz različitih kulturnih ekspanzija koje, čini se, cijene i svoj individualni izričaj lokalnog identiteta i održavanje različitih poveznica i pripadnosti, u nekim slučajevima i na velike udaljenosti. Lenđelska kultura doprinijela je i razvoju metalurgije u jugoistočnoj Europi, jer je bila dijelom regionalne cirkulacije bakra (Klasen *et al.* 2013) i dijelila mnoge kućanske i osobne ritualne prakse i ukrašavanje s kasnoneolitičkim grupama u regiji. Praksa zatvaranja prostora, iako vrlo varijabilna, povezuje mnoge neolitičke kulture. Zajednice lenđelske kulture su, dakle, živjele neolitičkim načinom života, uzgajajući pripitomljene životinje, uzgajajući žitarice i živeći u dugim kućama. Organizacija naselja u obliku sela i neke naznake hijerarhije ili osobne specijalizacije govore u prilog svakodnevice koja je određena potrebama zemljoradničkog ciklusa i brigama neposredno prisutne skupine. Ipak, mnogo toga tek treba shvatiti, primjerice, točan razlog korištenja i namjenu figurina, značenje i vrstu aktivnosti koje su se odvijale u zatvorenim prostorima, te značaj kulturnih veza izvan lenđelske kulture.

Conclusion

The Lengyel culture occupies a border position in the Prehistory of Europe, both geographically and chronologically. As one of a number of post-LBK cultures, it represents the development of the Danubian Neolithic into a series of more diverse cultural expansions that appeared to prize both their individual expressions of local identity and the maintenance of different connections and affiliations, in some cases over long distances. The Lengyel culture also contributed to the south-eastern European development of metal, belonging to the regional circulation of copper (Klassen et al. 2013) and sharing much of the domestic and personal ritual and adornment with late Neolithic groups in this region. The practice of enclosure, though itself very varied, unites many different Neolithic cultures. The communities of the Lengyel culture therefore broadly lived a Neolithic way of life, herding domesticated animals, growing cereals and living in longhouses. The village-like organisation of settlements and some indications of hierarchy or individual specialisation speak to a day-to-day life determined by the demands of the agricultural cycle and the concerns of the immediate group. However, much remains to be understood; the precise use and purpose of figurines, the meaning of and activities that took place at enclosures and the significance of cultural connections beyond the Lengyel.

TIHOMILA TEŽAK-GREGL

LENĐELSKA KULTURA NA PODRUČJU HRVATSKE

THE LENGYEL CULTURE IN CROATIA'S TERRITORY

Robert Rudolf Schmidt prvi je neke nalaze s područja Hrvatske pripisao lenđelskoj kulturi. U knjizi „Die Burg Vučedol" u kojoj je uz rezultate svojih iskopavanja na položaju Gradac na Vučedolu iznio i jedan od prvih sinteznih prikaza neolitika i eneolitika u međuriječju Drave, Save i Dunava, neke je keramičke nalaze iz Bapske opisao kao karakteristične oblike lenđelske kulture (Schmidt 1945, 121). Iste je predmete nešto kasnije Vladimir Milojčić odredio kao slavonsko-srijemsku kulturu za koju također naglašava kako ima sličnosti s lenđelskom kulturom (Milojčić 1949, 83), pa ju je ubrzo i preimenovao u slavonsko-lenđelsku, odnosno bapsko-lenđelsku grupu. Potonji je naziv preuzeo 1961. S. Dimitrijević u svojoj sintezi neolitičkih kultura u slavonsko-srijemskom području da bi nakon provedenih iskopavanja u Bapskoj istu neolitičku pojavu preimenovao u sopotsko-lenđelsku kulturu (Dimitrijević 1968, 12-20). Dakle, već je rano uočena određena sličnost sopotske kulture slavonsko-srijemskoga prostora s lenđelskom kulturom Transdanubije. Iako je kasnije, uvažujući primjedbe mađarskih i slovačkih kolega (Kalicz, Makkay 1972; Pavuk 1976, 38) te uzimajući u obzir da je sopotska kultura starija od najstarije lenđelske, sam Dimitrijević odbacio dodatak lenđelski, ipak je uvijek naglašavao kako je sopotska kultura, iakio u osnovi nije lenđelska, svojim širenjem na sjever u zapadnu Mađarsku prouzročila stvaranje lenđelske kulture te ju je smatrao rodonačelnicom lenđelskih kultura (Dimitrijević 1979a). Veze područja južno od Drave s lenđelskom kulturom ponovo su postale aktualne nakon otkrića lokaliteta Brezovljani kod Križevaca u sjeverozapadnoj Hrvatskoj na osnovi kojega je Dimitrijević definirao brezovljanski tip sopotske kulture (Dimitrijević 1978). Već je u prvim objavama brezovljanskog keramičkog materijala koji karakterizira umekšana bikonična profilacija i crveno slikanje nakon pečenja, utvrdio sličnosti s keramikom slovačke grupe Lužianky. Nekoliko godina kasnije usporedio je brezovljanski tip s transdanubijskom grupom Sopot-Bicske i grupom Lužianky zaključujući kako su obje rezultat prodora sopotske kulture na sjever i da stoga imaju protolenđelski značaj. Razlike koje su među njima vidljive potječu od različitih supstrata na kojima su nastale i intenziteta sopotskih utjecaja (Dimitrijević 1979a, 343-345). Otkrića novih nalazišta bezovljanskog tipa sopotske kulture u sjeverozapadnoj Hrvatskoj, ali i u Transdanubiji (Marković 1989, 64-65; 1994, 78, 214; Regenye 1996, 164-165) potvrdila su Dimitrijevićeve ideje o protolenđelskom obilježju brezovljanskog tipa sopotske kulture. U takvom ga kontekstu nalazimo i u periodizacijama lenđelske kulture u Transdanubiji N. Kalicza (Kalicz 1988). On razlikuje predlenđelski horizont koji čine kasni Zseliz i Sopot-Bicske i protolenđelski horizont u koji ulaze Lužianky, Sè i Brezovljani.
Pedesetih godina 20. st. J. Korošec je na temelju nekoliko

Robert Rudolf Schmidt was the first to ascribe certain finds from Croatia's territory to the Lengyel culture. In his book Die Burg Vučedol, in which, together with the results of his excavations at the Gradac site at Vučedol, he put forth one of the first syntheses of the Neolithic and Eneolithic in the Drava, Sava and Danube interfluve and described some of the pottery finds from Bapska as typical Lengyel culture forms (Schmidt 1945, 121). Somewhat later, Vladimir Milojčić classified the same items as the Slavonian-Srijem culture, which he stressed had similarities with the Lengyel culture (Milojčić 1949, 83) so that soon he changed the designation to Slavonian-Lengyel, or the Bapska-Lengyel group. The latter term was assumed in 1961 by S. Dimitrijević in his synthesis on Neolithic culture in the Slavonia-Srijem region, only to rename the same Neolithic phenomenon to the Sopot-Lengyel culture after conducting excavations in Bapska (Dimitrijević 1968, 12-20). Thus, a certain similarity between the Sopot culture of the Slavonia-Srijem region and the Lengyel culture of the Transdanubia was already observed rather early. Although subsequently, after taking into account the comments made by Hungarian and Slovak colleagues (Kalicz, Makkay 1972; Pavuk 1976, 38) and the fact that the Sopot culture was older than the oldest Lengyel, Dimitrijević himself discarded the addition of Lengyel, he nonetheless always stressed that the Sopot culture, although essentially not Lengyel, led to the creation of the Lengyel culture by spreading northward into western Hungary, and he considered it the root cause of the Lengyel culture (Dimitrijević 1979a). Links between the territory south of the Drava with the Lengyel culture once more became topical after the discovery of the Brezovljani site at Križevci in north-west Croatia, on which basis Dimitrijević defined the Sopot culture's Brezovljani type (Dimitrijević 1978). Already in his first publications of the Brezovljani pottery materials, which is characterized by softened biconical articulation and red painting after firing, he ascertained a similarity with the pottery of the Slovak Lužianky group. Several years later, he compared the Brezovljani type to the Transdanubian Sopot-Bicske and Lužianky groups, concluding that both were the result of the northward penetration of the Sopot culture and that they thus had proto-Lengyel significance. The visible differences between them had their origins in the different substrata on which they emerged and the intensity of Sopot influences (Dimitrijević 1979a, 343-345). The discovery of Sopot culture Brezovljani type sites in north-west Croatia, but also in the Transdanubia (Marković 1989, 64-65; 1994, 78, 214; Regenye 1996, 164-165) confirmed Dimitrijević's ideas on the proto-Lengyel features of the Sopot culture's Brezovljani type. It is in this context that it can also be found in the periodization of the Lengyel culture in the Transdanubia compiled by N. Kalicz (Kalicz 1988). He distinguished between a pre-Lengyel horizon consisting of the late Zseliz and Sopot-Bicske and the proto-Lengyel horizon

slovenskih i hrvatskih nalazišta izdvojio tzv. alpsku facies lenđelske kulture, uočivši u arheološkom materijalu neke naznake lenđelske keramografije (Korošec 1960, 47). No, ubrzo je reagirao S. Dimitrijević i iste nalaze pripisao eneolitičkoj lasinjskoj kulturi (Dimitrijević 1961). U genezi lasinjske kulture Dimitrijević je isprva posebno naglašavao ulogu badenske kulture, ali je kasnije uvidio svoju kronološku zabludu te zaključio da s obzirom na područje rasprostiranja tri supstratne komponente tvore osnovu za nastanak lasinjske kulture: vinčanska, sopotska i lenđelska, točnije njezina inačica Zengövárkony (Dimitrijević 1979b). Istovremeno definira i novu neolitičku pojavu na koju je već 1975. upozorila P. Korošec interpretirajući nalaze iz Ajdovske jame (Korošec 1975, 173; Dimitrijević 1979a, 347-349). U stratigrafiji navedene špilje Dimitrijević prepoznaje 4 sloja od kojih najdonji sadrži keramiku nedvojbeno lenđelskog obilježja za koju predlaže naziv alpsko-lenđelska kultura, dok se u gornja tri sloja pojavljuje tipična lasinjska keramika. Upozorava kako se ovaj naziv ne odnosi na pojavu koju je ranije Korošec nazvao alpskom facies lenđelske kulture. Naredних je godina u Sloveniji otkriveno više lokaliteta sa sličnim arheološkim materijalom što je sve jasnije upućivalo na postojanje dviju susljednih pojava, jedne kasnoneolitičke lenđelske, i druge ranoeneolitičke

Ozalj, posuda, kat. br. 204
Ozalj, vessel, cat. no. 204

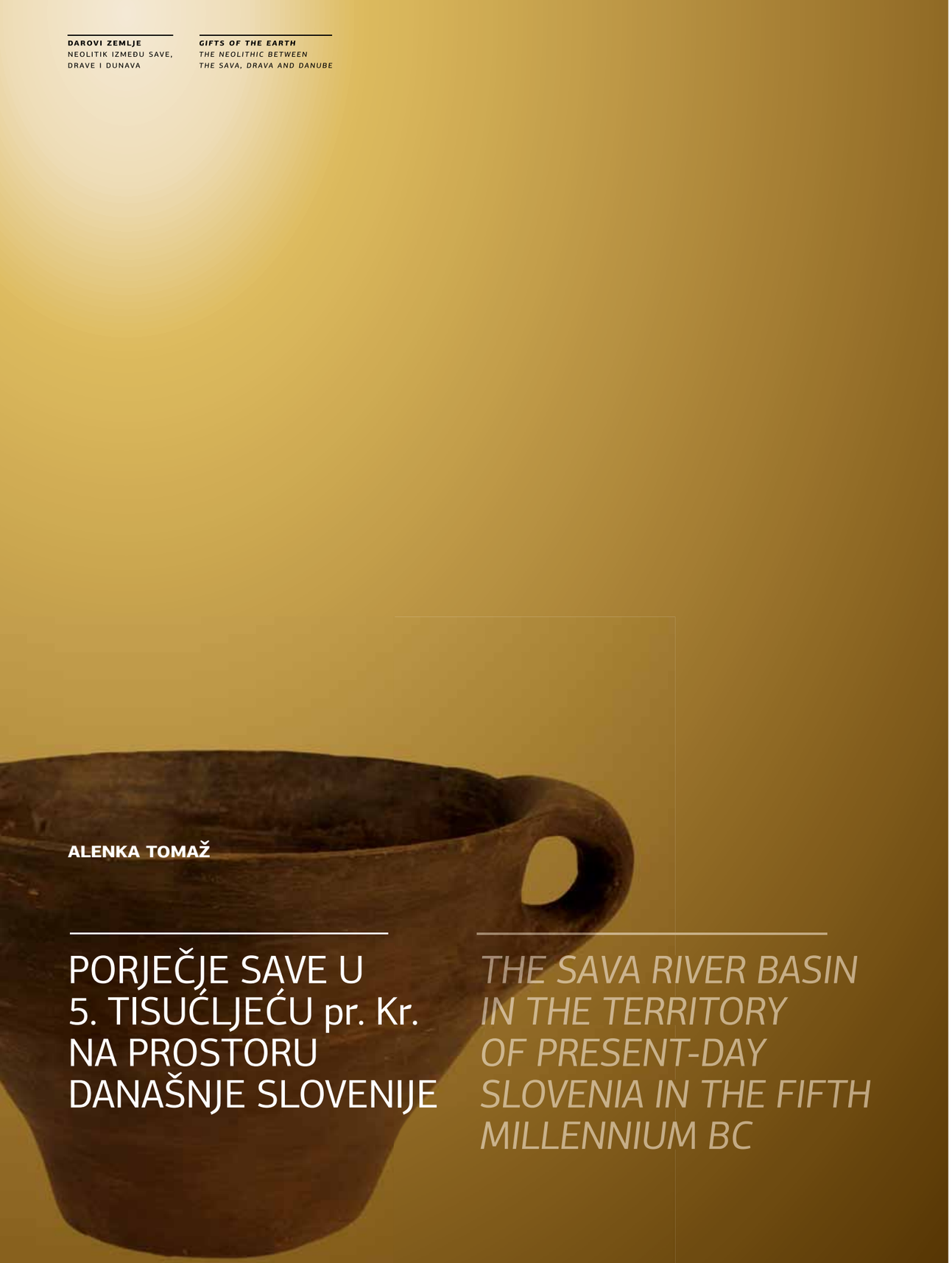
which encompasses Lužianky, Sè and Brezovljani.
In the 1950s, J. Korošec distinguished the so-called Alpine facies of the Lengyel culture based on several Slovenian and Croatian sites, observing certain indications of Lengyel ceramography in the archaeological materials (Korošec 1960, 47). However, Dimitrijević responded quickly, ascribing these same finds to the Eneolithic Lasinja culture (Dimitrijević 1961). Dimitrijević initially placed special emphasis on the role of the Baden culture in the genesis of the Lasinja culture, but later he realized his chronological error and concluded that, with regard to its area of distribution, three substratal components formed the basis for the emergence of the Lasinja culture: Vinče, Sopot and Lengyel, more precisely its Zengövárkony variant (Dimitrijević 1979b). At the same time, he also defined a new Neolithic phenomenon which had already been noted in 1975 by P. Korošec when interpreting finds from Ajdovska jama (Korošec 1975, 173; Dimitrijević 1979a, 347-349). Dimitrijević recognized four layers in this cave's stratigraphy, of which the lowest contained pottery with undoubtedly Lengyel features, for which he proposed the term Alpine-Lengyel culture, while the upper three layers contained typical Lasinja pottery. He warned that this term did apply to the phenomenon that Korošec had earlier called the Alpine facies of the Lengyel culture. In subsequent years, several sites were discovered in Slovenia which had similar archaeological materials, which increasingly pointed to the existence of two neighbouring phenomena, one Late Neolithic Lengyel, and the other early Eneolithic Lasinja (Dular 1985, 101-102, Budja 1988, 50). A similar situation was also observed in the western parts of the Hungarian Transdanubia (Károly 1992). At the beginning of the 1990s, during rescue excavations at the Ozalj-Stari grad site, prehistoric pottery was discovered next to the medieval fortress, among which some Lasinje pottery was observed, although most was a type of pottery until then undiscovered in northern Croatia. A category of very fine red pottery, and some painted pottery, stood out in particular. The typological and stylistic features of this pottery indicated the Lengyel culture complex (Težak-Gregl 1993b; 2001c; 2005b). Most pottery finds had analogies to certain Slovenian sites, primarily Moverna Vas, which is, geographically speaking, closest to Ozalj. The finds from the upper layers of Moverna Vas have been ascribed to the Lasinja culture, while those from the lower layers to the Lengyel (Dular 1985, 102). A more precise stratigraphic sequence at this site was established by excavations in 1988 (Budja 1988; 1989; 1992). Radiocarbon dating has established that these layers are Late Neolithic, i.e., Lengyel culture, between 4904 and 4033 BC (Budja 1993, 20, Fig. 5). Further parallels could be found in the south-west part of the Hungarian Transdanubia where, according to M. Károly, several settlements may be ascribed to the Lengyel, and perhaps Lasinja culture (Károly 1992). Károly classified the

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

lasinjske (Dular 1985, 101-102; Budja 1988, 50). Slična je situacija uočena i u zapadnim dijelovima mađarske Transdanubije (Károly 1992). Početkom devedesetih godina na lokalitetu Ozalj-Stari grad u prigodi zaštitnih istraživanja uz srednjovjekovni dvorac otkrivena je prapovijesna keramika među kojom je uočeno nešto lasinjske keramike, ali većina je pripadala tipu keramike kakve do tada u sjevernoj Hrvatskoj nije bilo. Osobito se isticala kategorija vrlo fine crvene keramike, te nešto slikane keramike. Tipološko-stilska obilježja ove keramike upućivala su na lenđelski kulturni kompleks (Težak-Gregl 1993b; 2001c; 2005b). Većina keramičkih nalaza imala je analogije s nekim slovenskim nalazištima, u prvome redu s Movernom Vasi koja je i geografski gledano najbliža Ozlju. Nalazi iz gornjih slojeva Moverne Vasi pripisani su lasinjskoj kulturi, a oni donjih slojeva lenđelskoj (Dular 1985, 102). Preciznija stratigrafska sekvenca na tom lokalitetu utvrđena je iskopavanjima 1988. g. (Budja 1988; 1989; 1992). Radiokarbonski datumi vremenski su slojeve kasnoga neolitika, tj. lenđelske kulture smjestili između 4904. i 4033. g. pr. Kr. (Budja 1993, 20, Fig. 5). Daljnje paralele bilo je moguće naći u jugozapadnom dijelu mađarske Trandanubije gdje je prema M. Károly nekoliko naselja moglo biti pripisano kasnoj lenđelskoj, a potom lasinjskoj kulturi (Károly 1992). Tamošnje nalaze lenđelske keramike Károly je svrstala u faze II i III lenđelske kulture. No, valja naglasiti da ozaljska keramika izvrsnom kvalitetom i udjelom slikanja nadmašuje srodan materijal slovenskih i transdanubijskih nalazišta. Nove nalaze regionalnog tipa lenđelske kulture na lokalitetu Čatež-Sredno polje, a koji imaju dodirne točke s ozaljskim materijalom, slovenski su autori definirali kao savsku grupu lenđelske kulture, datiranu u prvu polovicu 5. tisućljeća (Guštin 2005, Guštin *et al.* 2005b; Tomaž 2005). Neolitičko nalazište na ozaljskom starom gradu prema položaju na prirodno zaštićenoj uzvisini, poluukopanom stambenmm objektu i prije svega keramičkoj proizvodnji nedvojbeno pripada kompleksu kasnih lenđelskih kultura i zajedno sa slovenskim nalazištima tvori najjužniji izdanak čitavoga kulturnoga kompleksa.
Zaključimo, dakle, da je područje sjeverne Hrvatske višestruko povezano s lenđelskim kulturnim kompleksom. Unatoč nekim nedoumicama koje uglavnom proizlaze iz istovremenih datuma za formativnu fazu lenđelske kulture i prisutnost sopotske kulture na tlu Transdanubije (Kalicz, Kreiter, Tokai 2007, 42-44), uloga i doprinos sopotske kulture oblikovanju lenđelskih kultura ostaju neupitni kao i pripadnost njezine regionalne varijante, brezovljanskoga tipa protolenđelskom, odnosno formativnom horizontu. Jednako tako moramo sasvim sigurno računati s prodorima kasne lenđelske kulture, ili po nekim autorima epilenđelske faze i oblikovanjem njezine regionalne inačice na južnoj periferiji ovoga kulturnoga kompleksa.

local Lengyel pottery finds into phases II and III of the Lengyel culture. However, it is noteworthy that the Ozalj pottery, with its outstanding quality and share of painted surfaces, surpasses any similar materials from Slovenian and Transdanubian sites. New finds of the Lengyel culture's regional type at the Čatež-Sredno polje site, which have some points in common with the Ozalj materials, have been defined by Slovenian scholars as the Lengyel Culture Sava group, dated to the first half of the fifth millennium BC (Guštin 2005; Guštin et al. 2005b; Tomaž 2005). The Neolithic site at Ozalj's old castle, based on its site on a naturally protected rise, the semi-buried residential structure and above all the pottery production, unambiguously belongs to the late Lengyel culture complex, and together with the Slovenian sites it constitutes the southernmost branch of this entire cultural complex.
It may therefore be said in conclusion that the territory of northern Croatia has many ties to the Lengyel cultural complex. Despite some doubts which generally arise from the coterminous dates for the formative phase of the Lengyel culture and the presence of the Sopot culture in the Transdanubia (Kalicz, Kreiter, Tokai 2007, 42-44), the role and contribution of the Sopot culture to the formation of the Lengyel culture remain unquestioned, as does the classification of its regional variant, the Brezovljani type, to the proto-Lengyel or formative horizon. By the same token, we must certainly count on the penetration of the late Lengyel culture or, according to some scholars, the epi-Lengyel phase and the formation of its regional variants on the southern periphery of this cultural complex.



ALENKA TOMAŽ

PORJEČJE SAVE U 5. TISUĆLJEĆU pr. Kr. NA PROSTORU DANAŠNJE SLOVENIJE

THE SAVA RIVER BASIN IN THE TERRITORY OF PRESENT-DAY SLOVENIA IN THE FIFTH MILLENNIUM BC

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Prije dva desetljeća naše razumijevanje neolitičkog razdoblja, na prostoru današnje središnje i istočne Slovenije, temeljilo se prije svega na pojedinim istraživanim neolitičkim nalazištima poput Ajdovske jame, Resnikovog prekopa, Drulovke i Ptujskog grada. Intenzivna istraživanja neolitika posljednjih nekoliko godina i otkriće novih neolitičkih nalazišta na trasi autoputa promijenilo je i nadopunilo razumijevanje i tumačenje razdoblja neolitika u širem porječju rijeke Save na prostoru današnje Slovenije. Otkrivena su bila nova neolitička nalazišta na lokacijama Čatež-Sredno polje, Col 1 kod Podgračenog, Dragomelj, Obrežje, Škovce kod Dolskog, Ponikve kod Trebnja, Dolenji Leskovec kod Save i dr. Provedena su bila revizijska iskopavanja na nalazištu Resnikov prekop te revizije arheološkog materijala iz istraživanja Josipa Korošeca na Drulovki, Resnikovom prekopu i Ptujskom gradu.

O povijesti istraživanja neolitika i eneolitika na slovenskom prostoru pisali su različiti autori, među njima France Leben (1979), Mihael Budja (1983 i 1993 (1994)), Anton Velušček (1999), Mihael Budja i Simona Petru (2003), Mitja Guštin (Guštin 2005), Alenka Tomaž (2010) i dr., no povijesni pregled neolitičkih studija na prostoru Slovenije može se sažeti u povijest istraživanja neolitičkih lokaliteta s jedne strane i razvoj tumačenja neolitika s druge. Početci istraživanja neolitika i eneolitika u Sloveniji vezani su za otkriće sojenica na Ljubljanskom Barju 1875. godine, ali je za njihov razvoj svakako najvažnija sredina 20. stoljeća. Pedesetih i šezdesetih godina 20. stoljeća Josip Korošec je započeo istraživanja više neolitičkih nalazišta, među kojima su Resnikov prekop (Korošec 1964b), Drulovka (Korošec 1956; 1960) i Ptujski grad (Korošec 1965) te analize materijala iz Ajdovske jame (Korošec 1953). Rezultati njegovih istraživanja dugi niz godina predstavljali su jedine "referentne točke" istraživanja i tumačenja neolitičkog razdoblja u Sloveniji. Sedamdesetih godina 20. stoljeća je Stanko Pahič istraživao u Andrencima (Pahič 1976) i na nekim drugim lokalitetima, pa su rezultati njegovih istraživanja ponajviše pridonijeli ka razumijevanju neolitičkog razdoblja sjeveroistočne Slovenije. U to vrijeme je u Mariboru održan i kolokvij "Neolitik i eneolitik Slovenije i susjednih regija" na kojem su bile predstavljene tada aktualne interpretacije neolitika i njegove materijalne kulture (Arheološki vestnik 24, 1973). Osamdesetih godina 20. stoljeća počinju suvremena istraživanja vrlo važnog lokaliteta Moverna vas sa kompleksnom stratigrafijom arheoloških ostataka neolitičkog i eneolitičkog razdoblja (Budja 1988; 1989; 1990a; 1992; 1992 (1995); 1993; 1993 (1994)). Od prilike u isto vrijeme Milena Horvat počinje sa istraživanjima Ajdovske jame, jednog od ključnih nalazišta za tumačenje neolitika i eneolitika na prostoru Slovenije (Horvat 1989; 2009). Suvremeno poznavanje neolitika u središnjoj Sloveniji vezano je također

Two decades ago, our understanding of the Neolithic period in the territory of present-day central and eastern Slovenia was based primarily on individual researched Neolithic sites such as Ajdovska jama, Resnikov prekop, Drulovka and Ptujski grad. Intensive research into the Neolithic over the past several years and the discovery of new Neolithic sites along a motorway section altered and supplemented the understanding and interpretation of the Neolithic in the wider Sava River Basin in the territory of present-day Slovenia. New Neolithic sites were discovered at the following sites: Čatež-Sredno polje, Col 1 in Podgračeno, Dragomelj, Obrežje, Škovce near Dolsko, Ponikve near Trebnja, Dolenji Leskovec at the Sava River and others. Revisionary excavations were conducted at the Resnikov prekop site, and the archaeological materials from Josip Korošec's research at Drulovka, Resnikov prekop and Ptujski grad also underwent a revision.

A number of scholars have written about the history of the Neolithic and Eneolithic periods in Slovenian territory, among them France Leben (1979), Mihael Budja (1983 and 1993 (1994)), Anton Velušček (1999), Mihael Budja and Simona Petru (2003), Mitja Guštin (Guštin 2005), Alenka Tomaž (2010) and others, but the historical overview of Neolithic study in Slovenia may be summarized in the history of research into Neolithic sites on the one hand and progress in interpretations of the Neolithic on the other. Research into the Neolithic and Eneolithic in Slovenia began with the discovery of a stilt house at Ljubljansko Barje in 1875, but the most significant progress was made from the mid-twentieth century onward. In the 1950s and 1960s, Josip Korošec initiated research at several Neolithic sites, among them Resnikov prekop (Korošec 1964b), Drulovka (Korošec 1956; 1960) and Ptujski grad (Korošec 1965), and he also analyzed the materials from the Ajdovska jama cave (Korošec 1953). For many years, the results of his research served as the sole "reference points" for further research and interpretation of the Neolithic in Slovenia. In the 1970s, Stanko Pahič conducted research in Andrenci (Pahič 1976) and at certain other sites, so the results of his research mostly contributed to an understanding of the Neolithic period in north-eastern Slovenia. At that time, a colloquium on "The Neolithic and Eneolithic in Slovenia and Neighbouring Regions" was also held in Maribor, at which the then current interpretations of the Neolithic and its material culture were presented (Arheološki vestnik 24, 1973). Modern research at the very important Moverna vas site, with a complex stratigraphy of archaeological remains from the Neolithic and Eneolithic periods, began in the 1980s (Budja 1988; 1989; 1990a; 1992; 1992 (1995); 1993; 1993 (1994)). At roughly the same time, Milena Horvat initiated research at Ajdovska jama, one of the key sites for interpretation of the Neolithic and Eneolithic in Slovenia

za otkriće neolitičkih slojeva na Gradcu kod Mirne (Dular *et al.* 1991; Dular 2001), a za prostor sjeveroistočne Slovenije važna su istraživanja Irene Šavel u Bukovnici i Šafarskom (Šavel 1992; 1994; 2006). Krajem devedesetih godina 20. stoljeća, na trasi budućeg autoputa, otkriven je i istražen lokalitet Dragomelj (Turk, Svetličič, 2005). 2002. godine istraživani su lokaliteti Čatež-Sredno polje (Guštin *et al.* 2005; Tomaž 2010), Col 1 kod Podgračenog (Horvat 2005) i Obrežje (Phil Mason, us. inf.). Iste godine su provedena i revizijska iskopavanja na nalazištu Resnikov prekop (Velušček 2006). 2008. godine otkrivena su i istražena nalazišta Škovce kod Dolskog (Žorž 2008) i Ponikve kod Trebnja (Gojko Tica, us. inf.), a 2009. godine nalazište Dolenji Leskovec kod Save (Horvat 2009, 28). Krajem 20. i u početkom 21. stoljeća provedene su i revizije arheološkog materijala sa istraživanja Josipa Koršca na Drulovki (Guštin *et al.* 2005), Resnikovom prekopu (Tomaž 1999; Tomaž, Velušček 2005) i Ptujskom gradu (Tomanič-Jevremov *et al.* 2006).

Složeniji od povijesti "terenskih istraživanja neolitičkih nalazišta" čini se historijat interpretacija neolitika u središnjoj i sjeveroistočnoj Sloveniji. Prvi, koji je definirao neolitičku kulturu na tom području, bio je Josip Korošec. Nalaze iz Drulovke, Ajdovske jame, Zbelova, Brezja kod Zreča, Brinjeve Gore i Andrenaca svrstao je u slovensku neolitičku kulturnu grupu, koja se raznim elementima povezivala s butmirskom, slavonsko-srijemskom ili lenđelskom grupom (Korošec 1956, 14). Kasnije ju je nazvao alpska facies lenđelske kulturne grupe, a vremenski ju je svrstao na sam kraj neolitika (Korošec 1960, 47). Prilikom objave nalaza iz Resnikovog prekopa i Ptujskog grada izrazio je sumnju u održivost predloženog naslova s obzirom na relativno skromne elemente prave lenđelske kulture koje nalazimo u keramici Resnikovog prekopa. Uz pomoć tzv. piriformnih amfora te terina različitih oblika pokušao je utvrditi utjecaj Butmirske kulture. Time se znatno promijenio njegov nekadašnji stav, da je na formiranje alpske facies lenđelske kulture utjecala prvenstveno lenđelska kultura (Korošec 1964b, 40-41). Nakon objave nalaza iz Ptujskog grada njegov stav, u vezi utjecaja na alpska facies, opet se promijenio, naime utvrdio je da su u alpski facies lenđelske kulture, pogotovo na Resnikovom prekopu, vidljivi najčišći elementi lenđelske kulture. Također, jasno se mogla identificirati i jadranska komponenta, pogotovo u nekim oblicima posuda (Korošec 1965, 15). Na osnovu ornamentike i oblika posuda je Tatjana Bregant u svojim istraživanjima pokušala definirati kontinentalne i jadransko-mediteranske komponente slovenskog materijala. Unatoč jasno vidljivim poveznicama s jadransko-mediteranskim kulturnim okruženjem, ona tvrdi da treba istaknuti činjenicu da alpska facies lenđelske kulture nije u neposrednoj vezi s tim kulturnim krugom, već da on

(Horvat 1989; 2009). Contemporary knowledge of the Neolithic in central Slovenia is also tied to the discovery of Neolithic layers in Gradec, near Mirna (Dular et al. 1991; Dular 2001), while the research conducted by Irena Šavel in Bukovnica and Šafarsko is important for north-eastern Slovenia (Šavel 1992; 1994; 2006). At the end of the 1990s, the Dragomelj site, on a section of a future motorway, was discovered and examined (Turk, Svetličič, 2005). In 2002, the Čatež-Sredno polje (Guštin et al. 2005; Tomaž 2010), Col 1 in Podgračeno (Horvat 2005) and Obrežje (Phil Mason, us. inf.) were all investigated. In that same year, revision excavations were conducted at the Resnikov prekop site (Velušček 2006). The Škovce near Dolsko (Žorž 2008) and Ponikve at Trebnje (Gojko Tica, us. inf.) sites were discovered and examined in 2008, and the Dolenji Leskovec site on the Sava River (Horvat 2009, 28) was discovered in 2009. At the end of the twentieth and beginning of the twenty-first centuries, the archaeological materials from Josip Korešec's research at Drulovka (Guštin et al. 2005), Resnikov prekop (Tomaž 1999; Tomaž, Velušček 2005) and Ptujski grad (Tomanič-Jevremov et al. 2006) all underwent revisionary evaluations.

The history of interpretations of the Neolithic in central and north-east Slovenia appears even more complex than the history of "field research into Neolithic sites". The first who defined Neolithic culture in this territory was Josip Korošec. He classified the finds from Drulovka, Ajdovska jama, Zbelovo, Brezje at Zreč, Brinjeva Gora and Andrenci as the Slovenian Neolithic culture group, which in various elements is tied to the Butmir, Slavonia-Srijem or Lengyel group (Korošec 1956, 14). He later referred to it as the Alpine facies of the Lengyel culture, placing it chronologically at the very end of the Neolithic (Korošec 1960, 47). Upon publication of the finds from Resnikov prekop and Ptujski grad, he expressed doubt in the sustainability of the proposed designation given the relatively modest elements of genuine Lengyel culture that can be found in the Resnikov prekop pottery. With the help of so-called pyriform amphorae and terrines of various shapes, he attempted to ascertain the influence of the Butmir culture. He thereby significantly changed his former stance that the formation of the Alpine facies of the Lengyel culture was primarily influenced by the Lengyel culture (Korošec 1964b, 40-41). After publication of the finds from Ptujski grad, his stance on the Alpine facies again changed, for he asserted that the purest elements of the Lengyel culture are visible in the Alpine facies of the Lengyel culture, particularly at Resnikov prekop. Also, an Adriatic component, especially in certain vessels shapes, could be clearly identified (Korošec 1965, 15). In her own research, Tatjana Bregant attempted to define continental and Adriatic-Mediterranean components of the Slovenian materials based on the vessel ornamentation and shapes. Despite the clearly visible

predstavlja samo jednu, veoma jaku, komponentu njezinog razvoja. Bregantova je također smatrala da u alpskoj facies lenđelske kulture nema dovoljno lenđelskih elemenata, zbog čega je predložila novo ime „jugoistočna predalpska kulturna skupina". Prema njezinom mišljenju, alpska facies lenđelske kulture i lasinjska kultura su srodne i razvile su se iz istog temelja, no nalazišta u Sloveniji ne možemo pripisati drugoj (Bregant 1974, 42). Utjecaje iz jadranskog područja u neolitiku i eneolitiku opravdavao je i Šime Batović, koji je smatrao, da su danilska i hvarska kultura snažno utjecale na formiranje alpske facies lenđelske kulture, koju je podijelio na stariju i mlađu fazu. Prema njemu su utjecaji s jadranskog područja u alpsku facies lenđelske kulture stigli uz pomoć lasinjske kulture preko Hrvatskog primorja i Like (Batović 1973, 91). Unatoč obratnom vremenskom rasporedu (najprije lasinjska kultura tek nakon alpska facies lenđelske kulture) smatrao je da su obje usko povezane i da imaju sličan razvoj (Batović 1973, 102). Pored Korošca, Bregantove i Batovića i drugi su istraživači povezivali neolitičke nalaze iz kontinentalne Slovenije s jadranskim područjem, među njima Zorko Harej (1975; 1986) i Paola Korošec (1975). U posljednje vrijeme je o vezama sjeverozapadne Hrvatske i Slovenije s jadranskim područjem pisala i Tihomila Težak-Gregl (2001b, 27-38).

Druga skupina interpretacija arheoloških nalaza iz kontinentalne Slovenije veže se za istraživače koji su smatrali da sva nalazišta iz Slovenije treba svrstati u eneolitičko razdoblje i kulturno povezivati s Podunavljem. Takvom se interpretacijom prvi poslužio Stojan Dimitrijević, koji je u studiji o problemu neolitika i eneolitika u sjeverozapadnoj Jugoslaviji, pored nalazišta u Hrvatskoj, u lasinjsku kulturu uključio i sva nalazišta u Sloveniji (Dimitrijević 1961). Na osnovu keramičkih nalaza lasinskoj kulturi je određena bapsko-lenđelska osnova, na koju su utjecale badenska, bodrogkerestúrska i vučedolska kultura. Na toj osnovi je lasinjska kultura definirana kao badenizirana lenđelska pojava (Dimitrijević 1961, 56). Kasnije se njegov stav djelomično promijenio, pa je nastanak lasinjske kulture povezivao sa združivanjem triju supstratnih temelja: vinčanskog, sopotskog i lenđelskog, na koje je utjecala badenska kultura, a kojima bi bio dodan i četvrti temelj, a to je alpska lenđelska kultura (Dimitrijević 1979, 170), definirana na temelju četvrtog horizonta Ajdovske jame. O eneolitičkom karakteru arheoloških nalaza s područja kontinentalne Slovenije pisali su i drugi autori, među njima France Leben, koji je sve jamske nalaze iz Slovenije svrstao u lasinjsku kulturu i eneolitičko razdoblje te zagovarao kulturno jedinstvo Slovenije, sjeverne Hrvatske i južne Austrije u post-neolitičkom razdoblju (Leben 1979, 38) te Stanko Pahič, koji je u početku sve nalaze pripisao tzv. škocjansko-lasinjskoj kulturi i ujedno smatrao da su alpska

links to the Adriatic-Mediterranean cultural milieu, she claimed that emphasis should be placed on the fact that the Alpine facies of the Lengyel culture was not directly tied to this cultural sphere, rather that it constituted only a single, very strong, component of its development. Bregant also believed that the Alpine facies of the Lengyel culture lacked sufficient Lengyel elements, so that she proposed a new designation, the "south-east pre-Alpine culture group". According to her view, the Alpine facies of the Lengyel culture and the Lasinja culture are similar and developed from the same base, but find-sites in Slovenia cannot be ascribed to the latter (Bregant 1974, 42). Influences from the Adriatic zone during the Neolithic and Eneolithic were also defended by Šime Batović, who believed that the Danilo and Hvar culture powerfully influenced the formation of the Alpine facies of the Lengyel culture, which he divided into older and younger phases. According to Batović, influences from the Adriatic zone arrived in the Alpine facies of the Lengyel culture with the help of the Lasinja culture through the Croatian Littoral and Lika (Batović 1973, 91). Despite the reverse chronological order (first the Lasinja culture only after the Alpine facies of the Lengyel culture), he believed both were narrowly linked and underwent similar development (Batović 1973, 102). Besides Korošec, Bregant and Batović, other researchers also linked the Neolithic finds from continental Slovenia with the Adriatic zone, among them Zorko Harej (1975; 1986) and Paola Korošec (1975). Tihomila Težak-Gregl has also recently written about the ties between north-western Croatia and Slovenia with the Adriatic zone (2001b, 27-38).

The other set of interpretations of the archaeological finds from continental Slovenia are associated with researchers who believed that all find-sites from Slovenia should be classified as Eneolithic and culturally tied to the Danubian Basin. This interpretation was first put forth by Stojan Dimitrijević, who, besides find-sites in Croatia, included all sites in Slovenia in the Lasinja culture in a study on the problems surrounding the Neolithic and Eneolithic in north-western Yugoslavia (Dimitrijević 1961). Based on the pottery finds, he established a Babsko-Lengyel basis for the Lasinja culture, influenced by the Baden, Bodrogkeresztúr and Vučedol cultures. On this basis, he defined the Lasinja culture as a "Badenized" Lengyel phenomenon (Dimitrijević 1961, 56). Later he partially changed his view, so he tied the emergence of the Lasinja culture with the merger of three substratal foundations: Vinče, Sopot and Lengyel, influenced by the Baden culture, to which he added a fourth foundation, the Alpine Lengyel culture (Dimitrijević 1979, 170), defined on the basis of the fourth horizon in Ajdovska jama. Other scholars have also written about the Eneolithic character of the archaeological finds from continental Slovenia, among them France Leben, who ascribed all cave finds from Slovenia to the Lasinja culture and the Eneolithic period,

Sl. 1, najznačajnija neolitička nalazišta s materijalnom kulturom lenđelskog karaktera na prostoru srednje, jugoistočne i sjeveroistočne Slovenije te sjeverozapadne Hrvatske.
Legenda: 1- Čatež-Sredno polje, 2 – Col 1 kod Podgračenog, 3 – Ajdovska jama, 4 – Sevnica, 5 – Gradec kod Mirne, 6 – Ponikve kod Trebnjeg, 7 – Resnikov prekop, 8 – Škovce kod Dolskog, 9 – Dragomelj, 10 – Kamnik (Mali grad) in (Kratna iznad Kamnika), 11 – Drulovka kod Kranja, 12 – Pusti gradec, 13 – Moverna vas, 14 – Ozalj –Stari grad (Hrvatska), 15 – Ptuj – Ptujski grad in Srednješolski center, 16 – Andrenci, 17 – Bukovnica.
Fig. 1, the most significant Neolithic sites with a Lengyel-type material culture in central, south-east and north-east Slovenia and north-west Croatia.
Legend: 1 – Čatež-Sredno polje, 2 – Col 1 in Podgračeno, 3 – Ajdovska jama, 4 – Sevnica, 5 – Gradec at Mirna, 6 – Ponikve at Trebnje, 7 – Resnikov prekop, 8 – Škovce at Dolsko, 9 – Dragomelj, 10 – Kamnik (Mali grad and Kratna above Kamnik), 11 – Drulovka at Kranj, 12 – Pusti gradec, 13 – Moverna vas, 14 – Ozalj-Stari grad (Croatia), 15 – Ptuj-Ptujski grad and Ptuj-Srednješolski center, 16 – Andrenci, 17 – Bukovnica.

facies lenđelske kulture, lasinjska kultura i tip Pölshals-Strappelkogel samo različita imena iste kulture (1968, 16), da bi desetljeće kasnije na temelju nalaza iz nalazišta Andrenci predvidio i mogućnost kasno neolitičkog naselja.

Za razumijevanje kronoloških odnosa arheoloških nalaza s područja Slovenije dugi niz godina je bio najznačajniji rad Hermanna Parzingera (1984) koji je tipološkom analizom keramike pojedinih nalazišta s Ljubljanskog barja i metodom analogije dobro datiranih cjelina pokušavao utvrditi vremensko i kulturno mjesto pojedinih nalazišta i njihovo trajanje. Veze s jadranskim i talijanskim područjem, su prema njegovom mišljenju rijetke, područje središnje Slovenije više je vezano za područje Podunavlja (Parzinger 1984, 36, 60).

Najranije interpretacije arheoloških nalaza iz kontinentalne Slovenije više ili manje su temeljile isključivo na metodama tipološko-kronološko-kulturnih determinacija nalaza i njihovim analogijama, s kojima je u pojedinačnom slučaju bio definiran vremenski i kulturni raspon od srednjeg neolitika jadranskog područja do srednjeg eneolitika podunavskog područja.
Tek u novije vrijeme su interpretacije odmakle od kulturno-historičnih okvira, a bile su prihvaćene i suvremene metode terenskih arheoloških istraživanja. Istraživanjima stratigrafski kompleksnog nalazišta u Movernoj vasi u Sloveniji je prvi put dokumentirana serija uzastopnih slojeva neolitičkog i eneolitičkog razdoblja (Budja 1988, 1989, 1992, 1992(1995)). Otkrićem i sustavnim istraživanjima lokaliteta, na trasama budućih autocesti u središnjoj Sloveniji, došlo se do mnogih novih saznanja i brojnih kontekstualno dobro dokumentiranih nalaza, zbog kojih je bio nužan pretres dosadašnjih

and he advocated cultural uniformity between Slovenia, northern Croatia and southern Austria in the post-Neolithic period (Leben 1979, 38), and Stanko Pahič, who initially ascribed all finds to the so-called Škocjan-Lasinja culture and simultaneously believed that the Alpine facies of the Lengyel culture, the Lasinja culture and the Pölshals-Strappelkogel type were simply different names for the same culture (1968, 16), only to foresee a potential late Neolithic settlement decades later based on the Andrenci site.

For many years, a work by Hermann Parzinger (1984) was the most important for an understanding of the chronological relations between archaeological finds from Slovenia's territory. He used a typological analysis of pottery from individual sites at Ljubljansko barje and analogies to soundly-dated units in an attempt to ascertain the chronological and cultural place for individual sites and their duration. In his view, links to Adriatic and Italian territory were rare, and he considered the territory of central Slovenia more closely tied to the Danubian Basin (Parzinger 1984, 36, 60).

The earliest interpretation of archaeological finds from continental Slovenia were more or less exclusively based on methods such as the typological-chronological-cultural determination of finds and their analogies, with which a chronological and cultural range from the middle Neolithic in the Adriatic zone to the middle Eneolithic in the Danubian zone was determined in individual cases. Only more recently have the interpretations moved from the cultural-historical framework, with contemporary archaeological fieldwork methods also accepted. A series of consecutive Neolithic and Eneolithic layers was first documented in research into the stratigraphically complex site in Moverna vas (Budja 1988, 1989, 1992, 1992(1995)).

The discovery and systematic research into sites on sections of future motorway routes in central Slovenia led to much new knowledge and numerous contextually well-documented finds, which necessitated a re-examination of previous interpretations and a new evaluation of Neolithic materials from this area. Besides Čatež-Sredno polje, which is thus far the largest researched Neolithic site in Slovenia, Dragomelj, Col in Podgračeno, Ponikve at Trebnje and others were discovered along sections of the future motorways. In his work Prvi poljedelci (The First Farmers; 2005), Mitja Guštin proposed a new name, the Sava group of the Lengyel culture – instead of the Alpine facies of the Lengyel culture – for the cultural phenomenon of older and newly-discovered sites of these first agricultural communities concentrated primarily along the Sava River, which more precisely defined the geographic component for the distribution of the site, at which a similar material culture was found and which can be linked to the agricultural communities in central and south-east Slovenia in the first half of the fifth millennium BC.

Sl. 2, savska terasa kod Brežica s lokacijom nalazišta Čatež-Sredno polje.
Fig. 2, Sava terrace at Brežice with the location of the Čatež-Sredno polje site.

interpretacija i nova evaluacija neolitičkog materijala s tog područja. Pored nalazišta Čatež-Sredno polje, koje za sad predstavlja najveće istraženo neolitičko nalazište u Sloveniji, na trasi budućih autoputa otkriveni su i Dragomelj, Col kod Podgračenog, Ponikve kod Trebnja i dr. Za kulturni fenomen starih i novootkrivenih nalazišta tih prvih poljoprivrednih zajednica, koja su koncentrirana prvenstveno uz rijeku Savu, u radu *Prvi poljedelci* je Mitja Guštin (2005), umjesto alpska facies lenđelske kulture, predložio novo ime savska grupa lenđelske kulture, koja preciznije definira geografsku komponentu rasprostranjenosti nalazišta, na kojima je otkrivena slična materijalna kultura i koju možemo vezivati za poljoprivredne zajednice prve polovine 5. tisućljeća pr. Kr. na području središnje i jugoistočne Slovenije.

Od najvažnijih lokaliteta, koji na temelju arheološkog materijala mogu biti pripisani savskoj grupi lenđelske kulture, treba spomenuti Čatež-Sredno polje, Dragomelj, Resnikov prekop, Drulovku, Kamnik- Mali grad, Gradec kod Mirne, Resnikov prekop, Ajdovsku jamu, Col kod Podgračena, Kratno iznad Kamnika, Gradišče kod Stiške vasi, Obrežje, Javšine, Sevnicu, Spahu, Škovce kod Dolskog, Ponikve kod Trebnja, Dolenji Leskovec kod Save i dr. (sl. 1).

Za savsku grupu tipična su naselja na plodnim riječnim terasama, kao npr. nalazišta Čatež-Sredno polje (sl. 2), Dragomelj, Dolenji Leskovec kod Save, Škovce kod Dolskog, Ponikve kod Trebnja i dr. koja u pravilu nisu zaštićena. Među njima je najbolje istraženo naselje Čatež-Sredno polje, koje prema svom karakteru i veličini od 3 ha ukazuje na tipičan lenđelski karakter njezinih starijih faza. Na području lenđelske kulture nisu poznate zgrade ujednačenog tlocrta, naime u svim fazama pojavljuju se nadzemni objekti s više prostorija (Pavuk 2003, 455-469), kao i djelomično ukopani objekti (Težak-Gregl 1995, 12), kakve poznajemo i na našem području. Na nalazištu Čatež-Sredno polje je 24 takvih primjeraka (sl. 3), a poznate su i na nalazištima Škovce kod Dolskog (Žorž 2008) i Dragomelj (Turk, Svetličič 2005). Relativno skromni ostaci dopuštaju samo djelomičan uvid u izgled objekata, no pretpostavlja se, da su zgrade više ili manje bile ukopane, a krovna konstrukcija je bila drvena. Tlocrti ukopanih dijelova objekata na nalazištu Čatež-Sredno polje su većinom amorfnih oblika i veličine od 10 m^2 do više od 50 m^2 (Tomaž 2010, sl. 14). Pored njih otkrivene

Sl. 3, Čatež-Sredno polje, primjer ukopanog objekta.
Fig. 3, Čatež-Sredno polje, example of excavated structure.

Noteworthy among the most important sites which, based on their archaeological materials, may be attributed to the Sava group of the Lengyel culture are Čatež-Sredno polje, Dragomelj, Resnikov prekop, Drulovka, Kamnik-Mali grad, Gradec at Mirna, Ajdovska jama, Col in Podgračeno, Kratno, above Kamnik, Gradišče at Stiška vas, Obrežje, Javšine, Sevnica, Spaha, Škovce near Dolsko, Ponikve at Trebnje, Dolenji Leskovec on the Sava, and others (Fig. 1).

Settlements on fertile river terraces are typical of the Sava group, such as, for example, Čatež-Sredno polje (Fig. 2), Dragomelj, Dolenji Leskovec on the Sava, Škovce near Dolsko, Ponikve at Trebnje, etc., which have not, as a rule, been preserved. Among these, the best researched was the Čatež-Sredno polje settlement, which may be described as older-phase Lengyel in character based on its layout and size of 3 ha. Structures with a uniform floor-plan are not known in the territory of the Lengyel culture, for in all phases above-ground structures with several rooms appear (Pavuk 2003, 455-469), as well as partially dug-in pit-houses (Težak-Gregl 1995, 12), known also in Slovenia's territory. There are 24 such examples at the Čatež-Sredno site (Fig. 3), and they have also been recorded at the Škovce at Dolsko (Žorž 2008) and Dragomelj (Turk, Svetličič 2005) sites. The relatively modest remains only allow for partial insight into the appearance of the structures, but it has been assumed that the buildings were more or less pit-houses with wooden roofs. The floor-plans of the dug-in portions of the structures at the Čatež-Sredno polje site are largely amorphous with surface areas from 10 m^2 to over 50 m^2 (Tomaž 2010, Fig. 14). Besides these, many small pits were also discovered, which have been interpreted as the vestiges of economic activity. The combination of large pits next the modest remains of dwellings, as discovered at Dragomelj, allowed for the interpretation of finds in the sense of an entire functional unit. A structure with dimensions of 11 x 7 m, discovered at the Škovce site, was interpreted as part of a residential building or a structure that served the entire community (Žorž 2008).

The actual organization of the settlement can only be discerned using the example of the Čatež-Sredno polje site, at which a sufficiently large portion of the settlement was examined (Fig. 4). Based on a comparative analysis of the spatial layout of the structures and their absolute dates, it may be concluded that

Sl. 4, Čatež-Sredno polje, organizacija neolitičkog naselja.
Fig. 4, Čatež-Sredno polje, organization of the Neolithic settlement.

su i mnogobrojne manje jame, koje su interpretirane kao ostaci gospodarskih aktivnosti. Kombinacija velikih jama uz skromne ostatke kuća, kakve su bile otkrivene na Dragomlju, dopuštale su interpretaciju nalaza u smislu jedne cjelokupne gospodarske cjeline. Objekt veličine 11 x 7 m, otkriven na nalazištu Škovce, interpretiran je kao dio stambenog objekta ili objekta koji je služio cjelokupnoj zajednici (Žorž 2008).

Sama organizacija naselja može se sagledati samo na primjeru nalazišta Čatež-Sredno polje na kojem je bio istražen dovoljno velik dio naselja (sl. 4). Na temelju komparativne analize prostornog rasporeda objekata i njihovih apsolutnih datuma, moglo se utvrditi da je samo naselje bilo formirano ciljano u kružnom smjeru, tako da je najstariji objekt bio postavljen u sam centar naselja, dok su mlađi ili istodobni objekti bili postavljeni kružno oko njega u jednakoj međusobnoj udaljenosti. Udaljenost između objekata u prvoj fazi širenja naselja bila je oko 50 m, dok su u sljedećoj fazi objekti bili promišljeno smješteni između ostalih objekata na međusobni udaljenosti oko 30 m (Tomaž 2010, sl. 19).

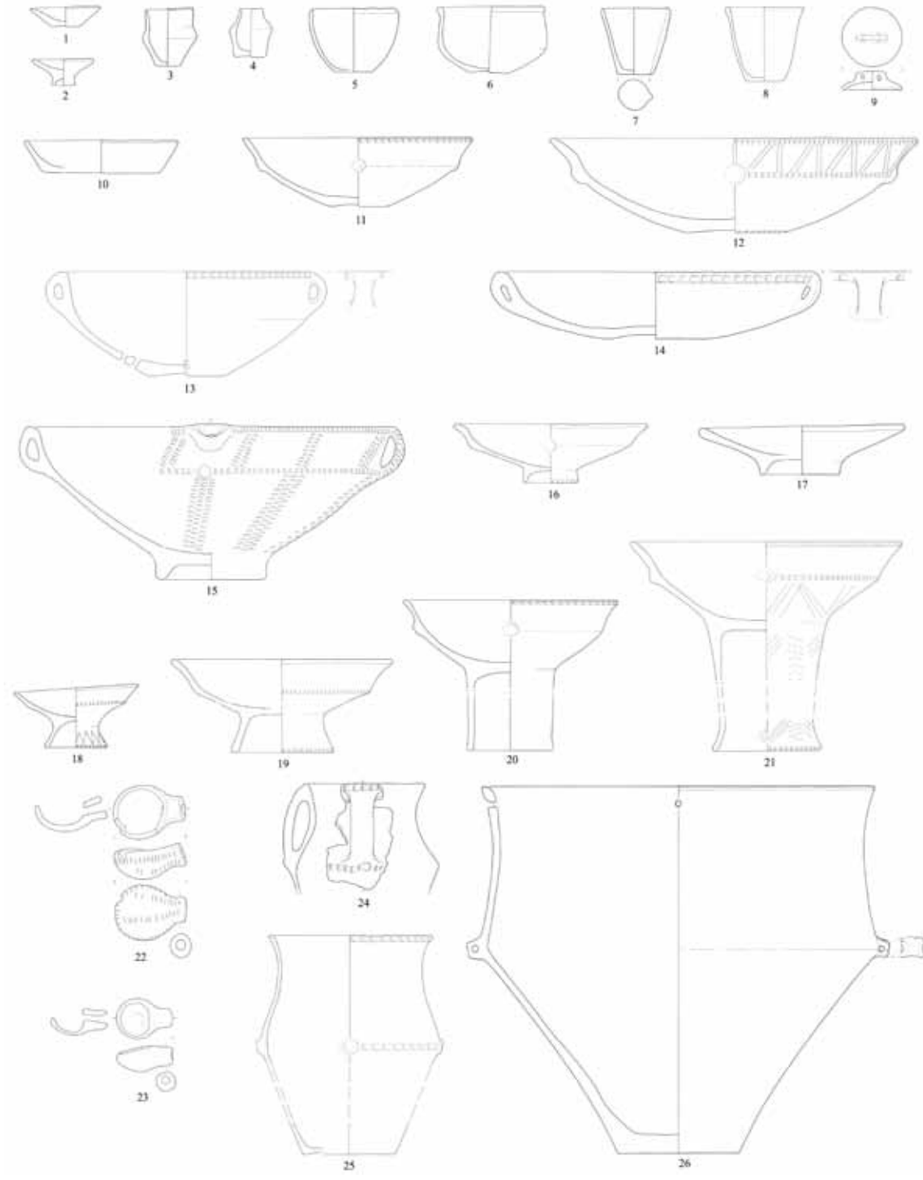
Materijalna kultura, otkrivena na nalazištima savske grupe lenđelske kulture obuhvaća većim dijelom keramiku i kamene alatke. Kolekcija neolitičkog kamenog oruđa otkrivena na nalazištu Čatež-Sredno polje predstavlja do sada najveću zbirku artefakata, pa se neke od zaključaka može prenijeti i na razinu svih nalazišta savske grupe. Na Čatežu otkriven zbir kamenih artefakta obuhvaća 78,9% odbojaka, 8,1% obrađenih alatki i 12,2% kamenih jezgri. Glačane alatke sastoje se od kamenih sjekira, nedovršenih sjekira, brusova i slično (Kavur 2005, 131). Zbog količine otkrivenih odbojaka smatra se da se proizvodnja alatki obavljala na samom lokalitetu. Sve sirovine koje su se koristile za proizvodnju alatki na odbojcima lokalnog su podrijetla.
Keramički je materijal na svim nalazištima najbrojniji, pa bi stoga njegove analize ponudile i najbolje rezultate. U posljednjim godinama napravljene su brojne analize keramičke građe iz različitih nalazišta, no najbrojniji materijal na području savske grupe otkriven je na lokalitetu Čatež-Sredno polje, s keramičkom zbirkom koja sadrži više od

the settlement itself was formed purposefully with a circular orientation, so that the oldest building was erected in the very centre of the settlement, while younger or coterminous structures were placed circularly around it at equal distances from each other. The distance between structures in the first phase of expansion of the settlement was roughly 50 m, while in the next phase structures were deliberately placed between the remaining buildings at a distance of 30 meters from each other (Tomaž 2010, Fig. 19).

The materials discovered at sites of the Sava group of the Lengyel culture largely encompasses pottery and stone tools. The collection of Neolithic stone implements discovered at the Čatež-Sredno polje site constitutes the thus far largest collection of artefacts, so some conclusions may be made at the level of all Sava group sites. The set of stone artefacts discovered at Čatež encompasses 78.9% flakes, 8.1% retouched tools and 12.2% stone cores. The polished tools consisted of stone axes, unfinished axes, grindstones and similar implements (Kavur 2005, 131). Due to the quantity of flakes discovered, it is believed tool production proceeded at the site itself. All raw materials used to produce tools on flakes are local in origin.

The pottery materials are most numerous at all sites, so analysis of it has yielded the best results. In recent years, numerous analyses of pottery from different sites have been conducted, but the most numerous materials in the Sava group territory were discovered at the Čatež-Sredno polje site, with a pottery collection which consists of over 68,000 fragments (Tomaž 2010). Based on contemporary analysis of the pottery, which ensues from well-defined radiocarbon dated archaeological units together with a re-evaluation of archaeological materials from older research, it may be asserted that the pottery materials are rather culturally uniform, which is confirmed by the repertoire of pottery shapes, their rendering, and particularly their manner of ornamentation. Widely open biconical bowls with outwardly drawn upper sections, biconical bowls with outwardly drawn upper sections and spouts, footed bowls with recipients resembling ordinary bowls, various biconical pots and spoons with horizontally pierced handles (Fig.

Sl. 5, tipični oblici neolitičke keramike savske grupe lenđelske kulture.
Fig. 5, typical Neolithic pottery shapes of the Sava group of the Lengyel culture.



68.000 ulomaka (Tomaž 2010). Na osnovu suvremenih analiza keramike, koje proizlaze iz dobro definiranih radiokarbonsko datiranih arheoloških cjelina, uz revizije arheoloških materijala starih istraživanja, moglo bi se konstatirati, da je keramički materijal prilično kulturno ujednačen, što potvrđuje repertoar oblika keramike, njezina izrada, a posebice i način ukrašavanja. Među tipove koji se pokazuju kao glavni spojni element keramike savske grupe lenđelske kulture treba uvrstiti široko otvorene bikonične zdjele izvučenog gornjeg dijela, bikonične zdjele izvučenog gornjeg dijela s izljevom, zdjele na nogama

5) must be included among the types which have emerged as the main connecting element of the pottery of the Sava group of the Lengyel culture.

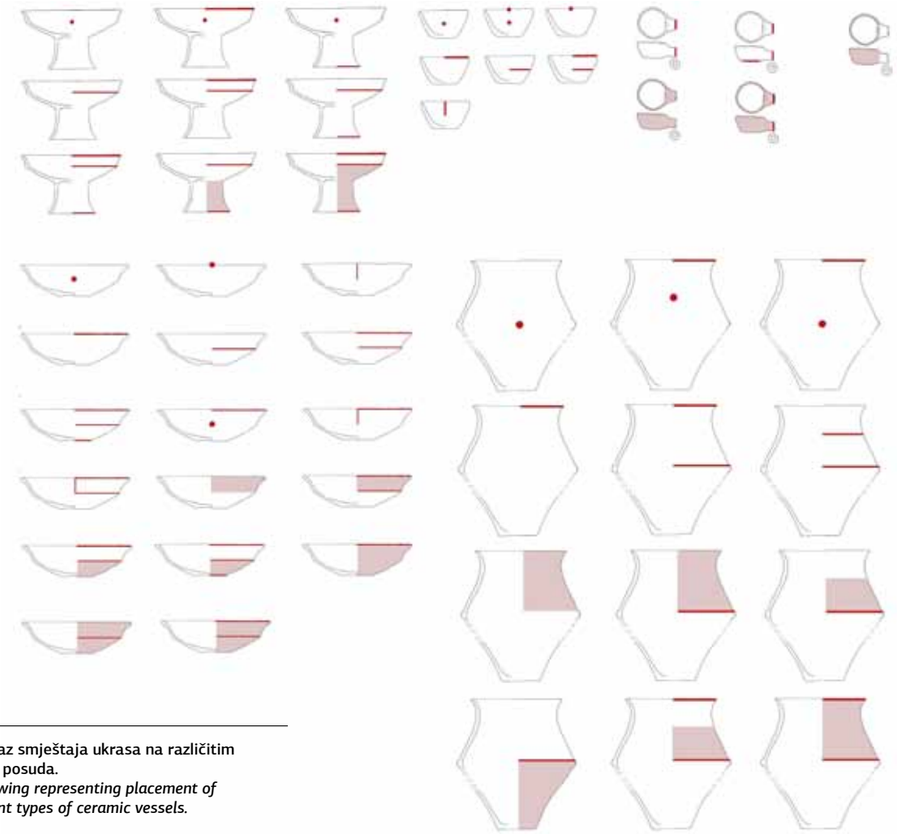
Biconical bowls with outwardly drawn upper sections constitute the most numerous vessel type at all sites of the Sava group of the Lengyel culture; at Čatež-Sredno polje bowls account for 31% of all ceramic vessels, footed bowls for 27%, ceramic spoons for 18% and various pots for 13% of all pottery. Other vessel types, such as plates, jugs, lids and miniature vessels, are more rare (Fig.

Sl. 6, zdjele na nozi s tipičnim ukrasom otiskivanja noktom.
Fig. 6, footed bowls with typical ornament made by impressed fingernails.

čiji recipijenti sliče običnim zdjelama, različiti bikonični lonci te žlice s horizontalno probušenom ručicom (sl. 5).

Bikonične zdjele izvučenog gornjeg dijela predstavljaju najbrojniji tip posude na svim nalazištima savske grupe lenđelske kulture, na Čatežu-Srednom polju zdjele predstavljaju 31% svih keramičkih posuda, zdjele na nozi 27%, keramičke žlice 18 % i različiti lonci 13% sve keramike. Drugi tipovi posuđa, kao što su tanjuri, bokali, poklopci i minijaturno posuđe su rjeđi (sl. 5: 1-9) (Tomaž 2010, sl. 29). Bikonične zdjele izvučenog gornjeg dijela pojavljuju se u različitim veličinama, na primjer zdjele iz Čateža-Srednog polja imaju dokumentiran raspon volumena između 0,4 i 10 l (Tomaž 2010, 73). Mnogobrojni su i različite varijante osnovnih tipova (sl. 5: 11-17). Pored jednostavnih bikoničnih zdjela izvučenog gornjeg dijela (sl. 5: 11-12, 26, 17) pojavljuju se još bikonične zdjele izvučenog gornjeg dijela sa ručicama (sl. 5: 13-14), bikonične zdjele izvučenog gornjeg dijela sa izljevom te bikonične zdjele izvučenog gornjeg dijela sa ručicama i izljevom (sl. 5: 15). Najbrojniji repertoar oblika zdjela sigurno je onaj s nalazišta Čatež-Sredno polje, no i na ostalim nalazištima savske grupe poznajemo širok repertoar različito oblikovanih bikoničnih zdjela izvučenog gornjeg dijela (npr. Dragomelj, Resnikov prekop, Drulovka, najstarija faza Gradca kod Mirne idr.). Karakterističan oblik keramičkog repertoara savske grupe predstavljaju i zdjele na nozi (sl. 5: 18-31; sl. 6), koje su oblikovane isto kao bikonične zdjele izvučenog gornjeg dijela, ali na dnu imaju izrađenu i nogu, koja može biti različitih oblika i visine u rasponu od 2 do 24 cm (Tomaž 2010, sl. 34). Noge zdjela savske grupe najčešće su konusne i šuplje, a samo na Čatežu-Srednom polju je pronađen i jedan primjerak sa punom nogom sa šupljim završetkom i rupom (Tomaž 2010, G 168). Jedan od zajedničkih elemenata su i bikonični lonci različitih veličina i oblika (sl. 5: 24-26). Možemo ih podijeliti u tri veličine: manje, srednje i velike. Raspon njihovih volumena na nalazištu Čatež-Sredno polje varira između 0,24 i 34 l, a najviše je onih veličine između 4,2 i 13 l (Tomaž 2010, 90). Lonci savske grupe različitih su oblika, ali najviše lonaca ima

5: 1-9) (Tomaž 2010, Fig. 29). Biconical bowls with outwardly drawn upper sections appear in various sizes, for example the bowls from Čatež-Sredno polje have a documented range in volumes from 0.4 and 10 l (Tomaž 2010, 73). Also numerous are the different variants of basic types (Fig. 5: 11-17). Besides simple biconical bowls with outwardly drawn upper sections (Fig. 5: 11-12, 26, 17), biconical bowls with outwardly drawn upper sections and small handles (Fig. 5: 13-14), biconical bowls with outwardly drawn upper sections and spouts and biconical bowls with outwardly drawn upper sections and small handles (Fig. 5: 15) also appear. The most numerous repertoire of bowl shapes is certainly that from Čatež-Sredno polje, but a broad range of differently-shaped biconical bowls with outwardly-drawn upper sections is known at other Sava group sites (e.g. Dragomelj, Resnikov prekop, Drulovka, the oldest phase at Gradec, near Mirna, etc.). A typical shape in the pottery repertoire of the Sava group includes footed bowls (Fig. 5: 18-31; Fig. 6), which were formed the same as biconical bowls with outwardly-drawn upper sections, but with a foot formed at the bottom, which may have different shapes and heights ranging from 2 to 24 cm (Tomaž 2010, Fig. 34). The foot on Sava group bowls is most often conical and hollow, and only at Čatež-Sredno polje was an example found that has a full foot with hollow end and a hole (Tomaž 2010, G 168). Biconical pots of differing sizes and shapes (Fig. 5: 24-26) are also a common element. They may be divided into three groups: small, medium and large. The range of their volumes at Čatež-Sredno polje varies between 0.24 and 34 l, and most of them were in the 4.2 to 13 l size range (Tomaž 2010, 90). Sava group pots have various shapes, but most pots have a conical lower section, a prominent transition and a lightly drawn-out neck and opening. The pots may or may not have small handles, made on the neck or connecting the neck with the opening. Analogies to these vessel shapes can be found at almost all Sava group sites (Tomaž 2010). Another typical form is the ceramic spoon with pierced handle, although there are those with full handles (Fig. 5: 22-23). Spoons may have a recipient shaped like a hemisphere with a flat or rounded base. The remaining types of ceramic vessels are rare at Čatež-Sredno polje, as at other sites.



Sl. 7, shematski prikaz smještaja ukrasa na različitim tipovima keramičkih posuda.
Fig. 7, schematic drawing representing placement of ornaments on different types of ceramic vessels.

konusni donji dio, naglašen prijelaz u rame i blago izvučen vrat i usta. Lonci mogu biti bez ili sa ručicama, koje su izrađene na vratu ili povezuju rame s otvorom. Analogije za te oblike posuda pronalazimo na skoro svim nalazištima savske grupe (Tomaž 2010). Karakterističan oblik predstavljaju i keramičke žlice s horizontalno probušenom ručicom, premda postoje i one s punom ručicom (sl. 5: 22-23). Žlice mogu imati recipijent u obliku polovice kugle s ravnim ili zaobljenim dnom. Preostali tipovi keramičkog posuđa su rijetki na nalazištu Čatež-Sredno polje, kao i na drugim nalazištima.

Jedan od značajnijih elemenata, koji povezuje materijalnu kulturu nalazišta savske grupe lenđelske kulture, je ukras utiskivanjem, koji može biti napravljen noktom ili na neki drugi način (sl. 6) (Tomaž 2005, 2010), no u slučaju keramike iz Čateža-Srednog polja i Dragomlja tako ornamentirana keramika predstavlja više od 60% ukrašene keramike (Tomaž 2010, 169). Plastična dekoracija se pojavljuje samostalno ili u kombinaciji s drugim načinima ukrašivanja, najčešće u kombinaciji sa utiskivanjem. Urezana i užlijebljena dekoracija u savskom kontekstu nije jako česta, no susrećemo je na keramici svih nalazišta savske grupe (Tomaž 2010). Motivi i smještaj ukrasa na keramičkim posudama su uglavnom jednostavni, linijski ili površinski i ovisni o keramičkom tipu posude, koja je dekorirana. Neki ukrasi nalaze se na svim

One of the most significant elements that links the material culture of sites of the Sava group of the Lengyel culture is the impressed ornament, which may have been made either by fingernail or in some other manner (Fig. 6) (Tomaž 2005, 2010), but in the case of pottery from Čatež-Sredno polje and Dragomelj, pottery ornamented in this manner accounts for over 60% of ornamented pottery (Tomaž 2010, 169). The sculpted decoration appears either independently or in combination with other ornamentation techniques, most often in combination with impressing. Incised and grooved decorations are not frequent in the Sava context, but they can be seen on pottery at all Sava group sites (Tomaž 2010). The motifs and placement of ornaments on the ceramic vessels are generally simple, linear or superficial and dependent upon the vessel's ceramic type, which is decorated. Some ornaments can be found on all ceramic types, but some ornaments are only associated with bowls, and others only with pots (Fig. 7) (Tomaž 2010, 113). Besides the shape and decoration, the rendering technique for Sava group pottery has also been ascertained. The results of technological macroscopic analysis of the pottery from Čatež-Sredno polje, Dragomelj and Resnikov prekop indicate a rather standardized manner of rendering ceramic vessels, in which the rendering technology was based on the selection of generally medium-grain pottery clay, simple manual working with the help of bands, fine finishing of

tipovima keramike, no neki ukrasi vezani su samo za zdjele, a drugi samo za lonce (sl. 7) (Tomaž 2010, 113). Pored oblika i dekoracije keramiku savske grupe determinira i njezin način izrade. Rezultati tehnološko makroskopske analize keramike s lokacija Čatež-Sredno polje, Dragomelj i Resnikov prekop ukazuju na prilično standardiziran način izrade keramičkog posuđa, u kome je tehnologija izrade bazirana na izboru uglavnom srednje zrnatih lončarskih glina, prostoručnoj izradi pomoću traka, finoj obradi vanjske i unutrašnje površine te nezavršenom oksidacijskom pečenju (Tomaž 2010, 171-172).

Područje kontinentalne Slovenije su u prvoj polovini 5. tisućljeća pr. Kr. naseljavale, pored savske grupe, i druge poljoprivredne zajednice, koje možemo na temelju komparativne analize keramičke građe odvojiti od savske grupe, ali u širem smislu i njih treba pripisati lenđelskoj kulturnoj manifestaciji. Neolitička nalazišta u sjeveroistočnoj Sloveniji (npr. Andrenci, Bukovnica isl.) sa Savskom grupom povezuju neki oblici zdjela, lonaca i žlica s razlikom da kod materijala s tih nalazišta prevladava klasičan lenđelski karakter. Za razliku od materijala iz središnje Slovenije ta je keramika često nedekorirana, a ukras uglavnom predstavljaju plastične aplikacije. Utiskivanje nokta ili šila skoro nije ni bilo poznato (Tomaž 2010, 173). Na sličnu situaciju nailazimo i na području Bele Krajine. Naime, među posuđem savske grupe i neolitičke keramike iz Moverne vasi i ostalih nalazišta u Beloj Krajini, vidi se srodnost u oblicima zdjela, zdjela na nozi, lonaca i žlica, ali među materijalom jedne i druge grupe postoje i značajne razlike u tehnologiji i kvaliteti izrade te u ornamentici. Ukras na keramici iz Moverne vasi je u 80% primjeraka izrađen tehnikama urezivanja i kombinacijom urezivanja i utiskivanja, a samo utiskivanje upotrijebljeno je tek kod 10% ukrašene keramike. Iako među nalazištima savske grupe lenđelske kulture i nalazištima u sjeveroistočnoj Sloveniji i onima u Beloj Krajini postoje usporedbe kod oblika posuđa, to nije potvrđeno za način ukrašavanja, a ne za način izrade, stoga je zaključeno da sve tri grupe imaju svoj karakter, a treba ih razumjeti u širem kompleksu lenđelskog kulturnog kompleksa kasnog neolitika (Tomaž 2010, 175).

Nalazišta savske grupe lenđelske kulture na području središnje i jugoistočne Slovenije vremenski su smještena u prvu polovinu 5. tisućljeća pr. Kr. (npr. Čatež-Sredno polje sa više od 20 datuma između 4899. i 4545. cal BC (Tomaž 2010, sl. 16), Dragomelj s rasponom datuma između 4660. - 4500. cal BC (Turk, Svetličič, 2005, 69) i Resnikov prekop s datumima između 4850. - 4460. cal BC, 4840. - 4590. cal BC, 4580. - 4505. cal BC (Velušček 1999, 66; 2006, 36)). Makar djelomično isti vremenski period je konstatiran i u Movernoj vasi s datumima za 2. fazu: 4904.-4874., 4902.-4876. i 4775.-4442. BC.; 4. fazu: 4685.-4340. BC; 5. fazu: 4598.-4248. BC i 6. fazu: 4360.-4033. BC (Budja 1992, sl. 1). Problematici

the external and internal surfaces and incomplete oxidation in firing (Tomaž 2010, 171-172).

The territory of continental Slovenia was, besides the Sava group, also inhabited by other agricultural communities in the first half of the fifth millennium BC, which can be discerned from the Sava group based on a comparative analysis of ceramics, although in the broader sense they too should be ascribed to the Lengyel cultural phenomenon. The Neolithic sites in north-east Slovenia (e.g. Andrenci, Bukovnica, etc.) are linked to the Sava group by specific bowl, pot and spoon shapes, the only difference being that a classic Lengyel character predominates in the materials from these sites. As opposed to materials from central Slovenia, this pottery is often undecorated, and the ornaments are generally sculpted applications. Impressing fingernails or awls was virtually unknown (Tomaž 2010, 173). A similar situation can also be found in White Carniola. Namely, among the Sava group vessels and Neolithic pottery from Moverna vas and other sites in White Carniola, a similarity in the shapes of bowls, footed bowls, pots and spoons can be seen, even though considerable differences between one and the other group are also apparent in the rendering techniques and quality and in the ornamentation. The decoration on the pottery from Moverna vas is, on 80% of the examples, rendering by incising techniques and a combination of incising and impressing, while impressing alone was used on only 10% of the decorated pottery. Even though there are comparable vessel shapes between sites of the Sava group of the Lengyel culture and sites in north-east Slovenia and those in White Carniola, this has not been confirmed for decoration techniques nor for rendering techniques, so it was established that all three groups have their character, and they should be understood within the broader Lengyel culture complex of the late Neolithic (Tomaž 2010, 175).

Sites of the Sava group of Lengyel culture in central and south-east Slovenia have been chronologically dated to the first half of the fifth millennium BC (e.g. Čatež-Sredno polje with over 20 dates between 4899 and 4545 cal BC (Tomaž 2010, Fig. 16), Dragomelj with dates ranging from 4660-4500 cal BC (Turk, Svetličič, 2005, 69) and Resnikov prekop with dates between 4850-4460 cal BC, 4840-4590 cal BC, and 4580-4505 cal BC (Velušček 1999, 66; 2006, 36)). An identical – or partly so at a minimum – chronological period was ascertained in Moverna vas with dates for the second phase: 4904-4874, 4902-4876 and 4775-4442 BC; fourth phase: 4685-4340 BC; fifth phase: 4598-4248 BC and sixth phase: 4360-4033 BC (Budja 1992, Fig. 1). Attention has been accorded to problems surrounding the radiocarbon chronology of Neolithic and Eneolithic sites in the territory of central and north-east Slovenia in several studies (e.g.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

apsolutne kronologije neolitičkih i eneolitičkih nalazišta na području središnje i sjeveroistočne Slovenija obratila se pažnja na više mjesta (npr. Tomaž 2011, Sraka 2012), no intenzivan rad na razjašnjenju problema u vezi završetka savske grupe i početka lasinjske kulture svaki dan donosi nova saznanja. U svakom slučaju, osim pojedinih indikacija o starijim naseljima (npr. Breg), naselja savske grupe i ona u Beloj Krajini još uvijek se mogu smatrati najranijima na području kontinentalne Slovenije, što je, s obzirom na susjedne regije gdje je početak neolitičkog načina života datiran na kraj 7. i početak 6. tisućljeća pr. Kr. (Biagi, Spataro 2005; Minichreiter, Krajcar Bronić 2006), relativno kasno.

U centralnoeuropskom smislu savska grupa lenđelske kulture pripada mlađem neolitiku, no u širem kulturno-historijskom kontekstu trebamo je razumjeti kao dio lenđelskog kompleksa, a neki elementi u materijalni kulturi ukazuju i na veze s brezovljanskim tipom sopotske kulture (Tomaž 2010, 176), što i ne iznenađuje jer se i ona veže za lenđelske karakteristike posuđa, uglavnom s njezinim starijim fazama tzv. proto-lenđelskim horizontom (Preuß, 1998, 317; Težak-Gregl 2001c, 29). U prvim objavama lokaliteta Čatež-Sredno polje i ostalih nalazišta, više autora je suglasno da neolitički nalazi s područja središnje Slovenije imaju najviše analogija s keramikom kasno lenđelskih faza (Sagadin 2005, 34; Kalicz 2001, 9; 2006b, 65; Károlyi 1992; Tiefengraber 2006b, 86 idr.), osim za nalaze iz Dragomlja za koje Turk i Svetličič naglašavaju da se najviše analogija može naći među nalazima brezovljanskog tipa sopotske kulture i na nalazištima istočne Austrije, Slovačke i Moravske u fazama koje su datirane uglavnom u početne horizonte lenđelske kulture (Turk, Svetličič, 2005, 25). Detaljna komparativna analiza keramičkih nalaza s lokaliteta Čatež-Sredno polje pokazala je da analogije keramici svakako možemo naći među keramičkim materijalom lenđelskih nalazišta na širokom prostoru rasprostranjenosti lenđelskog kulturnog kompleksa i u raznim fazama zapadno-mađarskih nalazišta, ranim i kasnijim fazama moravsko-austrijske slikane keramike i drugdje (Tomaž 2010, 176-180). Prema postojećim analogijama keramike i sa starijim fazama lenđelskog kompleksa i uz predloženu apsolutno kronološku raspodjelu grupe austrijsko moravske slikane keramike (Stadler, Ruttkay, 2007, 132, Tab. 7), koja početke ove grupe postavlja oko 4.800. god. pr. Kr., možda bi trebalo ponovo razmisliti i o mogućnosti pozicioniranja savske grupe u početne faze lenđelskog kulturnog kompleksa, na što bi ukazivale i bliske veze s brezovljanskim tipom sopotske kulture (Tomaž 2010, 189). U svakom slučaju, da bi odredili mjesto savske grupe, u budućnosti bi trebalo komparativnim analizama keramike i apsolutnom radiokarbonskom kronologijom i njezinim modeliranjem, preciznije odrediti i odnos između lenđelske i sopotske kulture.

Tomaž 2011, Sraka 2012), but intensive work on clarification of the problem pertaining to the end of the Sava group and the beginning of the Lasinja culture is yielding new knowledge every day. In any case, besides individual indications of older settlements (e.g. Breg), the settlements of the Sava group and those in White Carniola may still be deemed the oldest in the territory of continental Slovenia, which is, given the neighbouring regions where the beginning of the Neolithic lifestyle has been dated to the end of the seventh and early sixth millennia BC (Biagi, Spataro 2005; Minichreiter, Krajcar Bronić 2006), relatively late.

In the Central European context, the Sava group of the Lengyel culture belongs to the younger Neolithic, but in the broader cultural-historical context it should be seen as part of the Lengyel complex, while some elements in its material culture indicate a link to the Sopot culture's Brezovljani type (Tomaž 2010, 176), which is not surprising as the latter is also associated with the Lengyel characteristics for vessels, generally with the older phases of the so-called proto-Lengyel horizon (Preuß, 1998, 317; Težak-Gregl 2001c, 29). In the first publications of the Čatež-Sredno polje and other sites, a number of scholars agreed that the Neolithic finds from central Slovenia had the most analogies with the late Lengyel phase pottery (Sagadin 2005, 34; Kalicz 2001, 9; 2006b, 65; Károlyi 1992; Tiefengraber 2006b, 86 etc.), except for the finds from Dragomelj, of which Turk and Svetličič emphasized that most analogies could be found among the Sopot culture Brezovljani type and at the sites of eastern Austria, Slovakia and Moravia in the phases generally dated to the initial Lengyel culture horizons (Turk, Svetličič, 2005, 25). A detailed comparative analysis of pottery finds from the Čatež-Sredno polje site has shown that analogies thereto can be found among the ceramic materials of Lengyel sites in the broad area of distribution of the Lengyel cultural complex and in various phases of the west-Hungarian sites, the early and late phases of the Moravian-Austrian painted pottery and elsewhere (Tomaž 2010, 176-180). According to existing analogies between pottery and the older Lengyel complex phases, and with regard to the proposed absolute chronological distribution of the Austrian-Moravian painted pottery group (Stadler, Ruttkay, 2007, 132, Tab. 7), which sets the beginning of this group at approximately 4800 BC, perhaps it would be prudent to once more consider the possibility of placing the Sava group in the initial phase of the Lengyel cultural complex, which would also point to close ties to the Sopot culture's Brezovljani type (Tomaž 2010, 189). In any case, in order to determine the place of the Sava group, comparative analyses of pottery and absolute radiocarbon chronology and its modelling should be done to more precisely determine the relationship between the Lengyel and Sopot cultures.

MIHAEL BUDJA

NEOLITIZACIJA EUROPE: ARHEOLOŠKA, ARHEOGENETIČKA I BIOMOLEKULARNA PERSPEKTIVA

THE NEOLITHISATION OF EUROPE: ARCHAEOLOGICAL, ARCHAEOGENETIC AND BIOMOLECULAR POINTS OF VIEW

Uvod

Pojava i širenje neolitičkih kultura u Europi dugo su promatrani kroz prizmu migracija prapovijesnih populacija i distribucije keramike, a posebno ih je ideologizirao Lex Kossinae u kojem je „kulturna provincija“ izjednačena s “područjima određenog naroda ili plemena” (Kossina 1911, 3). Gordon Childe složio se s time da je neolitička keramika univerzalni pokazatelj kako “kulturnih identiteta”, tako i “rasprostiranja etničkih skupina” (Childe 1929, v–iv), ali se snažno protivio tome da se tehnologija izrade keramike i primarna distribucija iste dogodila na prostoru Europe. Pretpostavio je da su keramiku donijeli “imigranti iz jugozapadne Azije” koji nisu bili “specijalisti ali su potpuno ovladali svojim materijalom”. Tvrdi da su “iskusni zemljoradnici” s Peloponeza i Balkana proizvodili “jako finu poliranu i slikanu keramiku”, a “zemljoradnici faze Danubian I” u Karpatskoj kotlini i središnjoj Europi “neslikane grube posude s puno primjesa”. S druge strane granice širenja zemljoradnje i distribucije keramike prepoznao je “raštrkane skupine sakupljača” (Childe 1939, 21, 25–26; 1958, 58–60, 86–88).

Nakon što je Carleton Coon uveo fizičku antropologiju i rasno kartiranje (1939, 82–86, 104–107, Map 2) neolitički imigranti povezani su s “dunavskim zemljoradnicima”, “novom granom mediteranske” populacije u Europi s porijeklom na Bliskom Istoku koja je povezana s natufijenskim kulturnim kontekstima. U Europu su migrirali preko Anatolije i/ili Egeje, zatim su pošli dolinom Dunava do Karpatske kotline, središnje Europe i dalje na zapad, do pariške kotline gdje su susreli drugu skupinu „mediteranskih“ populacija koje su u Europu došle iz sjeverne Afrike preko Gibraltarskog tjesnaca. Smatra se da je prva skupina u Europu donijela „dunavsku slikanu keramiku“ koja pokazuje „sigurne sličnosti s Azijom“. Drugu se skupinu povezuje s „keramikom ukrašenom urezivanjem i trakama“. Ove struje su nedavno i arheogenetski prepoznate (Sampietro *et al.* 2007, 2165–2166; Deguilloux *et al.* 2012, 29, 32) te su ponovno priznate u arheologiji pod nazivom „dunavske“ ili „zapadne“ skupine (Gronenborn 2011, 68, 70).

Childe (1951, 76–77) je pojavu tehnologije izrade keramike prepoznao kao „najraniju čovjekovu svjesnu upotrebu kemijskih promjena... u kvaliteti materijala“ koja se dogodila na Bliskom Istoku u kontekstu neolitičke revolucije te je kasnije postala dijelom neolitičkog paketa.

Zemljopisnu korelaciju između distribucije slikane keramike i keramičkih figurina koji prikazuju žene te distribuciju genetski određenih Y-kromosomnih haploskupina modernih očinskih linija europskih i bliskoistočnih populacija desetljećima kasnije

Introduction

The appearance and diffusion of Neolithic cultures in Europe have long been studied in conjunction with migrations of prehistoric populations and pottery distribution, and became highly ideologised by the Lex Kossinae that equates ‘cultural province’ with ‘areas of particular people or tribes’ (Kossina 1911, 3). Gordon Childe agreed that Neolithic pottery was a universal indicator of both the ‘cultural identities’ and ‘distributions of ethnic groups’ (Childe 1929, v–iv), but he strongly disagreed that ceramic technology invention and its primary distribution can be found within Europe. He proposed that pottery arrived with Neolithic ‘immigrants from South-Western Asia’ who ‘were not full-time specialists, but had complete mastery over their material’. The ‘experienced farmers’ in the Peloponnese and the Balkans thus produced ‘extremely fine burnished and painted ware’, whereas the ‘Danubian I hoe-cultivators’ in the Carpathian Basin and Central Europe produced ‘unpainted and coarse and chaff-tempered vessels’. Beyond the agricultural frontier and pottery distribution on the North European plain, he recognised ‘scattered bands of food-gatherers’ (Childe 1939,21, 25–26, 1958,58–60, 86–88).

The introduction of physical anthropology and racial mapping into archaeology by Carleton Coon (1939, 82–86, 104–107, Map 2) related Neolithic immigrants to ‘Danubian’ agriculturalists’, a ‘new branch of Mediterranean’ population in Europe that had originated in the Near East and was associated with the Natufian cultural context. They migrated across Anatolia and/or the Aegean into Europe, and ‘up the Danube Valley into the Carpathian basin, Central Europe and farther to the west, to the Paris basin, where they met with the second group of ‘Mediterranean’ population, ‘which entered Europe from North Africa across the Straits of Gibraltar’. It has been suggested that the first group brought ‘Danubian painted pottery’ that shows ‘definite Asiatic similarities’ into Europe. The second was associated with the dispersal of ‘incised pottery with banded decoration’. These streams have been recently recognised archaeogenetically (Sampietro et al. 2007, 2165–2166; Deguilloux et al. 2012,29, 32), and re-actualised archaeologically as ‘Danubian’ and ‘Occidental’ groups (Gronenborn 2011, 68, 70).

Childe (1951, 76–77) recognised the invention of ceramic technology and pottery making as the “the earliest conscious utilization by man of a chemical change... in the quality of the material” that happened in the Near East in the context of the Neolithic revolution. It later became a constituent part of the Neolithic package.

počelo se smatrati „najboljim kulturološkim i genetskim“ markerima demografske pojave koja je radikalno preoblikovala europsku populacijsku strukturu početkom neolitika (King, Underhill 2002, 707). Smatralo se da je većinu europskih lovačko-sakupljačkih populacija u ranom neolitiku zamijenila bliskoistočna zemljoradnička populacija. Keramičke figurine u ovom kontekstu označavaju novu „ekspanzionističku“ ideologiju koja je omogućila prijelaz na „zemljoradnički“ način života prvotno na Bliskom Istoku. Europa nije bila ‘neolitizirana’ sve dok se figurine nisu počele širiti Balkanom (Cauvin 2000, 22–29, 204–205, 207–208).

Childe i Coon predlažu interpretativnu paradigmu u kojoj postupne migracije zemljoradnika i pomicanje granice zemljoradničkih aktivnosti u Europi dovode u korelaciju s granicom koju je prepoznao još Herodot – između barbarskog zapada i civiliziranog istoka. Prema ovakvom shvaćanju, prijelaz iz mezolitika u neolitik i/ili prijelaz na zemljoradnju u Europi istovjetan je prijelazu s divljaštva u civilizaciju (vidi Budja 1996; 1999; 2009; 2013).

Neolitizacija Europe i distribucija keramike

Doista, jugoistočna je Europa prepoznata kao „zapadna provincija bliskoistočne kulture zemljoradnika, stvorena procesom kolonizacije i akulturacije“, što se ogledava u distribuciji „zajedničkih tradicija u stilu keramike, orijentalnih pintadera i figurina koje prikazuju žene, ponekad i životinje, koje mogu biti povezane s kultovima“ (Piggott 1965, 49–50; vidi i Roden 1965). Prema mišljenju Johna Nandrisa (1970.193, 202), širenje iste grupe rukotvorina označava „kulturno jedinstvo, veće no što je ikada poslije postignuto u tom području jugoistočne Europe, i to do današnjih dana“.

Percipiranje dihotomije civilizirane/divljačke populacije i dalje je bilo bitno. ‘Monokromne’ i slikane (crvene, crne i bijele) posude postigle su paradigmatski status u praćenju „valova migracija iz Male Azije“ (Schachermeyr 1976, 43–46), kao i u označavanju kulturnih i etničkih identiteta najranijih neolitičkih zemljoradničkih dijaspora u Europi (Milojčić 1962; Theocharis 1973; Nikolov 1987; Bogucki 1996). Istovremeno, gruba keramika ukrašena utiskivanjem ili premazivanjem prepoznata je kao „izvorno balkanska, u tolikoj mjeri da ne vjerujemo da je ta primitivna keramika uvezena iz Male Azije“ (Theocharis 1967, 173; cf. Thissen 2000, 163). Zaista je bila i dalje povezivana s „barbarskom lokalnom produkcijom“ (Milojčić 1960, 32; Nandris 1970, 200; Milojčić-von Zumbusch, Milojčić 1971, 34, 151).

Predloženo je da se drugi val migracija preklapa s „probojem“ bijele slikane keramike uz Vardar, Moravu i Strumu (Garašanin, Radovanović 2001; Luca, Suciu 2008; Krauß 2011), kao i s „brzim širenjem premazivane keramike uz obale Crnog mora i dolinom Dunava” (Özdoğan 2011, S426). Ove migracije rezultirale su stvaranjem sklopa kultura na sjevernom i istočnom Balkanu i u Karpatskoj kotlini koje su dijelile isti „neolitički paket“ porijeklom iz središnje Anatolije, a uključivao je „cjevaste ručke, plastične reljefne ukrase, antropomorfne ili zoomorfne posude, steatopigne figurine, pintadere, i tako dalje” (Özdoğan 2011, S425). Razlike u obliku posuda i kompoziciji ukrasa, ipak, stvorile su regionalno određene ranoneolitičke kulture poput starčevačke, Körös, Criş i Karanovo kulture (vidi Budja 2001; Krauß 2011).

U skorije se vrijeme predlaže da novi podaci dobiveni iz izotopa stroncija s područja dunavskih klanaca na sjevernom Balkanu pokazuju žensku migraciju u tu regiju u kontekstu širenja neolitičkih zajednica iz središnje Anatolije uz obale Crnog mora i Dunava. To se odvijalo na prijelazu iz mezolitika u neolitik, odnosno između 6200. i 6000. god. pr. Kr. Predlaže se i postojanje fizičke „razlike među populacijama“ i „dramatičan porast u broju ne-lokalne prve generacije imigranata“ jer pet od 45 individua iz Lepenskog Vira nisu lokalnog porijekla. U svim se slučajevima, osim jednog, radi o ženama, stoga se kao objašnjenje spominje „društvena razmjena“ i „spajanje populacija“ na pomičnoj granici zemljoradničkih aktivnosti (Borić, Price 2013, 301–3302, 3299). Ipak, takav se razvoj događaja mogao odviti jedino u sklopu već oformljenih društvenih mreža (npr. krvnog srodstva, dogovorenih brakova, razmjene partnera i drugih društvenih mreža koje uključuju recipročnost i obaveze) između lovačko-sakupljačkih i prvih zemljoradničkih naselja u regiji (vidi Zvelebil, Lillie 2000; Zvelebil 2001; 2004a). Smjer i brzina širenja ukazuju na važnost postojećih lovačko-sakupljačkih društvenih konteksta i komunikacijskih putova, a u prilog tomu govore i uvjeti zemljoradničkih populacija i razmjer migracija.

Treći val migracija povezuje se s genezom kulture linearnotrakaste keramike (LTK) u Karpatskoj kotlini i njezinom širenju na zapad (Gronenborn 2007; Lünning 2007; Oross, Banffy 2009; Burger, Thomas 2011).

Brzina širenja izračunata je na temelju serije standardnih radiokarbonskih datuma koji su tada bili dostupni. Peter Breunig (1987) rasporedio ih je u vremenske intervale od 500 godina, i to od Bliskog Istoka prema atlantskoj Europi i kroz 7. tisućljeće pr. Kr. u jugoistočnoj te 6. tisućljeće pr. Kr. u zapadnoj Europi. Jugoistočno-sjeverozapadni vremenski pomak „širenja neolitičkog načina života“ s Bliskog Istoka preko Europe stoga je postao opće prihvaćen (vidi Biagi *et al.*

The geographical correlation of painted pottery and ceramic female figurine distribution, and the distribution of genetically identified Y-chromosome haplogroups in the modern paternal lineages of European and Near Eastern populations were hypothesised decades later to be ‘the best material culture and genetic markers’ of a demographic event that radically reshaped the European population structure at the beginning of Neolithic (King, Underhill 2002, 707). It was argued that the majority of the hunter-gatherer population in Europe was replaced in the Early Neolithic by a Near-Eastern farming population. Ceramic female figurines in this context mark the new ‘expansionist’ ideology that enabled the transition to the ‘agricultural way of life’ in the Near East first. Europe did not become neolithicised until figurines reached the Balkans (Cauvin 2000, 22–29, 204–205, 207–208).

Childe and Coon both suggested an interpretative paradigm in which the gradual migration of farmers and the spread of agricultural frontier into Europe correlates with the boundary – that has been recognised since Herodotus – between the barbarian West and the civilized East. In this perception, the Mesolithic-Neolithic transition and/or the transition to farming in Europe correlates with the transition from barbarism to civilisation (see Budja 1996; 1999; 2009; 2013).

The neolithisation of Europe and pottery distributions

Indeed, Southeast Europe was recognised as a “western province of Near Eastern peasant culture, created by the processes of colonisation and acculturation” that was mirrored in the distribution of “common traditions in pottery styles, oriental stamp seals and female figurines, and sometimes of animals, which may relate to religious cults” (Piggott 1965, 49–50; see also Roden 1965). In John Nandris’s (1970, 193, 202) view the dispersal of the same set of artefacts marked “cultural unity, greater than was ever subsequently achieved in this area of southeast Europe, down to the present day”.

The perception of the dichotomy of the civilised/barbarian population continued to be highly significant. The ‘monochrome’ and painted (red, black and white) vessels achieved paradigmatic status in tracing ‘waves of migrations from Asia Minor’ (Schachermeyr 1976, 43–46), and in marking the cultural and ethnic identity of the earliest Neolithic farmer diasporas in Europe (Milojčić 1962; Theocharis 1973; Nikolov 1987; Bogucki 1996). At the same time, coarse, ‘impressed’ and ‘barbotine’ pottery was recognised as “so local to the Balkans that we do not believe that this primitive pottery was introduced from Asia Minor” (Theocharis 1967, 173; cf. Thissen 2000, 163). It was, indeed, linked to ‘barbarian local production’ that showed ‘a clear regression in pottery production’ (Milojčić 1960, 32; Nandris 1970, 200; Milojčić-von Zumbusch, Milojčić 1971, 34, 151).

It was suggested that the second wave of migration correlated with a ‘breakthrough’ of white painted pottery along the Vardar, Morava and Struma rivers (Garašanin, Radovanović 2001; Luca, Suciu 2008; Krauß 2011), and with the “rapid expansion of redslipped pottery along the Black Sea coastline through the Danube River valley” (Özdoğan 2011, S426). This migration resulted in the creation of a cluster of cultures in the northern and eastern Balkans and in the Carpathian Basin which shared an identical ‘Neolithic package’ originating in Central Anatolia and consisting of “tubular lugs, plastic decoration in relief, anthropomorphic or zoomorphic vessels, steatopygic figurines, pintaderas, and so forth” (Özdoğan 2011, S425). Differences in vessel shapes and ornamental composition, however, constituted regionally bounded Early Neolithic cultures such as Starčevo, Körös, Criş and Karanovo (see Budja 2001; Krauß 2011).

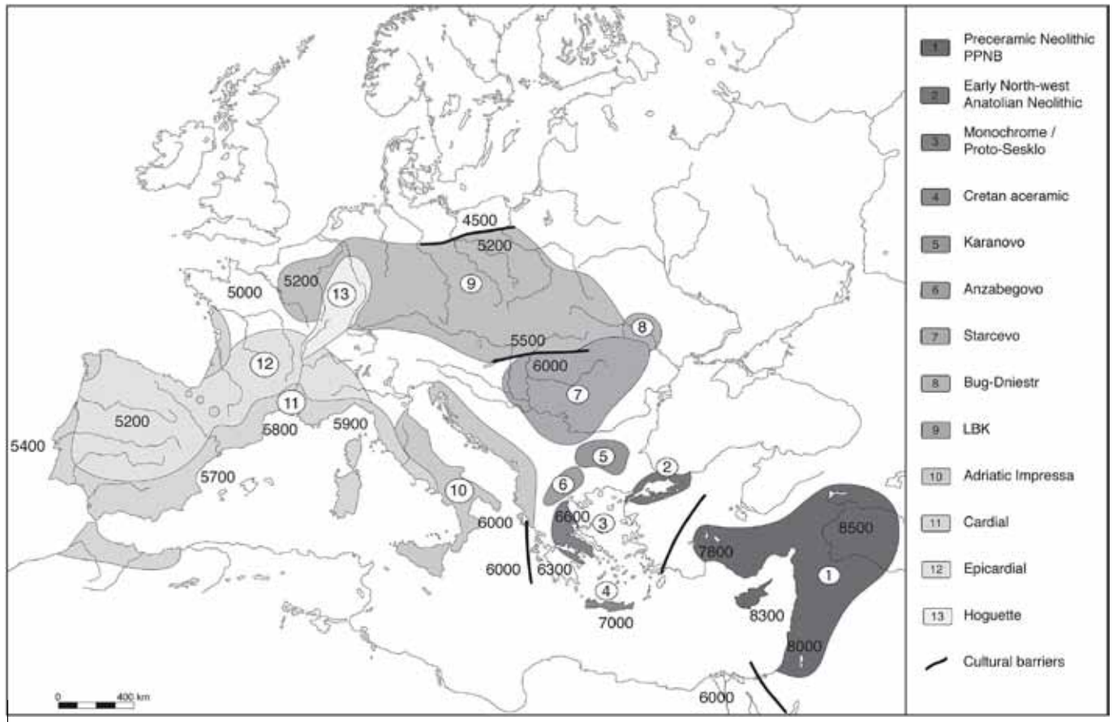
It has been suggested recently that the new strontium isotope data from the Danube Gorges in the northern Balkans show female migration to the region in the contexts of the spread of Neolithic communities from Central Anatolia along the Black Sea coast into the Danube in the Mesolithic-Neolithic transitional phase at 6200–6000 cal BC. Physical ‘differences between populations’ and a ‘dramatic increase in the numbers of non-local, first-generation migrants’ were also proposed, as five of the 45 individuals at Lepenski vir are non-local All but one of these individuals are female; thus ‘social exchange’ and ‘population blending’ at the mobile agricultural frontier are hypothesised (Borić, Price 2013, 3301–3302, 3299). However, such a scenario could only have happened within already established social networks (e.g., kinship ties, marriage alliances, exchange partnerships and other social ties of reciprocity and obligations) between hunter-gatherers and the first farming settlements in the region (see Zvelebil, Lillie 2000; Zvelebil 2001; 2004). The direction and rapidity of expansion suggest the importance of existing hunter-gatherers’ social contexts and routes of communication, as do the conditions of farming communities and the scale of the migration.

The third wave of migration was related to the genesis of the Linear Pottery culture (LBK) in the Carpathian Basin and its westward expansion (Gronenborn 2007; Lünning 2007; Oross, Banffy 2009; Burger, Thomas 2011).

The rate of spread was calculated from a series of standard 14C dates available at the time. Peter Breunig (1987) allocated them to temporal zones of 500-year intervals, running from the Near East to Atlantic Europe and through the 7th millennium in

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE



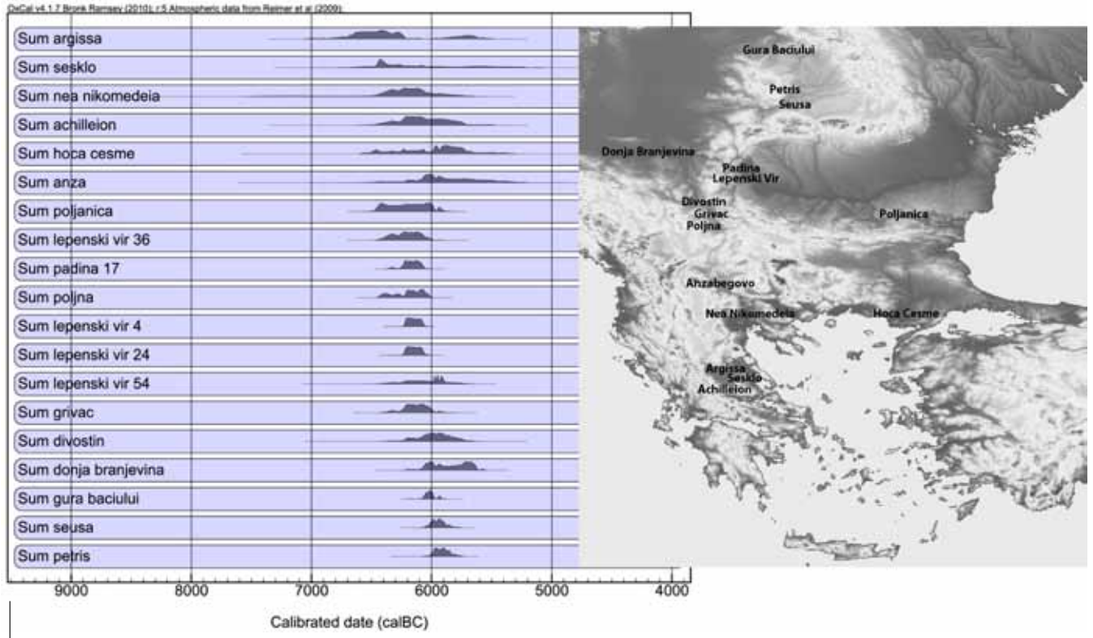
Sl. 1, hipotetski prikaz vremenskog gradijenta širenja neolitičkog paketa, kulturnih identiteta i "demičke difuzije" u pravcu sjeveroistok-sjeverozapad (iz Guilaine 2013., sl. 5.4)
Fig. 1, hypothesised southeast-northwest temporal gradient of the spread of the Neolithic package, cultural identities and 'demic diffusion' (from Guilaine 2013, Fig. 5.4).

2005). U jednom se demografskom modelu predlažu manje postupne migracije iz jednog povoljnog okruženja u drugo. Van Andel i Runnels (1995) smatraju da su anatolski zemljoradnici prvo u malom broju naselili dolinu Larise u Tesaliji, smatrajući to jedinim područjem na južnom Balkanu koje je moglo pružiti sigurnu i dovoljno dobru žetvu za značajan rast populacije na „pročelju vala napredovanja" koji je doveo do sljedeće migracije (i.e., 'žablji skok')[1] prema Dunavu i Karpatskoj kotlini. Izračunali su da je zemljoradnicima trebalo 1500 godina da dosegnu zasićenost potrebnu za 'točku odraza' i da migriraju na sjeverni Balkan. Paolo Biagi i Michela Spataro (2001) su, pak, revidirali radiokarbonske datume iz odabranih špiljskih lokaliteta na središnjem Mediteranu i bili su uvjereni da su pronašli dokaze za hijatus između zadnjih mezolitičkih i prvih neolitičkih naseljavanja, i to u svim razmatranim slučajevima. Na temelju toga su zaključili da je kasni mezolitik bio razdoblje propadanja populacije u kojem su lovačko-sakupljačke zajednice sasvim nestale ubrzo nakon pojave zemljoradnje (Biagi 2003, 148–150; Rowley-Conwy *et al.* 2013; za raspravu vidi Mlekuž *et al.* 2008; Bonsall *et al.* 2013; Forenbaher *et al.* 2013) (Sl. 1).

[1] João Zilhão (1993, 37, 49) uveo je kolonizacijski model 'žabljeg skoka' kojim predlaže brze migracije istočnomediteranskih zemljoradničkih populacija na zapadni Mediteran. Model je nedavno aktualiziran u paleogenetskim istraživanjima (Deguilloux et al. 2011, 32–34).

Southeast Europe and the 6th millennium BC in Western Europe. The southeast-northwest temporal gradient of the 'spread of the Neolithic way of life' from the Near East across Europe was thus broadly accepted (see Biagi et al. 2005). A less gradual movement was hypothesised in a demographic model suggesting migrations from one suitable environment to another. Van Andel and Runnels (1995) suggested that Anatolian farmers first settled in small numbers on the Larissa Plain in Thessaly, as they thought this was the only region in the southern Balkans that could provide a secure and large enough harvest for significant population growth 'at the wave front' that led to the next migratory move (i.e., 'leap-frog')[1] towards the Danube and Carpathian Basin. They calculated that farmers needed 1500 years to reach saturation at a 'jumping-off point' and to migrate to the northern Balkans. Paolo Biagi and Michela Spataro (2001), on the other hand, reviewed the radiocarbon dates from selected cave sites in the central Mediterranean and believed they had found evidence of a hiatus between the latest Mesolithic and earliest Neolithic occupations in every case. From this, it was suggested that the late Mesolithic was a period of population decline, with hunter-gatherers disappearing altogether soon after the arrival of farming (Biagi 2003, 148–150; Rowley-Conwy et al. 2013; for discussion see Mlekuž et al. 2008; Bonsall et al. 2013; Forenbaher et al. 2013) (Fig.1).

[1] *João Zilhão (1993, 37, 49) introduced the 'leapfrog' colonization model suggesting rapid migration of east Mediterranean farmers to the West Mediterranean. The model was recently actualized in palaeogenetic studies (Deguilloux et al. 2011, 32–34).*



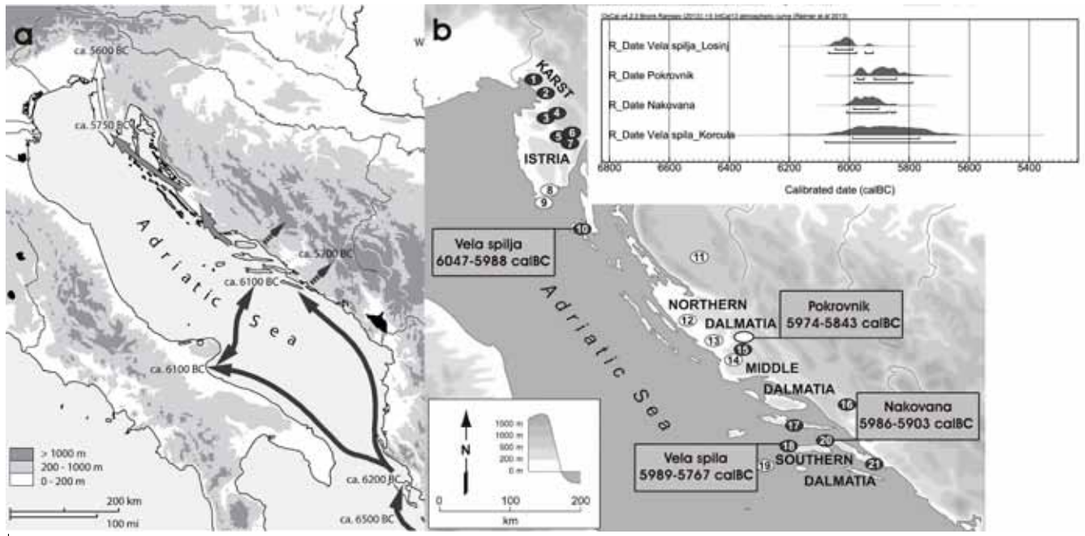
Sl. 2, distribucija lokaliteta i prikaz zbirne vjerojatnosti početne distribucije neolitičke keramike u jugoistočnoj Europi (prilagođeno iz Budja 2009., tab. 2)
Fig. 2, site distribution and Sum probability plot of initial Neolithic pottery distribution in Southeastern Europe (modified from Budja 2009, Tab. 2)

Najranija proizvodnja keramike u jugoistočnoj Europi odvila se između 6500. i 6200. god. pr. Kr. na južnom Balkanu i Peloponezu, i između 6440. i 6028. god. pr. Kr. na sjevernom i istočnom Balkanu (Perlès 2001; Thissen 2005; 2009; Reingruber, Thissen 2009; Müller 1991; 1994; Budja 2009; 2010; Reingruber 2011a; b) (Sl. 2). Jugoistočno-sjeverozapadni vremenski pomak, dakle, nije potvrđen radiokarbonskom kronologijom distribucije keramike inicijalnog neolitika u jugoistočnoj Europi. Podaci ukazuju na istovremenu pojavu keramike u regijama za koje je predlagana postepena kolonizacija. Iako je keramika na južnom Balkanu pronađena u kontekstu zemljoradničkih naselja, pronalažena je i u kontekstima sjevernijih lovačko-sakupljačkih i zemljoradničkih populacija (Perlès 2001; Budja 2009). Na Lepenskom Viru posude su pronađene u kontekstu lovačko-sakupljačkih ukopa i simboličkog ponašanja. Stavljane su u trapezoidne strukture br.. 4, 24, 36 i 54, u kontekstu s kamenim skulpturama, ukopima novorođene djece i sekundarnim ukopima (ili odlaganjem) ljudskih i psećih mandibula (Budja 1999; 2009, 26–127; Garašanin, Radovanović 2001; Stefanović, Borić 2008, 139, 145–146, 149–150).

Distribucija prvih zemljoradničkih zajednica na istočnom Jadranu tradicionalno se povezuje sa širenjem 'Impresso Cardium' keramike (keramika ukrašena utiskivanjem). To je ujedno bio i indikator širenja zemljoradnje diljem regije. Stašo Forenbaher i Preston Miracle (2005; 2006) su uveli dvofazni model prema kojem je keramika ukrašena impresso tehnikom potekla s obala sjeverne Grčke i širila se od juga prema sjeveru uz jadransku obalu. Taj je proces uključivao

The earliest pottery productions in Southeast Europe are embedded in time spans at c. 6500–6200 cal BC in the southern Balkans and Peloponnese, at c. 6440–6028 cal BC in the northern and eastern Balkans (Perlès 2001; Thissen 2005; 2009; Reingruber, Thissen 2009; Müller 1991; 1994; Budja 2009; 2010; Reingruber 2011a;b). (Fig. 2). The southeast-northwest temporal gradient thus found no confirmation in the radiocarbon chronology of the initial Neolithic pottery distribution in Southeast Europe. The data suggest the contemporaneous appearance of pottery in regions where gradual colonisation was hypothesised. While pottery in the southern Balkans was found in farming settlement contexts, it also appeared in the north in hunter-gatherer and farmer contexts (Perlès 2001; Budja 2009). At Lepenski Vir, vessels were contextualised within hunter-gatherers' burial practices and symbolic behaviour.
They were placed in trapezoidal built structures Nos. 4, 24, 36 and 54, and associated with stone sculptures, neonate burials and secondary burials (or depositions) of human and dog mandibles (Budja 1999; 2009, 26–127; Garašanin, Radovanović 2001; Stefanović, Borić 2008, 139, 145–146, 149–150).

The distribution of the first farming communities in the Eastern Adriatic is traditionally associated with the 'Impresso Cardium' (i.e. impressed) pottery dispersal. It was also used as an indicator of the spread of farming across the region. Stašo Forenbaher and Preston Miracle (2005; 2006) introduced a two-phase model suggesting that impressed ware originated in coastal Northern Greece and spread with immigration from South to North along the Adriatic coast. The process included immigrant farmers that made exploratory visits and set up short-term seasonal



Sl. 3 a, b, kolonizacijski model istočnog Jadrana na temelju pretpostavljenog postupnog širenja impresso-keramike duž obale istočnog Jadrana (a) (Forenbaher, Miracle 2005., sl. 4). Dostupni skupovi radiokarbonskih podataka ne potvrđuju postupno širenje keramike jer nema bitne kronološke razlike u odnosu na izgled impresso-keramike i rasprostiranje na južnom i sjevernom Jadranu (prilagođeno prema *Forenbaher* i dr. 2013., sl. 1).
Fig. 3 a, b, the colonisation model for the Eastern Adriatic based on the hypothesised gradual spread of impressed pottery along the eastern Adriatic coast (a) (Forenbaher, Miracle 2005. Fig. 4). The available radiocarbon data sets do not confirm the gradual spread of pottery as there is no essential chronological difference in the appearance of impressed pottery and dispersal on the Southern and Northern Adriatic (modified after Forenbaher et al. 2013, Fig. 1)

zemljoradnike koji su, kao istraživači, putovali i podizali kratkotrajna sezonska prebivališta u špiljama i na otvorenom duž obalnog pojasa južne Dalmacije (prvotna kolonizacija), nakon kojih se pojavljuju seoska naselja koja su se polako širila prema sjevernom Jadranu u područjima gdje je tlo bilo plodno (faza konsolidacije). Dostupni setovi radiokarbonskih datuma ne podupiru model postupne kolonizacije jer ne postoji znatna kronološka razlika u pojavi i širenju impresso keramike na južnom i sjevernom Jadranu (Forenbaher *et al.* 2013) (Sl. 3)[2]. Početak ranog neolitika na istočnom Jadranu pada u raspon između 6048. i 5988. g. pr. Kr. na sjeveru (Vela spilja, Mali Lošinj), 5985. i 5843. g. pr. Kr. u središnjoj regiji (Pokrovnik u Dalmaciji), i između 5986. i 5903. g. pr. Kr. (Spila Nakovana na Pelješkom poluotoku) i 5989. i 5767. g. pr. Kr. (Vela spila na otoku Korčuli) na jugu.

Dostupni radiokarbonski datumi za područje istočnog Jadrana pokazuju da Istra i krški plato iznad Tršćanskog zaljeva padaju izvan tog raspona. Pretpostavlja se da se neolitik ovdje javlja oko 5600. g. pr. Kr. i da je povezan s „impresso keramikom

[2] Nedavno objavljeni radiokarbonski datumi su: 7134±37 BP prije sadašnjosti (OxA–18118) za Velu spilju, Mali Lošinj; 7000±100 BP (nedostupan broj uzorka), za Kargadur 6769±33 BP prije sadašnjosti, 6612±32 BP (OxA–21092, OxA–21093) i Vižulu 6140±70 BP (HD–11733) na južnom izdanku istarskog poluotoka, i 6999±37 BP prije sadašnjosti (OxA–17194) za Pokrovnik u Dalmaciji; 7050±37 BP (OxA–18120) za Spilu Nakovanu na pelješkom poluotoku; i 7000±120 BP (Z–1968) za Velu spilu (Bonsall *et al.* 2013, 149, Tab. 8.1; Forenbaher *et al.* 2013, Tab. 1). Datum iz Vele spile, izvorno objavljen kao datum impresso keramike (7300±120 BP, Z–1967), nedavno je pripisan prijelaznom period između mezolitika i neolitika (Forenbaher *et al.* 2013, 597). Datumi su kalibrirani s 68.2 postotnom točnošću uz pomoć Oxcal 4.2 programa.

camps at caves and open-air sites along the coastal strip of southern Dalmatia (i.e. pioneer colonisation), followed by a village settlement that spread slowly towards the Northern Adriatic in areas with fertile soils (i.e. consolidation phase). The available radiocarbon data sets do not confirm the gradual colonisation model as there is no essential chronological difference in impressed pottery appearance and dispersal in southern and northern Adriatic (Forenbaher et al. 2013) (Fig. 3)[2]. The beginning of the Early Neolithic in the Eastern Adriatic appears to be embedded in the time span between 6048–5988 cal BC in the North (Vela spilja, Mali Lošinj island), 5985–5843 cal BC in the central region (Pokrovnik in Dalmatia), and between 5986–5903 cal BC (Spila Nakovana on Pelješac peninsula) and 5989–5767 (Vela spila on Korčula Island) in the South.

The available ^{14}C evidences in the Northern Adriatic show that the Istrian peninsula and Karst Plateau above Trieste Bay remained outside this range. It is postulated that the Neolithic was established here at c. 5600 cal BC and that it was associated with the end of "Impressed Ware and the appearance of assemblages with only undecorated pottery" (i.e. Vlaška-Danilo pottery) in the Middle Neolithic (Forenbaher et al. 2013, 599).

[2] The recently published 14C dates are: 7134±37 BP (OxA–18118) for Vela spilja, Mali Lošinj Island; 7000±100 BP (lab code unavailable), for Kargadur 6769±33 BP, 6612±32 BP (OxA–21092, OxA–21093) and Vižula 6140±70 BP (HD–11733) on the southern tip of Istria peninsula, and 6999±37 BP (OxA–17194) for Pokrovnik in Dalmatia; 7050±37 BP (OxA–18120) for Spila Nakovana on Pelješac Peninsula; and 7000±120 BP (Z–1968) for Vela spila (Bonsal et al. 2013, 149, Tab. 8.1; Forenbaher et al. 2013, Tab. 1). A date from Vela spila, originally published as related to early 'Impresso Cardium' pottery 7300±120 BP, Z–1967), has recently been reattributed to a 'Mesolithic/Neolithic transitional period' (Forenbaher et al. 2013, 597). The dates are calibrated at 68.2 probability using the Oxcal 4.2 program.

i pojavom skupnih nalaza neukrašene keramike" (keramika Vlaška-Danilo) u srednjem neolitiku (Forenbaher *et al.* 2013, 599). Sjeverna granica impresso keramike na istočnom Jadranu nalazi se u južnoj Istri, iako je takva keramika pronađena i u špiljama na obalnom dijelu Tršćanskog zaljeva[3]. Ipak, na većini nalazišta s one strane granice rani se neolitik manifestira kroz pojavu Vlaške keramike (Barfield 1972) koji nalikuju onima danilske kulture u srednjem neolitiku Dalmacije. Pretpostavlja se da je ta regija kolonizirana tek u srednjem neolitiku (Forenbaher, Miracle 2006; Forenbaher, Kaiser 2006; Biagi, Spataro 2001; Biagi 2003). Suprotno tome možemo pretpostaviti da Vlaška grupa nije predstavnik inicijalnog neolitika u regiji. Materijal iz slojeva, 2a i 3 na nalazištu Edera/Stenašca pokazuje da se prije Vlaške skupine javlja jednostavna keramika lokalnog podrijetla zajedno s domestificiranim (koze, goveda i svinja) te divljim životinjama, morskim školjkama i litikom, između ostalog trapezima i mikrodubilima. Ovo je definirano kao kasni kastelnovijenski kulturni kompleks, i datirano u vrijeme oko 6700 ± 130 g. prije sadašnjosti (5700. –5515. g. pr. Kr.) (Biagi, Spataro 2001, 35).

Zanimljivo, na ovom su području mezolitička nalazišta poznata (Komšo 2006), ali ne i dobro datirana. Ipak, serije radiokarbonskih datuma s nekih nalazišta u ovoj regiji ukazuju na vremensku prazninu između posljednjih mezolitičkih i prvih neolitičkih naseljavanja koja se razlikuju u trajanju i nisu bila istovremena na više nalazišta, iako se na širem prostoru vidi kontinuitet. Vremenski prekid se nastojao objasniti raznim hipotezama, ali i dalje ostaje neriješen problem (za raspravu vidi Biagi, Spataro 2001; Biagi 2003; Forenbaher, Miracle 2006, 497–504; Mlekuž *et al.* 2008; Berger, Guilaine 2009; Bonsall *et al.* 2013).

Nalazi keramike u jugoistočnoj Europi pokazuju lokalne i regionalne razlike s obzirom na tehniku proizvodnje te oblik i ukrašavanje posuda. Kombinirana petrografska i kemijska analiza matrice i sastava gline jasno ukazuje na razlike u proizvodnji keramike. Keramika na sjevernom Balkanu dosljedno je proizvođena prema jednom receptu, uz pomoć nevapnenačke tinjčeve glinene paste, a odlikuju je fini aluvijalni kvarcni pijesak s feldspata i mnogo primjesa organskih tvari (pljeva). Na istočnom Jadranu keramika je, pak, sadržavala mnogo drobljenog kalcita, a na zapadnom mnogo minerala (npr. kremen) i samljevene keramike (reciklirana keramika) (Spataro 2009; 2011). Od samih početaka, keramika na egejskom prostoru proizvođena je lokalno na brojnim nalazištima i redovito je cirkulirala među susjednim naseljima.

[3] Pečina na Leskovcu, Pečina pod Muzarji, Pečina pod Steno, Pejca v Zavodu i Orehova Pejca (vidi Fabec 2003, 108).

The northern boundary of 'Impresso Cardium' pottery through the Eastern Adriatic is positioned in southern Istria, although the pottery was found in cave sites in the coastal fringe of the Trieste Bay[3]. However, in most sites across the boundary, the earliest Neolithic is represented by Vlaška pottery (Barfield 1972). These pottery assemblages resemble those from the Middle Neolithic Danilo culture in Dalmatia, and it has been hypothesised that the region was not colonised before the Middle Neolithic (Forenbaher, Miracle 2006; Forenbaher, Kaiser 2006; Biagi, Spataro 2001; Biagi 2003). Nevertheless, we may assume that the Vlaška group does not represent the initial Neolithic in the region. Materialities in stratigraphicaly super-positioned layers 2a and 3a at the Edera/Stenašca rock shelter show that the younger (2a) can be recognised as the Vlaška group, but the older (3a) contained plain pottery of local production, along with the bones of domestic (i.e. caprines, cattle and pig) and wild animals, shells of marine molluscs and lithics that includes trapezes and microburins. It was recognised as a Late Castelnovian hunter-gatherer complex and dated to 6700 ± 130 BP (5700–5515 cal BC) (Biagi, Spataro 2001, 35).

Interestingly, Mesolithic sites are known in this area (Komšo 2006), but not well radiocarbon dated. On the other hand, radiocarbon sequences from some sites in this region show a temporal gap between the latest Mesolithic and earliest Neolithic occupations that varied in duration and were not synchronous among the sites, although there is an evident continuity of occupation over the wider region. Various hypotheses have already been proposed to account for the temporal discontinuity, but it remains unresolved (for discussions, see Biagi, Spataro 2001; Biagi 2003; Forenbaher, Miracle 2006, 497–504; Mlekuž et al. 2008; Berger, Guilaine 2009; Bonsall et al. 2013).

The pottery assemblages in Southeast Europe show local and regional differences in production techniques, vessel shapes and ornaments. The combined petrographic and chemical compositional analyses of clay matrix and ceramic fabrics clearly indicate differences in pottery production. Pottery in the northern Balkans was consistently manufactured according to a single recipe, using non-calcareous micaceous clay pastes, characterised by fine well-sorted alluvial quartz sand with feldspar, and heavily tempered with organic matter (i.e. chaff). In the Adriatic, however, pottery was heavily tempered with crushed calcite on the east coast, and with mineral resources (e.g., flint) and grog (recycled pottery) on the west coast (Spataro 2009; 2011). From the outset in the Aegean, pottery was made locally at a number of sites and exchanged regularly between neighbouring settlements. Some fine

[3] Pečina na Leskovcu, Pečina pod Muzarji, Pečina pod Steno, Pejca v Zavodu and Orehova Pejca (see Fabec 2003, 108).

Neki recepti za dobivanje paste za finu keramiku pokazuju da se keramika prenosila na udaljenosti od oko 200 km te da je mogla biti predmetom prekomorske razmjene. Nepromijenjena matrica keramike u nekim slučajevima odraz je znakovitog kontinuiteta u tehnologiji proizvodnje tijekom tog tisućljeća (Tomkins *et al.* 2004; Quinn *et al.* 2010).

U ranom neolitiku na prostoru jugoistočne Europe prepoznaju se dva osnovna oblika ukrašavanja keramike. Slikani motivi ograničeni su na Peloponez, Balkan i južnu Karpatsku kotlinu, a impresso keramika na jadransku obalu. Slikana keramika na istočnoj se obali Jadrana javlja u srednjem neolitiku (Müller 1994; Schubert 1999; Budja 2001).

Nalazi keramike na najranijim naseljima na Peloponezu i najjužnijem izdanku balkanskog poluotoka uključuju monokromnu (s crvenim premazom) keramiku i 'vrlo ograničeno korištenje slikanja' (Perlès 2001, 112; vidi i Krauß 2011, 119). U naseljima na sjevernom i istočnom Balkanu nedvojbeno se prvo pojavljuju neslikane posude. U kasnijim kontekstima one prevladavaju, jer slikane posude tvore od 0,2% do manje od 10% ukupnog broja ulomaka (Budja 2009, 126; Krauß 2011, 122). Ipak, ne može se zanemariti regionalizaciju vidljivu kroz oblik posuda (Thissen 2009) i ukrase na mlađoj slikanoj keramici (Schubert 1999; 2005). U južnim dijelovima regije (Tesalija i Peloponez) javljaju se crveno i crno ukrašavanje. Sjevernije, u Makedoniji, dodana je i bijela boja. Na sjevernom i istočnom Balkanu na najranijoj keramici prevladava ukras bijele boje, a sličan je uzorak uočljiv i u regionalnoj distribuciji motiva, poput točaka i mreža koje prevladavaju na sjevernom i istočnom Balkanu te trokuta, kvadrata, cik-cak i cvjetnih motiva na južnom Balkanu i Peloponezu.

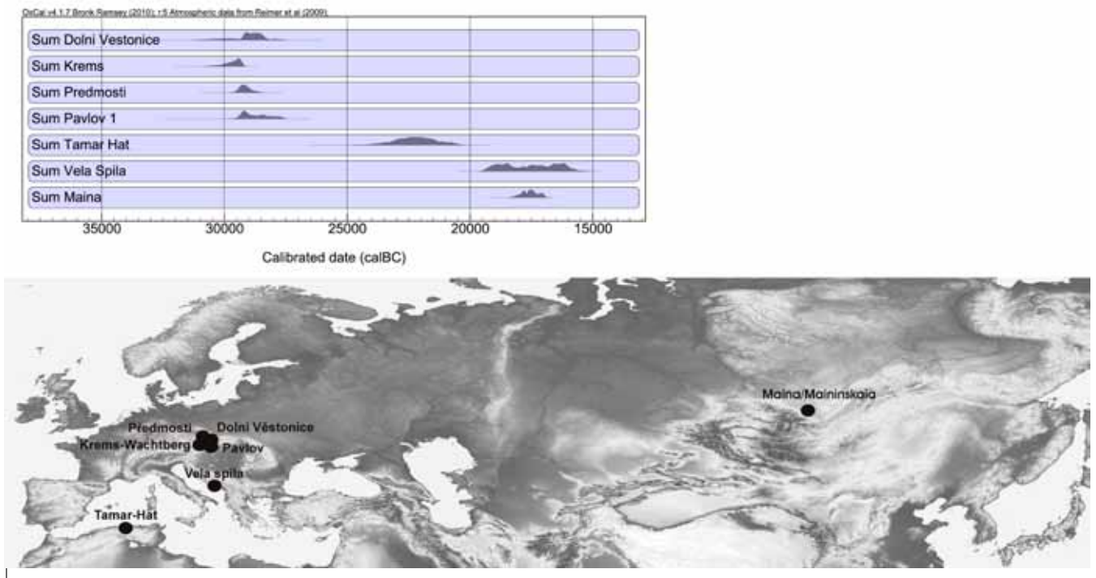
Pretpostavljeni jugoistočno-sjeverozapadni gradijent i vremenski pomak širenja keramičke produkcije bili su široko prihvaćeni kao indikatori širenja neolitičkog kulturnog identiteta i načina života u Europu. Povezivan je s granicama rasprostiranja ranoneolitičkih kultura (zemljoradničkih enklava) te sa zemljoradničkim granicama i 'demičkom difuzijom' (vidi Lünning 2007; Özdoğan 2007; Guilaine 2007; Burger, Thomas 2011) (Slika 2). U tim interpretacijama sjeveroistočna i istočna Europa su marginalizirane i u ranom neolitiku ostaju prazne (ali, vidi Dolukhanov *et al.* 2005; 2009; Gronenborn 2007). Vrijedno je spomenuti da je hipoteza o granicama prisutna otkada ju je Herodot prepoznao kao zemljoradničku granicu i razmeđe civiliziranog istoka i barbarskog zapada (vidi Budja 2009).

ware paste recipes show that pottery may have been transported over a distance of around 200km and that it may have been an item in maritime exchange networks. The unchanged ceramic matrix in some cases reflects significant continuity in pottery technology over the millennium (Tomkins et al. 2004; Quinn et al. 2010).

Two basic ornamental principles are recognised in the dispersal of pottery in Southeast Europe in the Early Neolithic. While painted motifs are limited to the Peloponnese, the Balkans and the southern Carpathian Basin, Cardium impressed ornaments mark the Adriatic coast. It is not before the Middle Neolithic that painted pottery appears on the east cost of the Adriatic (Müller 1994; Schubert 1999; Budja 2001).

The pottery assemblages in the earliest settlement contexts on the Peloponnese and the southernmost tip of the Balkan Peninsula consist of monochrome (red-slipped) pottery, and 'a very limited use of painting' (Perlès 2001, 112; see also Krauß 2011, 119). Unpainted vessels were clearly the first to appear in settlements in the northern and eastern Balkans. They still prevail in the latter contexts, as painted vessels comprise from 0.2% to less than 10% of the total quantity of ceramics (Budja 2009, 126; Krauß 2011, 122). However, we cannot ignore the regionalisation evident in vessel forms (Thissen 2009) and ornamentation in later painted pottery (Schubert 1999; 2005). In southern parts of the region (Thessaly and the Peloponnese) ornaments appeared in red and black. Further to the north, in Macedonia, white was added. In northern and eastern regions of the Balkans, white ornamentation predominates in the earliest pottery assemblages. A similar pattern is seen in regional ornamental motifs distribution, as dots and grids predominate in the northern and eastern Balkans, and triangles, squares, zigzags and floral motifs in the southern Balkans and the Peloponnese.

The hypothesised southeast-northwest temporal gradient of the spread of the pottery package was broadly accepted as an indication of the spread of a Neolithic cultural identity and way of life into Europe. It was correlated with the boundaries of Early Neolithic cultures (e.g., farming enclaves) and associated with the agricultural frontiers and 'demic diffusion' (see Lünning 2007; Özdoğan 2007; Guilaine 2007; Burger, Thomas 2011) (Fig. 2). Northeast and East Europe were marginalised, having no point of entry and remaining a blank through the period (but see Dolukhanov et al. 2005; 2009; Gronenborn 2007). It is worth remembering the frontier thesis had been entertained since Herodotus recognised it as the agricultural frontier and the boundary between the civilised East and barbarian West (see Budja 2009).



Sl. 4, ^{14}C-distribucija keramičkih figurica u predneolitičkim kontekstima u Euroaziji. Sekvenciranje se temelji na skupovima ^{14}C-podataka s lokaliteta Dolní Věstonice, Pavlov I, Předmostí i Krems-Wachtberg u srednjoj Europi (Verpoorte 2001., 40,59, 90; Einwögerer, Simon 2008., 39), s lokaliteta Vela spila na jadranskom otoku Korčuli (Farbstein i dr. 2012., 4-5), s lokaliteta Tamar Hat u sjevernoj Africi i lokaliteta Maina u Sibiru (Vasil'ev 2001.,10, sl. 4; Farbstein i dr., 11).
Fig. 4, the ^{14}C distribution of ceramic figurines in pre-Neolithic contexts in Eurasia. The sequence is based on ^{14}C data sets from Dolní Věstonice, Pavlov I, Předmostí and Krems-Wachtberg in Central Europe (Verpoorte 2001. 40,59, 90; Einwögerer, Simon 2008. 39), from Vela spila on the island of Korčula in the Adriatic (Farbstein et al. 2012. 4-5), from Tamar Hat in northern Africa and Maina in Siberia (Vasil'ev 2001,10, Fig.4; Farbstein et al. 2012, 11).

Predneolitički izumi tehnologije za proizvodnju keramike i distribucija keramičkih posuda

Lovci-sakupljači su koristili razne tehnologije za proizvodnju keramike mnogo prije prijelaza na zemljoradnju. Izum tehnologije za proizvodnju keramike u Europi se povezuje s izradom ženskih i životinjskih figurina u gravetijenskim, epigravetijenskim i pavlovijenskim kompleksima središnje Europe u vremenu između oko 30 000. i 27 000. g. pr. Kr.[4], u sjevernoj Africi između 23 000. i 21 000. g. pr. Kr. , a u sjevernom Sibiru između 18 000. i 17 000. g. pr. Kr. U jugoistočnoj se Europi radi o vremenu između oko 19 000. i 16 000. g. pr. Kr. u epigravetijenskom kontekstu na nalazištu Vela Spila na jadranskom otoku Korčuli (Verpoorte 2001, 40, 59, 90; Vasil'ev 2001, 10; Einwögerer, Simon 2008, 39; Farbstein *et al.* 2012, 4–5) (Sl. 4).

U središnjoj Europi u gravetijenskim i pavlovijenskim lovačko-sakupljačkim kampovima na nalazištima Dolní Věstonice, Předmostí, Pavlov I i Krems-Wachtberg (Verpoorte 2001, 95–100, Tab. 5.1) pronađeno je 16 000 keramičkih predmeta (s više od 850 komada figurativne keramike). Na nalazištima Dolní Věstonice i Pavlov keramika je pronađena u asocijaciji sa središnjim ognjištima koja nalikuju na peći. Dostupne statistike pokazuju da su gotovo sve figurine i statuete namjerno oštećivane, iako su mnoge kugle, koje tvore velik dio inventara,

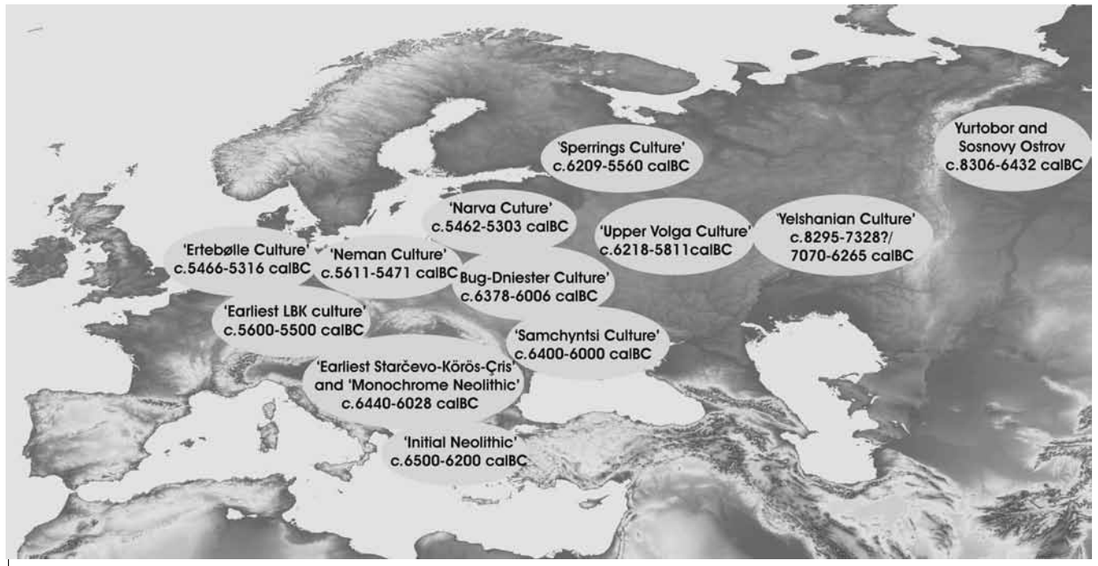
[4] **Svi radiokarbonski datumi kalibrirani su s 68.2 postotnom točnošću uz pomoć Oxcal 4.2 programa.**

The Pre-Neolithic ceramic technology inventions and pottery distributions

Hunter-gatherers used diverse ceramic technologies long before the transition to farming began. The invention of ceramic technology in Europe was associated with the making of female and animal figurines in Gravettian, Epigravettian and Pavlovian complexes in Central Europe within a period that ranges from c. 30 000 to 27 000 cal BC [4]. It was followed in North Africa at 23 000 – 21 000 cal BC and Southern Siberia at 18 000 – 17 000 cal BC. In Southeast Europe, it appeared at c. 19 000 – 16 000 cal BC in an Epigravettian context at the Vela Spila cave site on Korčula island in the Adriatic (Verpoorte 2001, 40, 59, 90; Vasil'ev 2001, 10; Einwögerer, Simon 2008, 39; Farbstein et al. 2012, 4–5) (Fig. 4).

In Central Europe, an assemblage of 16 000 ceramic objects – more than 850 figural ceramics – have been found in Gravettian and Pavlovian hunter-gatherer camps at Dolní Věstonice, Předmostí, Pavlov I and Krems-Wachtberg (Verpoorte 2001, 95–100, Tab. 5.1). At Dolní Věstonice and Pavlov, the ceramic distributions seem to be associated with the central position of oven-like hearths. The available statistics indicate that almost all the figurines and statuettes were deliberately fragmented, although many of the pellets and balls which comprise a large quantity of the ceramic inventory were found intact (Verpoorte 2001, 56, 69, 95–100, Tab. 5.1). Recently, 36 ceramic artefacts

[4] *All the ^{14}C data in the text have been calibrated at 68.2% probability (2σ), using the OxCal 4.2 programme.*



Sl. 5, početna distribucija keramike među lovačko-sakupljačkim skupinama u sjeveroistočnoj i istočnoj Europi i među ratarsko-stočarskim skupinama u jugoistočnoj, srednjoj i zapadnoj Europi. Za kulturne kontekste i ^{14}C-datume, vidi tekst s referencama
Fig. 5, initial pottery distributions in hunter-gatherer groups in Northeastern and Eastern Europe, and in farming groups in Southeastern, Central and Western Europe. For cultural contexts and ^{14}C dates see text with references.

pronađene neoštećene (Verpoorte 2001, 56, 69, 95–100, Tab. 5.1). U novije vrijeme, 36 keramičkih artefakata (ulomci figurina u obliku konja ili jelena) iz špilje Vela Spila na otoku Korčuli postaju prvi dokaz tehnologije za proizvodnju keramike u jadranskom epigravetijenu (Farbstein 2012). Ipak, paleolitičku i najraniju neolitičku keramiku u regiji odvaja više od 10 000 godina.

Antropomorfna keramička figurina s paleolitičkog nalazišta Maininskaia (Maina) u južnom Sibiru starija je od prvih posuda od pečene gline koje se pojavljuju u toj regiji u lovačko-sakupljačkim kontekstima. Smatra se da su se keramičke posude prvi puta pojavile između oko 19 200. i 18 800. g. pr. Kr. u špilji Xianrendong (Wu *et al.* 2012) i između oko 16 500. i 15 500. g. pr. Kr. u špilji Yuchanyan (Boaretto *et al.* 2009; Lu 2010) među malim sedentarnim ili djelomično sedentarnim lovačko-sakupljačkim zajednicama južno od rijeke Yangtze u jugoistočnoj Kini. Na japanskom se arhipelagu pojavljuju između oko 14 000. i 13 100. g. pr. Kr. (Taniguchi 2009, 38). Na ruskom dalekom istoku vremenski raspon je mnogo veći, od 15 990. do 7710. g. pr. Kr. (Keally *et al.* 2003; Kuzmin 2006; Kuzmin *et al.* 2007).

Pretpostavlja se da se prvo širenje keramike u zapadnom Sibiru odvilo između oko 8300. i 6400. g. pr. Kr. (Zakh 2006, 77). Zapadnije, u području zapadnog Urala i srednjeg toka rijeke Volge, najranija keramika pronađena je u kontekstu malih naselja Elshanka (Yelshanian) kulture koja su bila raširena diljem velikog šumsko-stepskog područja. Posude koničnih i ravnih dna izrađivane su od slane gline s primjesama organskog materijala, ribljih ljuski i drobljenih životinjskih kostiju. Ukrašavane su ubadanjem, utiskivanjem i urezivanim linijama. Najraniji datumi dobiveni na temelju slatkovodnih školjki padaju u raspon između oko 8300. i 7300. g. pr. Kr. Ipak, treba ih smatrati preranima jer nije poznat "rezervoar efekt" vrijednosti za istočnoeuropsku nizinu. Datumi dobiveni na temelju uzoraka kostiju i karboniziranih ostataka hrane, pak, padaju u raspon između 7070. i 6509. g. pr. Kr. (Viskalin 2006; Zaitseva *et al.* 2009,799–800, Tab. 1; Vybornov *et al.* 2013, 15–18).

U istočnoeuropskoj nizini, na gornjem toku Volge i Oke, najranija nalazišta s keramikom datirana su u vrijeme između 6218. i 5811. g. pr. Kr. (Tsetlin 2008, 234, Tab. 66; Zaretskaya, Kostyliova 2008, Tab 1). Sjevernije, u Kareliji, prva keramika pronađena je u kontekstima lovačko-sakupljačkih nalazišta na južnim obalama jezera Onega. Najraniji kontekst (Tudozero V) datiran je u razdoblje između oko 6209. i 6049. g. pr. Kr. , a kasniji (Sperrings) između oko 5512. i 4947. g. pr. Kr. Posude uskog dna ukrašavane su utiskivanjem ribljih kralježaka, a kasnije ih zamjenjuju češljasti ukras i linije uboda (German 2009). Na južnom Baltiku rana se keramika pojavljuje u razdoblju između oko 5462. i 5303. g. pr. Kr. na istočnoj obali (Narva), između oko 5611. i 5471. g. pr. Kr. na središnjoj obali (Neman), i između oko 5466. i 5316. g. pr. Kr. na zapadnoj obali (Ertebølle) (Hallgren 2009) (Sl. 5). Nalazi keramike u svim kulturnim kontekstima pokazuju sličnosti utoliko što imaju rijedak i jednostavan ukras, tehniku namatanja i sužena dna (Piezonka 2012).

Najranija proizvodnja keramike na Bliskom se Istoku javlja u zemljoradničkim društvenim kontekstima. Keramika je slikana, a datirana je u razdoblje između 7066. i 6840. g. pr. Kr. (Özdoğan 2009; Nieuwenhuyse *et al.* 2010). Svi ovi podaci ukazuju na to da je tehnologija izrade keramike otkrivena i ponovno otkrivena više puta u različitim paleolitičkim i neolitičkim kontekstima te da su lovačko-sakupljačke zajednice izrađivale posude diljem Euroazije. Različite tehnike izrade keramike, oblikovanje posuda i ukrašavanje odražavaju različite, ali paralelne, metode proizvodnje i distribuciju prije i nakon prijelaza na zemljoradnju. Dakle, u zapadnoj Euroaziji, prva se keramika pojavila u dva gotovo istovremena, ali zemljopisno i kulturološki različita konteksta. Na sjeveru je pronađena u kontekstu mobilnih i polumobilnih lovačko-sakupljačkih zajednica istočnoeuropske nizine, a na jugu u kontekstu zemljoradničke privrede Bliskog Istoka. Međutim vrijedno je spomenuti da je prvi kontekst dugo ignoriran (vidi Davison *et al.* 2007; 2009; Gronenborn 2011), dok je drugi neprestano predmet arheoloških i arheogenetskih studija (King *et al.* 2008; Battaglia *et al.* 2009; Burger 2010; Thomas *et al.* 2013).

Vela Spila on Korčula Island offer the first evidence of ceramic technology in the Epigravettian in the Adriatic (Farbstein 2012). However, more than 10 000 years separate the Palaeolithic ceramics and the earliest Neolithic pottery in the region.

The anthropomorphic ceramic figurine at the Palaeolithic site Maininskaia (Maina) in Southern Siberia predates the introduction of the first fired-clay vessels in hunter-gatherer contexts in the region. The introduction of ceramic vessels was suggested to occurred first at c. 19 200 – 18 800 cal BC in Xianrendong Cave (Wu et al. 2012) and at c. 16 500–15 500 cal BC in Yuchanyan Cave (Boaretto et al. 2009; Lu 2010) among small-scale sedentary or semi-sedentary hunter-gatherer communities south of the Yangtze River in Southeastern China. On the Japanese archipelago, it appeared at c. 14 000–13 100 cal BC (Taniguchi 2009, 38). In the Russian Far East, the time span is much broader, from 15 990 to 7710 cal BC (Keally et al. 2003; Kuzmin 2006; Kuzmin et al. 2007).

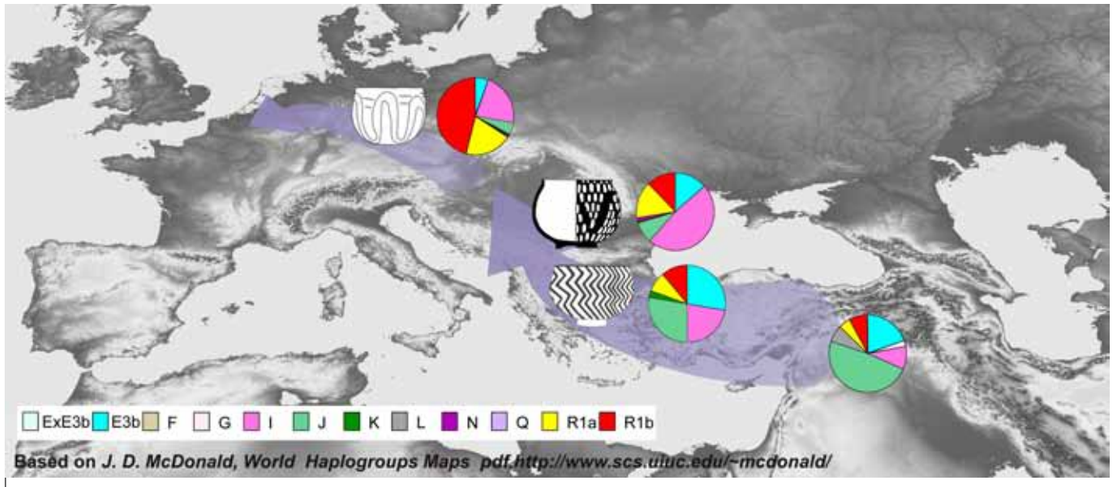
In western Siberia, the initial distribution of pottery was hypothesised within the time span c. 8300–6400 cal BC (Zakh 2006, 77). Further to the west, in the Western Urals and Middle Volga River, the oldest pottery was contextualised in small seasonal Elshanka (Yelshanian) sites scattered over a vast forest-steppe area. Vessels with conic and flat bases were made from salty clay tempered with organic matter, fish scales and crushed animal bones. They are decorated with imprints of pits, notches and incised lines. The earliest dates, based on freshwater mollusc shells, range between c. 8300 and 7300 cal BC. However, they should be considered too old, as the reservoir age value for the East European Plain is not known. However, the dates on bone samples and carbonised food residuals range between 7070–6509 cal BC (Viskalin 2006; Zaitseva et al. 2009, 799–800, Tab. 1; Vybornov et al. 2013, 15–18).

In the northern East European Plain, on the Upper Volga and Oka rivers, the earliest pottery sites are embedded in a time span of 6218–5811 cal BC (Tsetlin 2008, 234, Tab. 66; Zaretskaya, Kostyliova 2008, Tab 1). Further north, in Karelia, the early pottery was contextualised at hunter-gatherer sites on the southern shores of Lake Onega. The earliest context (Tudozero V) is dated to c. 6209 – 6049 cal BC, and the later (Sperrings) to c. 5512 – 4947 cal BC. The point-based vessels were decorated with impressions of fish vertebrae, later replaced by comb and punctuated lines (German 2009). In the southern Baltic, early pottery dispersals are embedded in a time span of c. 5462 – 5303 cal BC on the east coast (Narva), c. 5611 – 5471 cal BC on the central coast (Neman), and c. 5466 – 5316 cal BC on the west coast (Ertebølle) (Hallgren 2009) (Fig. 5). The pottery assemblages in all cultural contexts show similarities in having common features such as sparse and simple decoration, coiling techniques and pointed vessel bases (Piezonka 2012).

The earliest pottery production in the Near East was embedded in farming social contexts. The pottery was painted and dated at 7066 – 6840 cal BC (Özdoğan 2009; Nieuwenhuyse et al. 2010). All these data indicate that ceramic technology was invented and reinvented more than once in different Palaeolithic and Neolithic contexts, and that hunter-gatherer communities made ceramic vessels elsewhere in Eurasia. The various pottery-making techniques, vessel shaping and ornamentation reflect different, but parallel production methods and distributions before and after the transition to farming. Thus, in Western Eurasia, initial pottery distributions occurred in two almost contemporaneous, but geographically and culturally distinct areas. The northern distribution was embedded in mobile and semi-mobile hunter-gatherer contexts on the East European Plain; the southern is associated with subsistence farming in the Near East. It is worth remembering that, while the first was ignored for much of the time (but see Davison et al. 2007; 2009; Gronenborn 2011), the latter is constantly discussed in archaeogenetic studies (King et al. 2008; Battaglia et al. 2009; Burger 2010; Thomas et al. 2013).

The Neolithic 'demic diffusion' population migratory model and the pottery dispersals

As mentioned above, the initial southeast-northwest Neolithic pottery trajectory was suggested to be associated with the distribution of the genetically determined Y-chromosome haplogroup (hg) J in modern European populations. The northern then correlates, paraphrasing King and Underhill, with the 'best



Sl. 6, klinalna distribucija frekvencija za Y-kromosomske haploskupine J i E unutar suvremenih europskih populacija na pravcu jugoistok-sjeverozapad je, prema pretpostavkama, bila povezana s doprinosom levantinskih muškaraca europskom Neolitiku. Postoje naznake kako se geografski poklapa s distribucijom ranoneolitičke slikane keramike i distribucijom naselja u jugoistočnoj Europi. Distribucija haploskupina se temelji na McDonaldovim Svjetskim mapama haploskupina (McDonald 2005.) (iz Budja 2013., sl. 5).
Fig. 6, the southeast-northwest cline of frequencies for Y-chromosome haplogroups J and E within modern European populations were hypothesised to be associated with Levantine male contribution to the European Neolithic. It has been suggested that they geographically overlap with the distribution of Early Neolithic painted pottery and settlement distributions in Southestern Europe. The haplogroup distribution is based on McDonald's World Haplogroups Maps (McDonald 2005) (from Budja 2013, Fig. 5).

Model migracije neolitičkih populacija, 'demičke difuzije', i širenje keramike

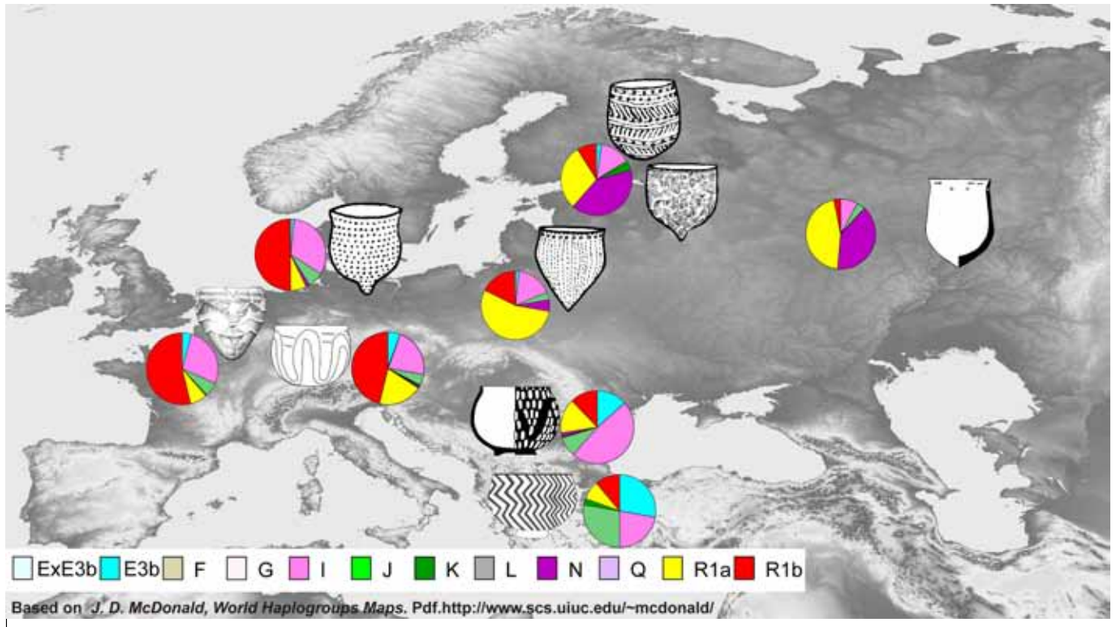
Kao što je ranije navedeno, inicijalni jugoistočno-sjeverozapadni smjer širenja neolitičke keramike bio je povezivan s distribucijom genetskih Y-kromosomnih haploskupina (hg) J u modernim europskim populacijama. Sjeverni se, stoga, podudara, da parafraziramo Kinga i Underhilla, s 'najboljim genetskim pokazateljima': Y kromosom hg N u modernim populacijama (McDonald 2005; Rootsi *et al.* 2007; Derenko *et al.* 2007) i starim mitohondrijskim hg U4, U5 i H (Der Sarkissian *et al.* 2013) (Sl. 6 i 7).

Jugoistočno-sjeverozapadni gradijent i vremenski pomak širenja keramike dovedeni su u vezu s pomacima u frekvenciji distribucije genetskih markera u modernim populacijama zapadne Euroazije otkad su Luigi Cavalli-Sforza i Albert Ammerman uveli demografske i genetičke studije u arheologiju. Pretpostavili su neprekinuto jugoistočno-sjeverozapadno orijentirano kretanje ranoneolitičkih levantskih zemljoradnika po Europi, odnosno 'demičku difuziju' koja se odvijala prosječnom brzinom od 1 km godišnje (Ammerman, Cavalli-Sforza 1971; 1984; ali, vidi Currat 2012).
Genetičari su fokus s fenotipa preselili na genotip, s kranijalnih obilježja na klasične genetske markere, i s rasa na populacije. Povezali su prvu komponentu (PC) frekvencije 38 gena 'klasične' distribucije markera u modernim europskim populacijama s ranoneolitičkim 'valovima napredovanja' ili 'demičke difuzije' zemljoradnika s Bliskog Istoka u Europu. Postepene promjene u frekvenciji alela sažete na prostorno interpoliranim 'sintetičkim kartama' distribucije frekvencije alela posljedica su apsorbiranja lokalnih lovačko-sakupljačkih

genetic predictors': the Y-chromosome hg N in modern populations (McDonald 2005; Rootsi et al. 2007; Derenko et al. 2007) and the ancient mitochondrial hg U4, U5 and H (Der Sarkissian et al. 2013) (Figs. 6 and 7).

The southeast-northwest temporal gradient of the spread of the pottery package has been correlated with frequency gradients of genetic marker distributions in modern populations in Western Eurasia since Luigi Cavalli-Sforza and Albert Ammerman introduced demographic and genetic studies into archaeology. They postulated a continuous southeast-northwest oriented movement of Early Neolithic Levantine farmers across Europe, a 'demic diffusion' at an average of 1km per year (Ammerman, Cavalli-Sforza 1971; 1984; but see Currat 2012).

The geneticists shifted the focus from phenotypes to genotypes, from cranial characteristics to classic genetic markers, from races to populations. They linked the first principal component (PC) of 38 gene frequencies of 'classic' marker distributions in modern European populations with the Early Neolithic 'wave of advance' or 'demic diffusion' of farmers from the Near East into Europe. The gradual changes in allele frequencies summarised on spatially interpolated 'synthetic maps' of allele-frequency distributions are due to the absorption of local hunter-gatherer populations into farming communities. During the 'demic diffusion' process, the local admixture of indigenous hunter-gatherers in the advancing wave of farmers was hypothesised as minimal. The 'first demic event' was believed to have significantly reshaped European population structure, and the current European gene pool was interpreted as consisting mainly of genetic variations originating in Near Eastern Neolithic populations, with only a small contribution from Mesolithic Europeans. It was suggested that 'demic diffusion' generated a genetic continuity between the



Sl. 7, usporedne klinalne distribucije frekvencija Y-kromosomskih haploskupina J, E i N među suvremenim populacijama u Europi i početne distribucije keramike u neolitičkoj Europi. Distribucija haploskupina se temelji na McDonaldovim Svjetskim mapama haploskupina (McDonald 2005.) (iz Budja 2013., sl. 6).
Fig. 7, the parallel clines of frequencies of Y-chromosome haplogroups J, E and N in modern populations in Europe and initial pottery distributions in Neolithic Europe. The haplogroup distribution is based on McDonald's World Haplogroups Maps (McDonald 2005) (from Budja 2013, Fig. 6).

populacija u zemljoradničke zajednice. Pretpostavlja se da je, tijekom procesa 'demičke difuzije', lokalna mješavina autohtonih lovačko-sakupljačkih zajednica u nadolazećim populacijama zemljoradnika bila minimalna. Vjeruje se da je 'prvi demički događaj' znatno izmijenio strukturu europske populacije, a trenutni europski genetski bazen interpretiran je kao sklop većinom sastavljen od genetskih varijacija koje su se dogodile u neolitičkim bliskoistočnim populacijama, tek s malim udjelom mezolitičkih Europljana. Predlagano je da je 'demička difuzija' stvorila genetski kontinuitet između neolitičkih i modernih europskih populacija (Menozzi *et al.* 1978; Cavalli-Sforza *et al.* 1994). Ipak, model 'demičke difuzije' kritiziran je jer su lokalne značajke PC 'sintetičkih karata' matematički artefakti koji "nužno ne ukazuju na specifične lokalizirane povijesne migracijske događaje" (Novembre, Stephens 2008, 646). PC pomaci mogu se pojaviti i u kontekstu kulturne difuzije kada nema populacijskog rasta, i ‚paradoksalno, potreban je 'vrlo velik udio paleolitičkih predaka' kako bi nastala jugoistočno-sjeverozapadno orijentirana os pomaka (Arenas *et al.* 2013, 60). Najveća raznolikost haplotipova u europskim se populacijama ne pojavljuje u jugoistočnoj Europi, već na Iberskom poluotoku, što ukazuje na pomak orijentiran jug-sjever i transmediteranski pretok gena sa Sjevernom Afrikom (Novembre, Ramachandran 2011, 259–260).
Od revolucije u proučavanju ljudskog genoma studije su usmjerene na genetske markere nuklearnog DNK (mitohondrijski (mt) i Y kromosom) (Renfrew 2000; Renfrew *et al.* 2000; Thomas *et al.* 2013). Prvi je prisutan u oba spola, ali se nasljeđuje isključivo po majčinskoj liniji, dok je drugi

Neolithic and modern populations of Europe (Menozzi et al. 1978; Cavalli-Sforza et al. 1994). However, the 'demic diffusion' model was criticised because the local features of the PC 'synthetic maps' are mathematical artefacts that "do not necessarily indicate specific localized historical migration events" (Novembre, Stephens 2008, 646). The PC gradients can occur even in the context of cultural diffusion, when there is no population expansion, and paradoxically, a 'very large level of Paleolithic ancestry' is necessary to produce the southeast-northwest gradient axis (Arenas et al. 2013, 60). The highest haplotype diversity in European population is found not in Southeast Europe, but on the Iberian Peninsula, thus suggesting a south-north gradient and trans-Mediterranean gene flow with northern Africa (Novembre, Ramachandran 2011, 259–260).

Since the revolution in the study of the human genome, studies have focussed on nuclear genetic DNA markers, i.e. mitochondrial (mt) and Y-chromosomal (Renfrew 2000; Renfrew et al. 2000; Thomas et al. 2013). The first is present in both sexes, but inherited only through the maternal line, while the latter is present only in males, and inherited exclusively through the male line (see Jobling et al. 2004). Because they are non-recombinant and highly polymorphic, they are seen as ideal for reconstructing human population history and migration patterns. Thus different human nuclear DNA polymorphic markers (polymorphisms) of modern populations have been used to study genomic diversity, to define maternal and paternal lineage clusters (haplogroups), and to trace their (pre)historic genealogical trees, and chronological and spatial trajectories (Goldstein, Chikhi 2002; O'Rourke 2003; Richards 2003; Torroni et al. 2006; Olivieri et al. 2013). Particular attention has been drawn to the power of Y-chromosome biallelic

prisutan samo kod muškaraca i nasljeđuje se isključivo po očinskoj liniji (vidi Jobling *et al.* 2004). Zbog toga što su nerekombinantni i izrazito polimorfni, idealni su za rekonstrukciju ljudske populacijske povijesti i migracijskih uzoraka. Dakle, različiti ljudski polimorfni markeri DNK (polimorfizmi) modernih populacija korišteni su u proučavanju genomske raznolikosti kako bi se definirali klasteri majčinskih i očinskih linija (haploskupine), i za praćenje njihovih (pret) povijesnih genealoških stabala te kronoloških i prostornih kretanja (Goldstein, Chikhi 2002; O'Rourke 2003; Richards 2003; Torroni *et al.* 2006; Olivieri *et al.* 2013). Osobitu pažnju privlače bialelski markeri Y kromosoma, jer omogućavaju tvorbu nedirnutih haplotipova, odnosno zbog njih je lako ustanoviti migracije muškaraca. Već smo spomenuli da se pretpostavlja da su se odabrani markeri Y kromosoma i s njima povezane haploskupine širili u smjeru jugoistok-sjeverozapad, što označava i kretanje muškaraca s levantskim genskim precima, što se podudara s distribucijom ranoneolitičke slikane keramike i keramičkih ženskih figurina u Europi (King, Underhill 2002). Novije genetičke studije ukazuju na to da je moderno naseljavanje Europe bilo složen proces te da je pojedini demički događaj u ranom neolitiku prejednostavno rješenje (Pinhasi 2012). Očinsko nasljeđe modernih istočnoeuropskih populacija pokazuje da je ta regija bila ujedno i važan izvor, ali i važan primatelj kontinuiranog toka gena. Studije Y kromosoma hg J1 (M267), J2 (M172), E (M78) i I (M423) snažno podupiru neprekinute mezolitičke, neolitičke i postneolitičke tokove gena u jugoistočnoj Europi te između Europe i Bliskog Istoka, i to u oba smjera. Osim toga, niska frekvencija i varijabilnost I i E u Anatoliji i na Bliskom Istoku govore u prilog europskog mezolitičkog podrijetla spomenute dvije haploskupine. Neolitičke i postneolitičke komponente najbolje odražava prisutnost J linija. Frekvencije u populaciji jugoistočne Europe variraju od 2 do 20%, iako su neke od linija mogle stići prije neolitika, što je dovelo do prenaglašavanja neolitičkih imigracija (King *et al.* 2008; Battaglia *et al.* 2009). Ipak, skup podataka o mitohondrijskom genomu i vremenski rokovi linija pokazuju da bi mogući kandidati za neolitičku imigraciju s Bliskog Istoka trebali imati hg J2a1a i K2a. Čini se, pak, da je ta imigracija bila zanemarivo mala (Soares *et al.* 2010).

Kraj populacijskog migracijskog modela 'demičke difuzije'

Novije filogenetske analize starog mitohondrijskog i Y-kromosomnog DNK (aDNK), dobivenog iz mezolitičkih i neolitičkih ljudskih ostataka otkrivaju genetsku strukturu

markers, as they allow the construction of intact haplotypes and thus male-mediated migration can be readily recognised. We already mentioned above, it was hypothesised that the southeast-northwest cline of frequencies for selected Y-chromosome markers and related haplogroups indicates the movement of men with Levantine genetic ancestry, and that this coincides with the distribution of Early Neolithic painted pottery and ceramic female figurine distributions in Europe (King, Underhill 2002). Recent genetic studies suggest that the modern peopling of Europe was a complex process, and that the view of a single demic event in the Early Neolithic is too simplistic (Pinhasi 2012). The paternal heritage of the modern population of Southeast Europe reveals that the region was both an important source and recipient of continuous gene flows. The studies of the Y-chromosomal hg J1 (M267), J2 (M172), E (M78) and I (M423) strongly suggest continuous Mesolithic, Neolithic and post-Neolithic gene flows within Southeast Europe and between Europe and the Near East in both directions. In addition, the low frequency and variance associated with I and E clades in Anatolia and the Middle East support the European Mesolithic origin of these two haplogroups. The Neolithic and post-Neolithic components in the gene pool are most clearly marked by the presence of J lineages. Its frequency in Southeast European populations ranges from 2% to 20%, although some lineages may have arrived earlier than the Neolithic, which has led to the level of Neolithic immigration being overestimated (King et al. 2008; Battaglia et al. 2009). However, the mitochondrial genome dataset and timescale for lineages show that possible candidates for Neolithic immigration from the Near East would include hg J2a1a and K2a. It seems, however, that the immigration was minor (Soares et al. 2010).

The end of 'demic diffusion' population migratory model

Recent phylogenetic analyses of ancient mitochondrial and Y-chromosomal DNA (aDNA), extracted from Mesolithic and Neolithic human remains have revealed a genetic structure that cannot be explained by a southeast-northwest oriented 'wave of advance' or 'demic diffusion' of Near Eastern farmers and hunter-gatherer population replacements. Advances in aDNA methods and next-generation sequencing allow new approaches which can directly assess the genetic structure of past populations and related migration patterns. Mitochondrial aDNA analyses thus suggest variations in population trajectories in Europe. In central Europe, Neolithic farmers differed in various genetic markers from both Mesolithic hunter-gatherers and from modern European populations (Haak et al. 2005; 2010; Bramanti et al. 2009; Burger, Thomas 2011). The characteristic mtDNA type N1a, with a frequency distribution of 25% among Neolithic LBK farmers in

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

koja se ne može objasniti jugoistočno-sjeverozapadnim 'valom napredovanja' ili 'demičkom difuzijom' bliskoistočnih zemljoradnika, odnosno zamjenom lovačko-sakupljačkih populacija. Napredak u aDNK metodama i sekvencioniranjem genoma sljedeće generacije dopušta nove pristupe koji mogu izravno procijeniti genetsku strukturu prošlih populacija i migracijskih uzoraka. Analize mitohondrijskog aDNK stoga ukazuju na varijacije u kretanju populacija diljem Europe. U središnjoj Europi, neolitički se zemljoradnički genetski markeri razlikuju od onih mezolitičkih lovaca-sakupljača, ali i od onih modernih europskih populacija (Haak *et al.* 2005; 2010; Bramanti *et al.* 2009; Burger, Thomas 2011). Karakteristični mtDNK tip N1a s distribucijom frekventnosti od 25% među neolitičkim LTK zemljoradnicima u središnjoj Europi u kontrastu su s malom frekvencijom od 0,2% u modernim mtDNK uzorcima s istog područja (Haak *et al.* 2005). Taj tip nije uočen u uzorcima lovaca-sakupljača iz zapadne i sjeverne Europe. Naprotiv, hg H dominira (40%) varijabilnošću mitohondrijskog DNK suvremenih populacija središnje i zapadne Europe, a bio je manje čest kod ranoneolitičkih zemljoradnika, dok kod mezolitičkih lovaca-sakupljača praktički izostaje. Filogeografske studije pokazuju da je u Europu stigao s Bliskog Istoka prije posljednjeg glacijalnog maksimuma te da je preživio u glacijalnim utočištima jugozapadne Europe prije nego što se ponovno proširio u postglacijalnom razdoblju. Nedavno objavljene analize majčinske populacijske povijesti modernih Europljana i hg H mitohondrijskog genoma iz starih ljudskih ostataka pokazuju da ranoneolitičke linije "nisu znatno doprinijele" suvremenoj hg H raznolikosti i distribuciji u središnjoj Europi (Brotherton *et al.* 2013, 7). Hg H je povezivan s kulturom linearnotrakaste keramike, ali su linije izgubljene tijekom kratke faze pada populacije nakon 5000 god. pr. Kr. Trenutna raznolikost i distribucija ustanovljene su velikim rastom populacije u vremenu nakon LTK te "znatnim genetskim doprinosima sljedećih paneuropskih kultura poput kulture ljevkastih pehara koja je došla s Iberskog poluotoka u kasnom neolitiku ... nakon čega, čini se, postoji znatan genetski kontinuitet do suvremene središnje Europe " (ibid. 7; vidi i Lee *et al.* 2012, 577).

Na Iberskom se poluotoku javlja drugačija slika jer se neolitički sastav populacije haploskupine (npr. hg H, T2, J1c, I1, U4, W1) "znatno ne razlikuje od onoga suvremene populacije Iberskog poluotoka", ali se razlikuje od bliskoistočnih skupina (Sampietro *et al.* 2007, 2165). Zanimljivo, mt aDNK hg N1a se ne pojavljuje niti u Španjolskoj, niti u Francuskoj (Lacan *et al.* 2011). Dvije mezolitičke individue su, pak, prenijele mitohondrijski U5b haplotip koji se ne uklapa u klaster modernih populacija južne Europe (uključujući Baske) kao što je ranije navođeno (Sánchez-Quinto *et al.* 2012; Behar *et al.* 2012).

Central Europe, is in contrast with the low frequency of 0.2% in modern mtDNA samples in the same area (Haak et al. 2005). It was not observed in hunter-gatherer samples from Western and Northern Europe. On the contrary, hg H dominates (40%) present-day Central and Western European mitochondrial DNA variability. It was less common among Early Neolithic farmers and virtually absent in Mesolithic hunter-gatherers. Phylogeographic studies suggest that it arrived in Europe from the Near East before the Last Glacial Maximum, and survived in glacial refuges in Southwest Europe before undergoing a post-glacial re-expansion. Recently published analyses of the maternal population history of modern Europeans and hg H mitochondrial genomes from ancient human remains show that Early Neolithic lineages "do not appear to have contributed significantly" to present-day Central Europe's hg H diversity and distribution (Brotherton et al. 2013, 7). The hg H was associated with LBK culture, but lineages were lost during a short phase of population decline after 5000 cal BC. The current diversity and distribution were largely established by the strong post-LBK population growth and by "substantial genetic contributions from subsequent pan-European cultures such as the Bell Beakers expanding out of Iberia in the Late Neolithic, ... after which there appears to have been substantial genetic continuity to the present-day in Central Europe" (ibid. 7; see also Lee et al. 2012, 577).

A rather different picture emerges from the Iberian Peninsula, where the Neolithic composition of the haplogroup population (e.g., hg H, T2, J1c, I1, U4, W1) "is not significantly different from that found in the current population, but differs from the Near Eastern groups (Sampietro et al. 2007, 2165). Interestingly, there is no evidence of the mt aDNA hg N1a in either Spain or France (Lacan et al. 2011). Two Mesolithic individuals, on the contrary, carried a mitochondrial U5b haplotype which does not cluster with modern populations from Southern Europe (including Basques), as suggested recently (Sánchez-Quinto et al. 2012; Behar et al. 2012).

The mt aDNA sequences from contemporary huntergatherer and farmer populations in Scandinavia and the Baltic differ significantly. These populations are unlikely to be the main ancestors of either modern Scandinavians or Saami, but indicate greater similarity between hunter-gatherers and modern eastern Baltic populations (Linderholm 2011). It has also been suggested that Scandinavian Neolithic huntergatherers shared most alleles with modern Finnish and northern Europeans, and the lowest allele sharing was with populations from Southeast Europe. In contrast, Neolithic farmers shared the greatest fraction of alleles with modern Southeast European populations, but were differentiated from Levantine populations and showed a

Mt aDNK sekvenca istovremenih lovačko-sakupljačkim i zemljoradničkih populacija Skandinavije i Baltika znatno se razlikuje. Ove populacije vjerojatno nisu glavni preci niti modernih Skandinavaca niti naroda Saami, ali pokazuju veću sličnost između lovaca-sakupljača i modernih populacija istočnog Baltika (Linderholm 2011). Smatra se da skandinavski neolitički lovci-sakupljači dijele najviše alela s modernim Fincima i drugim populacijama sa sjevera, a najmanje s populacijama jugoistočne Europe. Nasuprot tomu, neolitički zemljoradnici najviše frakcija alela dijele s modernim populacijama jugoistočne Europe, ali se razlikuju od levantskih populacija i pokazuju uzorak smanjivanja genetskih sličnosti s 'populacijama sa sjeverozapadnih i sjeveroistočnih krajeva Europe' (Skoglund *et al.* 2012, 469). Najnovija arheogenetska istraživanja pokazuju široku 'heterogenost u geografskoj, vremenskoj i kulturološkoj distribuciji raznolikosti mtDNK' u sjeveroistočnoj Europi. Dok sekvence mt aDNK s lovačko-sakupljačkih nalazišta pokazuju genetski kontinuitet u nekim majčinskim linijama (npr. hg U4, U5 i H) u sjeveroistočnoj Europi još od mezolitika, kao i genetske afinitete s postojećim populacijama zapadnog Sibira, teško je precizno definirati genetske izvore drugih. Svi pokazuju jasne haplotipske razlike u odnosu na suvremene populacije naroda Saami. Najveća pretpovijesna migracija u regiji povezivana je sa 'širenjem rane keramike s istoka' (Der Sarkissian *et al.* 2013, 10–12).

Nažalost, još ne znamo što se dogodilo mezolitičkim lovcima-sakupljačima i neolitičkim populacijama jugoistočne Europe, pa u toj regiji još nisu provođene analize aDNK.

Prijelaz na zemljoradnju i 'kulturu mlijeka'

Svi ljudi imaju gen za proizvodnju laktaze, ali samo je djeca proizvode dovoljno za razgradnju laktoze, glavnog šećera u mlijeku. Svježe mlijeko je toksin za odrasle bez laktaze, i često uzrokuje simptome poput boli u abdomenu, napuhavanje, nadutost i dijareju. Laktaza je enzim kojeg proizvodi probavni sustav mladunčadi sisavaca čija se proizvodnja drastično smanjuje nakon dojenja. Sposobnost probavljanja laktoze iz svježeg mlijeka zove se sinteza laktoze. Ipak, vezu između sinteze laktaze i konzumiranja svježeg mlijeka i dalje ne razumijemo u potpunosti.

Svojstvo sintetiziranja laktaze prisutno je u otprilike 35% odraslih u ljudskim zajednicama diljem svijeta, ali varira između i unutar kontinenata. Frekvencije pojedinaca koji mogu sintetizirati laktazu visoke su u Europi, središnjoj Aziji i Indiji, dok ih u jugoistočnoj Aziji gotovo nema (Itan *et al.* 2010; Gerbault *et al.* 2011). U Europi je ta frekvencija najviša na sjeveru, i pada od središnjih i zapadnih (62–86%) do

pattern of decreasing genetic similarity to 'populations from the northwest and northeast extremes of Europe' (Skoglund et al. 2012, 469). The most recent arhaeogenetic study reveals an extensive 'heterogeneity in the geographical, temporal and cultural distribution of the mtDNA diversity' in Northeast Europe. While some mt aDNA sequences from hunter-gatherer sites show a genetic continuity in some maternal lineages (e.g., hg U4, U5 and H) in Northeast Europe since the Mesolithic, and also genetic affinities with extant populations in Western Siberia, the precise genetic origins of the others is more difficult to identify. They all display clear haplotypic differences with contemporary Saami populations. The major prehistoric migration in the area was thought to have been associated with 'the spread of early pottery from the East' (Der Sarkissian et al. 2013, 10–12).

Unfortunately, we still do not know what happened to the Mesolithic hunter-gatherer and Neolithic populations in Southeast Europe, as no aDNA studies have yet been carried out in the region.

The transition to farming and the transition to milk culture

All humans have the lactase gene, but only children produce lactase in sufficient amounts to break down lactose, the main sugar in milk. Fresh milk is a toxin to adults without lactase, and often causes symptoms such as abdominal pain, bloating, flatulence and diarrhoea. Lactase is an enzyme produced in the digestive system of mammalian infants, but is dramatically reduced after the weaning period. The ability to digest lactose found in fresh milk is called lactase persistence. However, the correlation between lactase persistence and fresh milk consumption is not yet fully understood.

The lactase persistence trait is found in approx. 35% of adults in human populations in the world, but varies widely between and within continents. The frequencies of lactase-persistent individuals are generally high in Europe, Central Asia and India but almost zero in Southeast Asia (Itan et al. 2010; Gerbault et al. 2011). In Europe, lactase persistence is at its highest frequency in the North, with a decreasing cline from the central and western (62–86%) to the southern and eastern regions (15–54%) (Gerbault et al. 2011, 864). On the Indian sub-continent the frequency of lactase persistence is higher in the North-West than elsewhere; further East, the lactase persistence frequency is generally low. In Africa and the Middle East, the distribution is patchy, with some pastoral nomadic tribes having high frequencies (92%) of lactase persistence compared with neighbouring groups living in the same region (Tishkoff et al. 2007; Ingram et al. 2009; Gerbault et al. 2011).

južnih i istočnih regija (15–54%) (Gerbault *et al.* 2011, 864). Na indijskom potkontinentu frekvencija je na sjeverozapadu veća nego igdje drugdje. Istočnije je frekvencija sintetiziranja laktaze općenito niska. U Africi i na Bliskom Istoku distribucija je fragmentarna, a nekoliko nomadskih plemena ima visoke frekvencije (92%) sintetiziranja laktaze u odnosu na susjedne skupine koje nastanjuju istu regiju (Tishkoff *et al.* 2007; Ingram *et al.* 2009; Gerbault *et al.* 2011).

Brojni polimorfizmi jednog nukleotida koji omogućavaju proizvodnju laktaze u odrasloj dobi geografski su drugačije distribuirani kod modernih populacija. Derivirana alelska varijanta –13 910*T prvog prijelaza nukleotida citozina u timin povezana je sa sintetiziranjem laktaze na prostoru Europe, središnje Azije i Indije (Enattah *et al.* 2002; Ingram *et al.* 2007; Itan *et al.* 2009). Ovaj alel i s njim povezana tolerancija na laktozu naizgled imaju dva izvorišta kod populacijskih predaka (nosioci H haplotipa) u regijama zapadno od Kavkaza i zapadno od Urala. Prva točka izvorišta datirana je u vrijeme između 12 000 i 5000 god. prije sadašnjosti, a druga kasnije, između prije 3000 i 1400 godina. Pomak u frekvenciji kod modernih populacija pokazuje da se alel širio na zapad (Enattah 2007, 619–622). Sinteza laktaze u Africi povezuje se s tri polimorfizma jednog nukleotida, C–14 010, G–13 915 i G–13 907, blizu gena za proizvodnju laktaze (Tishkoff *et al.* 2007). Povezani su s različitim etničkim skupinama s različitim haplotipskim i geografskim porijeklom. Vrijedno je ipak spomenuti da na neka pitanja i dalje ne možemo odgovoriti. Tako, na primjer ljudstvo Hadza u Tanzaniji ima visok stupanj sintetiziranja laktaze iako se ne bave stočarstvom.

Sintetiziranje laktaze samo je jedan od primjera prirodne selekcije kod ljudi, a ujedno i jedan od prvih jasnih primjera regulatornih polimorfizama u ljudskom genomu (Ingram *et al.* 2009). Isti gen prolazio je različite mutacije u različitim dijelovima svijeta, ali sa sličnim učincima. Sinteza laktaze uglavnom je uočena kod stočarskih populacija i, s obzirom na to da su svježe mlijeko i mliječni proizvodi jedini poznati prirodni izvori laktoze, čini se neizglednim da bi ta značajka bila odabrana bez postojanja izvora svježeg mlijeka (Gerbault *et al.* 2011, 864).

U posljednje vrijeme raspravlja se o nekoliko mogućih objašnjenja ' hipoteza selektivnosti pri razvoju laktazne perzistencije' i 'prednosti laktazne persistencije' (detaljnije vidi Budja *et al.* 2013). U prvom od njih, 'gensko-kulturološkoj koevoluciji' ili ''kulturno-povijesnoj' hipotezi, pretpostavlja se da je sintetiziranje laktaze odabrano kod onih populacija koje su generacijama konzumirale mlijeko i prihvatile stočarstvo i mliječne proizvode time povećavajući ovisnost

*A number of single nucleotide polymorphisms that allow lactase to be produced into adulthood have different geographic distributions within the modern populations. The derived allelic variant –13 910*T of the first nucleotide cytosine to thymine transition is associated with lactase persistence in Europe, Central Asia and India (Enattah et al. 2002; Ingram et al. 2007; Itan et al. 2009). This allele and associated selection for lactose tolerance seems to originate twice in ancestral populations (bearing haplotypes H) in regions north of the Caucasus and West of the Urals. The first origin is estimated at 12 000 to 5000 BP, and the second more recently at 3000 to 1400 years ago. It was suggested that the frequency gradient in modern populations shows that the allele migrated to the West (Enattah 2007, 619–622). Lactase persistence in Africa is linked to three single nucleotide polymorphisms, C–14 010, G–13 915 and G–13 907, close to the lactase gene (Tishkoff et al. 2007). They are linked to different ethnic groups with divergent haplotype backgrounds and geographic regions. However, some questions still remain unanswered. The Hadza people in Tanzania show a high level of lactase persistence despite having nothing to do with herding.*

Lactase persistence is one of the leading examples of natural selection in humans and also one of the first clear examples of the polymorphism of a regulatory in the human genome (Ingram et al. 2009). A single gene was involved with different mutations in different parts of the world, but with similar effects. The lactase persistence has been mainly identified in pastoralist populations and, as fresh milk and milk products are the only known naturally occurring sources of lactose, it is therefore unlikely that this trait would be selected without a supply of fresh milk (Gerbault et al. 2011, 864).

Several scenarios relating to the 'selection hypotheses on lactase persistence' and to 'the advantage of being lactase persistent' have been discussed recently (for details see Budja et al. 2013). The first 'gene – culture coevolution' or 'culture historical' hypothesis proposes that lactase persistence was selected among populations that consumed milk over generations and adopted animal breeding and dairying, thereby increasing the dependence of adults on milk. In opposition, the second, the 'reverse cause hypothesis', suggests that dairying was adapted by populations that were already lactase persistent. A mutation associated with lactase persistence within small human groups could have grown in frequency through genetic drift before milk was introduced into subsistence. The third, the 'calcium assimilation hypothesis', suggests that in high-latitude environments where lower sunlight produces less vitamin D (important for the absorption of calcium in bones) lactose in fresh milk promotes the uptake of calcium present in milk. In contrast to hunter-gatherers who had a vitamin

odraslih o mlijeku. Nasuprot tomu, u drugom objašnjenju, 'hipotezi obrnutog uzroka', pretpostavlja se da su mliječni proizvodi prihvaćeni kada je sintetiziranje laktaze već bilo razvijeno. Mutacija vezana uz sintetiziranje laktaze u malim skupinama mogla je postati frekventnija genetskim odmakom prije nego što je mlijeko uvedeno u prehranu. U trećem objašnjenju, 'hipotezi asimilacije kalcija', pretpostavlja se da se na većim nadmorskim visinama, gdje je položaj sunca niži pa se proizvodi više D vitamina (važnog za apsorpciju kalcija u kosti), zbog laktoze u svježem mlijeku povećava udio kalcija. U suprotnosti s lovcima-sakupljačima koji su kroz prehranu unosili mnogo D vitamina zbog morskih plodova, rani zemljoradnici možda su imali problema s nedostatkom D vitamina, a pijenje mlijeka moglo je biti prednost onima koji su razvili sintetiziranje laktoze. U četvrtom objašnjenju, 'hipotezi sušnog podneblja', pretpostavlja se da je mlijeko koje su koristili stočari moglo predstavljati nezagađeni izvor tekućine u regijama gdje je vode bilo malo. Pojedinci koji su intolerantni na laktazu bili su izloženi riziku od dijareje i dehidracije zbog pijenja svježeg mlijeka, ali selekcija je mogla biti jaka među pojedincima koji su razvili sintetiziranje laktaze.

Razvoj mliječnih proizvoda vjerojatno se razvio u procesu prijelaza na zemljoradnju, a korištenje mliječnih kiselinskih bakterija može se pratiti paralelno s domestificiranjem ovaca, koza i goveda. U mužnji i obradi mlijeka, laktokoki i laktobakcili korišteni su kako bi se potaknuo proces fermentacije koji mlijeko pretvara u jogurt, mlaćenicu, maslac i sir. Na ovaj je način olakšano pohranjivanje i prenošene mliječnih proizvoda. Mliječni su proizvodi postali dostupni i u razdobljima kada je proizvodnja mlijeka slabija, a mlijeko je kao izvor hranjivih tvari postalo dostupno kroz cijeli život pojedinaca.

Treba spomenuti da se količina laktoze smanjuje obradom mlijeka. Fermentirani mliječni proizvodi izazivaju manje ili nimalo nuspojava kod ljudi intolerantnih na laktozu. Laktoza u svježem mlijeku tvori 4,42–5,15 g/g% kod goveda, 4,66–4,82 g/g% kod koza, i 4,57–5,40 g/g% kod ovaca, a bakterijskom se fermentacijom može reducirati za 50–60%. Neki mliječni proizvodi (poput sira i maslaca) imaju mali udio laktoze, od 0 do 3,7 g/g% (Nagy *et al.* 2011, 267; Liebert 2012, 77).

Možemo pretpostaviti da je domestifikacija životinja u neolitiku uvela mliječne proizvode u ljudsku prehranu te da su domaće životinje bili stabilni sezonalni izvor hrane koji je mogao zamijeniti lovačko-sakupljački sustav sezonalne eksploatacije širokog spektra životinjskog mesa. Mlijeko je dobar izvor kalorija i iznimno važan izvor proteina i masti, zbog čega je moralo znatno popraviti kvalitetu prehrane. Pretpostavlja se da je pretpovijesna krava mogla proizvesti

D rich diet abundant in marine food, early agriculturalist might have had problems with vitamin D deficiency, and drinking milk could have been an advantage for lactase-persistent farmers. The fourth, the 'arid climate hypothesis', suggests that in regions where water was scarce, milk could be an uncontaminated source of fluid used by pastoralists. While lactase non-persistent individuals were at risk from diarrhoea and the dehydrating effects of drinking fresh milk, the selection may have been strong in lactase-persistent individuals.

The beginning of dairy culture can be assumed to have occurred in the processes of the transition to farming, and the utilisation of lactic acid bacteria can be traced alongside the domestication of sheep, goat and cattle. In milking and milk processing, the lactococci and lactobacilli were manipulated to initiate the fermentation that converts milk into yogurt, buttermilk, butter and cheese. These have advantages in storing and transporting dairy products and making them available in times of low milk production on one hand, and making milk available as a nutritional source throughout the entire life of the individuals on the other.

It should be noted that lactose is progressively reduced by milk processing. The fermented milk products cause fewer or no mal-symptoms to lactase non-persistent individuals. While the lactose content of fresh milk ranges between 4.42–5.15 g/g% in cattle, 4.66–4.82 g/g% in goats and 4.57–5.40 g/g% in sheep, it can be reduced to 50–60% by bacterial fermentation. Some processed milk products (such as cheese and butter) have very low lactose content, ranging from 0–3.7 g/g% (Nagy et al. 2011, 267; Liebert 2012, 77).

We may assume that animal domestication in Neolithic brought milk into the diet, and that domestic animals were a more stable seasonal resource, which could became an alternative to hunter-gatherers' system of the seasonal exploitation of a broad spectrum of animal resources. Milk is a good source of calories, specifically an important source of protein and fat, and must have increased the quality of the diet. The milk production of a prehistoric cow has been estimated to range between 400 and 600kg per weaning period. Even when the milk necessary for the raising of the calves is subtracted, some 150–250kg remains. This is almost equivalent to the calorie gain from the meat of a whole cow. Over the years, milking thus may have resulted in a greater energy yield than the use of cattle for meat (Gerbault et al. 2011, 865–866). Dairying was especially important for children and adolescents as it prolongs the beneficial effects of milk (proteins, fats, but also calcium supply) long after weaning (Vigne 2008, 200; Panesar 2011).

između 400 i 600 kg mlijeka u razdoblju dojenja. Čak i kada se oduzme mlijeko potrebno za hranjenje teleta, ostane između 150 i 250 kg. Izraženo u kalorijama, to je gotovo ista količina koju se može dobiti iz mesa cijele krave. Tijekom godina mužnja je mogla postati veći izvor energije od korištenja goveđeg mesa (Gerbault *et al.* 2011, 865–866). Mliječni proizvodi posebno su bili važni za djecu i adolescente jer produžuju korištenje dobrih svojstava mlijeka (proteine, masti, ali i zalihu kalcija) dugo nakon dojenja (Vigne 2008, 200; Panesar 2011).

Ipak, izostanak gena za sintetiziranje laktaze (alelska varijabla -13 910*T) pokazuje da je sintetiziranje laktaze kod neolitičkih populacija u Europi bilo rijetko, ako ne čak i jednako 'nuli' (Leonardi *et al.* 2012, 93). Nasuprot tomu, analize mliječnih masti s keramike pokazuju da su mužnja, korištenje i obrada mlijeka bili široko prihvaćeni u neolitiku diljem Euroazije. Biomolekularne analize lipida iz hrane koji se apsorbiraju i ostaju u stijenkama keramičkih posuda dokazuju proizvodnju mliječnih proizvoda u jugozapadnoj Aziji već oko 7000. g. pr. Kr. Navodno povećanje procesuiranja mlijeka u sjeverozapadnoj Anatoliji koje se dogodilo između 6500. i 5500. g. pr. Kr. navelo je znanstvenike da to vide kao rani centar za procesuiranje mlijeka u kojem je kravlje mlijeko bilo glavni resurs za mliječne proizvode (Evershed *et al.* 2008; Thissen *et al.* 2010; za komentare vidi Çakırlar 2012). Ova je regija imala središnju ulogu u širenju neolitičke privrede prema Europi (Brami, Heyd 2011; Özdoğan 2011). Ipak, reducirane masne kiseline preživača u stijenkama posuda ukazuju na korištenje mliječnih proizvoda i obradu mlijeka (zagrijavanje mlijeka) u kontekstu Starčevo-Criş kulture između oko 5950. i 5500. g. pr. Kr. , i Köros kulture između oko 5800. i 5700. g. pr. Kr. (Craig *et al.* 2005). Na sjevernom Jadranu u kontekstu Vlaške kulture (Mala Triglavca) 30% analizirane keramike sadržavalo je lipide karakteristične za mliječne masti, što sugerira da je obrada mlijeka u keramičkim posudama bila česta. Distribucija triglicerola (TAG) i indikativni lipidi reduciranih životinjskih masti pokazuju da su mliječni proizvodi vjerojatno dobivani iz kozjeg mlijeka. Uzorci keramike dobro su datirani u razdoblje između 5467. i 5227. g. pr. Kr. (Budja et al 2013, 106-112) (Sl. 8). U ranom neolitiku sjeverne Europe, u kontekstu linearnotrakaste keramike, obrada mlijeka datirana je u vrijeme između oko 5200. i 4900.–4800. g. pr. Kr. (Salque *et al.* 2012).

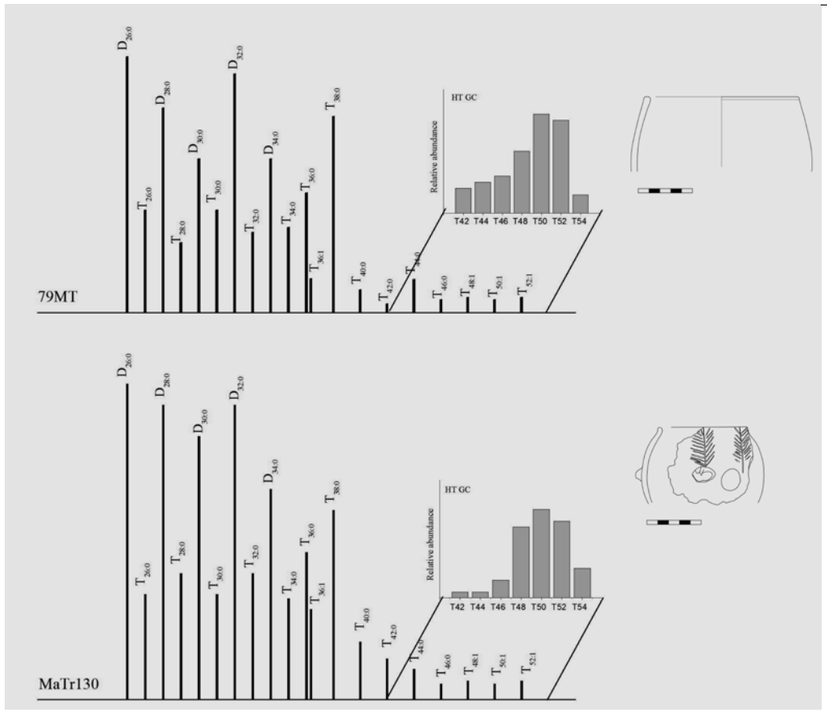
Paradoks perzistencije laktaze

Pascale Gerbault *et al.* (2009; 2011; 2012) i Yuval Itan *et al.* (2009; 2010) intenzivno su proučavali evolucijske procese

*However, the absence of lactase gene (e.g., the allelic variant –13 910*T) shows that lactase persistence in Neolithic populations in Europe was very low and 'may have even been zero' (Leonardi et al. 2012, 93). On the contrary, the analyses of dairy fats in pottery suggest that milking, milk consumption and processing were widely adopted in the Neolithic in Eurasia. Biomolecular analyses of the lipids present in food which become absorbed and trapped in the pores of clay vessels indeed show evidence of dairy production in southwest Asia as early as c.7000 cal BC. The apparent intensification of dairy processing in northwest Anatolia at 6500-5500 cal BC was recognised as an early centre for milk processing, with cow's milk as the main source of dairy products in this region (Evershed et al. 2008; Thissen et al. 2010; for comments see Çakırlar 2012). This region had a central position in dispersals of Neolithic subsistence economies into Europe (Brami, Heyd 2011; Özdoğan 2011). However, degraded ruminant fatty acid in pottery suggest milk products and milk processing (i.e. the heating of milk) in the Starčevo-Criş culture at c. 5950–5500 cal BC and Köros culture at c. 5800–5700 cal BC (Craig et al. 2005). In Northern Adriatic in Vlaška culture context (Mala Triglavca) it was found that 30% of sampled pottery contain lipids characteristic of dairy fats thus indicating that the processing of dairy products in pottery vessels was quite extensive. The triacylglycerols (TAGs) distributions, the indicative lipids of degraded animal fats, suggest that residues of dairy products probably derived from goat milk. The pottery samples are well embedded in the time span 5467–5227 cal BC (Budja et al. 2013, 106-112) (Fig. 8). In Northern Europe in the Early Neolithic LBK complex the milk processing is dated to c. 5200 and 4900–4800 cal BC (Salque et al. 2012).*

The lactase persistence paradox

Pascale Gerbault et al. (2009; 2011; 2012) and Yuval Itan et al. (2009; 2010) intensively studied the evolutionary processes that shaped the European lactase persistence patterns in modern populations. They ran computer simulations to test different selection hypotheses on lactase persistence in relation to 'demic diffusion' and culture diffusion models. Their results are contrasting. Computer simulations showed that high lactase persistence frequencies observed in Northern and Western Europe can be explained by selective pressure, possibly increasing with latitude in a way that is highly compatible with the calcium assimilation hypothesis combined with the effect of demographic expansion (i.e. population growth) during the Neolithic transition. The much lower frequencies in Southeast Europe can be explained by genetic drift if this mutation was carried by Near-eastern pioneers. Keeping in mind that the 'demic diffusion' model is based on the decreasing southeast-northwest cline of frequencies for



Sl. 8, triacilglicerolna (TAG) masena distribucija indikativnih lipida degradiranih životinjskih masti dokumentiranih u uzrocima keramike s lokaliteta Mala Triglavca (br. 79 i 130), koji ukazuju na ostatke mliječnih proizvoda dobivenih od kozjeg mlijeka (iz Budja i dr., 2013. 109-106, sl. 6).
Fig. 8, the triacylglycerol (TAGs) mass distributions of indicative lipids of degraded animal fats documented in the Mala Triglavca pottery samples (Nos. 79 and 130). They suggest residues of dairy products derived from goat milk (from Budja et al. 2013, 109-106. Fig. 6)

koji su oblikovali uzorke perzistencije laktaze u modernim europskim populacijama. Osmislili su računalne simulacije kako bi testirali različite hipoteze selekcije sintetiziranja laktaze u odnosu na 'demičku' i modele kulturne difuzije. Rezultati su oprečni. Računalne su simulacije pokazale da visoke frekvencije sintetiziranja laktaze u sjevernoj i zapadnoj Europi treba objašnjavati selektivnim pritiskom koji je mogao rasti ovisno o zemljopisnoj širini i to na način koji je kompatibilan s hipotezom asimilacije kalcija u kombinaciji s efektima demografske ekspanzije (rasta populacije) tijekom prijelaza na neolitik. Mnogo niže frekvencije u jugoistočnoj Europi može se objasniti genetskim odmakom ako su tu mutaciju prenosili bliskoistočni pioniri. Imajući na umu činjenicu da je model 'demičke difuzije' utemeljen na jugoistočno-sjeverozapadno postavljenoj krivulji frekvencija odabranih markera Y kromosoma, sugerirajući pomicanje neolitičkih muškaraca s levantskim genima, važno je uočiti da se krivulja alelske varijable –13 910*T pomiče u suprotnom smjeru. Frekvencija sintetiziranja laktaze najviša je u sjevernoj Europi, i smanjuje se prema središnjoj i zapadnoj (62–86%) te južnoj i istočnoj (15–54%) (Gerbault *et al.* 2011, 864).

Ipak, računalno modeliranje ukazuje na to da središte distribucije alela može biti jako udaljeno od izvorišta u smjeru širenja populacija te da se širi zajedno s 'demičkom difuzijom'. Ovaj proces naziva se 'surfanje alela', a smatra se da se odvijao sa širenjem zemljoradnika u Europu (Gerbault *et al.* 2009, 3, 7–8, Fig. 1; 2011; vidi i Gerbault 2012, 179–198, Fig. 4). To sugerira da se jaka selekcija sintetiziranja laktaze odvija u 'niši' na čelu 'demičke difuzije' gdje lokalni uvjeti okoliša i

*selected Y-chromosome markers, indicating the movement of Neolithic men with Levantine genetic ancestry across Europe, it is important to note that the allelic variant –13 910*T cline travels in the opposite direction. In Europe lactase persistence is at highest frequency in north Europe with a decreasing cline to the central and western (62–86%) and southern and eastern regions (15–54%)(Gerbault et al. 2011, 864).*

However, computer modelling suggests that the centre of distribution of an allele can be far removed from its location of origin in the direction of population expansion, moving at the front of the 'demic diffusion'. This process is called 'allele surfing' and is thought to have occurred with the spread of farmers in Europe (Gerbault et al. 2009, 3, 7–8, Fig. 1; 2011; see also Gerbault 2012, 179–198, Fig. 4) thus hypothesised that strong selection for lactase persistence runs within the 'niche construction' at the front of the 'demic diffusion', where local environmental condition and subsistence strategies led to population increase and concentration on milk resources.

*Nevertheless, Itan et al. (2009; 2010; see also Burger, Thomas 2011; Leonardi et al. 2012) suggest that the –13 910*T allele first underwent selection in a relatively short period among dairy farmers in the northern Balkans in the Starčevo and Körös cultures. It was than dispersed by 'demic diffusion' to Central and Western Europe in the area of Linear Pottery culture at 'around 6256–8683 years BP' (Itan et al. 2009, 7; see also Itan et al. 2010).*

However, both scenarios, the 'demic diffusion' of lactase-persistent farmers across Europe and the evolution of lactace

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

strategije preživljavanja dovode do povećanja populacije i koncentriranja na mlijeko.
Usprkos tome, Itan *et al.* (2009; 2010; vidi i Burger, Thomas 2011; Leonardi *et al.* 2012) predlažu da je alel –13 910*T prvo prošao selekciju u relativno kratkom razdoblju među prvim zemljoradnicima na sjevernom Balkanu u sklopu starčevačke i Körös kulture, nakon čega se 'demičkom difuzijom' proširio u središnju i zapadnu Europu na prostor kulture linearnotrakaste keramike između 'oko 6256. i 8683. g. prije sadašnjosti' (Itan *et al.* 2009, 7; vidi i Itan *et al.* 2010).

Oba scenarija, 'demička difuzija' zemljoradnika koji mogu sintetizirati laktazu diljem Europe i evolucija sintetiziranja laktaze u središnjoj Europi u neolitiku, čine se nerealnima. Arheogenetska analiza neolitičkih kostura sugerira da je 'frekvencija laktozne perzistencije bila znatno niža u ranom neolitiku Europe nego što je danas, a mogla je biti jednaka nuli' (Leonardi *et al.* 2012, 93; vidi i Burger, Thomas 2011). Zaista, analizom je ustanovljen nedostatak alela –13 910*T u mezolitičkim i neolitičkim populacijama u središnjoj Europi, na zapadnom Mediteranu i na Baltiku (Burger *et al.* 2007; Burger, Thomas 2011; Lacan *et al.* 2011; Linderholm 2011; Nagy *et al.* 2011). Jedine dvije iznimke su dvije postneolitičke individue u Baskiji na Iberskom poluotoku (Plantinga *et al.* 2012).

Biomolekularne analize mliječnih masti iz neolitičke keramike pokazuju da su mužnja, korištenje i obrada mlijeka bile prihvaćene u neolitičkoj Europi. Stočarstvo je, dakle, prihvaćeno prije razvitka i širenja laktozne perzistencije, što znači da možemo pretpostaviti da, pod normalnim okolnostima ona ne mora proći jaku selekciju u ovoj populaciji te da se uklapa u hipotezu da su mliječni proizvodi i konzumiranje mlijeka uvedeni prije genetske adaptacije. Jaki selekcijski pritisci mogli su biti sporadični i odvijati se pod određenim ekstremnim uvjetima poput suša, epidemija ili gladi.

Zaključna razmatranja

Prijelaz s mezolitika na neolitik daleko je složeniji i varijabilniji proces no što se smatralo. Uvođenje tehnologije izrade keramike i distribucija prvih keramičkih posuda u Euroaziji pokazuju široko rasprostranjenu pojavu različitih tehnika izrade keramike i ukrašavanja u različitim kulturnim i kronološkim kontekstima. Taj se uzorak ne može objasniti uskim i polaganim jugoistočno-sjeverozapadnim širenjem ljudi i posuda diljem Europe u 'valu napredovanja ' u sklopu 'prvog demičkog događaja'. Predlažemo da su obje stvari bile dio neprekinutih društvenih mreža koje su nastale davno prije pojave neolitika na Levantu.

*persistence in Central Europe in the Neolithic, seem to be unrealistic. The archaeogenetic analysis of Neolithic skeletons suggests that "lactase persistence frequency was significantly lower in early Neolithic Europeans than it is today, and may have been zero" (Leonardi et al. 2012, 93; see also Burger, Thomas 2011). Indeed, the analysis revealed an absence of the –13 910*T allele in Central Europe, in the Western Mediterranean and the Baltic in Mesolithic and Neolithic populations (Burger et al. 2007; Burger, Thomas 2011; Lacan et al. 2011; Linderholm 2011; Nagy et al. 2011). The only exceptions are two post-Neolithic individuals in the Basque Country on the Iberian Peninsula (Plantinga et al. 2012).*

Biomolecular analyses of dairy fats in Neolithic pottery suggest that milking, milk consumption and processing were widely adopted in the Neolithic in Europe. Pastoralism was thus adopted before lactase persistence arose or became frequent. We may assume, therefore, that under normal circumstances lactase persistence is not necessarily to be under very strong selection in this population and fits with the hypothesis that dairying and milk consumption emerged before genetic adaptation. Strong selective pressures may have been episodic and occurred only under certain extreme circumstances, such as drought, epidemic or famine.

Concluding remarks

The Mesolithic-Neolithic transformation was far more complex and variable process than previously hypothesised. The introduction of ceramic technology and initial pottery distributions in Eurasia show a wide-spread appearance of different pottery-making techniques and ornamental principles in different cultural and chronological contexts. The pattern cannot be explained by way of a narrow and gradual southeast/north west oriented spread of both people and vessels across Europe in a 'wave of advance' and within a 'first demic event'. We suggest that both were embedded in continuous social networks established long before the advent of the Neolithic in the Levant.

The data indicate that ceramic technology was invented and reinvented more than once in different Palaeolithic and Neolithic contexts, and that hunter-gatherer communities made ceramic vessels elsewhere in Eurasia. The various pottery-making techniques, vessel shaping and ornamentation reflect different, but parallel production methods and distributions before and after the transition to farming.

Initial pottery distribution in Europe shows two almost contemporary, but geographically distinct, trajectories. While the northern is embedded in hunter-gatherer contexts, it has been suggested that the southern was associated with the expansion

Podaci ukazuju na to da je tehnologija izrade keramike otkrivena i ponovno otkrivena nekoliko puta u različitim paleolitičkim i neolitičkim kontekstima te da su lovačko-sakupljačke zajednice diljem Euroazije izrađivale keramičke posude. Različite tehnike izrade keramike, oblikovanje i ukrašavanje posuda ocrtavaju različite, ali paralelne metode proizvodnje i širenja prije i nakon prijelaza na zemljoradnju.

Distribucija prve keramike u Europi pokazuje gotovo istovremene, ali zemljopisno udaljene smjerove kretanja. Na sjeveru se odvija u sklopu lovačko-sakupljačkih zajednica, a na jugu se povezuje sa širenjem zemljoradnje u tu regiju. Nalazi keramike u oba se konteksta razlikuju s obzirom na oblike posuda, tehniku izrade i ukras. Posude s koničnim bazama nisu korištene u jugoistočnoj Europi, a ukrašavanje u boji nikada nije ustanovljeno na posudama na sjeveroistoku ni sjeverozapadu. Neslikana se keramika očito prva pojavljuje u Europi u 7. tisućljeću pr. Kr. S obzirom na to da se obojeni ukras pojavljuje na loncima u jugoistočnoj Europi, dihotomija u aplikaciji boja i motiva u ranom neolitiku Europe postaje očigledna.

Arheogenetičari smatraju da je proces naseljavanja Europe u pretpovijesti bio znatno složeniji i varijabilniji nego što se smatralo. Palimpsest Y-kromosomnih očinskih i mitohondrijskih majčinskih linija u modernim populacijama otkriva tragove nekoliko demografskih ekspanzija koje su se tijekom tisućljeća dogodile u Europi. Pretpostavlja se da su se ovi procesi odvili u mezolitiku, neolitiku i bakrenom dobu, a vidljiviji su u frekvenciji markera Y kromosoma u modernih populacija na Balkanu i Mediteranu nego u drugim regijama. Novije analize starog DNK i paleodemografske rekonstrukcije pokazuju složenu sliku različitih smjerova kretanja populacija u drugim dijelovima Europe i, iako takve studije tek treba provesti za jugoistočnu Europu, može se očekivati sličnu sliku.

Arheološki i biokemijski podaci sugeriraju da je proizvodnja mliječnih proizvoda u Europi započela u ranom neolitiku. Arheogenetski podaci pak pokazuju izostanak gena za sintetiziranje laktaze kod europskih neolitičkih populacija i nisku frekvenciju laktozne perzistencije, ako ne i jednako nuli. Dakle, stočarstvo i mliječni proizvodi pojavili su se prije pojave i širenja laktozne perzistencije. Stoga možemo pretpostaviti da su se mužnja, konzumiranje mlijeka i fermentiranog mlijeka u Europi pojavili prije genetske adaptacije na mliječne kulture.

of farming into the region. The pottery assemblages in both contexts differ in terms of vessel shapes, production techniques and decoration. While vessels with conic bases were not modelled in Southeast Europe, coloured ornaments were never attached to vessels in the north-east or north-west. Unpainted vessels were clearly the first to appear in Europe in the 7th millennium cal BC. Since coloured ornaments were attached to pots in Southeast Europe, a dichotomy of colour and motif applications in the European Early Neolithic becomes evident.

Archaeogeneticists suggest that the processes of peopling Europe in prehistory were far more complex and variable than was first thought. The palimpsest of Ychromosomal paternal and mitochondrial maternal lineages in modern populations reveals the signatures of several demographic expansions within Europe over millennia, and gene flows between Europe and western Asia in both directions. These processes have been suggested for the Mesolithic, Neolithic and Chalcolithic periods and seem to be more visible in the frequency of Y-chromosome markers in modern populations in the Balkans and Mediterranean than in other regions. Recent analyses of ancient DNA and palaeodemographic reconstructions show a complex picture of varied population trajectories elsewhere in Europe, and while such studies have yet to be conducted for Southeast Europe, a similar picture may be expected.

Archaeological and biochemical data suggest that dairying was adopted in the Early Neolithic in Europe. Archaeogenetic data show, on the contrary, the absence of the lactase gene in Neolithic populations in Europe, and that their lactase persistence was very low and may have even been zero. Thus pastoralism and dairying appeared before lactase persistence arose or became frequent. We may assume, therefore, that dairying, milk consumption and fermented milk consumption in Europe emerged before the genetic adaptation to milk culture.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

BOBAN TRIPKOVIĆ

STANOVANJE I ORGANIZACIJA NASELJA

HOUSING AND THE ORGANIZATION OF SETTLEMENTS

Arhitektura i naselje u neolitiku

Razdoblje neolitika obično se povezuje sa zajednicama koje žive u stalnim naseljima, prakticiraju zemljoradnju i stočarstvo, izrađuju predmete od pečene gline i žive u kućama izgrađenim od čvrstih materijala. U izboru mjesta za nastanjivanje najznačajniju ulogu imali su blizina vode i dostupnost plodnog zemljišta i drugih resursa, čime je dugoročno omogućena relativno stabilna ekonomija utemeljena na proizvodnji hrane. U pogledu stanovanja, arheološka svjedočanstva iz tog vremena ukazuju na: uspješnost stanovnika da dugoročno opstanu na istom mjestu; planiranje i održavanje naseobinskog prostora; izgradnju udobnih kuća s pećima i skladišnim prostorom; razvoj simbolizma povezan s kućom, ognjištem i domom. Opće poboljšanje životnih uvjeta, koje u neolitiku sasvim sigurno primjećujemo, teklo je usporedo s demografskom ekspanzijom, što je značilo i prostornu ekspanziju naselja, kao i osnivanje novih. Potreba za obradivim zemljištem i pašnjacima, kako bi se uzdržavala povećana populacija, postupno je vodila k naseljavanju sredina koje su do tada bile nenastanjene, ili su bile vrlo slabo nastanjene, pa čak i onih koje nisu bile pogodne za agrikulturu. Utjecaj čovjeka na prirodnu sredinu ponegdje se manifestirao intenzivnom sječom i paljenjem šuma i, posredno, erozijom ogoljenog tla i nastankom novih tipova zemljišta. Događaju se i velike društvene promjene. Život u malim kratkotrajnim naseljima, vjerojatno nastanjenim srodničkom skupinom, s vremenom je ustupio mjesto životu u velikim stalnim naseljima. Ona su često brojala nekoliko stotina ili čak tisuća stanovnika, a u njihovoj strukturi i organizaciji primjećuju se dvije "suvremene" ljudske odlike: potreba da se izgradnjom kuća istakne privatnost obitelji/domaćinstva i da se izgrade i održe kolektivni identiteti.

Bilo koji opći pogled na naselje i stanovanje u neolitiku, međutim, ima nedostataka. Tome je tako zbog toga što izgled naselja i tip arhitekture nastaju i mijenjaju se u sklopu više faktora, kako kulturnih tako i prirodnih, koji su bili vrlo različiti u svakoj regiji. Na Bliskom istoku, primjerice, tijekom neolitika se uočava jasna promjena u stupnju društvene i kulturne složenosti. Mala naselja s ukopanim kružnim staništima, koja su dio tradicije lokalnih lovaca-sakupljača, postupno su zamijenjena velikim naseobinskim aglomeracijama. Povećava se i broj javnih građevina, a nadzemne četvrtaste kuće imaju razdijeljen unutrašnji prostor (Goring-Morris, Belfer-Cohen 2008; Cauvin 2000; Byrd 2005). U pogledu građevinskih tehnika promjena je, pak, malo. One su cijelo vrijeme lokalno varijabilne, jer ovise o materijalu dostupnom u okruženju, ali su kao sirovina posvuda značajnu ulogu imali glina i kamen. Važno je mjesto imao ćerpič – opeka izrađena od gline pomiješane

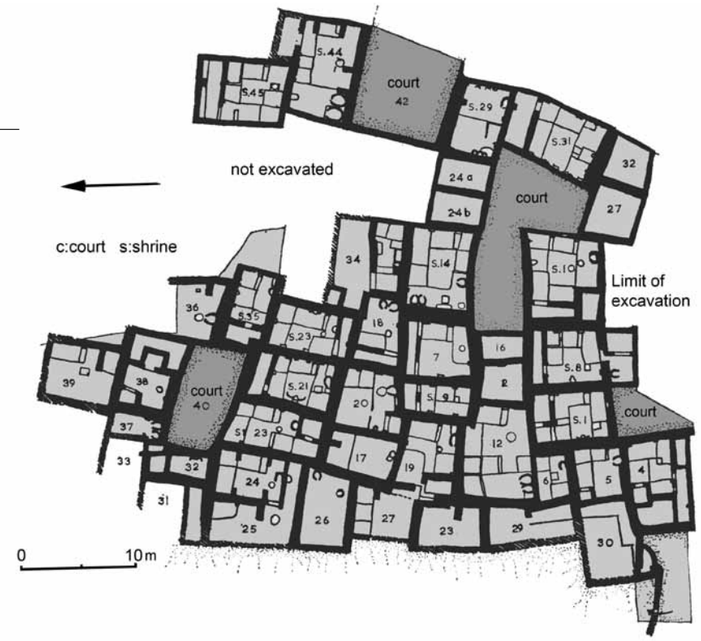
Neolithic architecture and settlements

The Neolithic period is usually associated with communities inhabiting permanent settlements, engaging in tilling and herding, producing objects made of fired clay and living in houses built of solid materials. For the selection of a settlement's location, the most important factors were the closeness of a water source and the availability of fertile land and other resources, which ensured in the long run a relatively stable economy based on the production of food. As regards housing, the archaeological evidence of the period suggests the following: people successfully survived for a long period in the same location; the settlement area was planned and maintained; constructed houses were comfortable, with stoves and storage areas; symbolism developed and was associated with house, hearth and home. The general improvement of living conditions – undoubtedly noticeable in the Neolithic – was followed by a demographic expansion, which means that settlements also expanded and new ones were set up. The demand for arable land and pasture, necessary to sustain the increased population, gradually led to the colonization of areas which had previously not been used for living, or where population was very sparse, including some areas that were not apt for agriculture. Man's influence on his natural environment was evidenced, in certain areas, by intensive felling and burning of forests, and, indirectly, by erosion of naked soil and creation of new types of land. Major social changes occurred, too. Living in small short-term settlements, probably used by a group of relatives, was gradually replaced by living in large permanent settlements. The population of these was several hundred, or even several thousand, and their structure and organization reflect two 'modern-day' human features: the need to build a house and thus emphasize family/household privacy, and the need to develop and maintain collective identities.

Any general overview of housing and settlements in the Neolithic is bound to be flawed. The reason for this lies in the fact that the appearance of settlements, and the type of architecture, developed and changed under the influence of several factors, both cultural and natural, and those were very different from one region to another. For example, in the Near East, a clear change in the level of social and cultural complexity can be observed in the Neolithic. Small settlements with circular living spaces dug into the ground, part of the tradition of local hunter-gatherers, were completely replaced by large housing agglomerations. The number of public buildings increased, too, and above-ground rectangular houses had a complex arrangement interior space (Goring-Morris, Belfer-Cohen 2008; Cauvin 2000; Byrd 2005). As far as the construction techniques go, little had changed. These techniques always had their local variants, because they depended on the materials available in a given region. Nonetheless, clay and stone

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE



Sl. 1, plan neolitičkog naselja Çatalhöyük, faza VII (prema Mellaart 1967)
Fig. 1, layout map of the Neolithic Çatalhöyük settlement, phase VII (after Mellaart 1967)

s vodom i organskim i neorganskim dodacima (pljeva, tucana školjka, keramika i dr.) i potom sušena na suncu – koji je slagan na temelje od kamena. Ćerpič je originalno neolitička inovacija, jer ga predneolitičke zajednice u tom području nisu koristile, a osmišljen je kao adaptivni odgovor tamošnjih ljudi na globalno zatopljenje koje je nastupilo s holocenom. Područje Bliskog istoka u to je vrijeme, uostalom kao i danas, uslijed suhe klime oskudijevalo u drvenoj građi, a prosječno nizak stupanj padalina i visoke temperature pogodovali su izgradnji i korištenju arhitekture od ćerpiča. Njegova upotreba imala je značajne prednosti. Termalna svojstva ćerpiča – da sprječava prodiranje topline tijekom vrućih ljetnih dana, a otpušta apsorbiranu toplinu tijekom hladnih noći – činili su ga izuzetno pogodnim za primjenu u lokalnim klimatskim prilikama (Rosenstock 2012). Iz istih razloga se na Bliskom istoku, ali i drugim sredinama sa suhom klimom, još uvijek koristi u seoskim sredinama.

Na čuvenom neolitičkom nalazištu Çatalhöyük središnjoj Anatoliji, koji datira od 7400. do 6200. g. pr. Kr., arhitektura od ćerpiča zanimljivo je izvedena (Mellaart 1967; Hodder 2005). Kuće su bile građene poput saća – sa zajedničkim zidovima, podsjećajući izgledom na Pueblo građevine američkih Indijanaca. U ovom naselju, koje je u prošlosti romantično nazvano i "najstarijim gradom na svijetu", zidovi kuća nisu imali prozore i vrata, već je za komunikaciju služio otvor na ravnom krovu, koji je u isto vrijeme bio i jedini izvor svjetla (Sl. 1). Tragovi iz kuća ukazuju na pripremu hrane i zanatske aktivnosti (redukciju opsidijana, izradu perli, izradu drveta), a s obzirom na toplu klimu, neke aktivnosti su vjerojatno obavljane i na krovovima (Hodder 2005, 128). Unutrašnjost građevina bila je izuzetno elaborirana, s podovima podijeljenima na platforme različite visine i mnogobrojnim simboličkim i ukrasnim sadržajima. Čest detalj u kućama bili su rogovi bika

were important raw materials all over. An important role was played by mudbrick – brick made of clay mixed with water and organic and inorganic admixtures (chaff, crushed shells, pottery etc.) and dried in the sun – laid on stone foundations. Mudbrick was an original Neolithic invention, because pre-Neolithic communities in that region had not used it. It was invented as a response of the local population to the global warming which occurred in the Holocene. At that time – and also today – in the Near East, timber was scarce due to the dry climate, and the low average precipitation and high temperatures were favourable for the building and usage of mudbrick houses. The use of mudbrick had important advantages. The thermal properties of mudbrick (it prevents the heat from entering during hot summer days, and releases the absorbed heat during cool nights) made it particularly suitable for the local climatic conditions (Rosenstock 2012). For the same reason, mudbrick is still used in rural communities in the Near East, and in other regions with dry climate.

At the famous Neolithic site of Çatalhöyük in central Anatolia, dating from 7400-6200 BC, the mudbrick architecture was interestingly executed (Mellaart 1967; Hodder 2005). Houses were built like honeycomb – they shared walls, and their appearance brings to mind the Pueblo houses of American Indians. In this settlement, in the past romantically named 'the oldest town in the world', house walls had no windows or doors. The way in was an opening in the flat roof, which was also the only source of light (Fig. 1). The remains of houses suggest that food was prepared there and some craft activities were practised (obsidian reduction, making of beads, woodworking). Given the warm climate, some activities were probably performed on the roof (Hodder 2005, 128). The interiors were very elaborate, with roofs divided into platforms set at different heights, and numerous symbolic and ornamental contents. A frequent detail found within the houses was bull horns and depictions of leopards, while the most frequent

Sl. 2, Çatalhöyük, reljefna predstava pra leoparda na sjevernom zidu građevine-svetišta 44 iz faze VI naselja (Mellaart 1967).
Fig. 2, Çatalhöyük, relief portrayal of prehistoric leopard on the northern wall of structure/shrine 44 from the settlement's phase VI (Mellaart 1967).

Sl. 3, zračna snimka dijela lokaliteta kulture linearnotrakaste keramike Balatonszárszó-Kiserdeidűlő (Oross, Bánffy 2009). Na snimci se jasno uočavaju jame stupova velikih kuća.
Fig. 3, aerial photograph of a section of the Balatonszárszó-Kiserdeidűlő Linear Pottery culture site (Oross, Bánffy 2009). The postholes for large houses are clearly discernable in the photograph.

i reljefni prikazi leoparda, a na oslikanim zidovima najčešće su prikazivane životinje i geometrijski motivi (Sl. 2). Zidovi glavne prostorije bili su u kratkim intervalima premazivani bijelom bojom, kako bi što bolje reflektirali svjetlost koja je dolazila kroz mali otvor na krovu. Bočne prostorije bile su znatno manje i uglavnom su služile za skladištenje. Čini se da su u kućama najviše boravili najstariji ukućani, sudeći prema koncentraciji ugljena na njihovim skeletnim ostacima, i žene, ako se može zaključivati na temelju slikanih prikaza koje ih prikazuju kao osobe svijetle puti. Svi su, pak, sahranjeni ispod poda, što upućuje na "posebno blizak odnos s kućom" (Hodder 2005, 128-129).

Za razliku od Bliskog istoka i Anatolije, u sredinama s više padalina i bujnom šumskom vegetacijom stanovništvu je za izgradnju i dugoročnu čvrstinu kuća, te ugodnost stanovanja, više pogodovala drvena građa. Kućama u središnjoj Europi stabilnost su davali brojni masivni stupovi između kojih se nalazio zid od šiblja oblijepljen blatom (Sl. 3). Konstrukcija

motifs of wall paintings were animals and geometric motifs (Fig. 2). The walls of the main chamber were coated white at short intervals, in order to reflect as much light as possible coming through the small opening in the roof. The side rooms were much smaller; they were primarily used for storage. It would appear that houses were used mostly by the eldest members of the community, judging by the concentration of charcoal in their skeletal remains, and also women, if the conclusion can be drawn from the paintings portraying them as people of fair skin. But everybody was buried under the floor of the house, suggesting a "very close relation to the house" (Hodder 2005, 128-129).

In contrast to the Near East and Anatolia, in regions with more precipitation and lush forest vegetation, people favoured timber as the construction material, which ensured long-term stability of houses and comfortable living. In central Europe, the stability of houses was obtained by the use of massive posts, with mud-covered wickerwork between them (Fig. 3). The pitched-roof structure was supported by additional lines of posts. Houses

Sl. 4, rekonstrukcija dvije građevine iz naselja kulture linearnotrakaste keramike Szentgyörgyvölgy-Pityerdomb (Oross, Bánffy 2009).
Fig. 4, reconstruction of two buildings from the Szentgyörgyvölgy-Pityerdomb Linear Pottery culture site (Oross, Bánffy 2009).

dvoslivnog krova bila je podržana s dodatnim nizovima stupova. Kuće su bile neobično dugačke, najčešće od 10 do 30 m, orijentirane sjeverozapad-jugoistok i međusobno odvojene nekoliko desetaka metara. Obično su se sastojale od tri dijela (Modderman 1986). Smatra se da je njihov središnji dio služio za stanovanje, dok su drugi dijelovi, ukoliko su postojali, služili kao skladišni prostor (jugoistočni dio) ili za smještaj životinja (sjeverozapadni dio). Izgradnja dugačkih kuća u tradicionalnim društvima obično je povezana s proširenom obitelji, suživotom više obitelji ili, čak, iste rodovske skupine, i to bi vrlo lako mogao biti slučaj i ovdje. Do danas je, ipak, nepoznato kako je unutrašnjost tih građevina izgledala. Podovi dugačkih kuća u središnjoj Europi nisu očuvani uslijed erozije tla, a njihova dobra očuvanost, zajedno s pokućstvom, svakako je najbitniji preduvjet za definiranje namjene prostorija. Zbog toga, o nekoliko tisuća istraženih kuća samo iz vremena kulture trakaste keramike, danas možemo zaključivati jedino na temelju tlocrta kojeg tvore stupovi, a koji ukazuju na zadivljujuću uniformnost građevina. Ipak, mnogi neolitički lokaliteti iz središnje Europe vrlo su dobro istraženi, tako da se izgled naselja može pouzdano rekonstruirati, kao i vrste i područja svakodnevnih aktivnosti (Sl. 4). Znamo da je prostor oko dugačkih kuća služio za dobavljanje građevinskog materijala, izradu keramike i alatki od kosti i kamena, a da su jame najbliže ulazu služile za odbacivanje otpada (Lüning 1982). Na prostoru pored kuća ponekad su sahranjeni i preminuli pripadnici zajednice, i to obično djeca. Dugačke kuće su u središnjoj Europi građene, doduše s nešto drugačijim

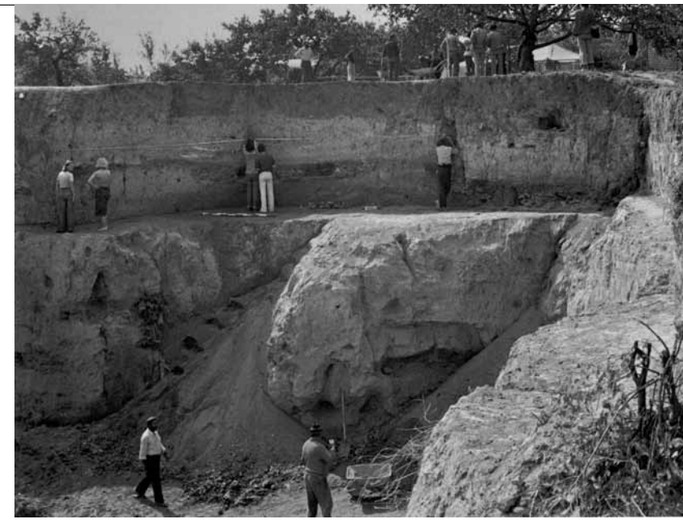
were unusually long, most often between 10 and 30 m, with a north-west to south-east orientation and several dozens of metres between them. Normally they consisted of three parts (Modderman 1986). The central section was probably used for living, while other sections – if they existed – were used for storage (the south-eastern section) or accommodation of animals (north-western section). In traditional societies, the construction of long houses was usually linked to extended families, co-residence of several families or even a bigger kin-based group, and this could very well have been the case here. However, interiors of such houses are still unknown. The floors of long houses in central Europe have not been preserved due to land erosion, and a good state of preservation of the houses, together with the household items, is the most important prerequisite for establishing the purposes of individual rooms. Nowadays all conclusions concerning the several thousand explored houses from the period of Linear Pottery Culture alone can be drawn only on the basis of their layout as outlined by postholes, and those suggest an impressive uniformity of the buildings. Still, many Neolithic sites in central Europe have been explored very well, allowing reliable reconstruction of the settlement plan, and of types of daily activities and areas in which they were carried out (Fig. 4). It is known that the area surrounding the long houses was used for provision of construction material, production of pottery and tools made of bone and stone, and that the pits that were closest to the entrances were used for waste disposal (Lüning 1982). The area adjacent to the houses was sometimes used for burials of deceased members of the community, usually children. Long

tlocrtom, do kraja neolitika, pa čak i kasnije, što ukazuje da je za tamošnje neolitičke zajednice njihova izgradnja također bila znatno više od jednostavne adaptacije na prirodno okruženje. Ona je bila dio njihove tradicije, sastavni dio njihovog kulturnog i kolektivnog identiteta (Whittle 2006; Hodder 1990).

Najveći broj neolitičkih naselja svrstava se u telove ili ravna naselja. Prvo su naseobine koje danas izgledaju kao veći ili manji brežuljci, a karakteristične su za Bliski istok, Anatoliju, istočnu i jugoistočnu Europu. O njihovoj rasprostranjenosti govore mnogi lokalni nazivi, kao tel, höyük, gomila, tumba, mogila i dr., koji se koriste na tom golemom području. Većina tih lokaliteta (u daljem tekstu tel) formirana je dugotrajnim stanovanjem i sukcesivnom izgradnjom kuća od čvrstih materijala (kamen, blato, drvo) na relativno ograničenom prostoru (Chapman 1997). Telovi nisu poznati prije neolitika, tako da je njihov nastanak povezan isključivo s inovacijama koje su tvorile neolitički način života. Na onima s moćnom kulturnom sekvencom, koji su formirani u postneolitičko vrijeme, često se u osnovi uočavaju i ostaci neolitičkog naselja, što znači da su mjesta njihovog nastanka bile uglavnom ekonomski stabilne lokacije, što je uočljivo u različitim razdobljima pretpovijesti. Ipak, treba imati u vidu i činjenicu da se naselje u osnovi tela ne razlikuje od dugotrajnih "ravnih" naselja i da ekonomska stabilnost svakako nije preduvjet za nastanak tela. Novija istraživanja pokazuju da su telovi formirani isključivo u suhim područjima s do najviše 1000 mm padalina godišnje, odnosno baš u sredinama gdje se za izgradnju kuća koriste značajne količine blata (Rosenstock 2005). U nastanku debele kulturne sekvence značajnu su ulogu imale odluke koje se tiču planiranja i organizacije naselja, kao i dnevna rutina domaćinstava. Zbog toga, može se reći da je nastanak brežuljkastog uzvišenja posljedica niza faktora, od kojih su najvažniji sljedeći (Chapman 1997; Reingruber *et al.* 2011): populacija koristi istu lokaciju duže vrijeme, ne nužno i u kontinuitetu; prostorna ekspanzija naselja ograničena je nekom prirodnom ili umjetnom preprekom; za izgradnju kuća i opremanje unutrašnjeg prostora koriste se znatne količine blata; pripremi prostora za izgradnju prethodi izravnavanje terena uz dopremanje velikih količina zemlje; domaćinstva rutinski i svakodnevno odbacuju određene količine otpada. Svakodnevni život u naselju imao je, pak, vlastitu dinamiku, tako da je vrijeme nastanka brežuljkastog uzvišenja bilo vrlo različito i tek će postati predmet daljnjih istraživanja (Sl. 5). Primjerice, serija datuma s eneolitičkog tela Pietrele u Rumunjskoj ukazuje na to da se gornjih 4 m kulturne sekvence formiralo tijekom samo 150 godina (Reingruber *et al.* 2011). Ako se uzme u obzir da je kulturni sloj tamo debeo čak 9 m, može se zaključiti da formiranje moćnog tela nije baš uvijek moralo biti tisućljetni proces.

houses were built in central Europe, though with slightly different layout, until the end of the Neolithic, and even later, indicating that, for the Neolithic communities in this region, the construction of such houses was much more than simple adaptation to their natural surroundings. It was part of their tradition, an integral element of their cultural and collective identity (Whittle 2006; Hodder 1990).

Most Neolithic settlements are classified as 'flat' settlements or settlements of the tell type. At first, there were settlements which today look like hills of various sizes, and they were characteristic of the Near East, Anatolia, eastern and south-eastern Europe. Their wide distribution is reflected in many local names, such as tel, höyük, gomila, tumba, mogila etc., used over that vast region. Most of the sites (hereinafter 'tells') were created as a result of long periods of inhabitation and successive construction of houses made of hard materials (stone, mud, wood) over a relatively limited space (Chapman 1997). No tells from the period preceding the Neolithic have been found, and thus their emergence is associated only with the innovations which brought about the Neolithic way of life. The tells which display a powerful sequence of cultures, formed in the post-Neolithic period, often include in their base the remains of a Neolithic settlement, which suggests that their locations were economically stable, and this can be ascertained for various prehistoric periods. Nonetheless, one should bear in mind the fact that a settlement in the base of a tell is no different from long-lasting 'flat' settlements, and that economic stability was not a prerequisite for the formation of a tell. Recent research demonstrates that tells were created only in dry regions which do not get more than 1000 mm of precipitation a year, that is, in regions in which large quantities of mud were used in the construction of houses (Rosenstock 2005). An important role in the creation of a thick cultural sequence was played by decisions concerning the planning and organization of the settlement, and the daily household routine. Thus, the creation of a hilly elevation can be attributed to a range of factors, the most important among them being (Chapman 1997; Reingruber et al. 2011): the population uses the same location over an extended period, not necessarily continuously; the settlement's special expansion is restricted by a natural or man-made obstacle; significant amounts of mud are used for constructing houses and furbishing their interiors; before construction, the terrain is levelled using large quantities of earth brought in; households routinely and daily dispose of certain quantities of waste. Everyday life within the settlement had its own dynamics, resulting in very different times when hilly elevations were formed, and those remain to be targeted by future research (Fig. 5). For example, a series of dates from the Eneolithic tell of Pietrele in Romania demonstrates that the upper 4 m of the cultural

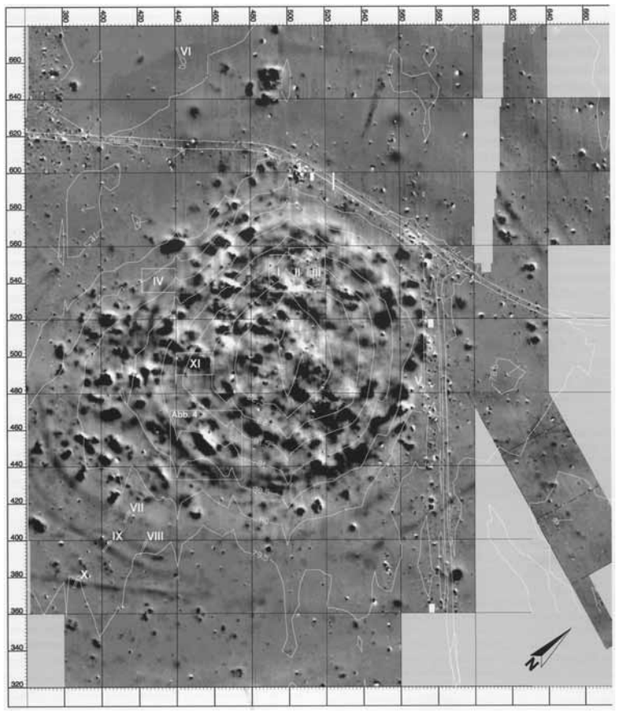


Sl. 5, Vinča, Belo Brdo – istraživanje eponimnog naselja vinčanske kulture 1978. (Tasić, Ignjatović 2008).
Fig. 5, Vinča, Belo Brdo – research at the eponymous Vinča culture site, 1978 (Tasić, Ignjatović 2008).

Drugi tip su "ravna" naselja, koja se danas opažaju uglavnom na temelju izoranih keramičkih fragmenata, raznog kamenog oruđa i ostataka nekadašnjih kuća. Ovisno o veličini zajednice ili dužine nastanjivanja bila su raznih veličina, od pojedinačnih domaćinstava i malih zaseoka do velikih naselja koja se prostiru na površini od nekoliko desetaka hektara. Prema sadašnjim saznanjima to su najčešće naselja razbacanog tipa, s velikim praznim prostorima između građevina, koje su stanovnici koristili kao vrtove, ekonomska dvorišta ili za obavljanje drugih svakodnevnih aktivnosti. Očekuje se, pak, da prostorna organizacija ravnih naselja pokazuje veću raznolikost koju je, pak, trenutno teško uočiti jer ih je malo istraženo u većem opsegu. Većina ravnih naselja u jugoistočnoj Europi, za razliku od telova, nije ograničena nekom preprekom (rov, palisada i dr.) koja bi spriječila ili usporila njihovu prostornu ekspanziju, iako u tom pogledu ima izuzetaka, poput naselja Makriyalos u Grčkoj (Pappa, Besios 1999) ili Belovode u istočnoj Srbiji (Šljivar: usmeno priopćenje). Na pojedinim lokacijama prisutne su obje vrste naselja, kao što je slučaj u Sesklu u Tesaliji (Grčka). Tamo je istraživanjima na brdašcu Kastraki ustanovljeno tel naselje iz ranog i srednjeg neolitika. Nastavkom istraživanja utvrđeno je da se oko njega širi otvoreno naselje, koje je, najvjerojatnije istovremeno s telom (Kotsakis 1999; 2006). I dalje, međutim, nije jasna dinamika razvoja naselja: je li prvo nastao tel, čijim je kasnijim proširenjem izgrađeno i veliko otvoreno naselje, ili je taj proces tekao obrnuto, postupnom agregacijom zajednice. Slična koegzistencija tel i ravnog naselja u posljednjim je desetljećima primijećena i na drugim lokacijama, kao u Polgar-Csöszhalom u Mađarskoj (Raczky, Anders 2010), Pietrele u Rumuniji (Hansen, Toderaş 2010) ili Bapskoj u istočnoj Hrvatskoj (Burić 2009b), što iznova aktualizira staro pitanje: jesu li tel naselja, s istaknutim položajem u krajoliku, bili mjesta koncentrirane političke moći u odnosu na ravna naselja? U ovom trenutku teško je suprotstaviti se dojmu da istaknuti položaj telova i njihova slojevita povijest, koja uključuje sjećanje, ima obilježja pravih spomenika i da je

sequence formed over just 150 years (Reingruber et al. 2011). Considering that the cultural layer at that site is as much as 9 m thick, the conclusion can be drawn that the formation of an impressive tell did not always take thousands of years.

The second type was the 'flat' settlements, nowadays identified mostly by isolated pottery shards, various stone tools and traces of former houses. Depending on the size of the community or the length of inhabitation in a location, these settlements could be of various sizes, ranging from individual households and small hamlets to large settlements spreading over several dozens of hectares. On the basis of the information available to date, most of these settlements were sprawling, with buildings wide apart, and that space between buildings used as gardens, farm yards or places in which other daily activities were carried out. One would expect that the special organization of flat settlements would be more varied, but at the moment that is difficult to ascertain, because few such settlements have been extensively excavated. In contrast to tells, the majority of flat settlements in south-eastern Europe were not limited by any obstacle (trench, palisade etc.) that would prevent or slow down their expansion, though there are some exceptions: for example, the settlement of Makriyalos in Greece (Pappa, Besios 1999) and of Belovode in eastern Serbia (Šljivar: personal communication). In certain locations, both types of settlement were present – this was the case in Sesklo in Thessaly (Greece). There, the excavation of the hill of Kastraki has revealed a tell-type settlement from the Early and Middle Neolithic. Further excavations have established that it was surrounded by an open settlement which was probably contemporary to the tell (Kotsakis 1999; 2006). However, the dynamics of the settlement's development remain unclear. Either the tell was established first, and the large open settlement was a result of the tell's expansion, or the process went in the opposite direction, through a gradual aggregation of the community. Similar co-existence of a tell and an open settlement has been observed in recent decades in some other locations, too, for example, at Polgar-Csöszhalom in Hungary



Sl. 6, magnetometrijski snimak tell-a Uivar (Schier, Drașovean 2004).
Fig. 6, magnetometric image of the Uivar tell (Schier, Drașovean 2004).

to nešto čega su neolitičke zajednice također bile svjesne (Chapman 1997). Uostalom, to je čak i u povijesti arheologije donijelo prevlast i veći kulturni značaj istraživanju telova u odnosu na druga naselja. Ako se, međutim, usporede načini života na telu i u drugim naseljima, onda bi danas svakako vrijedilo uzeti u obzir i stav da uspostavljanje političke hijerarhije nije adekvatno tumačenje različitosti neolitičkih naselja, ali i da samo svrstavanje naselja u tipove ima brojna ograničenja (Evans 2005; Kienlin 2012). Štoviše, tamo gdje je koegzistencija telova i ravnih naselja osobito prisutna, kao u jugoistočnoj Europi i Karpatskom bazenu, nema dovoljno indicija za tvrdnju o postojanju mikroregionalnih sociopolitičkih organizacija. U tom pogledu, na temelju novijih istraživanja u Karpatskom bazenu, čini se izglednijim da koegzistencija različitih naselja predstavlja društvenu i ekonomsku mrežu čiji su stanovnici povezani srodstvom, ekonomskim aktivnostima kao što je razmjena i, vjerojatno, identitetom (Parkinson 2006).

O kolektivnom identitetu neolitičkih skupina, između ostalog, svjedoči i činjenica da su mnoge naseobine omeđene umjetnom preprekom, rovom, palisadom ili suhozidom (Darvill, Thomas 2001; Parkinson, Duffy 2007), čiji je izgled ovisio o dostupnom materijalu, uloženom naporu i praktičnosti posla, ali i kulturnim preferencijama zajednice. Donedavno se činilo da su utvrde u jugoistočnoj Europi bile rjeđe tijekom neolitika ali je u posljednje vrijeme, zahvaljujući novim metodama daljinske detekcije i ciljanim istraživanjem, otkriven veliki broj rovova koji okružuju naselje. Ponegdje su čak uočeni čitavi sustavi rovova i palisada, kao u Uivaru (Sl. 6). Za izradu tih utvrda i njihovo povremeno održavanje svakako je bilo

(Raczky, Anders 2010), Pietrele in Romania (Hansen, Toderaș 2010) and Bapska in eastern Croatia (Burić 2009b), reopening the old question of whether the tell settlements in prominent locations in the landscape were places of concentrated political power in relation to the open settlements. At present, it is difficult to fight the impression that the prominent position of tells and their multi-layered history, which involves social memory, have features of real monuments and that the Neolithic communities were also conscious of that (Chapman 1997). In the history of archaeology, this notion has brought dominance and greater cultural importance to the exploration of tells, in comparison to other settlements. If, however, the way of life in a tell is compared to that in other settlements, we should definitely take into consideration the opinion that the development of a political hierarchy is not an adequate key for the interpretation of differences among Neolithic settlements, and that the very classification of settlements into various types has a number of limitations (Evans 2005; Kienlin 2012). What is more, where the co-existence of tells and flat settlements is particularly frequent – as in south-east Europe and the Carpathian Basin – indications which could corroborate the hypothesis of the existence of micro-regional socio-political organizations are inadequate. In this respect, on the basis of recent excavations in the Carpathian Basin, it seems more probable that the co-existence of different types of settlements represents a social and economic network, and that the people who lived in it were linked by kinship, economic activities such as exchange, and probably by identity (Parkinson 2006).

potrebno mnogo društvene energije i zasigurno su postojale seoske društvene institucije koje su kontrolirale taj proces. Njihova uloga, pak, vjerojatno nije bilo posvuda ista. One su istovremeno mogle imati praktičnu svrhu, kao što su zaštita od neprijatelja, divljih zvijeri ili poplava, ali i simbolički značaj, jer su ograđivale prostor naselja, razdvajale prirodu od kulture, ili divlje od domaćeg. S druge strane, mnogi ograđeni prostori u središnjoj Europi ne sadrže ostatke arhitekture i njihova svrha svakako se razlikuje od uloge rovova koji ograđuju naselja u jugoistočnoj Europi (Petrasch 1990; Whittle 1996). To je, dakle, još jedan značajan aspekt organizacije neolitičkih zajednica koji ima regionalnu varijabilnost. S obzirom na to da slične regionalne razlike postoje i u drugim aspektima stanovanja, kao što su tip arhitekture ili organizacija kućnog prostora, vrlo je važno da se o karakteru neolitičkih naselja, organizaciji zajednice ili izgledu kuća i strukturi domaćinstva, zaključuje uspostavljanjem ravnoteže između tri kulturne varijable: općih vrijednosti neolitičkog svijeta, regionalnog kulturnog razvoja i lokalnih povijesti. One će u daljnjem tekstu biti razmotrene na primjeru sjeverozapadnog Balkana, s užim fokusom na Podunavlje, Posavinu i Podravinu. To je područje tijekom ranog i srednjeg neolitika bilo nastanjeno zajednicama iz kulturnog kompleksa Starčevo-Körös-Criș, a tijekom kasnog neolitika zajednicama vinčanske, sopotske i butmirske kulture.

Rana neolitička naselja na sjeverozapadnom Balkanu

Arheološki dokazi ukazuju na to da na području sjeverozapadnog Balkana postoji trend uvećanja sedentarnosti od početka prema kraju neolitika. Tijekom ranog neolitika naselja su relativno mala i kratkotrajna, s malim pravokutnim kućama izgrađenim od šiblja i lijepa ili sa zemunicama i lakom nadzemnom konstrukcijom. Obično su smještena u dolinama velikih rijeka, na plodnom zemljištu i u blizini drugih prirodnih resursa. O broju ranoneolitičkih naselja mogu se iznijeti samo približne procjene, s obzirom na to da mnoga područja nisu podrobno istražena. Opći je dojam da su neke oblasti gušće naseljene, odnosno da postoje kulturne preference zbog kojih se favorizira nastanjivanje određenih područja. U zapadnoj Rumunjskoj poznato je više od 300 lokaliteta iz ranog neolitika (Luca, Suciu, Dumitrescu-Chioar 2011), u Šumadiji u Srbiji spominje se stotinjak nalazišta starčevačke kulture (Nikolić 2005), u istočnom Srijemu (Srbija) zabilježeno je 56 lokaliteta (Leković, Padrov 1992), a samo u oblasti Csongrád u Mađarskoj poznato je više od 230 lokaliteta Körös kulture (Paluch 2012). Veličine lokaliteta variraju od 0,2 do čak 12 ha, što vjerojatno ovisi o veličini skupine, organizaciji prostora i trajanju naselja ili njegove ekonomske uloge. Na

The collective identity of Neolithic groups is evidenced, inter alia, by the fact that many settlements were bound by an artificial barrier – a trench, palisade or dry wall (Darvill, Thomas 2001; Parkinson, Duffy 2007) – which varied depending on the material available, the invested effort and practicality, and also on the cultural preferences of the community. Until recently, it appeared that in south-eastern Europe, during the Neolithic, fortifications were rare, but thanks to new methods of remote detection, and some targeted explorations, a large number of ditches encircling settlements have been discovered. At some sites, whole systems consisting of ditches and palisades have been identified, as in Uivar (Fig. 6). Putting up fortifications and their occasional maintenance undoubtedly required a lot of social energy, and social institutions must have existed in villages which oversaw the process. The role of the fortifications was probably not the same in all localities. They could at the same time serve a practical purpose, such as defence against enemies, wild beasts or flooding, and also have a symbolic role, as they bound the territory of a settlement, separated nature from culture, or the wild from the domestic. On the other hand, many spaces in central Europe thus bound do not contain any architectural remains, and the purpose of those fortifications was certainly different from the role of ditches encircling settlements in south-east Europe (Petrasch 1990; Whittle 1996). This is yet another important aspect of the organization of Neolithic communities which displays regional variability. Since similar regional differences also exist in other aspects of housing (in types of architecture or organization of interiors), it is very important to base conclusions concerning the character of Neolithic settlements, organization of communities, appearance of houses or household structure on the basis of a balanced consideration of three cultural variables: general values of the Neolithic world, regional cultural development and local history. These variables will be discussed below using the example of the north-west Balkans, focusing in particular on the Danube, Sava and Drava valleys. During the Early and Middle Neolithic, this region was occupied by communities belonging to the Starčevo-Körös-Criș cultural complex, and during the Late Neolithic by communities of the Vinča, Sopot and Butmir cultures.

Early Neolithic settlements in the north-western Balkans

Archaeological evidence indicates that, between the beginning and end of the Neolithic, the trend of sedentary lifestyle was gaining ground in the territory of the north-west Balkans. During the Early Neolithic, settlements were relatively small and short-lived. They consisted of small rectangular houses made of wattle and daub, or dugouts with light above-ground structures. They were usually located in valleys of major rivers, on fertile land and

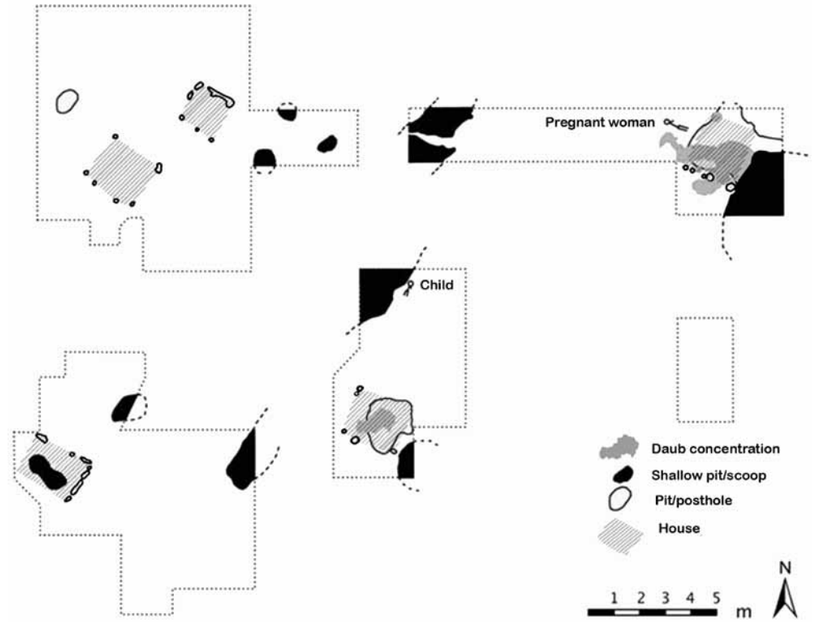
temelju strukture objekata, ekonomskih aktivnosti i kulturne dinamike Lazarovici, Lazarovici (2011) podijelili su naselja iz kompleksa Starčevo-Criş u zapadnoj Rumunjskoj na četiri vrste (glavna, sekundarna, sezonska i specijalna), što je svakako intrigantno objašnjenje koje bi valjalo testirati i u drugim područjima. Zasada je jako malo ranoneolitičkih naselja koja su ekstenzivno istražena. Istraživanje naselja Foeni Sălaş u zapadnoj Rumunjskoj iz vremena Starčevo-Criş IIb pokazalo je jednoslojno naselje nastanjeno skupinom koja je uložila malo vremena i rada u planiranje i izgradnju naseobinskog prostora. Objekti su ukopani, s malim količinama lijepa kao dokazom nekadašnje arhitekture i bez ognjišta, a u naselju nisu uočeni skladišni objekti. Sve je to istraživače usmjerilo k pretpostavci da se radi o vrlo kratkotrajnom naselju zajednice koja vjerojatno nije bila sedentarna (Greenfield, Drașovean 1994). Gotovo suprotan primjer zabilježen je stotinjak kilometara sjeverozapadno, na lokalitetu Biserna obala-Nosa kod Subotice (Garašanin 1961). Ondje je u naselju Starčevo-Körös kulture otkriveno nekoliko kuća i čak četrdesetak skladišnih jama, od kojih su se neke preklapale. Zidovi jama bili su oblijepljeni glinom, a iz nekih potječu i ostaci žitarica. Uzimajući sve u obzir, tamošnja neolitička zajednica svakako je bila sedentarna, a naselje dugotrajno.

Iz većine istraživanih naselja poznati su kompleksi jama, manje ili više nepravilnog oblika, od kojih se za neke navodi da su bile zemunice. Obično se ističe da su bile smještene smještene u krug ili polukrug oko javnog prostora ili velike središnje zemunice ili ognjišta. Plan iz vremena starih iskopavanja u Vinči pokazuje da su zemunice iz najstarije faze tog naselja smještene oko velike središnje zemunice u sklopu koje je nađeno 10 ljudskih kostura (Vasić 1936, T. VI, LVIII, Fig. 8, 209; Stalio 1968). Drugi primjeri ranoneolitičkih naselja sa središnjim organiziranim prostorom su Blagotin kod Trstenika (Srbija), gdje je pronađeno nekoliko "poluzemunica" smještenih oko "svetišta" identificiranog na temelju dvije figurine i žrtvenika na kompaktnoj podnici ispod koje se nalazila jama s dječjim kosturom (Stanković 1992) i Foeni Sălaş u rumunjskom Banatu, gdje je pet zemunica tvorilo polukrug oko središnjeg objekta (Greenfield, Jongsma 2006). Na posljednjem naselju, velike koncentracije zidnog i podnog lijepa te fragmenata kupole peći u nekim jamama istraživačima su predstavljali konačnu potvrdu toga da se radi o ukopanim staništima (Jongsma 1997; Jongsma, Greenfield 2011). Ipak, potreban je oprez pri zaključku da je zemunica bila osnovni tip nastambe tijekom ranog neolitika. Primjerice, čini se, da se zemunice u Vinči nisu koristile istovremeno. Sadrže miješane depozite starčevačke i vinčanske kulture i to u različitom omjeru (Letica 1968), a detaljno ispitivanje tih fragmenata sugerira da su

in the vicinity of natural resources. The number of Early Neolithic settlements can only be speculated, because many areas have not been explored in detail. A general impression suggests that the population was denser in some regions, reflecting cultural preferences that favoured living in certain areas. In western Romania, more than 300 Early Neolithic sites have been identified (Luca, Suciu, Dumitrescu-Chioar 2011), in the region of Šumadija in Serbia, around a hundred Starčevo Culture sites have been noted (Nikolić 2005), in eastern Syrmia (Serbia) 56 sites have been recorded (Leković, Padrov 1992), while in the region of Csongrád in Hungary alone, there are more than 230 sites of the Körös Culture (Paluch 2012). The site size varies from 0.2 ha to as much as 12 ha, which probably depended on the size of the group, spatial organization and duration of the settlement, or its economic role. On the basis of building structure, economic activities and cultural dynamics, Lazarovici, Lazarovici (2011) divided the settlements of the Starčevo-Criş complex in western Romania into four types (main, secondary, seasonal and special); this undoubtedly intriguing explanation should also be tested in other regions. Thus far, very few Early Neolithic settlements have been extensively excavated. The excavated settlement of Foeni Sălaş in western Romania, dated to Starčevo-Criş phase IIb, has revealed that this single-layer settlement was used by a group which invested little time and effort in planning and constructing the space in which they lived. The houses were dug into the ground, and small quantities of daub are the only evidence of former structures; there were no fireplaces, and no storage facilities have been discovered in the settlement. All this prompted the researchers to assume that this settlement was used for a very brief time by a community which was probably not sedentary (Greenfield, Drașovean 1994). A nearly opposite example has been recorded about one hundred kilometres to the north-west at the site of Biserna Obala-Nosa near Subotica (Garašanin 1961). There, in a settlement of the Starčevo-Körös Culture, several houses and as many as forty storage pits, approximately, have been discovered, some of which overlap one another. Pit walls were covered with clay, and in some of them remains of cereals have been discovered. Considering all of this, the Neolithic community using this settlement must have been sedentary, and the settlement was long-lived.

In the majority of explored settlements, complexes of pits have been found, of more or less irregular shapes, some of which were allegedly dugouts. Authors usually emphasize that they were set in a circle or a semi-circle surrounding a public space or a large central dugout or fireplace. A plan drafted during the old excavations at Vinča shows that dugouts dating from the earliest phase of the settlement were located around a large central dugout, within which 10 human skeletons had been

Sl. 7, plan naselja starčevačke kulture u Divostinu (prema Mlekuž 2010).
Fig. 7, layout map of the Starčevo culture settlement in Divostin (after Mlekuž 2010).



jame ukopane s različitih razina, odnosno da barem neke od njih potječu iz vremena izgradnje najstarijih (vinčanskih) kuća u tom naselju (Schier 1996). Osim toga, nijedna ne sadrži izravan dokaz da su se koristile za stanovanje, što vrijedi i za "zemunice" iz drugih naselja. Zbog toga se danas sve više čini da je neki broj tih jama u prošlosti protumačen kao nastambe zbog toga što u većini naselja nema upečatljivih ostataka nadzemnih građevina. S druge strane, podatke o nadzemnim građevinama iz vremena starčevačke kulture također ne treba zanemariti. One su pronađene na barem desetak lokacija u Srbiji, Hrvatskoj i Bosni (Minichreiter 2010), a uzimajući u obzir i druga područja rasprostiranja Starčevo-Körös-Criş kulturnog kompleksa taj broj je znatno veći (up. Lazarovici, Lazarovici 2011; Thissen 2005; Raczky 2006; Banffy, Sümegi 2011). Uglavnom se, međutim, radi o pojedinačnim kućama, otiscima stupova u nizu ili o komadima lijepa s otiskom šiblja, koji nisu dovoljni za procjenu kvalitete života ranoneolitičkih zajednica. Stoga, ako s naše strane postoji očekivanje da u većini starčevačkih naselja ima tek nekoliko istovremenih kuća koje je prilikom iskopavanja teško uočiti (Sl. 7), onda to svjedoči o najmanje dvije stvari koje treba prihvatiti bez rezerve: da je broj stanovnika u ranim naseljima zemljoradnika i stočara na sjevernom Balkanu bio vrlo malen i da su njihove nadzemne kuće bile drugačije od tradicionalne neolitičke arhitekture u južnim dijelovima Balkana.

Iz međurječja Sava-Drava-Dunav poznato je oko 120 starčevačkih nalazišta (Minichreiter 2010). Oni su često grupirani u male klastere od po nekoliko naselja na međusobnoj udaljenosti do nekoliko kilometara. S druge strane Save, u području Mačve u sjeverozapadnoj Srbiji

found (Vasić 1936, T. VI, LVIII, Fig. 8, 209; Stalio 1968). Other examples of Early Neolithic settlements with such a central organized space include Blagotin near Trstenik (Serbia), where several 'semi-dugouts' have been discovered, located around a 'sanctuary' identified on the basis of two figurines and an altar on compacted flooring, set over a pit containing a child's skeleton (Stanković 1992), and Foeni Sălaş in Romanian Banat, where five dugouts formed a semicircle around a central structure (Greenfield, Jongsma 2006). In this last settlement, high concentrations of floor and wall daub and fragments of a oven dome discovered in some pits have served as the final confirmation that these were housing structures dug into the ground (Jongsma 1997; Jongsma, Greenfield 2011). However, caution should be employed when drawing the conclusion that the dugout was the main type of housing structure in the Early Neolithic. It would appear, for example, that the Vinča dugouts were not used simultaneously. They contained mixed deposits of the Starčevo and Vinča cultures, in varying proportions (Letica 1968), and a detailed analysis of the fragments suggests that the pits were dug starting from different levels, implying that at least some of them originated from the period in which the oldest (Vinča) houses in that settlement were built (Schier 1996). Furthermore, none of the pits contained any direct evidence that they had been used for living, and this is also true of 'dugouts' discovered in other settlements. In view of the above, nowadays it appears that some of the pits were interpreted as housing structures in the past because in most of these settlements there were no convincing remains of above-ground structures. On the other hand, data on above-ground structures from the Starčevo Culture period should not be neglected either. Such structures have been discovered in at least ten locations in Serbia, Croatia and Bosnia (Minichreiter

poznato je tek tridesetak starčevačkih naselja (Stojić, Cerović 2011), dok ih je u Bosni još manje, što je vjerojatno posljedica trenutačne neistraženosti terena. Iznesena je ideja da je osnivanje starčevačkih naselja u Bosni povezano s eksploatacijom rudnika soli (Tasić 2007), što se pretpostavlja i za druga područja iz kompleksa Starčevo-Criş (Lazarovici, Lazarovici 2011). Kameni resursi, kojima je Bosna bogata, a Slavonija oskudna, mogli su također biti razlog koncentracije starčevačkih naselja u okolini Slavonskog Broda (Šošić Klindžić 2010). U međurječju su posljednjih desetljeća istraženi veći dijelovi lokaliteta u Zadubravlju-Slavonski Brod na 6200 m² (Minichreiter 1992a), Galovu-Slavonski Brod na 2200 m² (Minichreiter 2007), i Tržnica-Vinkovci na čak oko 12000 m² (Dizdar, Škrivanko 2000). Na nekima (Galovo) radiometrijska mjerenja ukazuju na više faza izgradnje neolitičkog naselja, dok na drugima (Tržnica-Vinkovci) ukazuju na to da je jednoslojno naselje manje-više istovremeno na cijelom prostoru i da se na temelju materijala ne uočava njegova prostorna ekspanzija. Iz ovih se naselja spominje mali broj nadzemnih kuća (Minichreiter 2010, Dizdar, Krznarić Škrivansko 2000). U Vinkovcima je otkrivena i djelomično istražena jedna kuća iz vremena starčevačke kulture (Dizdar, Škrivanko 2000). Radi se o četverokutnoj građevini s podom od nabijene ilovače i zidovima od šiblja i blata, sudeći prema ostacima lijepa duž zidova građevine. Oko 1 m dalje od građevine bilo je ognjište, za čije su se temelje koristili ulomci različitih posuda, preko kojih je potom stavljen sloj ilovače. Nadzemni objekti također su otkriveni i u Zadubravlju (Minichreiter 1992a), ali su prema našem, i drugim mišljenjima (Lichter 1993; Banffy, Sümegi 2011) pogrešno interpretirani kao skladišni prostor skupine koja živi u zemunici, a kao radne prostore koristi druge jame.

Jasno je da se u starčevačkim naseljima veći dio svakodnevnih aktivnosti odvijao izvan kuća, o čemu svjedoče peći, ognjišta, vatrišta i radni prostori koji su većinom otkriveni na otvorenom prostoru. Prostorna analiza Zadubravlja kod Slavonskog Broda otkrila je zone s praktičnom i ritualnom namjenom. Rekonstruirani su prostori za stanovanje, proizvodnju i pečenje keramike, izradu kamenih alatki, pripremu namirnica i skladištenje te područje za obavljanje kulta (Minichreiter 1992a). Iako se ne moramo u cijelosti složiti s navedenom rekonstrukcijom prostornih aktivnosti, očigledno je da se u ovom i drugim ranoneolitičkim naseljima na sjevernom Balkanu i međurječju većina aktivnosti iz dnevne rutine odvijala izvan stambenih objekata. Bez obzira na to jesu li otkrivene neposredno uz stambene objekte ili u javnom prostoru predviđenom u te svrhe, njihov karakter je otvoren, vidljiv i javan. To je ono što karakterizira sve ranoneolitičke

2010), and, if we take into consideration other regions within the distribution zone of the Starčevo-Körös-Criş cultural complex, the number is much higher (cf. Lazarovici, Lazarovici 2011; Thissen 2005; Raczky 2006; Banffy, Sümegi 2011). Still, most of those are individual houses, marks left by lines of posts or fragments of daub with twig impressions, which are insufficient to estimate the quality of life of the Early Neolithic communities. Therefore, if we expect to find but a few contemporaneous houses in most of the Starčevo settlements, and such houses are hard to identify during the excavation (Fig. 7), this bears witness to the following two tenets, which should be accepted without reservation: that the population of early settlements of farmers and herders in the northern Balkans was very small, and that their above-ground houses were different from the traditional Neolithic architecture in southern parts of the Balkans.

In the region bounded by the Sava, Drava and Danube, around 120 Starčevo settlements have been identified (Minichreiter 2010). They are often grouped in small clusters, several settlements in each, at a distance of several kilometres from each other. On the other side of the Sava, in the region of Mačva in north-western Serbia, just some 30 Starčevo settlements have been uncovered (Stojić, Cerović 2011), and their number in Bosnia is even smaller; this is probably a consequence of the low level of exploration. The setting up of the Starčevo Culture settlements in Bosnia has been linked to the exploitation of the salt mines (Tasić 2007); and the same hypothesis has been proposed for other regions within the Starčevo-Criş complex (Lazarovici, Lazarovici 2011). Another reason for high concentration of Starčevo settlements in the surroundings of Slavonski Brod could be the stone resources, which Bosnia is abundant in, and Slavonia short of (Šošić Klindžić 2010). In the region between the Sava, Drava and Danube, in recent decades, excavations have been carried out in large parts of the settlements of Zadubravlje in Slavonski Brod, over a surface area of 6200 m² (Minichreiter 1992a), Galovo in Slavonski Brod, over 2200 m² (Minichreiter 2007), and Tržnica in Vinkovci, over as much as 12000 m² (Dizdar, Škrivanko 2000). In some cases (Galovo), radiometric measurements indicate that the construction of the Neolithic settlement was done in several phases, while in others (Tržnica in Vinkovci), the results of such measurements point to a single-layer settlement built at more or less the same time over its entire surface, and the archaeological evidence discovered does not suggest that the settlement expanded in time. A small number of above-ground houses have been identified in these settlements (Minichreiter 2010, Dizdar, Krznarić Škrivanko 2000). In Vinkovci, another house dating from the Starčevo Culture period has been revealed (Dizdar, Škrivanko 2000). The building is rectangular in shape, floors were made of loam, while according to the remains of daub walls were constructed of wattle

Slika 8, pogled na lokalitet Obrovac 2 u Majuru, Šabac (foto D. Bulić).
Fig. 8, view of the Obrovac 2 site in Majur, Šabac (photo: D. Bulić).

zajednice, a što će se izgubiti tek s kulturnim, ekonomskim i društvenim vrijednostima koje sa sobom donosi kasni neolitik.

Stanovanje i simbolizam kućnog i naseobinskog prostora u kasnom neolitiku

Tijekom kasnog neolitika uočavaju se mnogobrojne promjene. Naselja na sjevernom Balkanu su dugotrajna, sastoje se od nekoliko stambenih horizonata s impozantnom debljinom kulturnog sloja. Također postoji i raznolikost u pogledu veličine naselja, arhitekture i organizacije prostora. Vinčanski lokaliteti kao Pločnik, Selevac ili Belovode u Srbiji obuhvaćaju površinu od nekoliko desetaka hektara (Tripković 2013). To su dugotrajna naselja koja se, naizgled, odlikuju većim stupnjem horizontalnog razmještanja građevina, ali će prostorna dinamika i organizacija naseobinskog prostora u njima tek postati predmetom istraživanja. Druga naselja, kao što su Uivar (Schier, Draşovean 2004; Schier 2008), Vinča (Chapman 1996; Tripković 2013), Gomolava (Brukner 1988) ili Okolište (Müller 2012) s vremenom su formirala izgled ili osobine tela, što se događa i sa sopotskim naseljima u međurječju, npr. Klokočevik, Sopot, Otok, Sarvaš, Bapska, Herrmanov vinograd i dr. (Dimitrijević 1979a; Krznarić Škrivanko 2006a). Nasuprot telovima ili velikim i dugotrajnim naseljima, koji su se razvili u dolinama velikih rijeka, tijekom ovog razdoblja zabilježene su i specifične lokalne adaptacije (Sl. 8). U području Mačve u Srbiji javljaju se mala brežuljkasta uzvišenja okružena rovom koja imaju izgled telova (Chapman 1981; Trbuhović, Vasiljević 1983). Od telova ih razlikuje vrlo jednostavna stratigrafija i mali broj objekata. Prema dosadašnjim interpretacijama, mogli su služiti kao sezonska naselja stočara ili stalne naseobine jednog do dva domaćinstva. Ona su, zasada, otkrivena samo u Posavini i Podrinju u Srbiji, ali može se

and daub. Approximately 1 m from the building, there was a herath, which foundation was constructed from broken fragments of pottery that was covered with loam. Above-ground structures have also been discovered at Zadubravlje (Minichreiter 1992a), but in our view, also shared by other authors (Lichter 1993; Banffy, Sümegi 2011), they have been erroneously interpreted as storage spaces used by the group which lived in the dugout and used other pits as work spaces.

It is clear that in Starčevo settlements the majority of daily activities were performed outdoors, as evidenced by ovens, fireplaces, hearths and work places, most of which were located in the open. A spatial analysis of the settlement of Zadubravlje near Slavonski Brod has revealed various zones which had either a practical or a ritual purpose. Areas dedicated to housing, production and firing of pottery, production of stone tools, preparation of food and storage have been identified, as well as those used for cult purposes (Minichreiter 1992a). Although we do not necessarily agree with the given reconstruction of spatial distribution, it remains evident that in this and in other Early Neolithic settlements in the northern Balkans and in the region bounded by the Sava, Drava and Danube, most of the daily activities were performed outdoors, and, whether they were performed immediately by the houses or in a public space dedicated to the purpose, they were open, visible and public. This characteristic feature of all Early Neolithic communities would be lost with changes in the cultural, economic and social values of the Late Neolithic.

Sl. 9, rekonstrukcija kuće 6/1980 (izradila J. Stanojev).
Fig. 9, reconstruction of house 6/1980 (made by J. Stanojev).

očekivati da se detaljnom prospekcijom terena mogu uočiti i u susjednim močvarnim područjima, prije svega Srijema, Baranje i istočne Slavonije.

Druge promjene tijekom kasnog neolitika tiču se izgleda i veličine kuća. Čini se da su tehnike izgradnje bile lokalno varijabilne, što je dobro dokumentirano u naselju butmirske kulture Obre II u središnjoj Bosni (Benac 1971). Ondje su se za izgradnju kuća koristili drvo, blato i kamen, ali su postojale varijacije u pogledu arhitektonske izvedbe. Stabilnost su kućama davali stupovi koji su bili ukopani na malim razmacima. Potom su zidovi nekih kuća bili izgrađeni od šiblja i lijepa, neki od vertikalno ili horizontalno postavljenih poluoblica, koje su također oblijepljene blatom, a zabilježene su i isključivo drvene građevine. U drugim sredinama kuće su se pretežito gradile od šiblja i lijepa, iako je zabilježena i varijabilnost u pogledu tehnika njihove izgradnje i izgleda. Promjene građevinskih tehnika kroz vrijeme osobito su dobro zabilježene u tri građevinska horizonta (Ia, Ia-b, Ib) vinčanskog naselja na Gomolavi (Srbija). Tamo se u najstarijem naselju (Ia) spominju zemunice, čija je točna definicija danas upitna, a s kraja te faze spominje se i mala kuća od šiblja i lijepa (Brukner 1988). Građevine iz srednje faze (Ia-b) su izgrađene u tradiciji dugačkih kuća, s masivnim stupovima koji drže krov na dvije vode. Njihovi podovi, poput onih iz središnje Europe, također nisu očuvani. U kasnoj fazi naselja (Ib) kuće su se gradile od šiblja oblijepljenog blatom, a sastojale su se od 2 do 4 prostorije (Sl. 9, Petrović 2011).

Housing and the symbolism of house and settlement in the Late Neolithic

A number of changes occurred during the Late Neolithic. Settlements in the northern Balkans persisted for longer periods of time, and left behind several housing horizons with an imposing thickness of cultural layer. Settlements were of diverse sizes, and their architecture and spatial organization also differed. Vinča Culture sites such as Pločnik, Selevac and Belovode in Serbia cover several dozen hectares (Tripković 2013). These were long-lasting settlements which apparently feature a greater degree of horizontal distribution of structures, but the spatial dynamics and organization of settlements remain to be explored. Some other settlements, such as Uivar (Schier, Draşovean; Schier 2008), Vinča (Chapman 1996; Tripković 2013), Gomolava (Brukner 1988) and Okolište (Müller 2012) had in time developed the appearance and features of tells, and the same evolution occurred in the Sopot Culture settlements in the region bounded by the Sava, Drava and Danube, such as Klokočevik, Sopot, Otok, Sarvaš, Bapska, Herman's Vineyard etc. (Dimitrijević 1979a; Krznarić Škrivanko 2006a). In contrast to the tells and large, long-lasting settlements, which developed in the valleys of major rivers, some specific local adaptations can also be observed in this period (Fig. 8). In the region of Mačva in Serbia, small hill-like sites surrounded by ditches looked like tells (Chapman 1981; Trbuhović, Vasiljević 1983). What distinguishes them from tells is a very simple stratigraphy and a small number of structures. According to interpretations to date, they could have been used as seasonal

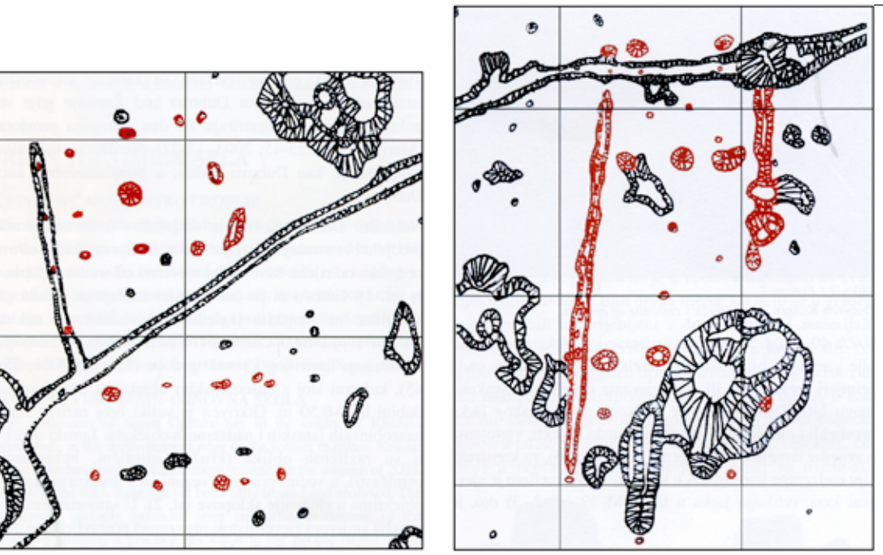
Zanimljivo je da se korištenje zemunica u sopotskim naseljima spominje jedino u Čepinu (Ovčara-Tursko groblje) i na Ervenici kod Vinkovaca. Na Ervenici je zabilježeno nekoliko velikih jama nepravilnog oblika, kao i mnogobrojni ukopi stupova, na temelju čega su interpretirane kao zemunice (Krznarić Škrivanko 1997). Iako smatramo da treba iskazati oprez u olakom prihvaćanju takve interpretacije, čini se da bar jedan objekt na Ervenici ima osobine zemuničkog staništa. Nekoliko je metara dalje od istraženog kompleksa jama, pravokutnog oblika s jasnim otiscima stupova duž ivice. Nema dovoljno ostataka koji bi upućivali na to da se koristio za stanovanje, ali je njegova daljnja namjena svakako bila drugačija od ostalih jama u spomenutom kompleksu. U njemu su pronađeni dio kalote dječje lubanje, zajedno s razbacanim životinjskim kostima, izgorenim kućnim lijepom i dijelovima ljudskih lubanja. Uz dječju kalotu je kao prilog stavljena crnopolirana bikonična posuda (Krznarić Škrivanko 1997). U starijem horizontu naselja Čepin-Ovčara (Tursko Groblje) dijelom je istražena velika jama nepravilnog ovalnog oblika s ostacima masivnih stupova, koju se navodi kao poluzemunicu. U mlađem su horizontu, međutim, istražene dvije pravokutne nadzemne kuće čiji su podovi bili napravljeni stavljanjem glinenog naboja preko daščane konstrukcije (Šimić 2006b).

Novija istraživanja u Bapskoj (Burić 2009b) i Sopotu (Krznarić Škrivanko 2006a) također su potvrdila postojanje kompaktnih kućnih podova iz kasnog neolitika s raznovrsnim pokućstvom, a za jednu kuću u Bapskoj čak postoje i indicije o gornjem katu. U Sopotu je osim nekoliko građevina od šiblja i lijepa, otkrivena i kuća sa četiri prostorije, ukupnih dimenzija 6,7x4 m, koja je bila izgrađena od horizontalno naslaganih dasaka (Krznarić Škrivanko 2003a; Krznarić Škrivanko 2006a).
Na Gradini u Otoku drvena kuća-brvnara (10x6 m) "od horizontalno poredanih i naslaganih hrastovih trupaca, koje su pridržavali vertikalno postavljeni bočni kolci" imala je tri broda i malen, otvoren trijem u pročelju. Pod od nabijene gline nalazio se jedino u središnjem dijelu (Dimitrijević 1979a). Nedaleko od ove, nalazila se građevina istih dimenzija, ali izgrađena u uobičajenoj neolitičkoj tehnici (šiblje i lijep). Nešto kasnijem vremenu iz istog naselja pripada trapezasti objekt, istražen u dužini od 10 m, a koji je bio izgrađen od vertikalno naslaganih kolaca, šiblja i lijepa, a sastojao se od najmanje tri prostorije. Uži dio građevine bio je širok 4,5 m, dok je širina drugog dijela iznosila najmanje 9 m (Dimitrijević 1979a). Na kraju, ostaci pravokutnih kuća poznati su i iz naselja Dubovo-Košno kod Županje (Sl. 10). Njihovi podovi nisu očuvani, ali osnove upućuju na to da su imale do tri prostorije. Stupovi-nosači bili su postavljeni na relativno pravilnim razmacima, a u nekim slučajevima su oni koji su nosili duže zidove postavljeni u temeljni rov.

settlements of herders, or permanent settlements of one or two households. For the time being, such elevations have been discovered only in the Sava and Drina valleys in Serbia, but it can be expected that a detailed field reconnaissance would identify more in neighbouring wetland areas, primarily in Syrmia, Baranja and eastern Slavonia.

Other changes that occurred in the Late Neolithic have to do with the appearance and size of houses. It seems that the construction techniques varied from region to region, as evidenced in the Butmir Culture settlement of Obre II in Central Bosnia (Benac 1971). There, houses were built of wood, mud and stone, and their architecture varied. The stability of houses was provided by posts dug into the ground at short intervals. Some of the houses had walls made using wattle and daub technique, while others had walls consisting of vertically- or horizontally-laid half-timbers, which were also plastered with mud. There were also some houses made only of wood. In other regions, the majority of houses were wattle and daub, but there were variations in terms of the technique employed and their appearance. Modifications in construction techniques which occurred in time have been recorded very well in the three building horizons (Ia, Ia-b, Ib) of the Vinča Culture settlement of Gomolava (Serbia). As regards the oldest settlement (Ia) on that location, dugouts have been noted, but their precise definition is nowadays questionable. A small wattle-and-daub house from the end of that period has also been recorded (Brukner 1988). In the middle phase (Ia-b), buildings were erected following the tradition of long houses, with massive posts supporting pitched roofs. The floors of such houses, like those in central Europe, have not been preserved. In the late settlement phase (Ib), houses were built using wattle and daub, and they consisted of two to four rooms (Fig. 9, Petrović 2011).

Interestingly, dwelling pits in the Sopot Culture have only been recorded in Čepin (Ovčara-Turkish cemetery) and in Ervenica near Vinkovci. At Ervenica, several large irregular pits have been revealed, and a large number of post holes, prompting the interpretation that these were dwelling pits (Krznarić Škrivanko 1997). Although we believe that such an interpretation should not be accepted without caution, it would appear that at least one structure at Ervenica had characteristics of a pit-dwelling. At a distance of several metres from the excavated complex, there was a rectangular pit, with clear post holes along its edges. There is insufficient evidence that this space had been used for accommodation, but its further use was undoubtedly different from that of other pits in the complex. In it, a part of a calotte of a child's skull was found, together with scattered animal bones, burnt house daub and parts of human skulls. Next to the child calotte, a black-burnished biconical vessel was laid as a grave good (Krznarić Škrivanko 1997). In the oldest horizon



Sl. 10, tragovi arhitekture u naselju Dubovo Košno, Županja (Marijan 2006).
Fig. 10, traces of architecture in the Dubovo Košno settlement, Županja (Marijan 2006).

Varijabilnost u pogledu izgradnje, veličine ili unutrašnje podjele može označavati specijaliziranu ulogu određenih građevina, odnosno njihovih pojedinih dijelova ili može ukazivati na strukturu skupine koja ondje živi. Tako se za velike građevine s Gomolave pretpostavlja da su služile za držanje goveda, a otisci ovčjeg papka iz kasnoneolitičkih kuća u Matejskom Brodu i Stublinama bi također mogli ići u prilog ideji da su barem neke životinje držane u kućama ili štalama (Orton 2012), ali su u tom pogledu vjerojatno postojale razlike. Primjerice, ispitivanje tragova fosfata pokazalo je da u Okolištu to nije bio slučaj (Hofmann 2012, 186, note 2). Za razliku od ranog neolitika, inventar ukazuje na to da se veliki broj aktivnosti obavljao u udobnoj unutrašnjosti često vrlo prostranih kuća. Pokućstvo se sastojalo od keramičkih posuda različite namjene (za pripremu namirnica, konzumiranje, skladištenje), kamenih žrvnjeva, glačalica, utega za tkalački stan i mnogih drugih alatki od kosti, roga i kamena (Sl. 11).

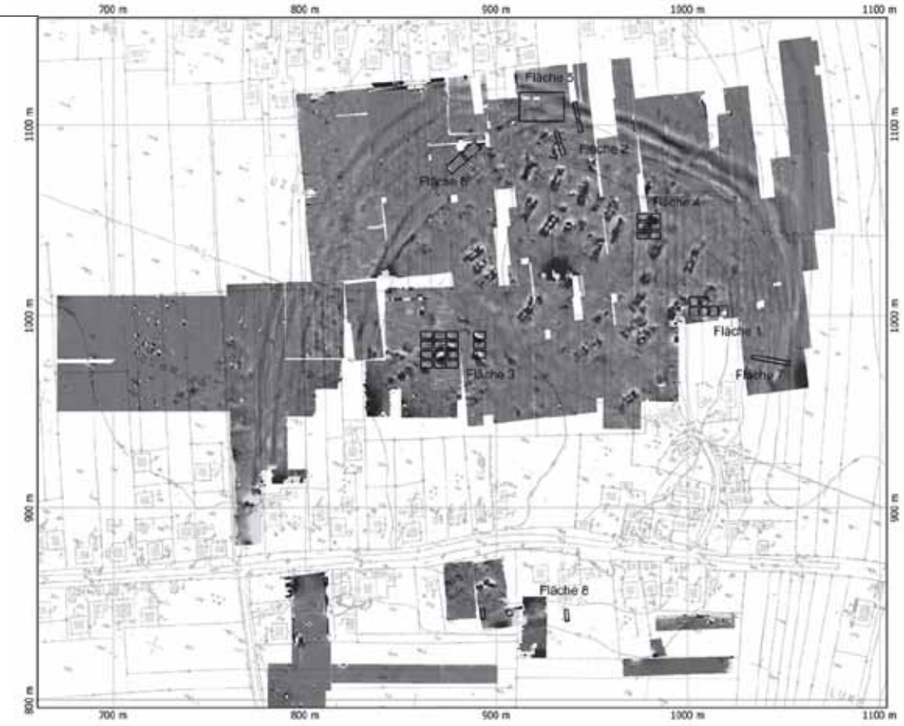
of the settlement of Čepin-Ovčara (Turkish cemetery), a large irregularly-shaped oval pit containing traces of massive posts has been partially explored and recorded as a semi-dugout dwelling. However, in the later horizon, two rectangular above-ground houses have been explored, with flooring consisting of packed clay laid over a plank structure (Šimić 2006b).

Recent excavations at Bapska (Burić 2009b) and Sopot (Krznarić Škrivanko 2006a) have also confirmed the existence of compacted house floors and diverse inventories originating from the Late Neolithic, and there are even indications that one house in Bapska could have had an upper floor. In Sopot, in addition to several wattle-and-daub structures, there was also a house, 6.7x4 m in size, consisting of four rooms, built with horizontally-laid planks (Krznarić Škrivanko 2003b; Krznarić Škrivanko 2006a). At Gradina in Otok, a wooden log house (10x6 m), made of "horizontally-arranged and -laid oak-wood timbers, supported by vertically-set

Sl. 11, Gomolava – pogled na unutrašnjost kuće 5/1980 (rekonstrukciju izradila J. Stanojev).
Fig. 11, Gomolava – view of the interior of house 5/1980 (reconstruction by J. Stanojev).

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE



Sl. 12, magnetometrijski snimak naselja butmirske kulture Okolište, Visoko (prema Müller et al. 2011).
Fig. 12, magnetometric image of Butmir culture settlement Okolište, Visoko (after Müller et al. 2011).

Tu se često nalaze i predmeti kojima je teško pronaći praktičnu svrhu: antropomorfne i zoomorfne figurine, rogovi bika, žrtvenici i sl. Simbolika kućnog prostora sada je nesuporedivo više izražena, jer su zabilježene kuće na kojima su zidovi bojeni ili oslikani, pojedini dijelovi zidova plastično su modelirani, a najvidljivije mjesto u kućama često zauzimaju bukranioni (Borić 2008; Jovanović, Glišić 1961; Jovanović 2011; Spasić 2012). Sada kuća definitivno postaje simbolom koji se tijekom ranog neolitika tek nazirao (Sl. 12). S druge strane, kod većine sopotskih naselja podovi kuća nisu očuvani čak ni tamo gde su naselja istražena u većem obimu (Barna, Pásztor 2011). Jedino je trobrodna brvnara iz Otoka u središnjem dijelu imala pod od nabijene ilovače, što upućuje na to da su bočne prostorije imale drugačiju namjenu (Dimitrijević 1979a), dok su u Bapskoj (Burić 2009b) i Sopotu (Krznarić Škrivanko 2006a) inventari kuća, izgleda, bogati, a o čemu ne postoji dovoljno objavljenih podataka. Važna je svakako napomena da je u jednoj od kuća u Bapskoj nađen i bivolji rog, što joj daje važnu simboličku konotaciju poznatu i iz drugih područja.

Repertoar objekata koji se nalaze izvan građevina također svjedoči o dnevnoj rutini domaćinstava. Sitni artefakti uglavnom su fragmentirani, što je posljedica njihovog odbacivanja ili gubljenja, a potom i gaženja. Skladišne jame, peći i ognjišta na otvorenom ili radionički prostori ponavljaju odlike sličnih prostora u unutrašnjosti kuća. Oni su vjerojatno predstavljali objekte ili mjesta sezonskog karaktera, a u izvjesnom smislu svjedoče i o tome da ne postoji stroga granica između javne i privatne domene. Od velikog interesa

side posts," consisted of three parts and a small open porch at the front. Packed-clay flooring was only in its central part (Dimitrijević 1979a). Not far off, there was another building of the same size, but this one was built using the usual Neolithic construction technique (wattle and daub). A trapezoid structure – of which a length of 10 m has been excavated – belongs to a somewhat later phase of the same settlement. It was built using vertically-set posts, wattle and daub, and consisted of at least three rooms. The narrower part of the structure was 4.5 m wide, while the other part had a width of at least 9 m (Dimitrijević 1979a). Finally, traces of rectangular houses have also been recorded in the settlement of Dubovo-Košno near Županja (Fig. 10). Their floors have not been preserved, but the foundations indicated that they had up to three rooms. The supporting posts were set at relatively regular intervals, and in some cases the posts supporting longer walls were set in the foundation ditch.

Variability in the construction method, size and interior distribution can be an indication of special purposes in individual buildings, or some of their parts, or it can reflect the structure of the group living in those buildings. The large buildings at Gomolava are presumed to have been used for keeping cattle, and the prints of sheep hoofs in the Late Neolithic houses at Matejski Brdo and Stubline could also corroborate the idea that at least some of the animals were kept in houses or stables (Orton 2012); however, in this respect the situation probably varied. For example, testing of phosphate traces has revealed that this was not the case at Okolište (Hofmann 2012, 186, note 2). In contrast to the Early Neolithic, here the inventory points to a

za razumijevanje svakodnevnog života u neolitičkom naselju su jame na otvorenom prostoru. One se najčešće dijele na otpadne jame, jame za dobivanje građevinskog materijala, ritualna mjesta i sl., ali izgleda da takva pojednostavljena interpretacija nije zadovoljavajuća. Primjerice, otpadne jame obično su definirane na temelju relativno izmiješanih depozita gara, pepela, životinjskih kostiju i biljnih ostataka. Iste jame, međutim, ponekad sadrže i cijele posude, figurine ili ljudske ostatke, pa nalazi govore protiv tako jednostrane definicije (Chapman 2000c). Osim toga, uloge kao što su dobivanje građevinskog materijala i otpadne ili kultne jame ili čak zemunice međusobno se ne isključuju, štoviše, one su komplementarne, i ozbiljan istraživački izazov je kako odrediti nekadašnje epizode u upotrebi jama, kao i njihovu ulogu u naselju (Tripković 2007). Istraživanje jama, stoga, predstavlja važnu komponentu razmatranja neolitičkih naselja, jer se time sagledavaju prostorne prakse domaćinstava i njihova svakodnevna dinamika.

Tijekom kasnog neolitika na sjevernom Balkanu mnoga su naselja ograđena rovom, bedemom i palisadom, a poneka i sustavom rovova i palisada. Tendencija k ograđivanju naseobinskog prostora primjećuje se još krajem starčevačke kulture (Lazarovici 1990), ali ono sada postaje vrlo rasprostranjeno. Čak se uočava i trend napuštanja naselja u udolinama i nastanjivanje na istaknutim položajima, od kojih su mnogi prirodno zaštićeni (Garašanin 1979; Burić 2009b). Utvrde su rano zabilježene u Vinči, Kormadinu kod Jakova, Gomolavi, Sopotu, Parti i drugim lokacijama, ali, s obzirom na to da se nalaze na periferijama naselja, u prošlosti su rijetko bile fokus istraživanja (Tripković 2013). To se promijenilo tek u posljednje vrijeme. Primjenom različitih metoda daljinske detekcije, prije svega geofizičkih mjerenja, rovovi se dobro ocrtavaju u Uivaru (Schier, Draşovean 2004), Okolištu (Sl. 12), Stublinama (Crnobrnja 2011), Belovodama (D. Šljivar: usmeno priopćenje) i Sopotu (Mušič *et al.* 2010). Utvrdilo se, primjerice, da je u Sopotu rov ograđivao prostor od 80x80 m koji je bio gusto ispunjen građevinama. Najkompleksniji sustavi su oni iz Uivara, gdje se uočio, što se potvrdilo i iskopavanjima, čitav niz koncentričnih rovova i palisada, koji, međutim, nisu istovremeni. Najstariji od njih okruživali su naseobinsku jezgru s kućama, a kasnije su iskopani i oni daleko od naseobinske zone. Najudaljeniji rov je ograđivao prostor od čak 10 ha, a pretpostavka je da su njime bili obuhvaćeni i neki resursi, vrtovi ili mjesta gdje su se držale životinje (Schier, Draşovean 2004; Draşovean 2007).
Izgradnja utvrda na sjevernom Balkanu u prošlosti je najčešće objašnjavana nesigurnim vremenima i potrebi zajednica da zaštite stanovništvo, poljoprivredne prinose i stoku (Lazarovici 1990; Garašanin 1979). Ipak, u blizini utvrđenih naselja često se nalaze naselja koja nisu ograđena, a izgleda da nedostatak ljudskog potencijala nije bio razlog za to. S druge strane, male naseobine tipa Obrovac u močvarnom području sjeverozapadne Srbije, koja su nastanjena sa 1-2 domaćinstva, okružene su širokim i dubokim rovom, najvjerojatnije zbog zaštite od poplave (Trbuhović, Vasiljević 1983; Chapman 1981). Zbog svega toga, čini se da se ne može govoriti o jedinstvenom konceptu ili obrascu utvrđivanja naselja. Formalizacija naseobinskog prostora može imati mnogo različitih uzroka, ali je, prema našem mišljenju, jednako bitan i njezin popratni efekt, koji je pak svuda isti: čvrsto je naglašen kolektivni identitet skupine koja nastanjuje prostor omeđen rovom.

large number of activities being performed in the comfortable interiors of houses which were often rather spacious. The household inventory included pottery vessels for various purposes (food preparation, consumption, storage), stone grindstones, polishers, loom weights and many other tools made of bone, antler and stone (Fig. 11). There were also many items whose practical function is difficult to identify: anthropomorphic and zoomorphic figurines, bull horns, altars etc. The symbolism of the house was much more emphasized by now, as in some cases house walls were coloured or painted, some sections of the walls were plastically shaped, and the most prominent location within the house was often reserved for bucrania (Borić 2008; Jovanović, Glišić 1961; Jovanović 2011; Spasić 2012). Undoubtedly, the house had become a symbol which could only slightly have been discerned during the Early Neolithic (Fig. 12). On the other hand, floors of houses have not been preserved in the majority of the Sopot Culture settlements, even in the cases when large areas of the settlement were excavated (Barna, Pásztor 2011). Only the tripartite log house in Otok had packed-clay flooring in its central part, suggesting that the purpose of side rooms was different (Dimitrijević 1979a), while in Bapska (Burić 2009b) and Sopot (Krznarić Škrivanko 2006a) house inventories appear rich, but this has not been demonstrated by sufficient published data. It is important to note that a bull horn was found in one house in Bapska, giving it an important symbolic connotation, also known in other regions.

The range of artefacts and structures identified outside buildings also testifies to the daily routine of a household. Small artefacts are mostly fragmented, which is a result of their being thrown away or lost, and then trampled on. Storage pits, ovens and fireplaces in the open, as well as workshop areas, reflect activities similar to those organized in the interiors. These were probably structures or places of a seasonal character, and to a certain degree they also testify to a lack of strict separation line between the public and private domains. Pits situated in the open are particularly interesting for understanding everyday life in a Neolithic settlement. Usually we distinguish between rubbish pits, pits used for extraction of construction material, those that served for ritual purposes, etc. However, it seems that such a simplified interpretation is inadequate. For example, waste pits have usually been identified on the basis of relatively mixed deposits of charcoal, ash, animal bones and plant remains. But in certain cases those same pits contained complete vessels, figurines or human remains, going against such a one-sided definition (Chapman 2000c). In addition, various functions such as extraction of building material and rubbish pits and cult pits or even dugouts used for accommodation are not mutually exclusive: far from it, such roles are even complementary, and identifying

Društvena organizacija i identiteti: domaćinstva, susjedstva i zajednice

Iz sadašnje perspektive čini se da je uspostavljanje privatnosti bilo fundamentalna inovacija neolitičkog svijeta na sjeverozapadnom Balkanu. Izgradnja dugotrajnih kuća od čvrstih materijala, a potom i daljnja podjela, ukrašavanje i simbolička elaboracija unutrašnjeg prostora, proizvod su ljudskog nastojanja da prvobitno sklonište i skrovište pretvori u mjesto koje je ugodno za dugotrajan boravak i koje je ispunjeno emocijama i toplinom. Etnografski podaci sugeriraju da u većini tradicionalnih društava kuće do 60 m² nastanjuju mala domaćinstva, i to najčešće nukleusne obitelji s obično patrilokalnim i patrilinearnim obrascima braka i nasljeđivanja, a da u kućama iznad 100 m² žive veća domaćinstva ili čak više užih obitelji, koje karakteriziraju matrilinearnost i matrilokalnost (Brown 1987). Na temelju dimenzija kuća u vinčanskoj kulturi M. Porčić je istaknuo vjerojatnost patrilokalnog postmaritalnog statusa (Porčić 2011), a kao dokaz navedene su i DNK analize 24 pokojnika muškog spola, od čega 7 djece, sahranjenih u izdvojenom dijelu vinčanskog naselja na Gomolavi, koje ukazuju da su bili u srodstvu (Stefanović 2008).

Prilikom izračunavanja veličine populacije u Okolištu pretpostavljeno je da male građevine iz najstarije faze naselja nastanjuje domaćinstvo od prosječno pet članova (Müller-Schiessel *et al.* 2010; Müller *et al.* 2011), dok su istraživanja veličine domaćinstava u vinčanskoj kulturi u prošlosti koristila 50 m² kao približnu granicu između osnovne i proširene obitelji (Chapman 1981). Sudeći prema veličini građevina i organizaciji unutrašnjeg prostora čini se da su na sjeverozapadnom Balkanu postojale znatne varijacije u pogledu veličine domaćinstva (Tripković 2013; Porčić 2010). Novije istraživanje

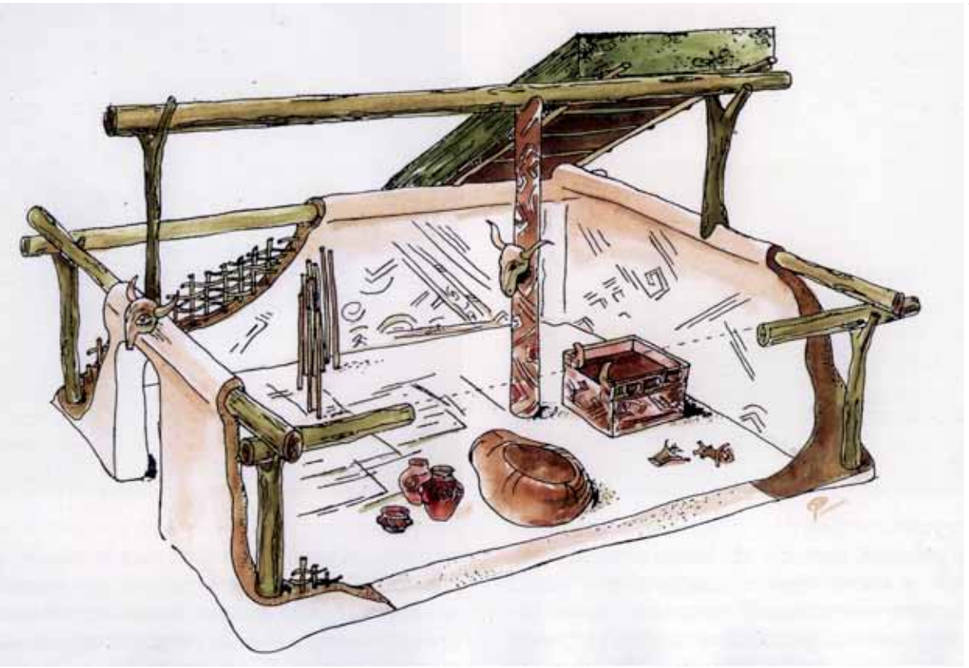
episodes for which pits were used and their functions in the settlements is a serious challenge for the researchers (Tripković 2007). Therefore, exploration of pits is an important component within the analysis of Neolithic settlements, because it reveals the spatial practice of households and their daily dynamics.

In the Late Neolithic, many settlements in the northern Balkans were enclosed by ditches, ramparts or palisades, and some even with a system comprising ditches and palisades. The tendency of enclosing spaces used for settlement can be noticed already at the end of the Starčevo Culture (Lazarovici 1990), but by now it had spread over a large area. Another noticeable trend is that of abandoning settlements in valleys and moving to higher locations, many of which enjoyed natural protection (Garašanin 1979; Burić 2009b). Fortifications have been recorded in the early phases of the settlements of Vinča, Kormadin near Jakovo, Gomolava, Sopot, Parța and others, but, given that they were located in the settlement peripheries, explorations have rarely focused on them (Tripković 2013). This situation has recently changed. With the application of various methods of remote detection, primarily with geophysical measurements, ditches became easily identifiable at Uivar (Schier, Draşovean 2004), Okolište (Kujundžić-Vejzagić et al. 2004), Stubline (Crnobrnja 2011), Belovode (D. Šljivar: personal communication) and Sopot (Mušič et al. 2010). It has been established, for example, that at Sopot the ditch enclosed an area of 80x80 m, full of densely distributed buildings. The most complex systems were uncovered at Uivar, with a range of concentric ditches and palisades – confirmed also during the excavations – but these structures were not contemporary. The oldest among them encircled the settlement core, comprising houses, and later other ditches were revealed, far from the settlement zone. The most distant ditch enclosed an area of no less than 10 ha, presumably the location of some resources, vegetable gardens or places in which animals were kept (Schier, Draşovean 2004; Draşovean 2007).

Putting up fortifications in the northern Balkans has been interpreted as a sign of turbulent times and the need for communities to protect their populations, agricultural yields and livestock (Lazarovici 1990; Garašanin 1979). Nonetheless, in the vicinity of fortified settlements there were often settlements which were not enclosed, and it appears that such a lack of enclosure cannot be explained by a lack of human resources. On the other hand, small settlements such as Obrovac in the wetland area of north-western Serbia, inhabited by one or two households, were encircled by a deep, wide ditch, probably protecting them from flooding (Trbuhović, Vasiljević 1983; Chapman 1981). In view of all of the above, it seems that there was no single concept or pattern of settlement fortification. The formalization of the living

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE



Sl. 13, kuća iz vinčanskog naselja Kormadin kod Jakova (nacrtala D. Rus).
Fig. 13, house from the Vinča settlement Kormadin at Jakovo (drawing by D. Rus).

pojedinačnih povijesti kućanstava na širem prostoru srpskog Podunavlja ukazuje na to da su postojala dva oblika demografske reprodukcije domaćinstva (Tripković 2013). Prvi je karakterističan za naselja s kućama manjih dimenzija, do oko 40 m², što su uglavnom građevine sa jednom prostorijom ili s više prostorija koje imaju komplementarnu funkciju. Takva naselja karakterizira dinamična izgradnja, a izgradnja nove kuće najčešće je povezana sa zasnivanjem novog domaćinstva. Društveno natjecanje između domaćinstava u tim naseljima je izraženo, a manifestira se kroz bogato ukrašene posude, veće količine nakita i ekspresivnom elaboracijom kućnog prostora (Sl. 13). Dekoracija kućnih zidova ili isticanje bukraniona također su upadljivi, bez obzira je li to napravljeno u javnoj (vani) ili privatnoj domeni (unutra). Daleko u pozadini svega, pak, izgradnja i izgled pojedinačnih kuća i dalje reflektiraju određene kulturne i komunalne standarde, što se vidi u sličnosti njihovih tlocrta. Zbog toga se može raspravljati o tome li je njihova kasnija individualnost posljedica svjesnog maskiranja tog kulturnog poretka ili efekt različitih razvojnih ciklusa kuća i domaćinstava (Tripković 2013).

Čini se, da su domaćinstva koja žive u kućama velikih dimenzija prakticirala sasvim drugačiji obrazac ponašanja. Njihova strategija temeljila se na održanju kontinuiteta kuće i domaćinstva, što je u pogledu postmaritalnog prebivališta najvjerojatnije značilo ostanak mladih bračnih partnera u roditeljskom domu. Ova strategija najbolje se očitava u vinčanskom naselju Divostin kod Kragujevca. U tamošnjim se kućama, na brižljivo izrađenim podovima od nabijene gline, nalazi više peći i ognjišta (Sl. 14), a pokućstvo se u svakoj prostoriji sastoji od sličnog repertoara posuda i drugih predmeta (Bogdanović 1988; Madas 1988). Barem tri kuće

space could have had a number of different reasons, but in our opinion its side effect was just as important, and it was the same all over: it emphasized the collective identity of the group living in the area surrounded by the ditch.

Social organization and identities: households, neighbourhoods and communities

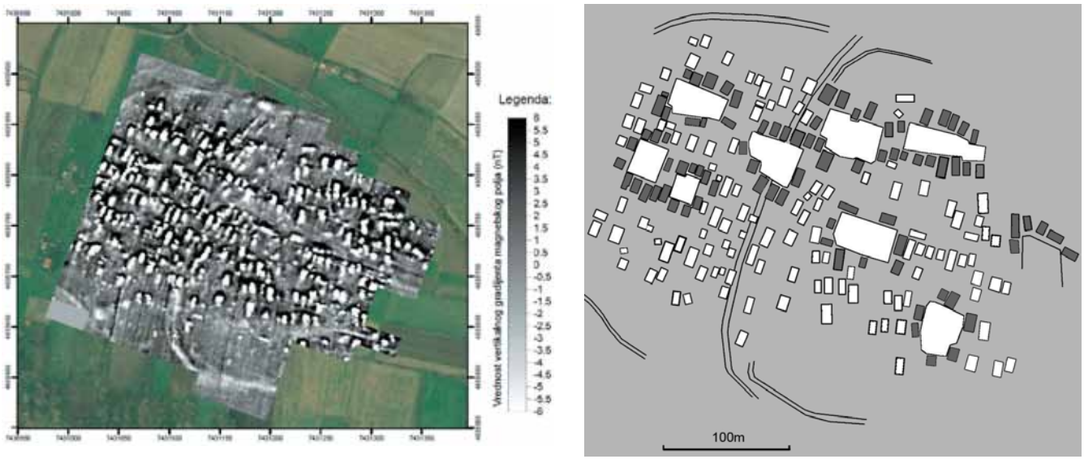
From the current perspective, it appears that the affirmation of privacy was the fundamental innovation of the Neolithic world in the north-western Balkans. The construction of long-term houses built of hard materials, the division, decoration and symbolic elaboration of the interiors – those were products of human endeavour to transform the primordial shelter and refuge into a comfortable place for a long-term stay, filled with emotion and warmth. Ethnographic data suggest that, in the majority of traditional societies, houses of up to 60 m² are inhabited by small households, usually consisting of a nuclear family with patrilocal and patrilineal marriage and inheritance patterns, while houses of more than 100 m² are used by larger groups or several nuclear families, characterized by matrilineality and matrilocality (Brown 1987). On the basis of the sizes of houses in the Vinča Culture sites, M. Porčić has pointed to the probability of patrilocal postmarital status (Porčić 2011), citing as evidence the results of analysis of the DNA of 24 deceased males, of whom 7 were subadults, buried in a separate section of the Vinča Culture settlement of Gomolava, which indicate that they had been related (Stefanović 2008).

When calculation of the population of Okolište was made, it was assumed that small structures from the earliest phase of the settlement were inhabited by households of five members, on

Sl. 14, kuća 15 u Divostinu (McPherron&Srejović 1988): zeleno = jame stupova i supstrukcija poda; crveno = pod, ognjišta i drugi objekti od lijepa; crno = distribucija i funkcija posuda. Legenda: krug – posude za skladištenje suhih namirnica, trokut – posude za skladištenje tekućine, trapez – posude za pripremu namirnica, polukrug – posude za objedovanje, kvadrat – recepijent i neodređene upotrebe (za daljnju determinaciju posuda pogledati Madas 1988).
Fig. 14, house 15 in Divostin (McPherron & Srejović 1988): green = postholes and floor substructure; red = floor, hearth and other daub structures; black = distribution and function of vessels. Legend: circle – vessels to store dry goods, triangle – vessels to store liquids, trapezium – vessels for food preparation, semi-circle – serving vessels, square – recipient and undetermined use (for further determination of vessels, see Madas 1988).

u istraženom dijelu naselja su s vremenom dograđivane, a nove prostorije predstavljaju funkcionalne replike starijih, s pećima i cjelokupnim kućnim inventarom. Čini se, pak, da su stariji ukućani zadržali izvjesnu kontrolu nad aktivnostima ekonomskog i ritualnog značaja, jer se velike skladišne posude i žrvnjevi nalaze jedino u starijoj prostoriji, kao i svi simbolički elementi, poput figurina, žrtvenika i sl. (Tripković 2009; Tripković 2013). Tradicionalno ponašanje ove zajednice jasnije naglašava poštovanje vrijednosti zajednice, dok je ekonomsko i društveno nadmetanje između domaćinstava manje izraženo, ili uopće ne postoji. U javnom prostoru ne uočavaju se ekspresivne poruke koje bi asocirale na socijalne tenzije. S druge strane, unutrašnjost kuća prepuna je takvih simboličkih poruka, a njihovo čitanje je, čini se, namijenjeno samo drugoj korezidentnoj obitelji. Tako obitelji koje žive u dograđenoj prostoriji na izvjestan način negiraju prostorni obrazac koji je replika starije prostorije: peći, a možda i ulazi, nalaze se u suprotnim dijelovima građevine, a peći su ukrašene na različit način (Tripković 2009). Barem neke od tih velikih građevina u Divostinu zasigurno se mogu povezati sa samim krajem naselja (Borić 2009), što je, zanimljivo, situacija i u Okolištu i u naseljima oko njega (Hofmann 2012), a izgleda da se ista stvar događa i u međurječju (Krznarić Škrivanko 2006a). To znači da je kraj neolitičkih naselja na neki način određen kulturnim i socijalnim praksama, i da je odgovor na ekonomsku ili društvenu nestabilnost zahtijevao veću koherentnost između srodnika različitih generacija ili pak prostorno (i ekonomsko) udruživanje više obitelji. Otuda kasnoneolitički obrazac udruženog stanovanja, koji se uočava u Divostinu, a koji ima analogiju u mnogim tradicionalnim društvima, između ostalog i u tradicionalnoj Balkanskoj zadruzi, možda predstavlja

average (Müller-Schiessel et al. 2010; Müller et al. 2011), while past research into the size of households of the Vinča Culture used a size of 50 m² as an approximate cut-off between the nuclear and extended family (Chapman 1981). Based on the sizes of buildings and organization of their interiors, it seems that the sizes of households in the north-west Balkans varied considerably (Tripković 2013; Porčić 2010). Recent research into the history of individual households in a wider territory of the Serbian part of the Danube valley suggests that there were two forms of demographic reproduction of households (Tripković 2013). The first was characteristic of settlements with small houses, with a surface area of approximately 40 m², which usually consisted of a single room or several complementary rooms. Such settlements had a dynamic evolution, and the construction of a new house was usually associated with establishing a new household. Social competition among households in these settlements is very active; it was manifested in richly adorned pottery, large quantities of jewellery and expressively elaborated interiors (Fig. 13). The decoration of walls and the prominent position of bucrania also stand out, irrespective of whether they are in the public domain (outside) or the private (inside). Far in the background of it all, the construction and appearance of individual houses still reflected certain cultural and communal standards, as can be seen from



Sl. 15 a-b, magnetometrijski plan i otvoreni prostori u naselju Crkvine-Stubline (Crnobrnja 2012).
Fig. 15 a-b, magnetometric layout and open spaces in the Crkvine-Stubline settlement (Crnobrnja 2012).

kulturnu adaptaciju sa širim značenjem. Činjenica da u mnogim slučajevima ove velike građevine prethode kolapsu neolitičkih društava može sugerirati obrazac te adaptacije i treba ga imati u vidu prilikom daljnjeg istraživanja povijesti naselja na sjeverozapadnom Balkanu.

Najmanje je poznato kako se formiraju skupni identiteti iznad nivoa domaćinstva. U Stublinama kod Obrenovca je, primjerice, uočeno desetak praznih prostora površine od 500 do 1200 m², koji su okruženi nizovima kuća koje formiraju klastere za koje se s oprezom ističe da bi mogle reflektirati srodničke odnose ili neku drugu vrstu organizacije (Sl. 15, Crnobrnja 2011, 2012). Kuće na Gomolavi također su raspoređene u skupine (Brukner 1988), dok se u Okolištu možda najbolje uočava ekonomska suradnja između domaćinstava. Sudeći prema vrstama aktivnosti čiji su ostaci identificirani u arheološkom zapisu, susjedna domaćinstva su specijalizirana za obavljanje samo određenih aktivnosti, što upućuje na pretpostavku da je među njima postojao neki oblik ekonomske suradnje (Müller *et al.* 2013). Čini se da je susjedstvo bilo značajan element te organizacije, ali još uvijek ima malo podataka o tome kako su srodnički odnosi, ekonomska suradnja i dinamika izgradnje kuća uzajamno isprepleteni. I, treba li računati na isti proces u strukturno različitim naseljima, kao što su velika i mala, ili razbacana i zbijena i sl. Može se pretpostaviti, barem kao radna hipoteza za buduće istraživanje, da je u naselju razbacanog tipa bilo dovoljno prostora za izgradnju nove građevine u onome što je bilo ekonomsko dvorište. Skupine kuća s Gomolave i parovi kuća s Divostina možda pokazuju takvu dinamiku izgradnje, gdje su srodnici istovremeno i susjedi. Veće grananje srodničkih relacija kroz naseobinski prostor može se pretpostaviti u naselju zbijenog tipa, kao u Okolištu ili u Vinči, pri čemu se s vremenom stvaraju raštrkane društvene mreže koje mogu uključivati i srodstvo i kooperaciju.

their similar ground plans. Bearing that in mind, we can discuss whether their later individual appearance is a consequence of the deliberate masking of this cultural order, or a result of various developmental cycles of houses and households (Tripković 2013).

It would appear that the population that lived in large houses followed a very different behavioural pattern. Their strategy was based on maintenance of house and household continuity, and for post-marital residence it probably meant that young spouses stayed in their parental home. This strategy can best be observed in the Vinča Culture settlement of Divostin near Kragujevac. There, houses had carefully-worked floorings of packed clay, and in them there were several ovens and fireplaces (Fig. 14), and the inventory of each room consisted of a similar repertoire of vessels and other items (Bogdanović 1988; Madas 1988). At least three houses in the excavated part of the settlement were extended in time, with new rooms being functional replicas of the old ones, and featuring ovens and the entire household inventory. It seems, though, that elder household members maintained a certain control over economic and ritual activities, because large storage vessels and grindstones can only be found in the old room, and the same is true of symbolic elements, such as figurines, altars etc. (Tripković 2009; Tripković 2013). The traditional behaviour of the community emphasized respect for communal values, while economic and social competition among households was less pronounced, or did not exist at all. In the public space, no expressive messages can be observed that would indicate any social tensions. On the other hand, the interiors of houses are full of such symbolic messages, and it seems that their intended readers were only members of the other co-resident family. Thus, families living in the added-on room somehow annulled the spatial pattern which was a replica of the old room: the ovens, and perhaps entrances, too, were located in the opposite parts of the building, and the ovens were decorated differently (Tripković 2009). At least some of the large buildings in Divostin can certainly be attributed to the very end of the settlement (Borić 2009), which, interestingly, is the same

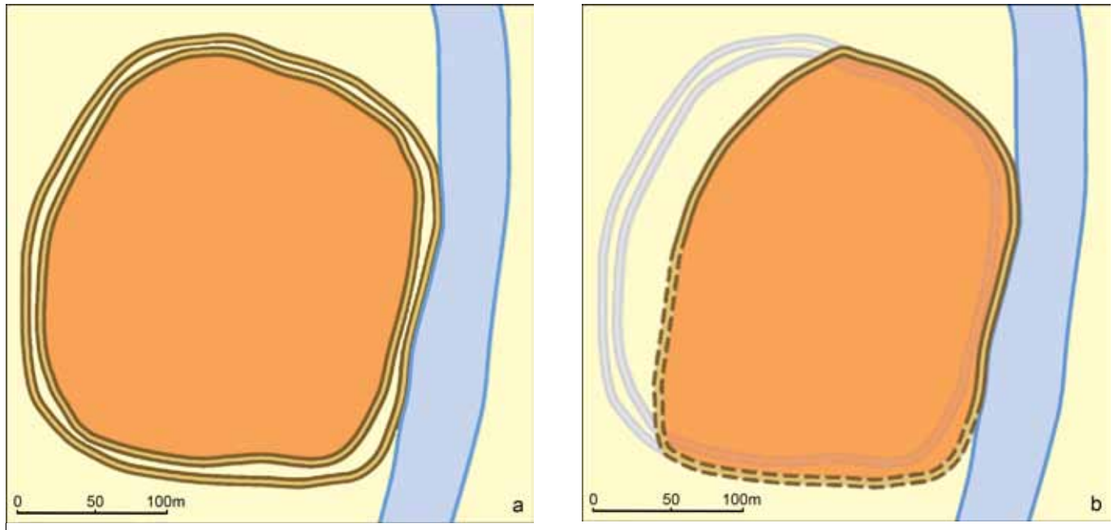
Opće je prihvaćeno da neolitička društva na sjevernom Balkanu nisu razvila hijerarhiju kompleksnog tipa, s nasljeđivanjem ranga ili statusa. S druge strane, veličina populacije u nekim naseljima upućuje na to da se mora razmišljati o vrsti političke organizacije koja je ta naselja učinila tako velikim i dugotrajnim. Pretpostavka je da Okolište već u najstarijoj fazi nastanjuje barem 1000–1500 stanovnika, a posljednja istraživanja ukazuju na to da je njihov broj možda bio dvostruko veći (Müller *et al.* 2011; *cf.* Hofmann 2012). U Stublinama kod Obrenovca, na temelju površine 219 geomagnetnih anomalija koje sugeriraju građevine, a čije je očitavanje u nekoliko slučajeva potvrđeno iskopavanjem (Crnobrnja 2011, 158), pretpostavlja se da je broj stanovnika iznosio oko 2000 (Porčić 2010). Oba naselja prikazuju komunalno organizirane prostorne planove, s kućama postavljenim u nizu i trostrukim (Okolište), odnosno dvostrukim (Stubline) sustavom rovova koji ih ograđuje. Usprkos tako velikom broju stanovnika, u arheološkom materijalu iz Okolišta (Müller 2012) i naselja vinčanske kulture (Porčić 2011) ne uočavaju se jasni signali unutarnaseobinske socijalne diferencijacije.

Izgradnja kompleksnog sustava rovova s palisadama u mnogim naseljima na sjevernom Balkanu, a zatim i dugoročno održavanje istih, svakako su zahtijevali koordinirano ulaganje i organizaciju ogromne društvene energije. To možda ukazuje na to da su ponegdje postojale društvene institucije koje su planirale i organizirale izgradnju utvrda, a zatim brinule i o njihovom održavanju. No to nije moralo biti bezuvjetno povezano s hijerarhijom koja uključuje prinudu i političku kontrolu. Arheološka svjedočanstva koja ukazuju na postojanje jakih komunalnih identiteta također su brojna: mnoga naselja okružena su sustavom rovova za čiju su izradu bili neophodni koordinacija i sudjelovanje svih ili većine stanovništva; kuće u takvim naseljima obično su zbijene i organizirane u redove; u središtu naselja u Uivaru nalazi se prostor na kojem nisu građene kuće, a koji je možda imao neku ulogu u javnim svetkovinama ili okupljanjima (Schier, Drașovean 2004); čini se da je središnja građevina na telu Parța, koja je obnovljena i korištena duže vrijeme, a koja je interpretirana kao svetište, bila u središtu ideološkog fokusa tamošnje zajednice (Lazarovici 1989; Lazarovici, Drașovean, Maxim 2001); veliko ognjište ispred svetišta u Parți, a zatim i lokacija peći na otvorenom prostoru u mnogim drugim naseljima, ukazuju na to da je jedan dio aktivnosti pripreme hrane obavljan u javnoj domeni, i da je možda bio od interesa za čitavu zajednicu ili jedan njezin dio; arheozoološka istraživanja u Opovu skrenula su pažnju na tragove (ceremonijalnih?) gozbi (Rusell 1993) itd. Dilema o načinima komunalne organizacije, međutim, svakako

as in Okolište and the surrounding settlements (Hofmann 2012); it appears that the same occurred in the region bounded by the Sava, Drava and Danube (Krznarić Škrivanko 2006a). This means that the end of Neolithic settlements was in some way determined by cultural and social practices, and that the economic or social instability required a higher level of coherence between relatives of various generations, or a spatial (and economic) unification of several families. This resulted in the Late Neolithic pattern of cohabitation, which can be observed in Divostin, analogies for which can be found in many traditional societies, including the traditional Balkan "zadruga", and which might represent a cultural adaptation with wider implications. The fact that these large houses preceded the collapse of Neolithic societies, in many cases, may suggest an adaptation pattern, and it should be borne in mind during further research of the history of settlements in the north-west Balkans.

We have the least information about the formation of group identities above the level of the household. For example, at Stubline near Obrenovac, some ten empty areas have been observed, of between 500 and 1200 m², surrounded with rows of houses forming clusters, which have been tentatively said to reflect kinship or some other type of organization (Fig. 15) (Crnobrnja 2011, 2012). At Gomolava, houses were also grouped (Brukner 1988), while economic cooperation between various households can be best observed at Okolište. Judging by the type of activities recorded on the basis of their traces among the archaeological evidence, neighbouring households specialized only in certain activities, suggesting that they were linked by some kind of economic cooperation (Müller et al. 2013). It appears that neighbourhood was an important element of social organization, but for the time being there is little data on the interplay between kinship, economic cooperation and house-construction dynamics – or on whether the same process could be expected in structurally different settlements: for example, large and small settlements, dispersed and compact ones, etc. It can be assumed – at least at the level of a working hypothesis for future research – that in dispersed settlements there was sufficient space for the construction of a new building in what was used as a farm yard. Groups of houses at Gomolava and pairs of houses at Divostin could reflect such a dynamic, with relatives living as neighbours. In compact settlements such as Okolište and Vinča, relatives could have branched out more across the settlement area, in time developing scattered social networks which could involve both kinship and cooperation.

It has generally been accepted that Neolithic societies of the northern Balkans did not develop any complex hierarchy in which rank or status would be inherited. On the other hand, the size



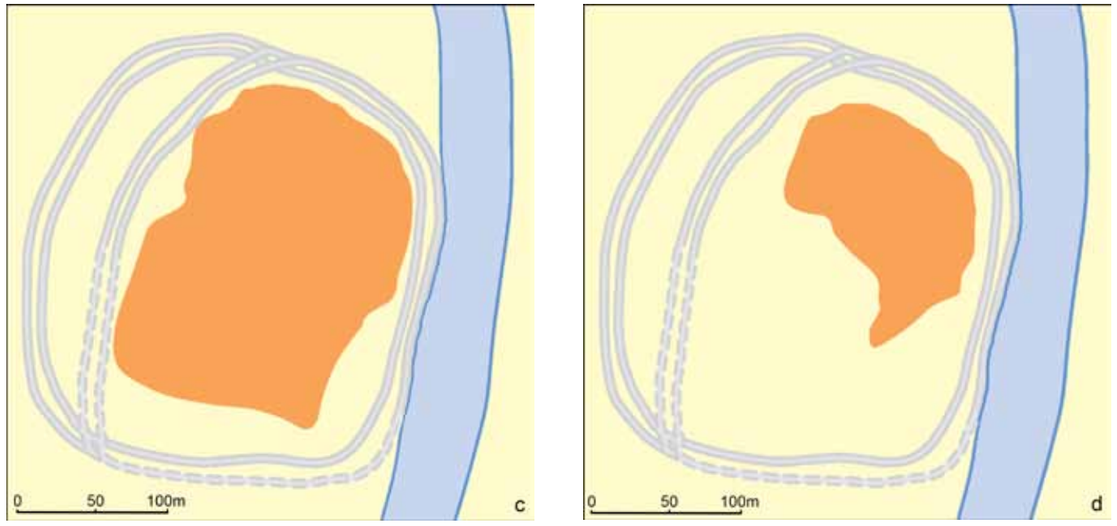
Sl. 16, četiri faze naselja u Okolištu (Müller 2012; Hofmann 2012).
Fig. 16, the four phases of the settlement in Okolište (Müller 2012; Hofmann 2012).

ostaje jer je nesumnjivo da se neki od navedenih podataka mogu protumačiti potpuno oprečno: i kao hijerarhizacija neolitičkih društava i kao dokaz o jačanju komunalnih vrijednosti i identiteta.

Odnosi između stanovnika susjednih naselja također su u posljednje vrijeme predmet veće pažnje. U Karpatskom bazenu opsežna su ispitivanja terena ukazala na to da se u okruženju jednog tela ili velikog horizontalnog naselja obično nalazi i nekoliko manjih naseobina, ali da ništa ne upućuje na dominaciju jednog naselja nad drugima. Umjesto toga, čini se, da su manje naseobine nastale iseljavanjem stanovništva iz velikog naselja s kojim nastavljaju održavati intenzivne ekonomske kontakte (Parkinson 2006). Tamo su, pak, primijećene znatne razlike u pogledu ritualnih i simboličkih aktivnosti na telovima i horizontalnim naseljima (Sziklósi 2013): a) na telovima su uglavnom sahranjeni muškarci i djeca, bez pratećih priloga ili su oni vrlo siromašni; na ravnim naseljima podjednako su sahranjene osobe muškog i ženskog spola, ali su kvaliteta i količine grobnih priloga različiti, b) prestižna roba se na horizontalnim naseljima sreće u grobovima, a na telovima u ostavama, kao žrtveni dar, prikaz na figurinama i sl. Ako se isti zaključci primjene i na sjeverozapadni Balkan, onda je potrebno istaknuti da Vinča kod Beograda sadrži najveću koncentraciju prestižnih predmeta. To je tel naselje od čak 10 ha, koje je u kontinuitetu nastanjeno od sredine 6. do sredine 5. tisućljeća pr. Kr. (Schier 1996; Borić 2009). U brojnim istraživačkim sezonama tijekom XX. stoljeća ondje su zabilježeni egzotični i vrijedni predmeti u neobično velikom broju. Predmeti od mramora i alabastera, nakit od školjke *Spondylus* i *Glycymeris* i oruđe od opsidijana u Vinči mjere se u desecima, stotinama i tisućama komada, što se, izgleda, ne ponavlja u drugim naseljima u širem okruženju (Chapman 1981; Dimitrijević, Tripković 2006;

of population of some settlements suggests that we should consider some kind of political organization, which made those settlements so big and long-lasting. It has been presumed that the population of Okolište in its earliest phase was at least 1000–1500, and the most recent exploration indicates that it might have been twice as big (Müller et al. 2011; cf. Hofmann 2012). At Stubline near Obrenovac, on the basis of the surface area of 219 geomagnetic anomalies suggesting buildings, which were confirmed by excavation in several cases (Crnobrnja 2011, 158), it has been suggested that around 2000 people lived there (Porčić 2010). Both settlements feature organized communal spatial plans, with houses set in a row, and a triple (Okolište) or double (Stubline) system of ditches encircling them. In spite of the large population, the archaeological finds from Okolište (Müller 2012) and settlements of the Vinča Culture (Porčić 2011) do not display clear signs of intra-settlement social differentiation.

The construction and long-term maintenance of complex systems of ditches and palisades in many settlements in the northern Balkans undoubtedly called for coordinated investment and organization of enormous social energy. This could imply that in certain areas there were social institutions which planned and organized construction of fortifications, and subsequently took care of their maintenance. Such institutions did not necessarily have to be associated with a hierarchy involving coercion and political control. Archaeological evidence also demonstrates that there were strong communal identities: many settlements were enclosed by a system of ditches, whose construction demanded the coordination and participation of all or most of the population; houses in such settlements are usually packed together and organized in rows; in the centre of the settlement of Uivar, there was a space in which houses were not built, which could have played a role in festivities or gatherings (Schier, Draşovean 2004); it seems that the central building in the Parța



Tripković, Milić 2009). Zbog toga, ukoliko se međunaseobinska nejednakost mjeri prisustvom/odsustvom ili asortimanom egzotičnih dobara, Vinča ostaje njezin glavni indikator, a što bi svakako trebalo testirati iskopavanjem istovremenih naselja u neposrednom susjedstvu.

Naseobinski klasteri poput onih iz Karpatskog bazena uočeni su manje-više u svim područjima sjeverozapadnog Balkana. Oni iz ranog neolitika, zabilježeni kod Slavonskog Broda, Vinkovaca ili Virovitice (Minichreiter 2010) ili iz kasnog neolitika na Drenskom Visu kod Obrenovca sa središtem u Stublinama (Crnobrnja 2011), samo su neki od primjera na koje se u posljednje vrijeme skrenula pažnja. Ipak, najpovoljniju sliku u pogledu razumijevanja nastanka i funkcioniranja malih naseobinskih klastera ponovo pruža područje Visokog u centralnoj Bosni, gdje je regionalna dinamika naseljavanja povezana s napuštanjem velikog središnjeg naselja, što je tel Okolište. Ono se u ranoj naseobinskoj fazi rasprostire na više od 7 ha i broji nekoliko stotina kuća, nakon čega se postupno umanjuje, a u završnoj fazi zauzima samo 1,2 ha (Sl. 16). Postupno napuštanje tela vremenski se preklapa s osnivanjem drugih naselja Butmirske kulture u neposrednom okruženju. Pretpostavka je da unutar formiranog naseobinskog klastera postoji ekonomska zavisnost manjih naselja, a možda i podložnost političkoj kontroli, čemu bi u prilog govorile manje površine tih naselja i činjenica da je samo Okolište bilo utvrđeno. Osim toga, druga naselja u središnjoj Bosni, kao što je Kundruci, ukazuju na to da su u njima obavljane samo određene aktivnosti, na temelju čega je zaključeno da su tamošnji stanovnici vjerojatno bili ekonomski zavisni od proizvoda iz većih naselja (Furholt 2012).

tell, which was repaired and used over a long period, and has been interpreted as a sanctuary, was in the centre of the ideological focus of the community living there (Lazarovici 1989; Lazarovici, Draşovean, Maxim 2001); the large fireplace in front of the sanctuary in Parța, and the location of ovens in the open in many other settlements, indicate that some of the food preparation was done in the public domain, and that it could have been of interest to the entire community or one of its parts; zooarchaeological research at Opovo has brought to the attention traces of (ceremonial?) feasts (Rusell 1993) etc. However, the dilemma concerning the methods of communal organization has not been resolved, because some of the listed data can be interpreted in completely different ways, as a hierarchical organization of the Neolithic societies and as a proof of growing communal values and identities.

Relations between the populations of neighbouring settlements have been gaining more attention in recent time. In the Carpathian Basin, extensive field surveys have revealed that in the surroundings of a tell or a large horizontal settlement, there were usually several smaller settlements, but nothing indicates that one settlement had dominance over others. Instead, it appears that small settlements were the results of people moving away from a large settlement, with which they kept up intensive economic contacts (Parkinson 2006). On the other hand, significant differences have been observed in ritual and symbolic activities performed in tells and in horizontal settlements (Sziklósi 2013): a) in tells, the people who were buried were mostly men and children, and they were buried with no grave goods, or the grave goods were very modest; in flat settlements both men and women were buried, but the quality and quantity of grave goods differed, b) in horizontal settlements, prestigious goods can be found in graves, and in tells such goods can be found in hoards, as offerings, representations of figurines etc. If the same

* * *

Neolitik je na sjeverozapadnom Balkanu doživio puni procvat krajem 6. i početkom 5. tisućljeća pr. Kr. osnivanjem stalnih i dugotrajnih naselja, izgradnjom i opremanjem prostranih kuća i razvojem simbolizma koji je najčešće povezan s kućom i domom. Nakon toga se primjećuje novi-stari trend, a to je povećana mobilnost stanovništva i napuštanje velikih dugotrajnih naselja. Isti trend zapaža se u cijeloj jugoistočnoj Europi i Karpatskom bazenu, a povezuje se s većom ulogom stočarstva u ekonomiji. On je započeo već početkom kasnog neolitika, osnivanjem prvih naselja na prirodno zaštićenim lokacijama, ali se tek početkom bakrenog doba vidi potpuni preobražaj neolitičkih društava koji, pak, nije svuda bio isti. Na području današnje Srbije naselja i kuće su manji i gotovo bez elaboracije unutrašnjeg prostora. Čini se da je u središnjoj Bosni i međurječju tek nastupilo vrijeme dugačkih kuća. A nekako na tromeđi ovih područja zabilježene su i specifične kulturne adaptacije s kojima se tek upoznajemo. Male zajednice koje nastanjuju naselja tipa Obrovac u močvarnom području današnje Mačve (Srbija), i dalje predstavljaju regularnu kulturnu adaptaciju, čini se do duboko u treće tisućljeće pr. Kr., ako je suditi prema malobrojnim istraživanjima i dosada poznatim informacijama.

conclusions are applied to the north-west Balkans, it is worth noting that Vinča, near Belgrade, had the highest concentration of prestigious goods. The tell-type settlement covers no less than 10 ha, inhabited continuously from the middle of the 6th to the middle of the 5th millennium BC (Schier 1996; Borić 2009). In many excavation campaigns carried out during the 20th c., an unusual number of exotic and valuable finds were made. At Vinča, items made of marble and alabaster, jewellery made of Spondylus and Glycymeris shells and tools made of obsidian have been found in dozens, hundreds and thousands, and such a situation has not been repeated in other settlements in the wider region (Chapman 1981; Dimitrijević, Tripković 2006; Tripković, Milić 2009). Therefore, if inter-settlement inequality can be measured by the presence/absence or range of exotic goods, Vinča has remained its main indicator, and this should definitely be tested by excavation of contemporary settlements in its immediate surroundings.

Settlement clusters, such as those in the Carpathian Basin, have been identified in nearly all areas of the north-west Balkans. Clusters from the Early Neolithic, recorded near Slavonski Brod, Vinkovci and Virovitica (Minichreiter 2010), or those from the Late Neolithic at Drenski Vis, near Obrenovac, with a centre at Stubline (Crnobrnja 2011), are just some of the examples that have recently attracted attention. Still, the best image which facilitates our understanding of the development and functioning of small settlement clusters is provided by the region of Visoko in central Bosnia, where the regional settlement dynamic is linked to the abandonment of a big central settlement, the tell of Okolište. In its early phase, it covered more than 7 ha and included several hundreds of houses. From there, it began to shrink, and in its final phase it encompassed only 1.2 ha (Fig. 16) The gradual abandonment of the tell coincided with the establishment of other settlements of the Butmir Culture in the immediate vicinity. It is assumed that, within the formed settlement cluster, smaller settlements were economically dependent, if not subjected to political control, and this is supported by the smaller surface areas of those settlements and the fact that Okolište was the only one that was fortified. In addition, there are indications that in other settlements in central Bosnia, such as Kundruci, just some activities were performed, prompting a conclusion that their population was economically dependent on products coming from larger settlements (Furholt 2012).

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

* * *

In the north-western Balkans, the Neolithic reached its peak in the late 6th and early 5th millennia BC, which was reflected in the establishment of permanent and long-lasting settlements, construction and furnishing of spacious houses and development of symbolism, most frequently associated with the house and home. Thereafter, the new-old trend could be observed: increased mobility of the population, which abandoned large long-lived settlements. The same trend was present throughout south-eastern Europe and in the Carpathian Basin, and it is explained by the increased role of herding in the economy. The change began at the beginning of the Late Neolithic, with the first settlements set up in naturally protected locations, but only at the beginning of the Copper Age can we observe the complete transformation of the Neolithic societies, which were not the same everywhere. In the territory of present-day Serbia, settlements and houses were smaller, and their interiors were almost without elaboration. It would appear that in central Bosnia and in the region bounded by the Sava, Drava and Danube, the period of long houses had only just begun. And in the tri-border area between these regions, some specific cultural adaptations have been recorded that we are only now learning about. Small communities which lived in settlements of the Obrovac type in the wetlands of today's Mačva (Serbia) continued to exist as a regular cultural adaptation, it would appear, well into the 3rd millennium BC, if we are to judge from the few excavations and little information available to date.

KELLY REED

PREHRANA I POLJOPRIVREDA U NEOLITIČKOJ HRVATSKOJ: ARHEOBOTANIČKI OSTACI

FOOD AND FARMING IN NEOLITHIC CROATIA: THE ARCHAEOBOTANICAL REMAINS

Pretpovijesna društva bila su pretežno poljoprivredna, a nabavljanje i proizvodnja dovoljne količine hrane za preživljavanje obitelji ili zajednice bila je svakodnevna aktivnost u kojoj su sudjelovali mnogi. Sakupljanje i proučavanje biljnih ostataka s arheoloških nalazišta pruža nam podatke o tim aktivnostima iz prošlosti. Nažalost, arheobotaničke ostatke se u jugoistočnoj Europi još premalo analizira, a samo se na malobrojnim iskopavanjima provode programi uzorkovanja i sakupljanja. U ovom će poglavlju biti riječi o novim arheobotaničkim nalazima iz kopnene Hrvatske te o informacijama koje nam oni mogu pružiti o utjecaju poljoprivrede na svakidašnjicu neolitičkih ljudi.

Arheobotanika

Arheobotanički ostaci predstavljaju samo dio izvornog sastava biljaka koji je, kroz niz prirodnih i/ili antropogenih procesa, ostao sačuvan na nekom arheološkom nalazištu. Najčešći način na koji se biljni materijal očuva na arheološkim nalazištima je karbonizacija ili izgaranje, što se događa u slučaju kada je organski materijal slučajno ili namjerno izložen toplini tijekom aktivnosti poput kuhanja, spaljivanja otpada ili pak zbog goriva (Van der Veen 2007). Na taj se način uglavnom očuvaju otporniji, gušći dijelovi biljaka poput sjemenki, drveta i orašastih plodova (Boardman, Jones 1990; Hillman 1981), iako su pronalaženi i meki dijelovi poput boba grožđa ili gomolja (Hather 1991; Valamoti 2007). Dakle, obično se karboniziraju oni dijelovi biljaka koji češće dolaze u kontakt s vatrom i koji mogu izdržati proces izgaranja. Biljni ostaci mogu se očuvati i ako se nalaze u izrazito velikoj vlazi, zatim ako prođu proces mineralizacije i isušivanja, a mogu biti identificirani i ako su ostavili utisnute tragove na keramici ili kućnom lijepu.

Botanički dokazi iz Hrvatske

RANI/SREDNJI NEOLITIK

Razdoblje ranog neolitika obilježeno je prijelazom s lovačko-sakupljačkog načina života na poljoprivredu i stočarstvo. Prva pripitomljena žitarica, porijeklom iz jugoistočne Azije, proširila se u jugoistočnu Europu preko mediteranskih otoka i Anatolije, a u Hrvatsku je stigla oko 6000. g. pr. Kr. Ustanovljeno je osam „prvih vrsta“: jednozrna pšenica (*Triticum monococcum*), dvozrna pšenica (*Triticum dicoccum*), ječam (*Hordeum vulgare*), grašak (*Pisum sativum*), leća (*Lens culinaris*), slanutak (*Cicer arietinum*), grahorica (*Vicia ervilia*) i lan (*Linum usitatissimum*) (Zohary 1996). Ove rane kultivirane vrste predstavljaju temelj neolitičke poljoprivrede, a potpuni „paket biljaka“ nije se kao cjelina širio diljem jugoistočne i središnje Europe (Colledge, Connolly 2007). Korištenje ovih novih vrsta ovisilo je o brojnim faktorima, uključujući lokalne vremenske uvjete i mehanizme

In prehistory, societies would have been largely agricultural and the acquisition and production of enough food to feed the family or community would have been a daily activity for many individuals. The recovery and examination of plant remains from archaeological sites provide evidence of these past activities. Unfortunately, archaeobotanical remains are still underutilised in parts of Southeast Europe, with only a few excavations conducting environmental sampling and recovery programmes. This chapter will explore current archaeobotanical evidence from mainland Croatia and the information this can provide on diet and the impact of agriculture on the daily lives of Neolithic people.

Archaeobotany

Archaeobotanical remains represent only a fraction of the original plant assemblage that, through a series of natural and/or anthropogenic processes, became deposited within the archaeological site. The most common form by which plant material is preserved on archaeological sites is through carbonisation or charring. This occurs when organic material is exposed to heat either accidentally or deliberately through activities such as cooking, burning rubbish or from fuel (Van der Veen 2007). It is generally the tougher, denser parts of the plants such as seeds, wood and nutshells that are more likely to preserve (Boardman and Jones 1990; Hillman 1981), although soft organs such as grapes or tubers have been recovered (Hather 1991; Valamoti 2007). Thus, carbonised plant remains tend to be heavily biased towards plant parts that come more frequently in contact with fire and can survive the charring process. Plant remains can also be preserved through waterlogging, mineralisation and desiccation, as well as identified from impressions in pottery or daub.

Botanical Evidence in Croatia

EARLY/MIDDLE NEOLITHIC

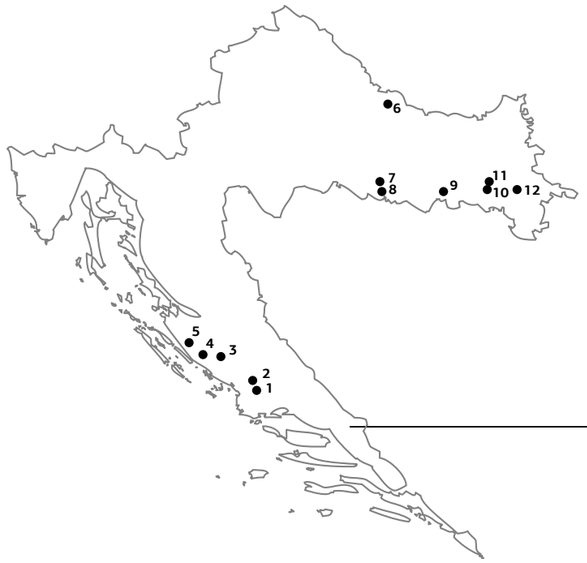
The early Neolithic signifies a change in subsistence practices from hunter gatherers to agriculturalists. The first domestic crops, originating from Southwest Asia, spread into Southeast Europe via the Mediterranean islands and Anatolia, reaching Croatia c.6000 cal BC. Eight 'founder crops' have been identified: einkorn (Triticum monococcum), emmer (Triticum dicoccum), barley (Hordeum vulgare), pea (Pisum sativum), lentil (Lens culinaris), chickpea (Cicer arietinum), bitter vetch (Vicia ervilia) and flax (Linum usitatissimum) (Zohary 1996). These early domesticates form the basis of Neolithic farming, however, the complete 'crop package' did not spread in its entirety throughout Southeast and Central Europe (Colledge and Connolly 2007). The utilisation of these new species would have been dependant on a number of factors, including local environmental conditions and the

			Rani/srednji neolitik Early/Middle Neolithic						Kasni neolitik Late Neolithic					
		Lokalitet/Site	Tomašanci-Palača	Tinj - Podlivade	Virovitica-Brekinja	Danilo	Pokrovnik	Crno Vrilo	Ivandvor-Gaj	Ravnjaš-Nova Kapela	Slavča	Sopot	Čista Mala-Veliščak	Tomašanci-Palača
		Referenca/Reference	Neobjavljeno (unpublished)	Chapman et al. 1996	Reed 2012	Reed 2006; et al. u pripremi (in prep)		Marijanović 2009	Reed 2012					
		Br. uzoraka/No. of samples	74	17	5	44	54	?	14	57	75	144	34	1
Cereals		Žitarice												
Barley	Hordeum vulgare	Ječam	+	(+)		+	+	+		+	+	+	+	
Einkorn	T. monococcum	Jednozrna pšenica	+	(+)	+	+	+	+	+	+	+	+	+	
Emmer	Triticum dicoccum	Dvozrna pšenica	+	(+)		+	+	+	+	+	+	+	+	
Bread wheat	T.aestivum/durum	Meka/tvrda pšenica				+				+	+	+		
Spelt	Triticum spelta	Krupnik								+		+		
New glume wheat		Pšenica s novom ovojnicom								+	+	+	+	
Broomcorn millet	Panicum miliaceum	Obični proso					+			+	+			
Foxtail millet	Setaria italica	Talijanski muhar									+			
Pulses		Mahunarke												
Grass Pea	Lathyrus sativus	Grah poljak			+	+	+					+		
Lentil	Lens culinaris	Leća	+			(+)	(+)		+	+	+	+	+	
Pea	Pisum sativum	Grašak								+		+		
Bitter vetch	Vicia ervilia	Grahorica								+		+		
Oil-rich seed crop		Sjeme bogato uljima												
Flax	Linum usitatissimum	Lan	+			(+)	(+)				+	+		
Fruits		Voće												
Cornelian cherry	Cornus mas	Drijen				+	+				+	+		+
Chinese lantern	Physalis alkekengi	Ljoskavac									+	+		
Blackberry	Rubus fruticosus	Kupina				(+)	(+)			+	+	+		
Dog rose	Rosa canina	Pasja ruža				(+)	(+)						+	
Danewart	Sambucus ebulus	Bazga	+			(+)	(+)			+		+		

Tablica 1, prisutstvo biljnih vrsta s neolitičkih nalazišta u Hrvatskoj + ima ostataka, (+) određen samo rod /
Table 1, presence of plant species from the Neolithic sites in Croatia. + present, (+) identified to genus only

kojima je započela kultivaciju. To su, primjerice, mogli raditi migranti koji su osnivali nova naselja i sa sobom donosili nove usjeve, ili pak domorodačke populacije koje su ideju o usjevima mogle dobiti kroz mreže razmjene (Vlachos 2003).
Sakupljanje biljnih ostataka iz ranog neolitika u Hrvatskoj je poprilično rijetko, osobito u usporedbi sa zemljama poput Mađarske (npr. Gyulai 2010), Bugarske (npr. Popova 2010) ili Grčke (npr. Valamoti 2004). Najvažnije otkriće biljnih ostataka iz ranog neolitika potječe iz naselja starčevačke kulture Tomašanci-Palača (Balen 2009). U više od 70 prikupljenih uzoraka, pronađeni su ostaci pšenice (jednozrne i dvozrne), ječma, leće, lana i bazge (*Sambucus ebulus*), a to su ujedno i prvi jasni dokazi rane poljoprivrede u toj regiji (Tablica 1). Dodatni su dokazi pronađeni na ranoneolitičkom naselju starčevačke kulture Zadubravlje-Dužine (Slavonski Brod), gdje je K. Minichreiter (1992c, 31,51) primijetila prisustvo žrvnjeva i razbacanih ostataka žitarica kojima se nije jasno mogla utvrditi vrsta. Osim navedenih, ne postoje druge objave biljnih ostataka iz kopnene Hrvatske, i tek su u nedavnim istraživanjima nalazišta Sopot, koje je proveo Gradski muzej Vinkovci (Krznarić Škrivanko 2011), pronađeni dodatni ostaci ranoneolitičkih žitarica u toj regiji (Reed, u pripremi). U srednjem neolitiku na lokalitetu Virovitica-Brekinja pojavljuju se ostaci jednozrne pšenice i graha poljaka (*Lathyrus sativus*) (Sekelj-Ivančan, Balen 2006; Reed 2012) (Tablica 1). Već je i na temelju ovih dokaza moguće govoriti o prihvaćanju i uzgajanju kultiviranih žitarica u kopnenoj Hrvatskoj od ranog neolitika, međutim, kako bi se pobliže razumjeli mehanizmi širenja i

mechanism by which people began cultivating. For example, migrants establishing new settlements and bringing with them new crops or indigenous inhabitants adopting the crops piecemeal through exchange systems (Vlachos 2003).
The recovery of plant remains from the early Neolithic in Croatia are relatively rare, especially compared to countries such as Hungary (e.g. Gyulai 2010), Bulgaria (e.g. Popova 2010) or Greece (e.g. Valamoti 2004). The most important discovery of early Neolithic plant remains were recovered from the Starčevo culture settlement of Tomašanci-Palača (Balen 2009). From over 70 samples collected, cereals of wheat (einkorn and emmer) and barley were recovered, as well as lentil, flax and the fruit danewart (Sambucus ebulus), providing the first clear evidence of early farming in the region (Table 1). Further evidence has been found at the early Neolithic Starčevo culture settlement of Zadubravlje-Dužine (Slavonski Brod), where Minichreiter (1992c, 31,51) noted evidence of querns and scattered cereal remains, although no clear species identifications were made. No further published plant remains have been identified from mainland Croatia, and only recently have excavations by Vinkovci Municipal Museum at Sopot (Krznarić Škrivanko 2011), provided further evidence of early Neolithic cereal remains in the region (Reed in prep). By the middle Neolithic remains of einkorn and grass pea (Lathyrus sativus) have also been identified from the site of Virovitica-Brekinja (Sekelj-Ivančan and Balen 2006; Reed 2012) (Table 1). From this evidence it is already possible to suggest the adoption and cultivation of domesticated cereals within mainland Croatia from the early Neolithic. To understand further the mechanism of



Sl. 2, zrno ječma (*Hordeum vulgare*) s kasnoneolitičke Slavče. Fotografirala autorica
Fig. 2, a grain of barley (Hordeum vulgare) from Late Neolithic Slavča. Author's photograph

Sl. 1, položaj neolitičkih naselja s arheobotaničkim ostacima:
1. Danilo, 2. Pokrovnik, 3. Čista Mala, 4. Tinj-Podlivade, 5. Crno Vrilo, 6. Virovitica-Brekinja, 7. Ravnjaš-Nova Kapela, 8. Slavča, 9. Zadubravlje-Dužine, 10. Ivandvor-Gaj, 11. Tomašanci-Palača, 12. Sopot
Fig. 1, location of Neolithic settlements with archaeological remains:
1. Danilo, 2. Pokrovnik, 3. Čista Mala, 4. Tinj-Podlivade, 5. Crno Vrilo, 6. Virovitica-Brekinja, 7. Ravnjaš-Nova Kapela, 8. Slavča, 9. Zadubravlje-Dužine, 10. Ivandvor-Gaj, 11. Tomašanci-Palača, 12. Sopot

prihvaćanja žitarica, potreban je veći broj arheobotaničkih nalaza.

U Dalmaciji su ostaci biljaka iz ranog neolitika utvrđeni na nalazištima Tinj-Podlivade (Chapman *et al.* 1996, 188), Pokrovnik (Reed *et al.* in prep) i Crno Vrilo (Marijanović 2009) (Sl. 1). U Pokrovniku i Crnom Vrilu utvrđene su dvozrna i jednozrna pšenica. U Pokrovniku su također pronađeni grah poljak, lan te voće poput pasje ruže (*Rosa canina*) i drijena (*Cornus mas*). Pronalaženje ostataka voća, odnosno divljih vrsta koje su rasle u bližoj okolici nalazišta, svjedoči o nastavljanju sakupljanja samonikle hrane uz uzgajane usjeve. Loša očuvanost nalaza s nalazišta Tinj-Podlivade onemogućila je precizno identificiranje vrsta pšenice (*Triticum* sp.) i ječma (*Hordeum* sp.).
Tijekom srednjeg neolitika u Dalmaciji je nastavljeno uzgajanje jednozrne i dvozrne pšenice te ječma i mahunarki, ali se u arheološkom materijalu pojavljuje i određen broj dodatnih vrsta usjeva. U srednjoneolitičkom naselju u Pokrovniku prvo se pojavljuje obični proso (*Panicum miliaceum*) (Reed *et al.* in prep), a u srednjoneolitičkom Danilu utvrđena je i meka pšenica (*Triticum aestivum*) (Reed 2006; *et al.* in prep). Na ovim je nalazištima utvrđen i cijeli niz ostataka voća koji ukazuje na kontinuiranu eksploataciju divljih izvora hrane.

KASNI NEOLITIK

Kasnoneolitički arheobotanički ostaci bolje su očuvani u kontinentalnoj Hrvatskoj. Raznoliki ostaci žitarica i divljih biljaka utvrđeni su na tri tela: Sopot, kojeg je istraživao Gradski muzej Vinkovci (Krznarić Škrivanko 2003a) te Ravnjaš-Nova Kapela i Slavča (Mihaljević 2007a, b), koje je istraživao Gradski muzej Nova Gradiška (Sl. 1). Radi se o ječmu (Sl. 2), jednozrnoj pšenici, dvozrnoj pšenici, krupniku (*Triticum spelta*), tvrdoj pšenici, pšenici s novom ovojnicom (cf. Jones *et al.*

spread and adoption of crops in mainland Croatia, however, more archaeobotancial evidence is required.

In Dalmatia, early Neolithic plant remains have been identified from Tinj-Podlivade (Chapman et al. 1996,188), Pokrovnik (Reed et al. in prep) and Crno Vrilo (Marijanović 2009) (Fig. 1). At both Pokrovnik and Crno Vrilo, emmer and einkorn were identified. At Pokrovnik, grass pea, flax and fruits, such as dog rose (Rosa canina) and cornelian cherry (Cornus mas), were also recovered. The recovery of fruit remains, which would have grown wild in the local environment, attests to the continued practice of gathering wild foods alongside the cultivation of crops. Poor preservation at Tinj-Podlivade did not allow wheat (Triticum sp.) or barley (Hordeum sp.) to be identified to species.
During the middle Neolithic in Dalmatia the growing of einkorn, emmer, barley and pulses continue, but a number of additional crop species begin to appear in the archaeological record. At the middle Neolithic settlement of Pokrovnik broomcorn millet (Panicum miliaceum) first appears (Reed et al. in prep) and at middle Neolithic Danilo bread wheat (Triticum aestivum) has been recovered (Reed 2006; et al. in prep). A range of fruit remains were also recovered from these sites, showing continued exploitation of wild food sources.

LATE NEOLITHIC

Archaeobotanical remains are better represented at late Neolithic sites in mainland Croatia. Three tell sites, Sopot, excavated by Vinkovci Municipal Museum (Krznarić Škrivanko 2003a), and Ravnjaš-Nova Kapela and Slavća (Mihaljević 2007a, b), excavated by Nova Gradiska Municipal Museum, have yielded a large variety of crops and wild plants (Fig. 1). These include, barley (Fig. 2), einkorn, emmer, spelt (Triticum spelta), bread/durum wheat, 'new' glume wheat (cf. Jones et al. 2000; Kohler-Schneider 2003), broomcorn millet, foxtail millet (Setaria italica), bitter vetch,

2000; Kohler-Schneider 2003), običnom prosu, talijanskom muharu (*Setaria italica*), grahu poljaku, grahorici, leći, grašku i lanu (Reed 2012) (Tablica 1). Osim njih, utvrđeno je i više od 30 različitih vrsta voća i divljih trava, uključujući: drijen, pasju ružu, troskot (*Physalis alkekengi*), kupinu (*Rubus fruticosus*), bazgu (*Sambucus ebulus*), trave (npr. *Bromus* sp., *Phleum* sp.), male mahunarke (npr. *Trifolium* sp., *Medicago sativa*), troskote (npr. *Rumex* sp., *Polygonum* sp.) i koprive (*Urtica urens*).
Očuvanost biljnih ostataka na ovim telovima bila je nešto bolja nego na istovremenim naseljima s horizontalnom stratigrafijom, vjerojatno tako zbog toga što su telovi naseljavani duže i češće, što znači da se ondje stotinama godina mogla nakupljati veća količina otpada iz domaćinstava. Nadalje, vide se jasni obrasci i u vrsti ostataka koji su pronađeni na ovim nalazištima. Na primjer, velik postotak zrnja žitarica pronađen je unutar kuća i vatrišta, što bi moglo značiti da su se žitarice na tim mjestima pripremale za jelo (Reed 2012). Ostaci voća pronalaženi su u koncentracijama unutar slojeva poda, a ostaci pljeve (uglavnom ostaci ovojnica pšenice) pronalaženi su u strukturama poput jama i jaraka, kamo su dospjeli kao posljedica odlaganja otpada od obrade usjeva (*ibid.*).
Drugi ostaci biljaka iz kasnog neolitika kopnene Hrvatske pronađeni su na nalazištima Ivandvor-Gaj (Balen *et al.* 2009) i Tomašanci-Palača (Balen 2009), koje je istraživao Arheološki muzej u Zagrebu za potrebe izgradnje autoceste A5. Iako je očuvanost ostataka uglavnom bila slaba, s nalazišta Ivandvor-Gaj potječu ostaci jednozrne i dvozrne pšenice te leće, dok s nalazišta Tomašanci-Palača potječe jedan ostatak drijena (Reed 2012). Slični nalazi identificirani su i u hrvatskom priobalju gdje su na nalazištu hvarske kulture Čista Mala-Veliš̌tak, kojeg je istraživao Muzej grada Šibenika (Podrug 2010), također pronađeni ostaci jednozrne pšenice, dvozrne pšenice, ječma, leće i drijena (Reed 2012) (Tablica 1). Dakle, do kasnog neolitika poljoprivreda je bila potpuno razvijena i u središnjoj i priobalnoj Hrvatskoj, uz sve veći raspon uzgajanih žitarica i mahunarki koje su se u prehrani dopunjavale lokalnim divljim vrstama voća i trava.

Rekonstrukcija poljoprivrednih aktivnosti

RAZMJERI I INTENZITET UZGOJA

Razmjeri i intenzitet proizvodnje hrane ključan su aspekt u interpretaciji poljoprivrednih aktivnosti. Vrsta strategije koju je poljoprivrednik koristio ovisila je o nizu lokalnih okolnosti, kao što su dostupnost zemlje, rada i alata (tehnologije) te o društveno-klimatskim uvjetima (npr. populacijski pritisci i mogućnost trgovine). Nadalje, poljoprivrednik je morao razmišljati o tome koje će usjeve uzgajati ovisno o dostupnosti

grass pea, lentil, pea and flax (Reed 2012) (Table 1). In addition, over 30 different fruit and wild/weed species were also recovered, including: cornelian cherry, dog rose, chinese lantern (Physalis alkekengi), blackberry (Rubus fruticosus), danewort (Sambucus ebulus), grasses (e.g. Bromus sp., Phleum sp.), small legumes (e.g. Trifolium sp., Medicago sativa), knotweeds (e.g. Rumex sp., Polygonum sp.) and nettles (Urtica urens).
Preservation of the plant remains were slightly better at these tell sites than at contemporary flat horizontal settlements. This is likely due to tell sites having a higher concentration of occupation, which results in a greater build-up of domestic waste that can occur over hundreds of years. Moreover, clear patterning has been observed in the type of remains found at these sites. For example, a high percentage of cereal grains were identified within house and hearth features, possibly indicating areas for the preparation of cereals for human consumption (Reed 2012). Fruits remains were concentrated within house floor deposits andf eatures such as pits and ditches showed a high chaff content (mainly glume wheat glume bases), which may have resulted from the deposition of crop processing waste (ibid.).
Other evidence of plant remains dating to the late Neolithic in mainland Croatia have been identified from Ivandvor-Gaj (Balen et al. 2009) and Tomašanci-Palača (Balen 2009), which were excavated as part of the construction of the A5 motorway by the Archaeological Museum in Zagreb. Although preservation was generally poor, einkorn, emmer and lentil were recovered from Ivandvor-Gaj and one cornelian cherry stone from Tomašanci-Palača (Reed 2012). Similar finds have also been identified from coastal Croatia, where the late Hvar culture site of Čista Mala- Veliš̌tak, excavated by Šibenik Museum (Podrug 2010), has also yielded remains of einkorn, emmer, barley, lentils and cornelian cherry (Reed 2012) (Table 1). Thus, by the late Neolithic, crop husbandry was well established within central and coastal Croatia, with the growing of a wide range of cereals and pulses, supplemented by local wild fruits and plants.

Reconstructing Farming practices

SCALE AND INTENSITY OF CULTIVATION

The scale and intensity of food production is a key aspect in interpreting agricultural regimes. The type of strategy adopted by a farmer will depend on a number of local circumstances, such as the availability of land, labour and tools (technology), and the socio-economic climate (e.g. population pressures and the opportunity to trade). In addition, the farmer has to consider which crops to grow based on whether manure is available (e.g. considering pastoral regimes) and the local environment (e.g. temperature, topography and soil conditions). All these factors will dictate the types of regimes that could be employed. During

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

gnojiva (npr. uzevši u obzir stočarske aktivnosti) te lokalnoj klimi (npr. temperatura, topografija i karakteristike tla). Svi ovi faktori odredili su vrste provedenih aktivnosti. Za neolitik se predlažu četiri glavne metode uzgajanja usjeva: pomični uzgoj (npr. Schier 2009), ekstenzivni uzgoj uz pomoć pluga (npr. Halstead 1995), hortikultura naplavnih područja (npr. Sherratt 1980) i „vrtni“ uzgoj (npr. Bogaard 2004). Zadnje dvije metode zahtijevaju veći ulog rada po poljoprivrednom zemljištu, a hortikultura naplavnih područja zahtijeva sezonske poplave. Prve dvije metode zahtijevaju manji ulog rada, ali zahvaćaju veću površinu, a u slučaju uzgoja plugom, potrebni su plug i volovi.
Analiziranjem vrsta divljih trava koje su pronađene uz ostatke žitarica, moguće je odrediti vrstu uzgoja koja se koristila na nalazištu. Ta metoda uključuje poznavanje ekološkog ponašanja divljih vrsta trava koje imaju određene osobine koje, kada ih se sagledava kao cjelinu, mogu, primjerice, otkriti je li polje bilo gnojeno (na to ukazuju vrste koje bolje rastu u tlu bogatom dušikom) ili obraslo korovom (na to ukazuju vrste koje brzo rastu i remete tlo). Primjenjujući tu metodu, arheobotaničke analize s nalazišta u Grčkoj i središnjoj Europi govore u prilog tome da je uzgoj manjih razmjera („vrtni“ uzgoj) bio tipična poljoprivredna metoda u neolitiku (npr. Bogaard 2004; Van der Veen 2005; Jones 2005). Primjenjujući ovu vrstu uzgoja moguće je uzgojiti širok spektar biljaka, a može služiti i kao zaštita u slučaju propadanja sezonalnih usjeva.
Najraniji i jedini dokazi intenzivnog vrtnog uzgoja na arheobotaničkim ostacima u Karpatskoj kotlini potječu s ranoneolitičkog nalazišta Ecsegfalva 23 u Mađarskoj (Bogaard *et al.* 2007). Ti nalazi sugeriraju da su se na trajnim parcelama u blizini naselja intenzivno uzgajale biljke koje dozrijevaju u jesen (*ibid*: 441). Na kasnoneolitičkom naselju Opovo (sjeverna Srbija), na temelju arheobotaničkih nalaza zaključeno je da bi se moglo raditi o režimu rotacije usjeva s prekidima (Borojević 2006, 162) Iako je ova metoda manje intenzivna, prednost uzgoja s prekidima je u tome što se ista polja mogu koristiti i kao pašnjaci za stoku (Valamoti 2004, 130), koja zatim obogaćuju zemlju gnojem.
Uvođenje pluga kao alata u uzgoju biljaka u neolitiku predmet je mnogobrojnih rasprava. Chapman (1981, 92-4) pretpostavlja da se uzgoj uz pomoć pluga u jugoistočnoj Europi mogao pojaviti u kontekstu kasnoneolitičkih nalazišta vinčanske kulture, jer bi plug bio potreban za obradu plodne zemlje crnice na tom području. U novije vrijeme, analize provedene u središnjoj Europi ukazuju na to da se plug koristio u kasnom neolitiku, ali u malim razmjerima, i to uz intenzivne aktivnosti poput kopanja motikom i gnojenja (Bogaard 2011). Uvođenje pluga bi, stoga, omogućilo smanjenje uloženog

the Neolithic four main methods of crop cultivation are suggested; shifting cultivation (e.g. Schier 2009), extensive ard cultivation (e.g. Halstead 1995), floodplain horticulture (e.g. Sherratt 1980), and 'garden' cultivation (e.g. Bogaard 2004). The latter two methods require a greater input of labour per area cultivated and in the case of floodplain horticulture the availability of seasonally flooded ground. The former two methods, however, require less labour input per area, but do require greater areas of land and in the case of ard cultivation, the availability of an ard and oxen. Through the examination of weed species recovered with cereal remains, it is possible to determine the type of cultivation that may have been practiced at a site. The method involves understanding the ecological behaviour of weed species, which have particular environmental traits that when examined together can reveal, for example, whether a field was manured (indicated by species which prefer high nitrogen soils) or weeded (indicated by species which are fast growing and like disturbed ground). Using this method, the archaeobotanical analysis of sites in Greece and Central Europe suggest that small scale intensive cultivation ('garden' cultivation) was typical of Neolithic agricultural methods (e.g. Bogaard 2004; Van der Veen 2005; Jones 2005). This type of cultivation allows a wide range of crops to be grown, which can provide a buffer against seasonal crop failure.
The earliest and only evidence of intensive garden cultivation from archaeobotanical remains in the Carpathian Basin is from the early Neolithic site of Ecsegfalva 23 in Hungary (Bogaard et al. 2007). From this study, evidence suggests autumn sown crops were intensively cultivated in permanent plots close to the settlement (ibid: 441). At the late Neolithic settlement of Opovo (northern Serbia) it has also been suggested from the archaeobotanical remains that a regime of crop rotation and fallowing may have occurred (Borojević 2006:162). Although a less intensive method, one advantage of fallowing is that the fields can provide grazing for domestic livestock (Valamoti 2004,130), who would then fertilise the soil through their manure.
The introduction of ard cultivation in the Neolithic is highly debated. In Southeast Europe Chapman (1981,92-4) suggested that ard cultivation may have developed at some of the large late Neolithic Vinča sites, as an ard would have been needed to utilise the fertile chernozem soils in the region. More recently, work in Central Europe has suggested that ards may have been used during the late Neolithic, but only on a small scale, with the continuation of intensive practices such as hoeing and manuring (Bogaard 2011). The introduction of the ard would therefore have allowed a decrease in labour costs while preparing the soil for cultivation and may have allowed a slightly larger area to be cultivated, while maintaining intensive gardening methods and a diverse range of crops. Extensive ard cultivation, on the other hand, involves less labour input per area of land and is not evident

Bapska-Gradac, sačuvani ostaci žita iz kuće 2 (Foto: M. Burić)
Bapska-Gradac, preserved remains of grain from house 2 (Photo: M. Burić)

rada ujedno pripremajući tlo za uzgoj, te obradu nešto veće površine, uz što bi se intenzivni vrtni uzgoj zadržao, a uzgajao sve veći spektar usjeva. Ekstenzivni uzgoj uz pomoć pluga, pak, iziskuje puno manje rada po jedinici zemlje, i nije vidljiv na biljnim ostacima u jugoistočnoj Europi sve do brončanog doba (Reed 2012; Halstead 1995).
Na temelju dosad analiziranih biljnih ostataka iz Hrvatske teško je odrediti tip uzgoja koji se primjenjivao zbog malog broja divljih trava pronađenih uz žitarice. Trenutno je teško reći je li se plug koristio u kasnom neolitiku Hrvatske. Široki spektar biljaka uzgajanih na tim dugo naseljavanim mjestima sugerira manje intenzivan režim uzgoja koji se odvijao u blizini nalazišta.

PROLJETNA/ZIMSKA SJETVA
Osim određivanja tipa uzgoja koji se primjenjivao na nekom nalazištu, važno je odrediti i godišnje doba kada se odvijala sjetva jer to pokazuje u kojem dijelu godine su se izvodile određene faze uzgoja i obrade biljaka. Vrijeme sjetve neke biljke također ukazuje na produktivnost, jer biljke koje dozrijevaju u jesen imaju više vremena za rast pa usjev može biti bogatiji. Vrijeme dozrijevanja može ovisiti o lokalnoj klimi (npr. temperature i prisutnost vode po godišnjem dobu) ili o vrsti uzgajanog usjeva (npr. izdržljivi zimski usjevi). Hillman (1981, 147) pretpostavlja da se sjetva u neolitiku odvijala u jesen, osim u područjima sklonima hladnim ili oštrim zimama, te da se samo mali broj biljaka sijao u proljeće, smanjujući napore zimskog uzgoja.
Na ranoneolitičkom nalazištu Ecsegfalva 23 u Mađarskoj (Bogaard *et al.* 2007) utvrđena je samo jesenska sjetva. U kasnom neolitiku pojavljuju se tragovi i jesenske i proljetne sjetve, kao što pokazuju nalazi iz Opova. Na primjer, na temelju pojave ljetnih jednogodišnjih biljki uz ostatke žitarica, utvrđeno je da je jednozrna pšenica sijana u jesen, dok su ječam, dvozrna pšenica, leća i lan uzgajani ljeti (Borojević 2006, 162). Ipak, velik broj ljetnih jednogodišnjih biljki u kontekstu sa žitaricama može biti posljedica intenzivnih metoda uzgoja, jer divlje vrste mogu smanjiti broj zimskih i potaknuti rast ljetnih jednogodišnjih biljaka (Reed 2012, Chapter 7). Na hrvatskim nalazištima mali broj divljih vrsta

from the plant remains until the Bronze Age in Southeast Europe (Reed 2012; Halstead 1995).
From the plant remains so far identified from Croatia, it is difficult to determine the type of cultivation method adopted, due to the low number of weed species found with cereal remains. Whether ards were used during the late Neolithic in Croatia is difficult to determine at present, and few archaeological remains have been found to support its presence at this time. The wide range of crops cultivated at these long lived settlements, may suggest a more small scale intensive regime practiced close to the sites.

SPRING/WINTER SOWING
In addition to the type of cultivation practiced at a site, it is important to determine the season that crop would have been sown, as this will determine when certain cultivation and processing stages will occur during the year. The sowing time of a crop may also indicate productivity, as autumn sown crops have a longer growth period resulting potentially in higher yields. Sowing time can be reliant on the local environment (e.g. seasonal temperatures or water table) or on the type of crops being cultivated (e.g. winter hardy crops). In the Neolithic, Hillman (1981, 147) suggests that most crops were sown in autumn, except in areas prone to cold or harsh winters, and that only minor crops may have been spring sown, reducing the burden on winter cultivation.
At the early Neolithic site of Ecsegfalva 23 in Hungary (Bogaard et al. 2007), only autumn sowing was identified. By the Late Neolithic, Opovo shows evidence of both autumn and spring sowing. For example, einkorn was sown in the autumn, while barley, emmer, lentil and flax were grown in the summer (Borojević 2006, 162), based on the high occurrence of summer annuals within the cereal remains. However, high numbers of summer annuals associated with crops may be due to intensive cultivation methods, where weeding reduces the number of winter annuals and encourages summer annuals to grow (Reed 2012, Chapter 7). At the Croatian sites, the low quantity of weed remains restricts the interpretation of sowing times; however, it is likely that autumn sowing would have been prominent during the Neolithic.

Galovo, sječiva sa sjajem, kat.br. 97
Galovo, blades with sickle gloss, cat. no. 97

trava ograničava interpretaciju vremena sjetve. Međutim, vrlo je izgledno da se jesenska sjetva izrazito koristila u neolitiku.

OBRADA USJEVA
Vrijeme između žetve i sjetve novih usjeva može biti kratko, a poljoprivrednici se s tim pritiscima suočavaju na različite načine, primjerice, dovodeći novu radnu snagu kako bi osigurali da će žetva završiti na vrijeme. Bez obzira na to obrađuje li se usjev djelomično ili u potpunosti, skladištenje ovisi o vremenu dostupnom nakon žetve te o broju ljudi i vremenskim prilikama. Hillman (1981) je zaključio da zajednice u hladnim/vlažnim klimama češće skladište poluprocesuirane usjeve, dok one u toplijim područjima u potpunosti čiste usjeve prije skladištenja. Bilo da je usjev očišćen djelomično ili u potpunosti, to utječe na potrebe za radom tijekom godine, jer djelomično očišćeni usjevi iziskuju više obrade na dnevnoj bazi od potpuno očišćenog sjemena (Fuller, Grain 2009).
Kvantitativnim analizama sastava svakog arheobotaničkog uzorka (npr. omjer ovojnica:zrno), možemo rekonstruirati što su poljoprivrednici radili u naselju nakon žetve (Van der Veen, Jones 2006). Za ovu je metodu, ipak, potrebno da u uzorku bude više od 100 sjemenki (bilo usjeva ili trava). U Hrvatskoj je ova metoda ograničena zbog toga što je većina uzoraka premala (volumenom i brojem identificiranih ostataka). Na ranoneolitičkom nalazištu Tomašanci-Palača, u nekoliko je jama utvrđen velik broj pšenice s ovojnicom (>100), što je prvi dokaz otpada od obrade usjeva. Na kasnoneolitičkim telovima u Sopotu i Slavči također postoje dokazi otpada od obrade usjeva (i.e. ostaci ovojnice pšenice) u jarcima i jamama (Reed 2012, Chapter 4). Iako je metoda odlaganja u ovim strukturama upitna, jedna od mogućnosti je da su nusprodukti svakodnevne obrade usjeva bacani u vatru, gdje su karbonizirani, nakon čega su skupljani i bacani u otpadne jame ili jarke.

SKLADIŠTENJE
Skladištenje je jedan od načina zaštite od sezonske i/ili dugoročne varijabilnosti u dostupnosti hrane, a omogućava i cjelogodišnje nastanjivanje nalazišta (Halstead, O'Shea 1989). Položaj i veličina objekata za skladištenje hrane mogu

CROP PROCESSING
The time between harvesting and sowing a new crop can be short and farmers cope with these pressures in a number of different ways, for example, bringing in extra labour for the harvest to insure it is brought in on time. Whether the crop is semi-cleaned or fully processed before storage is then reliant on the time available after harvest, the number of people available and the weather. Hillman (1981) found that communities with cold/wet climates tended to store their crops semi-cleaned, while in hotter regions crops were fully processed before storage. Whether the crop is stored semi-cleaned or fully cleaned will also affect the labour requirements during the year as semi-cleaned crops have greater day to day processing demands than fully cleaned grain (Fuller and Stevens 2009).
Through quantitative analysis of the composition of each archaeobotanical sample (e.g. ratios of glume:grain), we can reconstruct what farmers did after harvest at a settlement (Van der Veen and Jones 2006). This method, however, requires a sample to contain over 100 seeds (of either crops or weeds). Within Croatia this method of analysis is restricted due the majority of samples being too small (in sample volume and number of identifications). At the early Neolithic site of Tomašanci-Palača, a high number of glume wheat glume bases (>100) were recovered from a couple of pit features showing for the first time evidence of crop processing by-products. By the late Neolithic, the tell settlements of Sopot and Slavća also show evidence of crop processing waste (i.e. remains of glume wheat glume bases) in ditch and pit features (Reed 2012, Chapter 4). Although the method of deposition within these features is debatable, one possibility could be that the by-products of daily crop processing within the house were thrown into the hearths, where they carbonised, and then were later swept up and deposited into rubbish pits or ditches.

STORAGE
Storage is one mechanism to buffer against seasonal and/or long-term variability in the food supply, allowing the year round occupation of a site (Halstead and O'Shea 1989). The location and size of storage facilities can reveal household behaviours e.g. domestic storage for domestic use, external storage for communal

Virovitica-Brekinja, žrvanj, kat.br. 305
Virovitica-Brekinja, grindstone, cat. no. 305

otkriti ponašanje unutar domaćinstva poput unutrašnjeg skladištenja za upotrebu u kućanstvu, vanjskog skladištenja za društvenu upotrebu ili pak višak dobara za razmjenu. Dakle, položaj prostora za skladištenje unutar ili izvan kuće, kao i zajednički prostori, povezani su s društvenom i ekonomskom organizacijom nalazišta kao cjeline (Halstead 1999).
U sklopu naselja neolitičke vinčanske kulture u mnogim su kućama pronađene velike, nepomične i nešto manje, pomične posude za skladištenje (Stevanović 1997). Na proučavanim nalazištima u Hrvatskoj, u samo malom broju kuća utvrđene su unutarnje jame za skladištenje, ali su, u dobro očuvanim ostacima kasnoneolitičke kuće 23 na Sopotu, pronađene velike posude (tip buda), koje su mogle biti korištene za čuvanje hrane (Krznarić Škrivanko 2003a). Na ovim su nalazištima pronađene i vanjske jame, a u mnogima od njih utvrđene su i male količine biljnih ostataka. Ti ostaci ne ukazuju nužno na skladištenje, jer su u posude mogli biti bačeni sa smećem. Ipak, čini se, da se na neolitičkim naseljima koristilo i unutarnje i vanjsko skladištenje kako bi se osigurao cjelogodišnji boravak u tim naseljima.

Zaključak

Hrvatska je iznimno važna regija jer se nalazi na razmeđu poljoprivrednih tradicija toplijeg Mediterana i hladnije kontinentalne Europe. Analiza biljnih ostataka iz Hrvatske već je značajno doprinijela našem razumijevanju neolitičkih društava. Arheobotanički ostaci iz ranog i srednjeg neolitika, iako trenutno malobrojni, pokazuju da su se usjevi, a osobito žitarice i mahunarke, uzgajale i u kontinentalnoj i u priobalnoj Hrvatskoj, te da su predstavljale važnu poljoprivrednu aktivnost. Pojava novih usjeva u srednjem i kasnog neolitiku ukazuje na to da su poljoprivrednici neprestano prilagođavali svoje ratarske djelatnosti novim lokalnim uvjetima nabavljajući nove vrste i tehnologije kroz mrežu razmjene.
Na temelju novih istraživanja u Hrvatskoj i jugoistočnoj Europi, moguće je zaključiti da su se tijekom neolitika primjenjivale različite razine intenzivnog uzgoja malih razmjera. Usjevi su se u ranom neolitiku vjerojatno sijali u jesen, ali uvođenjem novih vrsta u kasnom neolitiku možda se pojavila i proljetna sjetva za neke od manje prisutnih usjeva (npr. obični proso). Iako bi se obrada usjeva u to vrijeme odvijala na nalazištu, detaljno određivanje istih na temelju arheobotaničkih nalaza s hrvatskih nalazišta, zasad, nije moguće. Uz kontinuirano uzorkovanje biljnih ostataka na pretpovijesnim nalazištima u Hrvatskoj, ove teorije mogu biti ispitane, pružajući važne podatke o poljoprivredi i svakodnevici tog vremena.

use or excess goods for trade. Therefore, the location of storage inside or outside the house or choosing communal storage is also related to the social and economic organisation of the site as a whole (Halstead 1999).
Within Neolithic Vinča culture settlements, large immobile and slightly smaller mobile storage vessels have been recovered within many houses (Stevanović 1997). From the study sites in Croatia, few houses show evidence of internal storage pits; however, at late Neolithic Sopot the well preserved remains of house 23 revealed large vessels ("buda" type), that could have been used for crop storage (Krznarić Škrivanko 2003a). External pits have also been excavated from these sites and many contained low quantities of plant remains, although the remains do not necessarily indicate storage, as they may have been deposited as rubbish. Nevertheless, it is likely that both internal and external crop storage was practiced at the Neolithic sites to support the year round occupation of these sites.

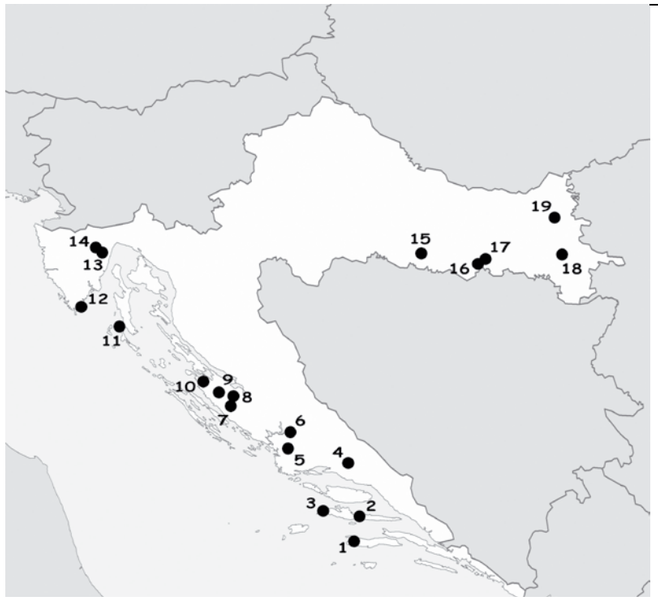
Conclusion

Croatia is a particularly important region as it signifies a transitional point between the hotter Mediterranean and cooler continental European farming traditions. The analysis of plant remains within Croatia has already added significantly to our understanding of Neolithic societies. The archaeobotanical remains from the early and middle Neolithic, although limited at present, show that crops, especially cereals and pulses, were grown in both mainland and coastal Croatia and would have been an important agricultural activity. The appearance of new crop species in the middle and late Neolithic suggests that farmers were continuously adapting their crop husbandry regimes in conjunction with local conditions and by acquiring new species and technologies through exchange networks.
From recent research within Central and Southeast Europe, it may be possible to suggest that varying degrees of intensive small scale cultivation occurred during the Neolithic. Crops were likely planted in the autumn during the early Neolithic, but with the introduction of new species by the late Neolithic spring sowing may have occurred for some of the minor crops (e.g. broomcorn millet). Although crop processing would have occurred at all settlements at this time, the details of these processes are currently limited from the Croatian archaeobotanical evidence. With continued recovery of plant remains at prehistoric settlements in Croatia these theories can be tested, providing important information about farming and daily life at this time.

SINIŠA RADOVIĆ

PREHRANA U NEOLITIKU HRVATSKE: ZNAČENJE LOVA I STOČARSTVA

DIET IN THE CROATIAN NEOLITHIC: THE IMPORTANCE OF HUNTING AND HERDING



Sl. 1, *Fig. 1* – Neolitička nalazišta koja se spominju u tekstu. / *Neolithic sites that are referred to in the text.* 1. Vela spila (Korčula), 2. Grapčeva špilja (Hvar), 3. Markova spilja (Hvar), 4. Zemunica, 5. Danilo-Bitinj, 6. Pokrovnik, 7. Tinj-Podlivade, 8. Smilčić, 9. Crno vrilo, 10. Nin, 11. Vela spilja/jama (Lošinj), 12. Kargadur, 13. Vela peć, 14. Pupićina peć, 15. Slavča, 16. Galovo, 17. Zadubravlje, 18. Sopot, 19. Hermanov vinograd.

Jedno od osnovnih obilježja mlađeg kamenog doba ili neolitika proizvodnja je hrane uslijed čega dolazi do napuštanja tradicionalnog lovno-sakupljačkog načina života. Kao dio nove strategije opstanka stočarstvo je uz zemljoradnju sastavni dio neolitičke ekonomije, a prehrambene navike, u vidu pripreme i konzumiranja hrane, mogu odražavati sociološke odnose i kulturni identitet društva. O tome možda najbolje govori činjenica da je termin *zemljoradnici i stočari* s vremenom postao i kronološki termin (Plucienik 2008, 16). Početkom neolitika na prostoru Bliskog istoka i Male Azije udomaćene su četiri vrste ekonomski iskoristivih životinja: ovca (*Ovis aries*), koza (*Capra hircus*), govedo (*Bos taurus*) i svinja (*Sus domesticus*), što je obilježilo pojavu stočarstva iako se tradicija lova zadržala i dalje (Bökönyi 1974). Udio jednog ili drugog oblika pribavljanja hrane ovisio je o okolnostima koje nam nisu nužno poznate pa u skladu s time prijelaz s lova na stočarstvo nije jednostavno definirati. U ovom su poglavlju razmotreni poznati podaci o prehrambenim navikama neolitičkih ljudi na prostoru današnje Hrvatske, s ciljem rekonstrukcije prehrambene ekonomije tadašnjeg društva (Sl. 1).

Arheozoološka istraživanja u Hrvatskoj

Iako prehrambeni otpad (kosti, zubi i drugi čvrsti dijelovi životinja) često predstavlja količinski zamjetnu skupinu nalaza na arheološkim nalazištima (Davis 1987; O'Connor 2000; Reitz, Wing 1999), analize animalnih ostataka u Hrvatskoj, nažalost, još uvijek nisu standard. Više je razloga uvjetovalo takvo stanje među kojima treba izdvojiti dugogodišnju tradiciju arheoloških istraživanja u kojoj je težište bilo na ostacima materijalne kulture (npr. keramičko posuđe), dok je prehrambenom otpadu pridavana slaba ili nikakva pažnja. Drugi problem je u malom broju domaćih stručnjaka specijaliziranih za analizu zoološkog materijala što ograničava broj analiza. I na kraju treba spomenuti i raznoliku znanstvenu podlogu samih stručnjaka

One of the main features of the Early Stone Age, or Neolithic, was food production, which resulted in the abandonment of the traditional lifestyle characterized by hunting and gathering. Together with tilling, herding was an integral part of the Neolithic economy and of a new strategy of survival. Dietary habits, in terms of food preparation and consumption, can reflect the sociological relations and cultural identity of a society. The best testimony to this is the fact that the phrase farmers (tillers and herders) in time also became a chronological term (Plucienik 2008, 16). In the early Neolithic, four kinds of animals suitable for economic exploitation were domesticated in the Near East and Asia Minor: sheep (Ovis aries), goat (Capra hircus), cattle (Bos taurus) and pig (Sus domesticus), marking the beginning of animal herding, although the tradition of hunting continued (Bökönyi 1974). The share of one or the other method of food provisioning depended on circumstances which are not necessarily known to us, and thus the transition from hunting to herding escapes a simple definition. This chapter discusses known data on the dietary habits of Neolithic people in the territory of present-day Croatia, with a view to reconstructing the dietary economy of its Neolithic society (Fig. 1).

Zooarchaeological research in Croatia

Although food waste (bones, teeth and other hard parts of animals) often makes up a significant quantity of finds at archaeological sites (Davis 1987; O'Connor 2000; Reitz, Wing 1999), unfortunately, analysis of animal remains is still not standard practice in Croatia. Such a situation has arisen for several reasons, among which is the long tradition of archaeological research in which emphasis has been put on remains of material culture (e.g. pottery), with very little or no attention paid to food waste. Another problem is the small number of Croatian experts specializing in the analysis of zoological material, which limits the number of possible analyses.

Čepin-Ovčara/Tursko groblje, cjediljka, kat.br. 66
Čepin-Ovčara/Tursko groblje, Colander, cat. no. 66

koji dolaze iz različitih polja znanosti: paleontologije, veterinarske medicine i arheologije uslijed čega ciljevi i metode istraživanja nisu nužno usklađeni.
Iako se u literaturi mogu naći šturi podaci o faunskim nalazima unutar arheološkog konteksta (npr. Dimitrijević 1969b) prve arheozoološke analize neolitičkog materijala u Hrvatskoj započele su 80-ih godina prošlog stoljeća (npr. Schwartz 1988). Međutim, do većeg interesa i intenziteta analiza došlo je tek dvadesetak godina kasnije (npr. Miracle, Pugsley 2006). Slijedi kraći pregled rezultata analiza faune s neolitičkih nalazišta u Hrvatskoj.

RANI I SREDNJI NEOLITIK
U kontinentalnoj Hrvatskoj ranoneolitička fauna s lokaliteta Galovo kod Slavonskog Broda jedina je detaljno istražena i objavljena (Trbojević Vukičević, Babić 1999; 2007). Stanovnici ovog starčevačkog naselja bavili su se stočarstvom. Uzgajali su stada goveda i malih domaćih preživača (ovce i koze), a u manjoj mjeri jeli su i svinjsko meso. Lov je bio važan dio ekonomije, a jelen (*Cervus elaphus*) najčešća lovna divljač te u nešto manjoj mjeri srna (*Capreolus capreolus*). Naseljem su se kretali i psi (*Canis familiaris*) koji su se između ostalog hranili odbačenim otpadcima, o čemu svjedoči manji broj ulomaka kostiju drugih životinja s tragovima grizenja (Trbojević Vukičević 1999, 69). Na lokalitetu Zadubravlje kod Slavonskog Broda evidentirani su ostaci ovaca, koza, goveda, svinja, jelena, zeca, psa i kune ali nisu navedeni rezultati detaljnijih analiza (Minichreiter 1992c, 35). Unutar oba naselja sakupljeno je svega nekoliko kostiju riba.
S područja primorske Hrvatske objavljeno je više arheozooloških analiza materijala s ranoneolitičkih nalazišta pa je najraniju pojavu stočarstva i njegovo širenje iz smjera jugoistoka prema sjeverozapadu moguće pratiti kroz analizirane skupove nalaza.

And, finally, we should also mention the diverse scientific backgrounds of such experts, who come from various scientific fields (palaeontology, veterinary medicine and archaeology), because of which their aims and research methods are not necessarily in harmony.
Although some spare information on faunal remains found within archaeological contexts can be found in the literature (e.g. Dimitrijević 1969b), the first zooarchaeological analyses of Neolithic material in Croatia were made in the 1980s (e.g. Schwartz 1988). However, it was not until twenty years later that such analyses incited greater interest and were intensified (e.g. Miracle, Pugsley 2006). Here below is a short overview of results of analyses of fauna originating from Neolithic sites in Croatia.

EARLY AND MIDDLE NEOLITHIC
In continental Croatia, the early Neolithic fauna from the site of Galovo near Slavonski Brod is the only such find that has been explored in detail and published (Trbojević Vukičević, Babić 1999; 2007). Inhabitants of this Starčevo Culture settlement herded animals. They reared herds of cattle and small domesticated ruminants (sheep and goats), and they also ate pork, though in smaller quantities. Hunting was an important element of their economy, and red deer (Cervus elaphus) was the game hunted most, followed by roe deer (Capreolus capreolus). In the settlement, there were also dogs (Canis familiaris), which ate discarded waste, among other things, as evidenced by a small number of bone fragments of other animals bearing teeth marks (Trbojević Vukičević 1999, 69). At the site of Zadubravlje near Slavonski Brod, remains of sheep, goats, cattle, pigs, deer, hares, dogs and martens were recorded, but the results of any further analyses have not been cited (Minichreiter 1992c, 35). At both sites, only a few fish bones have been collected.

In the territory of coastal Croatia, several zooarchaeological analyses have been made of material originating from early Neolithic sites, allowing for the emergence of animal herding and its spread from the south-east towards the north-west to be traced using the analysed groups of finds.

During the initial phase of the Early Neolithic, in Vela Spila cave on the island of Korčula, people kept small flocks of sheep and an occasional pig. They hunted small and medium-sized beasts (especially fox), while the hunting of large game (deer) was negligible. They also engaged in some fishing (Rainsford 2010), but in the developed phase of the Early Neolithic, fishing, as well as fox hunting, had already lost its importance, and food production boiled down almost exclusively to sheep rearing (Kužir et al. 2005; Miracle, Radović in preparation). In Markova Spilja on the neighbouring island of Hvar, people reared mixed

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Tijekom inicijalne faze ranog neolitika u Veloj spili na otoku Korčuli ljudi su držali manja stada ovaca i pokoju svinju. Lovili su male i srednje zvijeri (osobito lisice), dok je lov na krupnu divljač (jelen) bio zanemariv. U manjoj su se mjeri bavili i ribolovom (Rainsford 2010), ali se već u razvijenoj fazi ranog neolitika njegovo značenje gubi zajedno s lovom na lisice, dok je prehrambena ekonomija svedena na gotovo isključiv uzgoj stada ovaca (Kužir *et al.* 2005; Miracle, Radović, u pripremi). U Markovoj spilji na susjednom otoku Hvaru ljudi su uzgajali mješovita stada ovaca i koza, sakupljali morske puževe i školjke te povremeno lovili jelene, srne i zečeve (Malez-Bačić 1980, 164). Stočarstvo je bilo dominantno i u zaleđu srednje Dalmacije, gdje su u špilji Zemunici kraj Sinja držana stada ovaca i u znatno manjoj mjeri goveda i svinje, dok je jelen bio uobičajena lovna divljač (Šošić Klindžić *et al.* u pripremi).

Dalje sjeverozapadno u sjevernoj Dalmaciji na širem prostoru u zaleđu Zadra i Šibenika formirana su naselja na otvorenom. Arheozoološke analize materijala iz Nina (Schwartz 1988), Smilčića (Schwartz 1988), Crnog vrila (Radović 2009), Tinj-Podlivade (Schwartz 1996) i Pokrovnika (Moore *et al.* 2007b; Legge, Moore 2011) ukazuju na vrlo ujednačen sastav faune s ovih nalazišta, koji je tipičan za neolitička naselja jugoistočne Europe. Zajedničko im je intenzivno stočarstvo temeljeno gotovo isključivo na uzgoju velikih stada ovaca i koza, manjeg broja goveda i svega nekoliko svinja. Lov je sporadičan, a lovna divljač je zastupljena s malobrojnim ostacima jelena, srne i zeca. Ranoneolitički stanovnici ovih naselja lovili su i ptice, najviše guske i patke (*Anatidae*), a u manjoj mjeri i droplje (*Otididae*), ždralove (*Gruidae*), čaplje (*Ardeidae*), tetrijebe (*Tetraonidae*), kokoši (*Phasianidae*) i dr. (Malez 2009). Ovakva prehrambena ekonomija karakteristična je za mediteranski prostor i razlikuje se od stočarskih strategija u kontinentalnom dijelu. U zajednici s ljudima živjeli su i psi čiji su malobrojni ostaci otkriveni unutar većine ovih naselja. Iako su, prije svega, vjerojatno bili čuvari naselja i stada, postoje dokazi da su neolitički ljudi povremeno konzumirali i pasje meso (Radović 2009, 58). Sporadični nalazi lisica u Smilčiću, Crnom vrilu i Pokrovniku svjedoče o njihovim povremenim posjetima naseljima u potrazi za otpadcima i manjim, lako dostupnim plijenom. Riba je imala neznatnu ulogu u svakodnevnoj prehrani, dok su u manjoj mjeri konzumirane i morske školjke i puževi (Vujčić-Karlo 2009); najviše ogrci (*Osilinus*), dagnje (*Mytilus*) i kamenice (*Ostrea*).

Na kvarnerskim otocima pretežno su držana stada ovaca i koza, dok je lov bio od manje važnosti. U Veloj spilji/jami na otoku Lošinju evidentirano je i stanovito konzumiranje morskih mekušaca (Pilaar Birch u pripremi). Sličnu situaciju pratimo i u susjednoj južnoj Istri, gdje su u obalnom naselju

flocks of sheep and goats, gathered sea snails and shellfish, and occasionally hunted red deer, roe deer and hares (Malez-Bačić 1980, 164). Herding was the dominant activity in the hinterlands of central Dalmatia, too. There, flocks of sheep were held in the Zemunica cave near Sinj, and, to a much smaller extent, cattle and pigs were also kept, while red deer was the usual hunted game (Šošić Klindžić et al. in preparation).

Further to the north-west, in northern Dalmatia, in the wider hinterlands of Zadar and Šibenik, settlements developed in the open. Zooarchaeological analysis of material discovered in Nin (Schwartz 1988), Smilčić (Schwartz 1988), Crni Vir (Radović 2009), Tinj-Podlivade (Schwartz 1996) and Pokrovnik (Moore et al. 2007b; Legge, Moore 2011) suggests a very uniform composition of fauna, typical of the Neolithic settlements of south-eastern Europe. What is common to all of them is intensive herding, based almost exclusively on rearing large flocks of sheep and goats, a smaller number of cows, and just a few pigs. Hunting was a sporadic activity, and game animals are represented by several remains of red deer, roe deer and hare. The Early Neolithic population of these settlements also hunted birds, mostly geese and ducks (Anatidae), and to a smaller extent also bustards (Otididae), cranes (Gruidae), herons (Ardeidae), grouse (Tetraonidae), hens (Phasianidae) etc. (Malez 2009). Such dietary economy is characteristic of the Mediterranean and differs from herding strategies of the continental regions. Dogs also lived in human communities, and their remains have been discovered within most settlements of the period. Although their primary function was probably to guard settlements and flocks, there is also evidence that the Neolithic people occasionally consumed dog meat (Radović 2009, 58). Random finds of fox remains in Smilčić, Crni Vir and Pokrovnik demonstrate that these animals visited human settlements from time to time, searching for discarded waste and easily accessible prey. Fish played an insignificant role in everyday diet, while small quantities of shellfish and snails were also consumed (Vujčić-Karlo 2009), mostly topshells (Osilinus), mussels (Mytilus) and oysters (Ostrea).

On islands in the Kvarner Bay, the Neolithic communities kept flocks mostly of sheep and goats, while hunting played a less important role. In the cave of Vela Spilja or Jama on the island of Lošinj, some consumption of sea molluscs has been recorded (Pilaar Birch, in preparation). A similar situation can be observed in neighbouring Istria, where, in a coastal settlement at the location of Kargadur near Ližnjan, in addition to mixed flocks of sheep and goats (Radović 2011), people kept a small number of pigs and an occasional cow. They also fished and gathered sea molluscs (Komšo 2006, 214), while hunting was just a sporadic activity. The discovery of a small number of bitten and digested

na položaju Kargadur kod Ližnjana, uz mješovita stada ovaca i koza (Radović 2011) ljudi držali manji broj svinja te iznimno i govedo. Također su se bavili ribolovom i sakupljanjem morskih mekušaca (Komšo 2006, 214), dok je lov bio sporadičan. Nalaz manjeg broja izgrizenih i probavljenih kostiju posredno svjedoči o prisutnosti pasa unutar naselja (Radović 2011, 118).

Razdoblje srednjeg neolitika u Hrvatskoj znatno je slabije arheozoološki istraženo. U nedostatku objavljenih analiza materijala iz kontinentalnog dijela jedini su nam izvor malobrojni opći podaci o animalnim ostacima s pojedinih nalazišta. Tako se primjerice navodi da su na nalazištu Filipovica/Hermanov vinograd kod Osijeka sakupljene "kosti velikih biljojeda, ponajprije goveda i jelena" zajedno uz "riblje kosti i ljušture riječnih školjaka" (Šimić 2008b, 19). Općenito se može pretpostaviti da i dalje dominira stočarstvo u kojem prevladavaju stada domaćih goveda i malih preživača.

Istovremeno je u primorskoj Hrvatskoj u potpunosti raširen uzgoj ovaca i koza, dok je lov općenito sporedna komponenta prehrambene ekonomije. U Veloj spili na otoku Korčuli gotovo u potpunosti prestaje lov na male zvijeri. Na prostoru sjeverne Dalmacije u naseljima na otvorenom poput onoga u Danilo-Bitinju bitnih promjena u stočarskim strategijama u odnosu na prethodno razdoblje nema, iako je zabilježen mali porast u broju goveda (Moore *et al.* 2007a). Jedu se morske školjke, ali vjerojatno više kao povremena delicija, dok im je sam udio u svakodnevnoj prehrani neznatan (Legge, Moore 2011, 184).

Početkom srednjeg neolitika stočarstvo se u potpunosti raširilo na prostoru cijele Istre, a špilje na Učki i Ćićariji su uglavnom korištene kao torovi u kojima su držana manja mješovita stada ovaca i koza te rjeđe i pokoje govedo i svinja (Miracle, Pugsley 2006; Radović *et al.* 2008).

KASNI NEOLITIK

Jedina detaljna analiza ostataka faune iz razdoblja kasnog neolitika u kontinentalnom dijelu Hrvatske objavljena je s višeslojnog prapovijesnog nalazišta Slavča kod Nove Gradiške (Miculinić, Mihaljević 2003). U sastavu faune prevladavaju domaće životinje među kojima je najviše ostataka malih preživača (ovca, koza) uz nešto manje domaćih goveda i svinja. Lov je rjeđi, a najčešća lovna divljač je jelen i u nešto manjoj mjeri zec. Arheozoološki analiziran je i kasnoneolitički materijal s nalazišta Sopot kod Vinkovaca, ali su objavljeni samo šturi podaci. Dominiraju domaće životinje među kojima su najbrojnije svinje te domaća goveda i mali preživači. Od divljih vrsta su evidentirane srna, zec, lisica i medvjed (Krznarić Škrivanko, Reed 2006, 3; Krznarić Škrivanko 2008, 67).

bones indicates that dogs were also present within the settlement (Radović 2011, 118).

The Middle Neolithic period of Croatia has been researched much less. In view of the lack of published analysis of zooarchaeological material from continental Croatia, the only source is scarce general data on animal remains found at individual sites. For example, it has been recorded that, at the site of Filipovica/Herman's Vineyard near Osijek, "bones of large herbivores, primarily cattle and deer" were recovered together with "fish bones and shells of river shellfish" (Šimić 2008b, 19). Generally speaking, we can assume that herding was still the dominant activity, involving mostly herds of domestic cattle and small ruminants.

During the same period, sheep and goat rearing was widespread in coastal Croatia, while hunting was generally a minor element of the dietary economy. In Vela Spila cave on the island of Korčula, small-game hunting had nearly disappeared. In northern Dalmatia, in settlements in the open, such as that in Danilo-Bitinj, there were no major changes in the herding strategy in comparison to the previous period, although the number of bovine animals slightly increased (Moore et al. 2007a). Sea shells that were consumed probably served as an occasional delicacy, while their contribution to the daily diet was insignificant (Legge, Moore 2011, 184).

At the beginning of the Middle Neolithic, herding spread throughout Istria, and caves on mounts Učka and Ćićarija were largely used as pens in which small mixed flocks of sheep and goats were kept, with an occasional cow or pig (Miracle, Pugsley 2006; Radović et al. 2008).

LATE NEOLITHIC

The only published detailed analysis of Late Neolithic faunal remains discovered in continental Croatia regards the multi-layered prehistoric site of Slavča near Nova Gradiška (Miculinić, Mihaljević 2003). The faunal remains consist predominantly of domestic animals, primarily small ruminants (sheep, goat), with somewhat fewer finds of domestic cattle and pigs. Hunting was sporadic, and the game most hunted was red deer, and, to a smaller degree, hare. The Late Neolithic finds from the site of Sopot near Vinkovci were also the subject of a zooarchaeological analysis, but the published data are very scarce. The predominant finds are domestic animals, with the most numerous remains being of pigs, followed by domestic cattle and small ruminants. The game species recorded at the site include roe deer, hare, fox and bear (Krznarić Škrivanko, Reed 2006, 3; Krznarić Škrivanko 2008, 67).

Krajem neolitika u Veloj spili na Korčuli nastavljen je uzgoj ovaca i koza, ali su domaća goveda i svinje nešto češća u odnosu na ranija razdoblja (Radović *et al.* 2013). U kasnom neolitiku počinje i intenzivnije korištenje Grapčeve špilje na Hvaru. Iako je sigurno da se ova špilja početkom kasnog neolitika koristila kao kultno mjesto gdje su ceremonijalno odlagani životinjski i ljudski ostaci pa zastupljene životinjske vrste i njihovi dijelovi tijela ne odražavaju strategiju gospodarenja stadima, sastav faune je općenito sličan drugim istovremenima. Tako prevladavaju ovce i koze, uz nešto manje goveda i svinja, a od lovne divljači zastupljene su srne i zečevi (Frame 2008). Nažalost ne postoje objavljene studije kasnoneolitičke faune iz sjeverne Dalmacije, ali se može pretpostaviti da i dalje dominira stočarstvo uz zanemarivu ulogu lova.

U unutrašnjosti Istre situacija je drugačija. U Pupićinoj peći i u Veloj peći na Učki i dalje dominiraju ovce i koze, ali raste učestalost goveda i svinje. S obzirom na problematičnost razdvajanja ostataka domaćih od divljih svinja taj porast u njihovom broju može odražavati ili promjene stočarskih ili promjene lovnih strategija (Radović *et al.* 2008, 39). Izražen je i porast u učestalosti i broju divljih vrsta (Miracle, Pugsley 2006; Radović *et al.* 2008, 39) pa su tako, uz nešto češći lov na uobičajenu divljač (jelen, srna, divlja svinja, zec), povremeno lovljene i zvijeri (kuna, jazavac, smeđi medvjed).

Stočarstvo

Sastavni dio neolitičkog paketa su pojava i uzgoj domaćih životinja, odnosno stočarstvo. Najstariji dokazi domestikacije ekonomski iskoristivih životinja otkriveni su na prostoru jugoistočne Anatolije, a apsolutno datiranje smješta početak tih promjena u razdoblje od oko 10500 god. prije sadašnjosti (Vigne 2008, 181).

OVCA I KOZA

U Europi nisu fosilno dokazani divlji prethodnici današnjih domaćih ovaca i koza, a najstariji nalazi na europskom kontinentu pronađeni su na prostoru današnje Grčke i datiraju u rani neolitik, što pokazuje kako nije bilo lokalne domestikacije već su ove dvije vrste uzgojem i migracijama importirane iz prostora Azije. To potvrđuju i rezultati genetičkih istraživanja (npr. Meadows *et al.* 2005).

Držanje stada ovaca i koza sastavni je dio tradicionalnog načina privređivanja na mediteranskom prostoru, a u nešto manjoj mjeri i u unutrašnjosti. Iako se radi o dva različita roda (*Ovis* i *Capra*), životinje su često grupirane u mješovita stada. Oba roda su biljojedi, no način prehrane im je različit. Dok ovce pasu, koze su znatno mobilnije i brste što ih čini kompatibilnim

At the end of the Neolithic, in Vela Spila on the island of Korčula, sheep and goat rearing continued, but domestic cattle and pigs were present more than in earlier periods (Radović et al. 2013). In the Late Neolithic, the Grapčeva Špilja cave on the island of Hvar was also used more intensively. Although there is no doubt that, at the beginning of the Late Neolithic, this cave was used for cult purposes, and that both animal and human remains were laid there ceremoniously – and thus the discovered animal species and various parts of their bodies do not reflect the herding strategy – the composition of faunal remains is generally similar to those discovered at other contemporary sites. The prevailing finds are those of sheep and goat remains, with fewer cattle and pig remains, while game animals are represented by roe deer and hares (Frame 2008). Unfortunately, no study of Late Neolithic fauna in Northern Dalmatia has been published, but the assumption can be made that herding continued to be the predominant activity, and that the role of hunting was negligible. In inland Istria the situation was different. In Pupićina Peć and Vela Peć caves on the Učka mountain, sheep and goats were still the prevailing species, but cattle and pigs were becoming more frequent. Bearing in mind the problematic issue of distinguishing between the remains of domestic pigs and wild boars, the increase in the number of such finds can reflect a change in herding or hunting strategy (Radović et al. 2008, 39). Furthermore, an increase in the number and frequency of wild species can also be observed (Miracle, Pugsley 2006; Radović et al. 2008, 39), with more frequent hunting of the usual game (red deer, roe deer, boar, hare), and occasional hunting of wild beasts (marten, badger, brown bear).

Herding

Part and parcel of the Neolithic period was the emergence and rearing of domestic animals, that is, animal herding. The oldest evidence of domestication of economically exploitable animals has been discovered in south-eastern Anatolia, and the absolute dating specifies that the beginning of those changes took place around 10,500 BP (Vigne 2008, 181).

SHEEP AND GOAT

In Europe, no fossil evidence of any wild ancestors of today's domestic sheep and goat has been found, and their oldest remains on the European continent have been discovered in the territory of present-day Greece. Those have been dated to the Early Neolithic, suggesting that domestication was not a local process, but that these two species were imported from Asia through rearing and migration. Such a hypothesis is corroborated by the results of genetic testing (e.g. Meadows et al. 2005).

i olakšava njihov zajednički uzgoj. Za prostor kontinentalne Hrvatske, nažalost, nam nisu poznati podaci o zastupljenosti ovaca u odnosu na koze, ali rezultati provedenih analiza u primorskoj Hrvatskoj ukazuju da su se prva dotjerana stada sastojala isključivo od ovaca. Koze su se počele pojavljivati u znatno manjem broju tek u razvijenoj fazi ranog neolitika i to prvo u sjevernoj Dalmaciji i južnoj Istri. U srednjem neolitiku i kasnije proširio se uzgoj mješovitih stada sa i dalje malobrojnim kozama.

DOMAĆE GOVEDO

Divlje govedo ili pragovedo (*Bos primigenius*) bilo je prisutno na prostorima Euroazije sve do 17. st., kada su izlovljeni posljednji primjerci na prostoru današnje Poljske (Bökönyi 1974) i jedini je predak svih današnjih europskih domaćih goveda (*Bos taurus*). Unatoč rasprostranjenosti divlje forme, novija istraživanja mitohondrijske DNK ne podržavaju hipoteze o lokalnoj europskoj domestikaciji te ukazuju na bliskoistočno izvorište europskog domaćeg goveda (Edwards *et al.* 2007), iako nije isključena mogućnost lokalnog miješanja dviju vrsti jer su u neolitiku i kasnije obje vrste istovremeno živjele na prostoru Europe. Tijekom procesa domestikacije došlo je do značajne redukcije u veličini goveda, stoga su upravo metrijske vrijednosti kostiju i zuba najčešće korišteni kriterij pri razlučivanju divljih od domaćih formi neolitičkih goveda, iako zbog jako izraženog seksualnog dimorfizma dolazi do preklapanja u veličini između domaćih bikova i divljih krava. U neolitiku kontinentalne i primorske Hrvatske evidentirana su samo domaća goveda, iako su zabilježeni i pojedinačni veći primjerci.

Goveda su općenito bila znatno zastupljenija u neolitičkim naseljima kontinentalne Hrvatske (npr. Trbojević Vukičević, Babić 2007) dok su u Dalmaciji i Istri rjeđa, ali im ne treba podcijeniti ekonomsko značenje jer samom svojom veličinom osiguravaju znatno veću količinu mesa od malih preživača.

DOMAĆA SVINJA

Problematika razlikovanja divlje od domaće forme slična je onoj kod goveda. Osim malih morfoloških razlika na kostima glave, jedina značajnija razlika je u veličini i građi životinja što se iskazuje kroz metrijske vrijednosti kostiju i zuba. Specifičnosti u uzgoju svinja često rezultiraju izraženim varijacijama između jedinki, i u veličini i u morfologiji, što dodatno otežava specifičku determinaciju. Općenito se smatra da su u neolitiku većinom držane domaće svinje (*Sus domesticus*).

Izrazito mali broj ostataka svinje na neolitičkim nalazištima ukazuje na njenu neznatnu ekonomsku vrijednost i samo svjedoči o sporadičnoj konzumaciji svinjetine.

Keeping herds of sheep and goats is an integral part of the traditional economy in the Mediterranean, and, to a somewhat smaller extent, also in the interior of the continent. Although these animals belong to two genera (Ovis and Capra), they are often kept in mixed flocks. Both of them are herbivorous, but their feeding methods are different. While sheep graze, goats are much more mobile, and they browse; thus the two genera are compatible and their joint rearing is facilitated. Unfortunately, there is no data on the proportion of sheep and goats that were kept in continental Croatia, but the results of analyses made in coastal Croatia indicate that the first flocks driven to this region consisted only of sheep. Goats emerged in much smaller number and only in the developed phase of the Early Neolithic, at first in northern Dalmatia and southern Istria. During the Middle Neolithic and thereafter, rearing of mixed herds spread, but the number of goats remained small.

DOMESTIC CATTLE

Wild cattle or aurochs (Bos primigenius) were present in the territory of Eurasia until the 17th century, when the last specimens were hunted down in what is today Poland (Bökönyi 1974). This was the only ancestor of all today's European domestic cattle (Bos taurus). In spite of the wide distribution of its wild kind, recent research on the mitochondrial DNA does not support the hypothesis of local European domestication, and suggests that the European domestic cattle originates from the Middle East (Edwards et al. 2007); still, the possibility that the two species mixed cannot be ruled out, because in the Neolithic and in subsequent periods they both lived at the same time within the territory of Europe. During the domestication process, the size of cattle was significantly reduced, and for this reason the bone and teeth measurements are the criterion most frequently applied when distinguishing between wild and domestic kinds of Neolithic cattle. Still, due to a strong sexual dimorphism, the size of domestic bulls and wild cows tends to coincide. In continental and coastal Croatia, in the Neolithic, only domestic cattle have been registered, although some of the animals were large.

Generally, cattle were present much more in the Neolithic settlements of continental Croatia (e.g. Trbojević Vukičević, Babić 2007), while in Dalmatia and Istria they were rarer. Nonetheless, their economic importance should not be underestimated, because with their sheer size they provided a much larger quantity of meat than any small ruminants.

DOMESTIC PIG

The problems concerning differentiation between the wild boar and domestic pig are similar to those with cattle. On top of some small morphological differences in their head bones, the only significant difference is the size and build of the animals, expressed in bone and teeth measurements. The specific features of pig rearing often result in great variations between individual animals in terms of their size and morphology, further aggravating their identification. It is generally accepted that most pigs kept in the Neolithic were domestic pigs (Sus domesticus).

The exceptionally small number of pig remains discovered at Neolithic sites indicates that pigs had little economic value and that pork was consumed only sporadically.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

MODELI ISKORIŠTAVANJA STADA

Većina domaćih životinja može se različito iskorištavati. U prehrani je uz meso vrlo bitno i mlijeko, koje je regenerativno pa je životinju moguće višekratno musti tijekom njenog života. S ekonomskog aspekta brojne su prednosti u iskorištavanju mlijeka i mliječnih prerađevina u odnosu na meso. Mužnjom se dobiva veća količina proteina. Mlijeko sadrži masti, kalcij, šećer i vitamin D, a moguće ga je i preraditi raznim postupcima fermentacije u proizvode poput jogurta, kiselog mlijeka, maslaca i sira, koje je moguće pohraniti kao zalihu hrane, ali i transportirati (Davis 1987, 155). Međutim, neki ljudi nisu sposobni probaviti mlijeko, odnosno mliječni šećer (laktoza), što je za razdoblje neolitika potvrđeno genetičkim analizama određenih populacija u Europi koje su pokazale visok stupanj netolerancije prema laktozi (Burger *et al.* 2007). Kako se prilikom fermentacije mlijeka, mliječni šećer (laktoza) mijenja u mliječnu kiselinu, proizvod postaje lako probavljiv za ljude osjetljive na laktozu (McCracken 1971, 480), čime su otklonjene sumnje u mogućnost mužnje u neolitiku.

Gospodarenje radi mužnje i korištenje mliječnih proizvoda moguće je prepoznati kroz tri glavna izvora:
(1) materijalna kultura (predmeti za svakodnevnu upotrebu),
(2) ostaci lipida u posudama (kemijske analize),
(3) animalni ostaci (arheozoološke analize).

Među ostacima materijalne kulture s neolitičkih nalazišta na korištenje mliječnih proizvoda posredno ukazuju tzv. keramička cjedila (npr. Osijek – Hermanov vinograd; Šimić 2008b, 19), za koja se pretpostavlja da su služila za izdvajanje sirutke. Nadalje, kemijskim analizama prapovijesnih keramičkih posuda s prostora Europe pronađeni su tragovi lipida, što također svjedoči o korištenju mliječnih proizvoda (npr. Craig *et al.* 2005). Međutim, i dalje ostaje otvoreno pitanje koje su se životinje muzle.

Arheozoološkim analizama moguće je rekonstruirati profile smrtnosti stada, odnosno životnu dob u kojoj su životinje ubijane. Ovisno o svrsi iskorištavanja, razlikovat će se i pristupi u gospodarenju stadom (Payne 1973; Vigne, Helmer 2007). Ukoliko je cilj proizvodnja mesa, veći dio stada se ubija u subadultnoj dobi, kada dosegnu optimum veličine i težine. Mlade ženke ostavljaju se na životu u svrhu razmnožavanja i daljnjeg povećavanja stada te se ubijaju u starijoj dobi po završetku reproduktivnog ciklusa. Kada se ekonomija temelji na proizvodnji mlijeka, najveći broj životinja ubija se u infantilnoj dobi od 6 do 9 mjeseci, čim se osigura prinos mlijeka (laktacija). Kolje se više mužjaka dok se ženke ostavljaju radi mužnje. Ako je vuna glavni proizvod stada, ono će sadržavati podjednaki broj odraslih mužjaka

MODELS OF HERD EXPLOITATION

Most domestic animals can be used in various ways. In addition to meat, milk is also very important for nutrition, and, since it is regenerative, an animal can be milked many times during its life. From the economic outlook, the exploitation of milk and dairy products has several advantages in comparison to the exploitation of meat. Milking provides a higher amount of protein. Milk contains fat, calcium, sugar and vitamin D, and, through various processes of fermentation, it can be turned into products such as yogurt, curd, butter and cheese, which can be stored as food provisions, and also transported (Davis 1987, 155). However, some people are incapable of digesting milk sugar (lactose), and genetic analyses of certain European populations have confirmed a high level of lactose intolerance for the Neolithic period (Burger et al. 2007). During the fermentation of milk, milk sugar (lactose) turns into lactic acid, and the product becomes easily digestible for people who are lactose-intolerant (McCracken 1971: 480). This has dispersed doubts about the possibility of milking in the Neolithic.

The practice of milking and consumption of dairy products can be identified from three main sources:

(1) material culture (objects of everyday use),

(2) lipid remains in receptacles (chemical analysis),

(3) animal remains (zooarchaeological analysis).

The remains of material culture originating from Neolithic sites which indirectly suggest that dairy products were consumed are the so-called ceramic strainers (e.g. Herman's Vineyard near Osijek; Šimić 2008b, 19), presumably used for filtering out whey. Furthermore, chemical analyses of prehistoric pottery discovered in Europe have revealed traces of lipids, also testifying to the consumption of dairy products (e.g. Craig et al. 2005). But the question that remains unanswered is which animals were milked.

Zooarchaeological analysis can be used to reconstruct profiles of herd mortality, that is, the age at which animals were killed. Depending on the type of exploitation, approaches to herd management also differ (Payne 1973; Vigne, Helmer 2007). If the

i ženki. Životinje se ubijaju u znatno kasnijoj dobi kada opada kvaliteta njihove vune. S obzirom na to da divlje ovce imaju dlaku, a primitivni tipovi ranih domesticiranih ovaca u neolitiku još uvijek nemaju razvijeno runo (Ryder 1992), ovaj se model može izostaviti iz daljnjih razmatranja o načinima gospodarenja stadima u neolitiku. Treba naglasiti kako su ovi modeli idealizirani i temelje se na modernim principima maksimalizacije prihoda. Moguće je pretpostaviti da u prapovijesti nije postojala isključivost u iskorištavanju već se stadima gospodarilo s ciljem dobivanja raznovrsnih proizvoda.

Rezultati arheozooloških istraživanja ukazuju da su u naseljima na otvorenom u sjevernoj Dalmaciji uzgajana stada ovaca i koza ponajviše radi iskorištavanja mesa (Legge, Moore 2011; Mlekuž 2005; Radović 2009), dok je mužnja ovaca evidentirana već u špiljama na prostoru sjevernog Jadrana (Miracle, Pugsley 2006, 328; Radović *et al.* 2008: 43) i u južnoj Dalmaciji (Miracle, Radović u pripremi). Podaci su ograničeni i nužan je oprez pri tumačenju s obzirom na to da su uslijed sezonskih kretanja neolitički stočari koristili špilje kao torove gdje su čuvali stada i zadržavali se određeno vrijeme tijekom proljeća u vrijeme janjenja, što je rezultiralo stanovitom iskrivljenošću u podacima o smrtnosti stada sa špiljskih nalazišta koji pokazuju visoku smrtnost neonatalnih i infantilnih jedinki (Mlekuž 2005, 2006). Međutim, nedvojbeno je da je mužnja na prostoru primorske Hrvatske prisutna već od ranog neolitika te je iskorištavanje mlijeka i mliječnih proizvoda u stanovitoj mjeri ipak bilo dio prehrane neolitičkih ljudi.

Iako su podaci znatno skromniji, vjerojatno su i u kontinentalnoj Hrvatskoj tijekom neolitika stada ovaca i koza većinom držana radi mesa te u manjoj mjeri i mužena.

Prema dosadašnjim analizama životne dobi u trenutku smrti neolitička su goveda vjerojatno uzgajana isključivo radi mesa. Najčešće su ubijana juvenilna i adultna goveda, dok mali broj ostataka infantilnih jedinki možda ukazuje i na iskorištavanje radi mlijeka. Iako je moguće da su u kasnom neolitiku goveda mužena (Miculinić, Mihaljević 2003, 76), treba naglasiti kako to nije bilo od većeg značenja s obzirom na to da su rana domesticirana goveda vjerojatno proizvodila jako malu količinu mlijeka, jedva dostatnu za hranjenje teladi (Bökönyi 1974: 27).

Lov, ribolov i ostali načini pribavljanja hrane životinjskog podrijetla

LOV

S pojavom stočarstva lov postaje sporedan, što se očituje u slaboj zastupljenosti divljih životinja unutar neolitičkih skupova nalaza faune. Najčešća lovna divljač je jelen, a u nešto manjoj

goal is meat production, the majority of the herd is slaughtered as subadults, once animals reach optimal size and weight. Young female animals are left for breeding and further increase of the herd, and they are killed at the end of their reproductive cycle. However, if the economy is based on milk production, the greatest number of animals is slaughtered at an infant age of between 6 and 9 months, as soon as the milk yield (lactation) is ensured. More males are slaughtered, while females are spared for milking. If the main product of a flock is wool, the number of male and female adults is the same. Animals are killed at a much greater age, when the quality of their wool begins to fall. Bearing in mind that wild sheep have hair, and primitive types of early domesticated sheep in the Neolithic period still did not have well-developed fleece (Ryder 1992), this model can be left out of further discussions about herd management in the Neolithic. It is worth emphasizing that the above models are idealistic and based on the modern notion of profit maximization. It is possible that in prehistory one type of exploitation was not exclusive, and that herds were managed with the goal of obtaining various products.

Results of zooarcheaological research indicate that herds of sheep and goats in settlements in the open in northern Dalmatia were kept primarily for meat production (Legge, Moore 2011; Mlekuž 2005; Radović 2009), while milking of ewes has been recorded already in caves of the northern Adriatic (Miracle, Pugsley 2006, 328; Radović et al. 2008, 43) and southern Dalmatia (Miracle, Radović in preparation). The data are limited, and caution is warranted when interpreting them, bearing in mind that, due to seasonal migration, Neolithic herdsmen used caves as pens in which they kept their flocks for certain periods in springtime, during lambing, which results in a certain distortion of flock-mortality data coming from cave sites, because of the high mortality rate of neonatal and infant individuals (Mlekuž 2005, 2006). However, milking was undoubtedly present in coastal Croatia starting from the Early Neolithic, as some consumption of milk and dairy products was an element of the nutrition of Neolithic people.

Although data concerning continental Croatia are much more scarce, in the Neolithic, flocks of sheep and goats were probably kept there for meat, and they were also milked, but to a smaller extent.

Based on the research carried out to date of the ages of animals at the moment of dying, Neolithic cattle were probably reared only for their meat. Juvenile and adult animals were killed more often, while the small number of remains of infant animals could indicate that cow's milk was also used. Although it is possible that, in the Late Neolithic, cows were milked (Miculinić, Mihaljević 2003, 76), it is important to emphasize that milking did not have

Osijek-Filipovica/Hermanov vinograd, harpun, kat.br. 112
Osijek-Filipovica/Hermanov vinograd, Harpoon, cat. no. 112

mjeri srna i divlja svinja. Često su na nalazištima prisutni ograničeni dijelovi tijela, a na samim kostima tih životinja znatno je manje tragova mesarenja u odnosu na kosti domaćih životinja. To ukazuje da se inicijalno komadanje trupla odvijalo negdje drugdje dok su samo određeni dijelovi uzimani za daljnje korištenje. Odrasli jelen osigurava priličnu količinu mesa dok dijelovi skeleta (rogovlje i kosti) mogu poslužiti za izradu alatki. Malobrojni ostaci svinja često nisu specifički određeni pa je teško razmatrati o značenju divlje svinje kao lovne vrste.

Od sitne divljači najčešće je lovljen zec, osobito u sjevernoj Dalmaciji. Uvođenjem domaćih životinja i uslijed intenzivnog stočarstva dolazi do određenih promjena u okolišu. Stada domaćih preživača pasu i brste utječući tako na visinu i gustoću prirodne vegetacije, istovremeno stvarajući povoljnije životne uvjete za manje divlje životinje, osobito zečeve (Karmiris, Nastis 2007). Može se pretpostaviti da su relativno češći ostaci zečeva na neolitičkim nalazištima na otvorenom rezultat oportunističkog lova na, u to vrijeme, vrlo raširenu vrstu (Legge, Moore 2011, 185).

Lov na zvijeri nije bio uobičajen tijekom neolitika, ali je evidentiran na pojedinim nalazištima (Robb 2007, 152). U Veloj spili na Korčuli pronađeni su skeletni ostaci lisica s relativno čestim tragovima rezanja i gorenja koji ukazuju na komadanje trupla, deranje kože i skidanje mesa te pripremu za konzumiranje. Na ovom se mjestu tradicija lova na lisice u manjoj mjeri zadržala od mezolitika, iako su se promijenile metode i razlozi lova (Miracle, Radović, u pripremi). Tijekom srednjeg neolitika gotovo u potpunosti prestaje lov na lisice. Na ostalim nalazištima vrlo su rijetki ostaci zvijeri s tragovima mesarenja te se može zanemariti njihova prehrambena vrijednost.

Ptice su sporadično lovljene i konzumirane tijekom cijelog neolitika, ali je njihov udio u prehrani bio zanemariv (Malez 2001; 2009; Zlatunić 2002, 53).

Lov je općenito u neolitiku izgubio na važnosti o čemu svjedoče malobrojni ostaci divljih životinja. Zanimljivo je da u kasnom neolitiku na određenim nalazištima dolazi do svojevrsnog oživljavanja lova (npr. Radović *et al.* 2008, 39). Moguće je da u

any major importance, because the early domesticated cattle probably produced a very small quantity of milk, barely sufficient for feeding calves (Bökönyi 1974: 27).

Hunting, fishing and other methods of provisioning food of animal origin

HUNTING

With the emergence of herding, hunting lost its importance, as evidenced by the low presence of wild animals among finds of Neolithic faunal remains. The most frequently hunted game was red deer, followed by roe deer and wild boar. Often just some parts of animals were discovered at archaeological sites, and the bones discovered display many fewer butchering marks than the bones of domestic animals. This suggests that the initial carving of carcasses took place somewhere else, and that only some parts of the animals were taken for further use. An adult deer could provide a very substantial quantity of meat, and parts of its skeleton (antlers and bones) could be used for the production of tools. The scarce pig finds often are not specifically determined, making it difficult to discuss the importance of boar as a game species.

Among small game, hare was hunted most, especially in northern Dalmatia. The introduction of domestic animals and intensified herding caused certain changes in the environment. Flocks of domestic ruminants grazed and browsed, and this had an impact on the height and density of natural vegetation, creating at the same time more favourable living conditions for smaller wild animals, especially hares (Karmiris, Nastis 2007). The assumption can be made that the relatively frequent hare remains discovered at Neolithic sites are a result of the opportunistic hunting of this species, which was widespread at the time (Legge, Moore 2011, 185).

Wild-beast hunting was not customary during the Neolithic, but it has been identified in some sites (Robb 2007, 152). In Vela Spila cave on the island of Korčula, skeletal remains of foxes have been found, relatively frequently bearing marks of cutting and burning, suggesting that carcasses were dismembered, skinned and deboned, and that the meat was prepared for consumption At this site, the tradition of fox hunting continued to the Mesolithic, but with changed methods and motivation for hunting (Miracle,

Dobrovac-Kučište I, zoomorfna noga žrtvenika, glava vepra?, kat.br. 159
Dobrovac-Kučište I, zoomorphic altar leg, boar's head?, cat. no. 159

to vrijeme dolazi do obnavljanja šuma, a kao posljedica raste i broj divljih životinjskih populacija u okolišu. S druge strane, krajem neolitika vjerojatno dolazi do određenih raslojavanja društva pa se možda lovu pridavalo veće značenje kao izvoru hrane, ali i ugleda i moći (Miracle, Pugsley 2006, 355).

RIBOLOV I ISKORIŠTAVANJE MORSKIH SISAVACA
Na neolitičkim nalazištima u priobalju i/ili u blizini rijeka i jezera ostaci riba i/ili ribarskog alata ukazuju na ribolov (Batović 1979, 609; Dimitrijević 1979a, 352). U primorskoj Hrvatskoj početkom neolitika drastično opada važnost riba u prehrani u odnosu na ranije razdoblje, iako su riblje kosti i koštane udice i dalje relativno česte na obalnim nalazištima (npr. Komšo 2006, 214). U sjevernoj Dalmaciji skromni ostaci riba i koštanih udica (Vujević 2009, 97) ukazuju na zanemarivu ulogu morske ribe u prehrani, što je identično stanju u unutrašnjosti Istre (Miracle, Pugsley 2006, 282; Radović *et al.* 2008, 36, Tab. 1). Sve određene vrste riba pripadaju obalnom pojasu što ukazuje na oportunistički ribolov.

U kontinentalnoj Hrvatskoj također su evidentirani nalazi ribljih kostiju (npr. Šimić 2008b, 19), a zabilježeno je i da je na sopotskim naseljima pronađen stanovit broj utega za ribarske mreže, dok se krupnija riba, poput soma, lovila velikim koštanim udicama, harpunom i ostima (Dimitrijević 1979a, 352).
Iako je utvrđen na stanovitom broju neolitičkih nalazišta u Hrvatskoj, ribolov općenito nije bio bitan kao izvor hrane neolitičkih ljudi.

Iskorištavanje morskih sisavaca poznato je od paleolitika, a u nekim dijelovima svijeta zadržalo se do danas. Na istočnom Jadranu su samo u Veloj spili na Korčuli evidentirani rijetki ostaci dupina (*Delphinidae*) (Kužir *et al.* 2005, 297; Miracle, Radović u pripremi;). Zasad nije jasno radi li se o ostacima životinja koje je more izbacilo na obalu ili su ljudi na jugu Dalmacije zaista lovili dupine.

Radović, in preparation). During the Middle Neolithic, fox hunting disappeared almost entirely. At other sites, remains of wild animals with butchering marks are very rare, so that their dietary function can be disregarded.

Birds were sporadically hunted and consumed throughout the Neolithic, but their contribution to the diet was insignificant (Malez 2001; 2009; Zlatunić 2002, 53).

Generally, hunting lost its importance in the Neolithic, as evidenced by the small number of remains of wild animals. Interestingly, in the Late Neolithic, a certain revival of hunting can be observed at some sites (e.g. Radović et al. 2008, 39). It is possible that forests were regenerated in that period, and consequently the number of wild animal populations increased. On the other hand, the end of the Neolithic was probably a time of certain social stratification, and hunting could have been attributed greater importance as a source of food, and also of respect and power (Miracle, Pugsley 2006, 355).

FISHING AND EXPLOITATION OF SEA MAMMALS
At Neolithic sites in the coastal region and/or in the vicinity of rivers and lakes, fish remains and/or fishing tools suggest that the population engaged in fishing (Batović 1979, 609; Dimitrijević 1979a, 352). In littoral Croatia, the importance of fish in the diet rapidly fell in the Neolithic, when compared to the earlier period, although fish bones and bone hooks are still relatively frequently found at coastal sites (e.g. Komšo 2006, 214). In northern Dalmatia, scarce fish remains and bone hooks (Vujević 2009, 97) indicate that the role of sea fish in the diet was negligible, just as it was in inland Istria (Miracle, Pugsley 2006, 282; Radović et al. 2008, 36, T. 1). All identified kinds of fish belong to the coastal belt, indicating opportunistic fishing.

In continental Croatia, finds of fish bones have also been recorded (e.g. Šimić 2008b, 19), and in Sopot Culture settlements a certain number of weights for fishing nets have also been discovered, while larger fish, such as catfish, were caught with bone hooks, harpoons and fish spears (Dimitrijević 1979a, 352).

Although the existence of fishing has been established in several Neolithic sites in Croatia, generally, it was not an important source of food for the Neolithic population.

The exploitation of sea mammals had been practiced since the Palaeolithic, and in some parts of the world it still is. On the eastern Adriatic coast, only in Vela Spila cave on the island of Korčula have rare remains of dolphins (Delphinidae) been recorded (Kužir et al. 2005, 297; Miracle, Radović in preparation). For the time being, it remains unclear whether these are remains of animals that were washed to the shore, or people truly caught dolphins in southern Dalmatia.

SAKUPLJANJE VODENIH MEKUŠACA I BRANJE KOPNENIH PUŽEVA
Tijekom neolitika zadržala se mezolitička tradicija sakupljanja morskih i riječnih školjaka i puževa, čiji su ostaci često prisutni na većini nalazišta primorske (Bakić 2001, Vujčić-Karlo 2009) i kontinentalne Hrvatske (npr. Šimić 2008b). Kućice kopnenih puževa iz roda *Helix* još su rjeđe iako im je hranidbena vrijednost neupitna (Mašić 2004, 54-55). Općenito je dokazano konzumiranje školjaka i puževa tijekom neolitika, ali predstavljaju sporedni dio prehrane (Laurie *et al.* 2006, 419; Legge, Moore 2011).

Zaključak

Već od ranog neolitika stočarstvo je postalo dominantan oblik gospodarenja životinjama. U primorskom dijelu Hrvatske prevladavala su mješovita stada malih domaćih preživača uz koje su držana pojedinačna goveda te rjeđe svinje. U kontinentalnom dijelu goveda su bila znatno važnija te su od početka bila podjednako brojna kao i ovce i koze, da bi u kasnom neolitiku postala dominantna vrsta u stočarstvu. Svinje su također bile češće u neolitičkim naseljima kontinentalne Hrvatske. Lov je tijekom cijelog neolitika bio slabo zastupljen iako je evidentiran stanovit porast lovnih aktivnosti u kasnom neolitiku.

Stada su držana, prije svega, radi mesa, a dokazana je i mužnja ovaca i koza već od ranog neolitika, što ukazuje da je konzumiranje mlijeka i/ili mliječnih proizvoda u stanovitoj mjeri bilo dio prehrane neolitičkih ljudi.

Analizama stabilnih izotopa pokazalo se da su se tijekom neolitika ljudi u zaleđu jadranske obale hranili isključivo kopnenim životinjama i biljkama, dok su oni uz obalu i na otocima imali raznolikiju prehranu koja je u manjoj mjeri uključivala i konzumiranje riba, morskih sisavaca i morskih školjaka i puževa (Lightfoot *et al.* 2011, 80).

Moguće je zaključiti kako je stočarstvo odigralo vrlo bitnu ulogu u procesu neolitizacije, omogućujući migracije novih populacija i na područja gdje se nije bilo moguće baviti zemljoradnjom, a sama stoka je mogla biti i sredstvo razmjene i prvih kontakata s autohtonim zajednicama.
uključivala i konzumiranje riba, morskih sisavaca i morskih školjaka i puževa (Lightfoot *et al.* 2011, 80).

Moguće je zaključiti kako je stočarstvo odigralo vrlo bitnu ulogu u procesu neolitizacije, omogućujući migracije novih populacija i na područja gdje se nije bilo moguće baviti zemljoradnjom, a sama stoka je mogla biti i sredstvo razmjene i prvih kontakata s autohtonim zajednicama.

HARVESTING SEA MOLLUSCS AND LAND SNAILS
During the Neolithic, the Mesolithic tradition of gathering sea and river shellfish and snails continued, and their remains are commonly found at most sites of coastal (Bakić 2001, Vujčić-Karlo 2009)) and continental Croatia (e.g. Šimić 2008b). Shells of sea snails of the Helix genus are rarer, although their nutritional value is certain (Mašić 2004, 54-55). Generally, it has been proven that shellfish and snails were consumed during the Neolithic, but their role in the overall diet was minor (Laurie et al. 2006, 419; Legge, Moore 2011).

Conclusion

From the Early Neolithic onwards, herding became the dominant form of animal exploitation. In coastal Croatia, most of the herds were mixed, composed of small ruminants, with individual heads of cattle and, more rarely, pigs kept alongside them. On the continent, cattle played a much more important role, and from the beginning they were just as numerous as sheep and goats, and in the Late Neolithic cattle became the predominant herding species. Pigs were also more frequent in the Neolithic settlements of continental Croatia. Throughout the Neolithic, hunting had little importance, although in the Late Neolithic a certain surge in hunting activities has been recorded.

Herds were kept primarily for meat, but it has been proven that both sheep and goats were also milked from the Early Neolithic, suggesting that milk and/or dairy products formed a certain portion of the diet of Neolithic people.

Analyses of stable isotopes have demonstrated that, during the Neolithic, people who lived in the Adriatic hinterland fed only on land animals and plants, while those inhabiting the coast and islands had a more varied diet, which included fish, sea mammals and sea shellfish and snails, though to a smaller extent (Lightfoot et al. 2011, 80).

The conclusion can be drawn that herding played a very important role in the process of neolithization, by enabling new populations to migrate to regions in which they could not engage in tilling. In addition, farm animals could be used for trading and establishing first contacts with indigenous communities.

RAJNA ŠOŠIĆ KLINDŽIĆ

100 % PRIRODNO – SIROVINE KORIŠTENE U NEOLITIKU

100% NATURAL: RAW MATERIALS USED IN THE NEOLITHIC

Ono što čovjeka odvaja od ostatka živog svijeta jest intenzivna upotreba i modifikacija dijelova okoliša. Intenzitet je ključni razlikovni element jer brojne životinjske vrste također mijenjaju okoliš u različitoj mjeri. Ipak, jedino je čovjek uspio ovladati okolišem i promijeniti ga do neprepoznatljivosti. Prema danas dostupnim podacima i datiranjima, proces intenzivnije modifikacije okoliša otpočeo je prije 2,6 mil. godina, intenzivirao se u mezolitiku (primjerice paljenje šuma), međutim, tek s razdobljem neolitika počinju drastični zahvati u okoliš s trajnijim posljedicama po izgled istoga. Nakon završetka posljednjeg ledenog doba otpočinju korjenite promjene i mijenjaju kako okoliš tako i čovjeka samog. Danas, nakon približno 10000 godina više se ne može prepoznati ni okoliš ni čovjek s početka procesa.

Nekoliko puta su već naglašene promjene i njihova važnost koje počinju s neolitikom. Ipak, činjenica koju treba imati na umu jest da se javlja samo jedna nova sirovina, a to je metal. Ono što se razvija jest tehnologija, novi način upotrebe starih i dobro poznatih resursa. Ti se stari resursi i sele, iz okoliša, odnosno *agriosa* dolaze u *domus* i postaju dio svakodnevnog kućnog inventara (Hodder 1990). Mijenjanjem odnosa *domusa* i *agriosa*, ali ne samo time, mijenjaju se i percepcije udaljenosti kod ljudi. To je opozicija između domaćeg, poznatog, ograđenog i omeđenog s jedne strane te divljeg, vanjskog, stranog, drugačijeg, onog izvan granice s druge strane (Hodder 1990). U *domus* također ulazi i obrađeno tlo što znači da se i samo tlo dijeli u dvije grupe.

Glina se modificira i peče još od prije 36 000 godina, kamen se obrađuje 2,6 mil. godina, pigmenti se koriste 400 000 godina, školjke i puževi 100 000 godina. Svi ti materijali počinju se mnogo intenzivnije koristiti u različite svrhe. Pojačava se modifikacija okoliša čime je u modernom smislu otpočeo proces koji traje i danas. Sirovine postaju zapravo dio svakodnevnog života i identiteta populacije.

Životinje

Životinje se nastavljaju koristiti i dalje za prehranu, odjeću, oruđe i društvo, ali u jednom potpuno drugačijem kontekstu o čemu se detaljno piše u drugim poglavljima (vidi Radović). Životinje postaju dio kućnog inventara, postaju imovina i sustanar i vrlo iskoristiva sirovina. Od životinjskih ostataka, odnosno njihovih kostiju i dalje se izrađuje oruđe i nakit. Pas nastavlja biti čovjekov prijatelj, ali i namirnica. U okviru *domusa* pojavljuju se i mačke (Johansson 2012). Od novoudomaćenih životinja osim mesa počinje se koristiti i mlijeko. Tolerancija na laktozu u europskih se populacija može pratiti od prije 7500 god. prije sadašnjosti (Itan *et al.* 2009). Izmet životinja koristi se kao gnojivo (Bogaard *et al.* 2013).

What separates man from the rest of the living world is his intensive use and modification of parts of the environment. The key distinguishing factor is the intensity, since many animal species also modify their environments to various degrees. However, only man has succeeded in mastering the environment and changing it to the extent that it becomes unrecognizable. According to information and dates available today, the process of intensive modification of the environment began 2.6 million years ago; it heightened in the Mesolithic (for example, through the burning of forests), but only in the Neolithic did intervention in the environment become radical and have long-lasting consequences. The end of the last glacial period marked the beginning of some far-reaching changes which affected both the environment and man himself. Nowadays, approximately 10 000 years later, neither the environment nor the man that existed at the beginning of that process can be recognized.

The importance of changes that began in the Neolithic has already been mentioned. However, it is worth bearing in mind that only one new raw material emerged in that period – metal. What evolved was technology, a new way of using some old and well-known resources. The old resources were also moved – from the environment, that is 'agrios', they were brought to 'domus' and became part of the everyday inventory (Hodder 1990). The altered relation between domus and agrios, along with other factors, changed the human perception of distances. This pertains to the opposition of the domestic, familiar, enclosed and delineated, on the one hand, to the wild, outside, foreign, different, external, on the other (Hodder 1990). Domus also includes cultivated land, implying that the land itself was classified into two categories.

Clay has been worked and fired since as early as 36 000 years ago, stone has been used and modified for 2.6 million years, pigments used for 400 000 years, and mollusc and snail shells for 100 000 years. All these raw materials were now much more intensively used for various purposes. The modification of the environment also intensified, marking the beginning of a process – according to modern-day understanding – which is still ongoing. Raw materials became an element of everyday life and of a population's identity.

Animals

Animals continued to be used for food, clothes, tools and company, but in a completely different context, described in detail in other chapters (see Radović). They become part of the domestic inventory; they were property, but also co-tenants and a very useful resource. Animal remains (bones) were still used to make tools and jewellery. The dog continued to be man's best friend, but was also used for food. Cats also appeared within the domus

Glina

Glina je čovjeku kao sirovina poznata još od gornjeg paleolitika. Korištenje je bilo ograničeno uglavnom na konstrukciju ognjišta i izradu figurica. Tako su, primjerice, pronađeni ostaci peći i keramičke nedovršene i dovršene figurice na lokalitetu gravetijenske kulture Dolni Vestonice u Moravskoj (Vandiver *et al.* 1989) te ostaci konstrukcije ognjišta na lokalitetu orinjasijenske kulture Klisoura u Grčkoj (Karkans *et al.* 2004). Tijekom paleolitika glina se koristila za izradu figurica – od gline su se izrađivale tzv. Venere, prikazi životinja, spolnih organa. U finalnim razdobljima paleolitika počinje se koristiti i za izradu posuda. Kao građevinski materijal počinje se koristiti u okvirima mezolitika, približno 9000. god. pr. Kr. (Schmandt-Besserat 1977). Novi način upotrebe gline pojavljuje se s neolitikom, za izradu keramičkih posuda. Etnografske analogije upućuju na mogućnost korištenja gline za premazivanje tijela u još ranijim razdobljima (Schmandt-Besserat 1977).

Tlo

Uloga tla korjenito se mijenja. Umjesto pasivne uloge podloge tlo postaje aktivni sudionik u zajednici i faktor o kojem ovisi opstanak zajednice. Tlo se koristi za gradnju kuća (vidi Tripković). Osim kao građevinski element tlo se počinje koristiti za uzgoj žitarica. Najviše intervencija u okoliš vidljivo je upravo zbog same obrade tla. Kako bi se oslobodio prostor za usjev te kako bi se zemlja obogatila šume se sijeku i pale.

Školjke

Školjke i puževi se kao osobni ornament i/ili ukras počinju koristiti još u razdoblju srednjeg paleolitika. Njihov atraktivan izgled, specifičan okoliš gdje se mogu naći te lakoća modifikacije i nošenja vjerojatno su bili faktori koji su utjecali na popularnost tih organizama. Osobni ornamenti predstavljaju prvo „vantjelesno sredstvo pohrane informacija" (Henshilwood, Marean 2003). Informacija koju nose smatra se da je u početku bila identitet, odnosno pripadnost određenoj skupini ljudi. Bez obzira jesu li se bušile namjerno ili su rupe rezultat prirodnih procesa, školjke u kontekstu daleko od obale (i to prikupljene kao ljušture, što isključuje da su ih sakupljali zbog prehrane) svakako ukazuju na činjenicu da su se planski transportirale te da su ih koristili ljudi (d´Errico *et al.* 2009). Tijekom tog dijela paleolitika najčešće zastupljena školjka je vrste *Nassarius* i to na području sjeverne Afrike, južne Afrike te Bliskog istoka (d´Errico *et al.* 2009; Marean *et al.* 2007). Koristile su se i druge školjke, poput vrste *Glycimeris*. Ta se školjka koristila među prvima još u razdoblju

(Johansson 2012). The newly domesticated animals were used not only for meat, but also for milk. The lactose tolerance of European populations can be traced to 7500 years BP (Itan et al. 2009). Animal manure was used as fertilizer (Bogaard et al. 2013).

Clay

Humans had been familiar with clay as a raw material ever since the Upper Palaeolithic. Its use was limited primarily to the fireplace structure and the production of figurines. For example, at the Gravettian Culture site of Dolni Vestonice in Moravia, remains of a kiln and both finished and unfinished figurines have been found (Vandiver et al. 1989), and, at the Oriniasien Culture site of Klisoura in Greece (Karkans et al. 2004), the remains of a fireplace. During the Palaeolithic, clay was used for making figurines – the so-called Venuses, representations of animals and genitals. In the final phases of the Palaeolithic, clay began to be used for the production of wares, and in the Mesolithic, approximately 9000 years BC, it was first used as a construction material (Schmandt-Besserat 1977). In the Neolithic, clay was used in a new way for the production of pottery. Some ethnographic analogies indicated that it could have been used in even earlier periods for body coating (Schmandt-Besserat 1977).

Earth

The role of earth had changed radically. Instead of being a passive setting, it had become an active participant in the community and a crucial factor for its survival. Earth was used in the construction of houses (see Tripković). In addition to being a construction element, it began to be used for growing crops. It was its tilling which prompted the majority of environmental interventions. Forests were felled and burned to free land for tilling and to enrich the soil.

Shells

The beginning of the use of mollusc and snail shells as personal ornaments and/or decoration can be traced to the Middle Palaeolithic. Their attractive appearance, characteristic find sites and ease of modification and wearing probably contributed to their popularity. Personal ornaments have also been called the first external information storage (Henshilwood, Marean 2003). It is believed that the information they carry originally represented an identity, that is, affiliation to a certain group of people. Regardless of whether the holes in them were made intentionally or as a result of natural processes, shells found within contexts remote from any shore (which had been collected as empty shells, excluding the possibility that they had been used for food), undoubtedly suggest that their transportation and use were

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Čepin-Ovčara/Tursko groblje, ostava nakita od spondylusa i dentaliuma, kat.br. 67
Čepin-Ovčara/Tursko groblje, *hoard of jewellery made of spondylus and dentalium shells, cat. no. 67*

srednjeg paleolitika, prije približno 100 000 god. (Bar Yosef Mayer *et al.* 2009). Njezina upotreba se nastavlja i u neolitiku (Séfériadés 2009, 183). Jedna od najpoznatijih školjaka koja se koristila za nakit u neolitiku je *Spondylus gaederopus*. Ta školjka obitava u Mediteranu, a u neolitičkom kontekstu se može naći na području gotovo čitave Europe, sve do Poljske, Francuske i Njemačke (Séfériadés 2009, 181). Najsjeverniji nalaz je s lokaliteta Epône sjeverno od Pariza. Zanimljivo je da učestalost nalaza od spondilusa raste s udaljenošću od jadransko-egejskog područja gdje je njihovo prirodno stanište. Proizvodnja nakita odvijala se na egejskoj ili jadranskog obali ili u okviru radionica u srednjoj Europi dokuda su školjke putovale u sirovom obliku. Te podatke imamo posredno, iz arheoloških nalaza, ali nisu još utvrđeni centri primarne ili sekundarne distribucije (Séfériadés 2009, 183). U vrijeme neolitika jedan je od najboljih indikatora trgovine i razmjene te je često isticana kao egzotični materijal. Koristila se kao poklon i sredstvo razmjene. Od spondilusa su se izrađivale perle, narukvice, privjesci, kopče. Na području Hrvatske nalazi se rijetko, a potrebno je istaknuti ostavu iz Čepina te nalaze iz Vukovara (Balen 2006; Chapman *et al.* 2012). Njihov kontekst nalaza ukazuje na možda još neke namjene osim ukrašavanja. Često se nalaze u grobovima s ostalim prestižnim prilozima kao što su sjekire od žadeita i nefrita, bakar, zlato, mramor, malahit, rijetki rožnjaci (Chapman 2001). Ponekad se, kao primjerice u ostavi Ariusd u Rumunjskoj, nalaze s očnjacima jelena koji su se koristili kao ornamenti i ritualni predmeti u paleolitiku i mezolitiku. Iz toga se možda može izvući veza s

planned (d´Errico et al. 2009). In this period of the Palaeolithic, the most frequent shell was Nassarius, which has been found in northern Africa, southern Africa and the Near East (d´Errico et al. 2009, Marean et al. 2007). Some other shells were also used, for example, of the Glycimeris species. This shell was one of the first to be used, as early as the Middle Palaeolithic, some 100 000 years ago (Bar Yosef Mayer et al. 2009). It continued to be used in the Neolithic (Séfériadés 2009, 183). One of the most famous shells used in the Neolithic for jewellery was Spondylus gaederopus. It can be found in the Mediterranean, but it has been discovered within Neolithic contexts throughout Europe, as far away as Poland, France and Germany (Séfériadés 2009, 181). The northern-most find was made at the site of Epône, north of Paris. Interestingly, the frequency of Spondylus finds increases with the distance from the Adriatic-Aegean region, which is its natural habitat. The jewellery was produced on the Aegean or Adriatic coast, or in one of the workshops of central Europe where shells were brought as raw material. This data has been deduced indirectly, from archaeological discoveries, but the centres of primary and secondary distribution have not yet been identified (Séfériadés 2009, 183). Spondylus is one of the best indicators of trade and exchange in the Neolithic period, often presented as an exotic item. Thus it was used as a gift and means of trade. Furthermore, the shell was used for making beads, bracelets and pendants. Such items have rarely been found in the territory of Croatia, but, among the discoveries made, particularly noteworthy is the Čepin hoard, and the finds from Vukovar (Balen 2006, Chapman et al. 2012). The context of these finds suggests that

ranijim vjerovanjima. Prema ovom tumačenju, spondilus bi bio novi element u nadogradnji starih, paleolitičkih običaja i vjerovanja (Séfériadés 2009, 183). Nadalje, na posebnu namjenu ukazuje i činjenica da su se predmeti od spondilusa prenosili i čuvali kroz generacije, dok su se drugi namjerno lomili i palili. U brončanom dobu spondilus se naglo gubi. G. Childe je smatrao da je spondilus dio „praznovjerja" koje su neolitičke pridošlice donijele sa sobom i proširile Europom (Childe 1929). Tome donekle proturječi činjenica da je spondilus popularniji u kontinentalnoj Europi nego u Grčkoj (Séfériadés 2009, 187). U svakom slučaju spondilus je prisutan tijekom cijelog neolitika i ima posebno mjesto u sustavu vrijednosti neolitičkih ljudi. S jedne strane to možemo promatrati kao nastavak važne uloge koje školjke imaju u životima ljudi od vrlo ranih razdoblja prapovijesti. Ljudi su ih izabrali kao sredstvo iskazivanja identiteta i prenošenja informacija (možda i nešto više). Spondilus u neolitiku postaje još izraženiji aspekt simboličnog izražavanja.

Biljke

U neolitiku čovjek mijenja i bilje te ga počinje intenzivno koristiti u prehrani. Uzgoj žitarica je također detaljno objašnjen na drugom mjestu (vidi Reed). Osim toga, biljke se koriste za proizvodnju predmeta kao što su košare (Hurcombe 2009). Biljke su i građevinski element, koriste se pri gradnji kuća. Drvo je zasigurno jedan od prvih materijala koje je čovjek koristio i modificirao, međutim zbog lakog propadanja očuvano je vrlo malo predmeta izrađenih od drveta. Jedan od najstarijih očuvanih dokaza o upotrebi drveta su drvena koplja s nalazišta Schöningen u Njemačkoj koja se datiraju 400 000 godina prije sadašnjosti (Thieme 1997). Najstarije poznate kolibe datiraju iz približno istog vremena, s lokaliteta Terra Amata (de Lumley 2010), međutim, postoje i mišljenja da je dio kamene konstrukcije koji je bio dio pretpostavljene kolibe rezultat prirodnih postdepozicijskih procesa (Villa 1983). Također postoje ostaci drvene gradnje iz mezolitika kao, primjerice, Star Carr u Velikoj Britaniji (Conneller *et al.* 2012). Tijekom neolitika drvena građa uz glinu i blato postaje glavni građevinski element (vidi Tripković u ovom izdanju). Drvo se koristi i za kompozitna oruđa, za držak ili recipijent u koju su se umetale kamene izrađevine.

Pigmenti

Crveni oker, odnosno hematit je vjerojatno prvi bio upotrijebljen kao pigment (Rapp 2009). Pretpostavlja se da se prvo koristio za bojenje tijela, a u gornjem paleolitiku se počinje koristiti i kao boja za slikanje po zidovima špilja. Osim hematita koristio se oker, mangan, razni željezni oksidi.

Spondylus may have been used for other purposes, in addition to decoration. It has often been found within graves, together with other prestigious grave goods, such as axes made of jade and nephrite, copper, gold, marble, malachite and rare chert (Chapman 2001). Occasionally, as for example in the Arisud hoard in Romania, they have been found together with the canine teeth of stags, used as ornaments and ritual objects in the Palaeolithic and Mesolithic. Perhaps such finds may be used to contemplate the link between the shell and the early beliefs. According to this interpretation, Spondylus was a new element in the expansion of earlier Palaeolithic customs and beliefs (Séfériadés 2009, 183). Furthermore, the fact that objects made of Spondylus were passed down and kept from generation to generation, while some others were deliberately broken and burnt, also indicates that they had a special purpose. In the Bronze Age, Spondylus suddenly disappeared. G. Childe believed that Spondylus was an element of 'superstition' brought and spread throughout Europe by Neolithic newcomers (Childe 1929). This hypothesis is somewhat opposed by the fact that Spondylus was more popular in continental Europe than in Greece (Séfériadés 2009, 187). In any case, Spondylus was present throughout the Neolithic, and it held a special place within the system of values of the Neolithic people, which can be seen as a continuation of the important role that shells had played in the lives of humans ever since the earliest prehistoric periods. They had been chosen as a means of expression of identity and information transfer (and possibly even more). In the Neolithic, Spondylus became an even more prominent aspect of symbolic expression.

Plants

In the Neolithic, man changed and modified plants and began to use them intensively in his diet. Crop cultivation has been explained in detail elsewhere (see Reed). In addition, plants were used to make objects such as baskets (Hurcombe 2009). They were also a construction material, used for building houses. Wood is undoubtedly one of the first materials that was used and modified by man, but, because of its perishable nature, very few items made of wood have been preserved. One of the oldest preserved proofs of the use of wood is the wood spears discovered at the site of Schöningen in Germany and dated to 400 000 years BP (Thieme 1997). The oldest known huts date from approximately the same period, and they have been found at the site of Terra Amata (de Lumley 2010); however, some believe that a part of the stone structure and element of the assumed hut is a result of natural post-depositional processes (Villa 1983). Furthermore, remains of some Mesolithic wooden structures have been discovered at Star Carr in the UK (Conneller et al. 2012). During the Neolithic, wood became a construction element, in

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Galovo, jezgre od silicificiranih biomikritnih vapnenaca, tipična sirovina u starčevačkoj kulturi, kat. br. 94
Galovo, cores made of silicified biomicrite limestone, a typical raw material of the Starčevo culture, cat. no. 94

Pigmenti su netopivi materijali koji se uz pomoć tekućeg sredstva (voda, slina, jaje, krv, urin) miješa u boju koju je moguće nanijeti (Rapp 2009). Tijekom neolitika bojama se bojaju tijela, zidovi kuća, nakit, keramičke posude, odjeća.

Sol

Prvi dokazi o sustavu eksploatacije soli datiraju u najraniji neolitik (Weller, Dumitroaia 2005). Iako je sol sigurno bila u nekom obliku poznata i koristila se i u ranijim razdobljima, u neolitiku se počela sustavno eksploatirati. S područja Rumunjske imamo najranije dokaze o eksploataciji soli sustavom *briquetage* gdje se slana voda zagrijava u posebno pripremljenim keramičkim posudama. To, naravno, nije jedini način pribavljanja soli, koristila se i sunčeva toplina, ali to je mnogo manje vidljivo u arheološkom zapisu. Pretpostavlja se da je sol bila sredstvo prestiža i roba za razmjenu. Zbog drugačijeg sustava privrede, odnosno pohrane namirnica u naseljima i kućanstvima sol postaje izuzetno važna sirovina u neolitiku. Iako je još G. Childe uočio važnost soli kao robe pretpostavivši da su zlatni nalazi iz Merseburga došli kao sredstvo razmjene za sol (Childe 1929), sol je često bila zanemaren aspekt u proučavanju neolitizacije i neolitičke ekonomije (Tasić 2000).

addition to clay and mud (see Tripković in this edition). It was also used in the production of composite tools, as handles or fittings holding stone elements.

Pigments

Red ochre or haematite was probably the first pigment that was used (Rapp 2009). Presumably, it was first employed for body painting, and in the Upper Palaeolithic it was first used for painting on cave walls. Ochre, manganese and various iron oxides were also used in addition to haematite. Pigments are insoluble substances which can be mixed into a liquid medium (water, saliva, egg, blood, urine), to obtain a dye that can be applied to a surface (Rapp 2009). In the Neolithic, dyes were used for colouring painting bodies and house walls, colouring jewellery and pottery, and dyeing clothes.

Salt

The first evidence of the exploitation of salt dates from the earliest Neolithic (Weller, Dumitroaia 2005). Although salt must have been known and used in some form in the earlier periods, too, its systematic exploitation began in the Neolithic. The earliest evidence of the exploitation of salt comes from Romania – there the briquetage system was used, whereby salt water was heated in specially prepared ceramic vessels. Obviously, this was not

Samatovci, jezgre od opsidijana iz Tokajsko-prešovske oblasti, kat. br. 219
Samatovci, obsidian cores from the Tokaj-Prešov District, cat. no. 219

Kamen

Iako možda nije bio prvi materijal koji se koristio za izradu oruđa, upravo je kameno oruđe najstariji dokaz početka čovjekovog ovladavanja prirodom. U 2,6 mil. godina, koliko se kamen obrađuje, malo toga se bitno promijenilo. Tehnologija izrade imala je svoju evoluciju i svoj razvoj, iskoristivost komada sirovine rapidno se povećala, ali u osnovi su mehanizmi proizvodnje ostali isti. Kameno oruđe koje se koristilo tijekom neolitika ima svoje korijene u razdoblju gornjeg paleolitika i mezolitika kada se počinje javljati većina tipova koja se pojavljuje u neolitiku. Oruđa mijenjaju svoj oblik i funkciju, ali *mental map* ostaje po prilici isti ili sličan. Za obradu kamena se u neolitiku koriste dvije glavne tehnike – lomljenje i glačanje. Glačanje je novost u obradi kamena koja dolazi s neolitikom. Lomljenje je proces odbijanja manjih komada kamena od većeg komada kamena koji je pripremljen u jezgru. Odbijeni komadi zovu se odbojci ili sječiva. Sječiva su izduženi odbojci koji oblikom podsjećaju na nož. Od sječiva su se dalje mogli izrađivati brojni tipovi oruđa. Mogla su ostati u svom integralnom obliku ili se namjerno lomiti na manje komade od kojih su se onda izrađivale kompozitne alatke poput srpa. Najčešća sirovina za izradu kamenog oruđa su stijene s vrlo visokim udjelom silicija, školjkastog loma, bez svojstva kalavosti, i vrlo visoke tvrdoće (iznad 6 po Mohsovoj ljestvici). Takve stijene nisu rijetke i pojavljuju se u raznim oblicima. Mogu biti u svom primarnom ili sekundarnom položaju. Primarni položaj znači da se nalaze u stijeni, a sekundarni da su erodirane i transportirane najčešće vodom. Tijekom neolitika sirovina se eksploatirala na nekoliko načina. Ponekad je model eksploatacije uvjetovan dostupnošću, mogućnošću transporta, blizinom izvorišta u primarnom ili sekundarnom obliku, kontrolom teritorija, preferencijama. Ponekad su mehanizmi eksploatacije bili toliko zahtjevni, iako je sirovine bilo i u mnogo dostupnijem obliku, da se postavlja pitanje nije li to bio način da se zajednica na neki način organizira u zajedničkim aktivnostima i da se može uspostaviti sustav vlasti i hijerarhija utemeljena na eksploataciji. Posebno je pitanje bilo je li tim ljudima navedena aktivnost bila prikazana kao nešto posebno važno kako ne bi dovodili u pitanje svrsishodnost posla do čijeg se konačnog rezultata moglo doći i na mnogo lakši način.

Ovisno o tipu sirovine te o vlastitoj unutarnjoj organizaciji tijekom neolitika postoje sljedeći modeli pribavljanja: a) samodostatan, b) pribavljanje sirovine razmjenom, c) pribavljanje poluproizvoda razmjenom, d) pribavljanje gotovih proizvoda razmjenom. Sirovina se prikuplja selektivno, dostupnost i blizina nisu presudni kriterij. Ono što nije poznato su razlozi odlaska po sirovinu kada se kvaliteta sirovina može naći u neposrednoj blizini. Isto se pitanje postavlja vezano uz rudnike iako se već i na površini mogla prikupiti dovoljno kvalitetna sirovina.

Za srednju i istočnu Europu su prema korištenju lokalnog, odnosno sirovina iz udaljenijih područja, ustanovljeni modeli eksploatacije i kretanja tijekom neolitika i eneolitika. Ti se modeli u nekim segmentima poklapaju s keramičkim materijalom utvrđenom dolasku novih populacija i uspostavljanjem ili prekidanjem komunikacijskih veza (Kaczanowska, Kozłowski 1997, 223-233). U neolitiku srednje i jugoistočne Europe uočena su dva glavna modela pribavljanja sirovine i procesa proizvodnje kamenog oruđa. Prvi je model, i to uglavnom vezan uz razdoblje ranog neolitika, vezan uz kompleksan sustav nabave, proizvodnje i distribucije sirovine. Drugi, koji bi se mogao nazvati oportunistički, je sustav u kojem svako naselje pribavlja sirovinu za sebe i to iz neposredne okolice.

Značenje lokalnog, regionalnog, egzotičnog

Kako bi se objasnio kontekst određenog tipa kamena na nekom staništu te odredio odnos prema izvorištima takvog kamena definirani su termini kojima se opisuje taj kontekst. Te definicije nisu iste za sva prapovijesna razdoblja. Termini „lokalno“, „regionalno“ i „egzotično“ za razdoblje paleolitika redefiniraju se za razdoblje mezolitika i neolitika, odnosno redefinira se kilometraža koja se odnosi na određeni pojam. To često stvara zbrku i nedoumice u literaturi, pogotovo ako se barata pojmovima „prapovijesni“ i za razdoblje paleolitika

the only method of extracting salt. Solar heat was also used, but this is much less evident in the archaeological records. It is assumed that salt was used as a prestigious possession and traded. Because of the different economy, and the fact that food was stored within settlements and houses, in the Neolithic salt became a very important resource. Although Childe had already observed the importance of salt, having assumed that the finds of gold from Merseburg had been traded for salt (Childe 1929), salt has often been disregarded in studies of Neolithization and the Neolithic economy (Tasić 2000).

Stone

Although stone may not have been used as the first material for making tools, stone implements are the oldest evidence of man's mastering of nature. In the 2.6 million years of stone working, in essence, little has changed. The technology of stone processing has evolved and developed, the usability of individual pieces of this raw material has increased radically, but the fundamental production mechanisms have remained the same. Stone tools used in the Neolithic had their roots in the Upper Palaeolithic and Mesolithic periods, when the majority of tool types observable in the Neolithic emerged. The shape and function of individual implements changed, but the 'mental map' remained more or less the same or very similar. In the Neolithic, two main techniques of stone working were used: chipping and polishing. Polishing was a novelty in the stone processing introduced in the Neolithic. Chipping was a process of chipping off small pieces of stone from a larger piece, prepared as a core. The chipped-off pieces were called flakes or blades. Blades are elongated flakes whose shape resembles a knife. Such blades could have been used to produce a number of tools – they could have been kept in their original form or deliberately broken into smaller pieces subsequently turned into composite implements such as a sickle. The raw material most frequently employed for making stone tools were rocks with very high silica content, conchoidal fracture, no cleavage, and very high hardness (over 6 on the Mohs scale). Such rocks are not rare and can be found in various forms, either in their primary or secondary locations. The primary location means that they are part of the original rock, while secondary location implies that they have been eroded and moved away, usually by water. In the Neolithic, this raw material was exploited in several ways. Sometimes the method selected was a result of availability, possibility of transport, vicinity of the source of material in either its primary or secondary form, control over a certain territory, or preferences. But occasionally the exploitation mechanisms were extremely demanding, although the raw material existed in a much more accessible form, bringing us to the question whether this was a way of organizing the community in its common endeavours and establishing a system of power and hierarchy based on this exploitation. Yet another question is whether this activity was portrayed to the population as something particularly important, to prevent them from questioning the purposefulness of work whose final result could have been achieved much more easily.

Depending on the type of raw material and the internal organization, we can distinguish among the following procurement models in the Neolithic: a) self-sufficient, b) procurement of raw material by trade, c) procurement of semi-finished products by trade, d) procurement of finished products by trade. Raw materials were collected selectively, and their accessibility and vicinity were not the crucial consideration. What remains unexplained are the reasons for bringing raw material from afar when high-quality raw material could be found in the immediate vicinity. The same question has been raised in connection with quarries, given that raw materials of sufficient quality could have been found on the surface.

Models of exploitation and movement during the Neolithic and Eneolithic have been developed for central and eastern Europe, on the basis of usage of local raw materials or those brought from far-away places. In some segments, those models correspond to the arrival of new populations – ascertained on the basis of pottery finds – and to established or broken communication links (Kaczanowska, Kozłowski 1997, 223-233). Two main models of raw-material procurement and stone-tool production process have been identified for the Neolithic period in central and south-eastern Europe. The first is linked chiefly to the early Neolithic, and entails a complex system of procurement, production and

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Selci Đakovački - Kaznica-Rutak, sječivo, balkanski rožnjak, kat.br. 125
Selci Đakovački - Kaznica-Rutak, blade, Balkan flint, *cat. no. 125*

i za kasnija razdoblja bez preciznijeg definiranja vremenskog okvira. Model koji je Geneste uspostavio za područje JZ Francuske za razdoblje srednjeg paleolitika, primjenjiv je i na gornji paleolitik te regije i niz drugih geografskih područja (Geneste 1988). Prema tom modelu „lokalno" podrazumijeva udaljenost u radijusu do 5 km od naselja. Takva sirovina je zastupljena na lokalitetu sa 55-98%, a od toga je samo 1-5% oruđa. „Regionalno" se odnosi na sirovinu pribavljenu iz područja u radijusu 5-20 km od lokaliteta, a zastupljen je sa 2-20% artefakata, od čega 1-20% obrađenih u oruđe. „Egzotična" sirovina potječe iz područja u radijusu 30-80 km od lokaliteta. Lovno-sakupljačke zajednice su, vidljivo u litičkom materijalu, egzistirale unutar dva koncepta: *local hominid network (local habitat)* i *social landscape* (Gamble 1993, 36). Ti se različiti sustavi korištenja prostora mogu pratiti kroz distribuciju i transfer litičkih artefakata (Gamble 1995, 22). Prvi je koncept individualno iskorištavanje okoliša pri čemu se sirovina pribavlja tijekom seobe kao dio rutine, a drugi uključuje interakciju s drugim grupama i redefiniranje identiteta zajednice u prostoru (Gamble 1999, 89-92). U kasnom mezolitiku srednje Europe uobičajena udaljenost za pribavljanje sirovine bila je u radijusu 30-50 km od staništa. Na lokalitetu Rottenburg-Siebenlinden 3 50% sirovine pribavljano je u neposrednoj blizini lokaliteta, a 50% s udaljenosti 30-50 km (Gronenborn 1999, 136). I u drugim krajevima Europe širi se zona eksploatacije sirovine što se objašnjava potrebom za sirovinom bolje kvalitete za

distribution of raw material. The second could be described as an opportunistic system in which every settlement procured raw material for its own needs, from its immediate environment.

Meaning of 'local', 'regional', 'exotic'

With a view to explaining the context of a certain type of stone in a habitat, and establishing the relation with the sources of such stone, terms used to describe the context have been defined. The definitions are not the same for all periods of prehistory. The terms 'local,' 'regional' and 'exotic' used in the context of the Palaeolithic are redefined when applied to the Mesolithic and Neolithic periods, i.e. the mileage that each of the terms corresponds to is redefined. This often results in confusion and uncertainties in the literature, especially if the term 'prehistoric' is used in reference to both the Palaeolithic and later periods, without any more precisely specified time frame. The model developed by Geneste for the middle Palaeolithic of south-western France is also applicable to the upper Palaeolithic of the region, and of a range of other geographic areas (Geneste 1988). According to that model, 'local' means within a radius of 5 km from the settlement. Such raw materials make up 55-98% of all materials at the site, and only 1-5% of that are tools. 'Regional' refers to raw materials procured within a radius of 5-20 km from the site, which make up 2-20% of the artefacts, and 1-20% of them have been processed into tools. The 'exotic' raw materials originate from an area within 30-80 km from the site. Lithic material reveals that communities of hunter-gatherers existed within two concepts: the local hominid network (local habitat) and social landscape (Gamble 1993, 36). The different systems of space usage can also be traced through the distribution and transfer of lithic artefacts (Gamble 1995, 22). The first concept regards individual use of the environment, with raw materials procured during movement, as a routine activity, while the second involves an interaction with other groups and redefining a community's identity within space (Gamble 1999, 89-92). In the late Mesolithic of central Europe, the usual distance at which raw materials were procured was 30-50 km from the habitat. At the site of Rottenburg-Siebenlinden 3, 50% of raw materials came from the site's immediate vicinity, and 50% from a distance of 30-50 km (Gronenborn 1999, 136). In other parts of Europe the zone of raw-material exploitation also expanded, and this is explained by the demand for a higher-quality raw material for the production of standardized small blades and other types of tools (Gronenborn 1999, 137). It is important to bear in mind that these communities were mobile and that the distance between the raw material and the place in which they lived does not say anything about the size of space 'toured' by a community during a certain period, given that communities moved for a variety of

Samatovci, lomljevina od opsidijana, kat.br. 220
Samatovci, obsidian débitage, cat. no. 220

proizvodnju standardiziranih malih sječiva i ostalih tipova oruđa (Gronenborn 1999, 137). Treba, naravno, imati na umu da su te zajednice bile mobilne u svojoj biti i da udaljenost korištene sirovine od mjesta boravka ne govori o veličini prostora koji je neka zajednica „obišla" tijekom određenog perioda, jer su se selili i iz drugih razloga. S početima zemljoradnje, lokacija staništa se ponekad udaljava od blizine izvora sirovine. Bilo je važnije živjeti na plodnoj i obradivoj zemlji nego u blizini sirovine, budući da su proizvodili hranu imali su što ponuditi u zamjenu onima koji su eksploatirali i distribuirali sirovinu. Čini se da su rane poljoprivredne zajednice svoju potrebu za velikom količinom sirovine ponekad rješavale slanjem ekspedicija u potragu za sirovinom. S formiranjem gusto naseljenih naselja u potpuno razvijenim neolitičkim zajednicama dolazi do svojevrsne podjele rada među naseljima. Lokaliteti blizu izvora su se specijalizirali za eksploataciju i čuvanje izvora i proizvodnju poluproizvoda koji su bili transportirani u naselja koja nisu proizvodila poluproizvode i proizvode. Razlike su uočljive na svim razinama. Primjerice, u zapadnom kompleksu LTK prosječna je udaljenost iznosila 100 km, dok je u istočnom ta udaljenost bila svega 40 km. Razlike odražavaju konzervativizam i socijalnu zatvorenost istočne LTK, naspram otvorenosti i složenih socijalnih veza zapadne LTK. Upravo bi te razlike možda mogle biti odgovor zašto se istočni kompleks LTK zadržao na Karpatima, a zapadni proširio po većem dijelu Europe (Kaczanowska 2003, 9).

Nabava je bila neophodna za proizvodnju i opstanak zajednice. Ima socijalnu, tehnološku i ekonomsku komponentu. Mreža kojom su se odvijali višesmjerni kontakti i indirektne razmjene nije se ponovila u takvom opsegu u kasnijim razdobljima neolitika. Velik razvoj sustava razmjene među ranim

other reasons, too. With the onset of agricultural activities, the distance between the habitat and the source of raw material was sometimes increased. It was more important to live on fertile and cultivable land than close to raw materials, since food production gave them something to offer in exchange to those who exploited and distributed raw materials. It would appear that early farming communities sometimes satisfied their need for significant quantities of raw materials by sending expeditions in search of raw materials. With the establishment of densely populated settlements within fully developed Neolithic communities, a certain division of labour emerged among settlements. Those close to the sources specialized in exploitation and protecting sources and producing semi-finished products which were transported to settlements that produced neither semi-finished nor finished products. Such differences can be observed at all levels. For example, within the western LBK complex, the average distance was 100 km, while in the eastern the distance was only 40 km. This difference reflects the conservatism and social seclusion of the eastern LBK, as opposed to the openness and complex social ties of the western LBK. Such differences could provide an answer to the question why the eastern LBK complex stayed in the Carpathians, whereas the western spread over most of Europe (Kaczanowska 2003, 9).

Procurement was necessary for the production and survival of the community. It had social, technological and economic components. This scope of network of indirect trade and contacts which went in various directions did not reoccur in later Neolithic periods. A major development of the system of trade among the Danube farmers was linked with the low level of adaptation of LBK communities to the diverse conditions in which siliceous rocks were collected in central Europe. In other words, poor adjustment to new circumstances surrounding the exploitation

podunavskim poljodjelcima povezana je s niskom razinom adaptacije LTK zajednica na različite uvjete prikupljanja silicijskih stijena u srednjoj Europi. Drugim riječima to znači da slaba prilagodba na nove okolnosti eksploatacije uzrokuje dobru prilagodbu na razmjenu. Unutar jedne kulturne grupe naselja su mogla imati različit odnos prema sirovinama i proizvodnji, a razlika je čak moglo biti i unutar jednog naselja, odnosno na razini kućanstva (Voytek 2000, 269-277). Naseobinske zajednice, odnosno njihove jedinice (kućanstva) jedina su socijalna struktura koja se može uočiti na većini ranih neolitičkih lokaliteta. Unutar tih, kao i u svim ostalim zajednicama, morala je postojati podjela rada prema dobi i spolu, hijerarhiji te vještinama. Socioantropološka istraživanja pokazuju da su svi stanovnici malih sela bili povezani socijalnim i ekonomskim vezama kao zajednički vlasnici resursa, koji zajedno sudjeluju u proizvodnji ili sudjeluju u kompenzacijama za određene poslove, koristeći različite socijalne kanale (Lech 1990, 56). Zahvaljujući etnografskim primjerima pokazano je da snažno ustrojena sociopolitička organizacija uopće nije potrebna za učinkovitu eksploataciju i upravljanje silicijskim sirovinama (Torrence 1986, 50). Posao nikada ne mora biti obavljan u kontinuitetu niti su ga nužno obavljali specijalizirani profesionalci. Za zadovoljavanje dnevnih potreba gotovo svaki član zajednice mogao je naučiti napraviti jednostavno oruđe. Vlasništvo nad resursima je također poprilično variralo. Ili je određeni rudnik bio vlasništvo cijele zajednice, a čak i u situacijama kada je rudnik prepoznat kao vlasništvo neke grupe, ostali su također mogli dobiti dopuštenje za korištenje putem sklapanja određenog tipa saveza. Postojanje kompleksnih sustava rudnika samo za sebe nije dovoljan pokazatelj sociopolitičke kompleksnosti ili zatvorenosti neke zajednice. Jednostavne plemenske zajednice sposobne su za obavljanje i vremenski i tehnički zahtjevnih zadataka pod vrlo neformalnom ili *ad-hoc* vlašću (de Grooth 1997, 71). Analize eksploatacijskih lokaliteta – rudnika, kamenoloma i sustav distribucija silicijskih stijena te naselja, temeljni su podaci neophodni za potvrdu postojanja složenije i organizirane socijalne strukture. Distribucija silicijskih stijena u neolitiku pokazuje intenzivnu interakciju između naselja. Opsežna distribucija različitih sirovina, kao i učestalost raznih tipova, morala je biti povezana s protokom informacija te različitim kontaktima koji u takvom opsegu nisu vidljivi u ranijim razdobljima. To je vidljivo u homogenosti kulturnih atributa na širokom prostoru Europe, kao i u jasno različitim značajkama u odnosu na lovno-sakupljačke mezolitičke populacije. Sirovine putuju u različitim oblicima ovisno o dimenzijama inicijalnih blokova, stupnju zahtjevnosti obrade te vještine kupaca. Analizom proizvodnog procesa ustanovljeno je da su sirovine putovale

caused good adjustment to trade. Within a single cultural group, settlements could have diverse attitudes to raw materials and production, and differences could also exist within a settlement, at the level of households (Voytek 2000, 269-277). Settlement communities, that is, their units (households), are the only social structure that can be observed in the majority of early Neolithic sites. Within them – as within all communities – there must have been a division of labour depending on age and gender, hierarchy and skills. Socio-anthropological research has shown that all inhabitants of small villages were linked by social and economic ties, as joint owners of resources, who together participated in production or in compensations for certain work, using diverse social channels (Lech 1990, 56). Ethnographic examples have demonstrated that a firmly structured socio-political organization is not necessary for efficient exploitation and management of siliceous raw materials (Torrence 1986, 50). The work never needed to be performed in continuity, nor was it necessarily carried out by specialized professionals. In order to satisfy their daily needs, nearly every member of the community could learn how to make a simple tool. The ownership of resources also varied considerably. A mine could be owned by the entire community, and even in cases in which it was recognized as being in the ownership of a group, others could be allowed to use it, on the basis of some kind of alliance. The existence of complex mining systems is not in itself an indicator of a complex socio-political organization or closeness of a community. Simple tribal communities are capable of performing time-consuming and technically demanding tasks under very informal or 'ad hoc' authority (de Grooth 1997, 71). In order to confirm the existence of a more complex and organized social structure, analyses of exploitation sites (mines, quarries), the system of distribution of siliceous rocks and the settlement are necessary. The distribution of silica rocks in the Neolithic indicates that the interaction among settlements was intensive. The wide scope of distribution of various raw materials, and the frequency of diverse types, must have been linked to the information flow and various contacts on an unprecedented scale. This is further reflected in the homogeneity of cultural attributes over the vast European territory, and in clear differences from Mesolithic populations of hunter-gatherers. Raw materials travelled in various forms, depending on the size of initial blocks, degree of complexity of processing, and skill of the buyers. An analysis of the production process has established that raw materials travelled as blades, finished tools, pre-cores and cores. There were also travelling traders who traded semi-finished and finished products (blades and finished tools). Obsidian mostly travelled raw, as prepared cores; the most famous find of such cores has been made at the site of Nyírlugos (Hillerband, 1928). The reason for this is the small size of obsidian nodules found in the Tokaj-Prešov region, and its simple working into tools.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Radiolariti iz ofiolitne zone, tipična sirovina u sopotskoj kulturi.
Radiolarites from an ophiolite zone, a typical raw material of the Sopot culture.

kao sječiva, gotove alatke, predjezgre i jezgre. Postojali su i putujući trgovci gotovim poluproizvodima i proizvodima (sječivima i gotovim oruđem). Opsidijan uglavnom putuje kao sirovina, odnosno u obliku pripremljenih jezgri, a najpoznatiji nalaz te vrste je skupina jezgri pronađena na lokalitetu Nyírlugos (Hillerband 1928). Razlog tome su male dimenzije gomolja opsidijana koji se pojavljuje u tokajsko-prešovskoj oblasti te jednostavna obrada u oruđe. Opsidijan se u velikim količinama koristio blizu izvorišta sirovine. Kako se povećava udaljenost od izvora, tako opada i koncentracija opsidijana kao sirovine. Opsidijan se javlja i dalje, ali vjerojatno kao simbolika ili dar. Zbog svog atraktivnog i neobičnog izgleda opsidijan je sigurno svojevrstan simbol prestiža. No kada je riječ o njegovim praktičnim karakteristikama, one sigurno nisu takve da bi netko putovao tisuću km da ga dobije. Opsidijan je, barem na području Balkana, iako prisutan na mnogim lokalitetima, uvijek malobrojan i često u obliku koji nije bio iskoristiv kao oruđe. Zbog rijetkosti on je mogao biti dokaz putovanja, teritorijalnosti, veza pa se njegova uloga možda može prije proglasiti simboličnom nego utilitarnom (Tripković 2001, 38). Trenutno nema dovoljno dokaza koji bi neopozivo mogli razjasniti ulogu opsidijana na lokalitetima na Balkanu. Vrlo kvalitetan i popularan sentgalski radiolarit zabilježen je na udaljenosti od 1000 km, a čokoladni rožnjak i jursko-krakovski su putovali oko 850 km. Iz toga se vidi važnost, više simbolička nego utilitarna, nekih tipova sirovine. Isto tako mala zastupljenost sirovine ne umanjuje važnost poruke koju ona nosi jer bez obzira je li riječ o 1 ili 1000 komada važna je udaljenost koju je prešla, a ne brojnost ili utiliranost.

Large quantities of obsidian were used in the vicinity of the raw material's source. As the distance from the source grows, the concentration of obsidian as a raw material drops. It can still be found, but it was probably used as a symbol or gift. Because of its attractive and unusual appearance, obsidian must have been some kind of symbol of prestige. But when it comes to its practical characteristics, they are not such as to prompt somebody to travel a thousand kilometres to get it. Although obsidian is present at many sites, at least in the Balkans, such finds are always few, and often it has been found in a form that could not be used as tools. Because of its rarity, it could be used as proof of a journey, territoriality or links, and thus its role could be described as symbolic rather than utilitarian (Tripković 2001, 38). For the time being there is not enough evidence to clarify the role of obsidian at sites in the Balkans. High-quality and popular Szentgál radiolarite has been recorded at a distance of 1000 km, and chocolate chert and Jurassic-Krakow chert had travelled some 850 km. This testifies to the symbolic rather than utilitarian importance of some types of raw materials. In addition, small quantity in a raw material does not diminish the importance of the message it carries, and, whether there is a single piece of a thousand, what matters is the distance it has travelled, not its numbers or utilitarian function.

As regards the distances that various raw materials travelled, besides shells, they can be best determined for stone. Popular rare raw materials, used to produce polished tools, such as jade and nephrite, can be found throughout Europe. Some types of Szentgál radiolarite have been discovered at the Sopot Culture site of Samatovci near Osijek (Balen et al. 2002, 25), and their

Osim morskih školjaka, udaljenosti putovanja sirovine najbolje se mogu odrediti za kamenu sirovinu. Popularne rijetke sirovine za glačane alatke kao što su žadeit i nefrit mogu se naći na području čitave Europe. Neki tipovi sentgalskog rožnjaka pronađeni su na sopotskom lokalitetu Samatovci kod Osijeka (Balen *et al.* 2002, 25), a rasprostiru se na udaljenosti i od preko 500 km (Groneneborn 2009, Matetiucová 2008). Sentgalski radiolarit na nalazištu Brunn II kod Beča je zastupljen sa 75%. Lokaliteti Rosenburg i Strögen su na udaljenosti od 230 km, a sentgalski radiolarit je zastupljen sa 50%. Sentgalski radiolarit je prisutan i na moravskim lokalitetima Vedrovice i Kladniky (Matetiucová 2001, 289; 2002, 186). Najveća zabilježena udaljenost je oko 1000 km u regijama Saale i Hessen. Slaba zastupljenost sirovine ne umanjuje značenje činjenice da je netko fizički prešao put od 1000 km da bi ju donio u naselje. Osim za izradu oruđa, kamen se koristi i kao sirovina za izradu nakita, ukrasa i ornamenata. Predmeti od kamena, bilo kao nakit ili kao oruđe, pogotovo onog rijetkog, imaju snažnu simboličku vrijednost i važnost čije opsege i značenje tek trebamo pokušati odgonetnuti.

Postojeće sirovine i njihova upotreba nam govore o nekim tradicijama preživjelim iz ranijih razdoblja, kao i o novim svjetonazorima i običajima koji se formiraju u Europi od 7. tisućljeća prije Krista. Posebno je vidljiv potpuno nov sustav privrede, prije svega sustav prehrane koji je zahtijevao vrlo kompleksne sustave razmjene i učinio zajednice međuovisne jedne o drugima više nego bilo što u povijesti čovječanstva.

distribution zone encompasses distances of more than 500 km (Groneneborn 2009, Matetiucová 2008). Szentgál radiolarite makes up 75% of the stone at the site of Brunn II near Vienan. At the sites of Rosenburg and Strögen, at a distance of 230 km, Szentgál radiolarite makes up 50%. It is also present at the sites of Vedrovice and Kladniky in Moravia (Matetiucová 2001, 289; 2002, 186). The greatest distance at which it has been found is around 1000 km, in the regions of Saale and Hessen. The low frequency of the raw material does not diminish the fact that somebody physically made a journey of 1000 km to bring it to the settlement. Stone was also a raw material used, in addition to tool making, for jewellery, ornaments and decorations. Whether they ended up as jewellery or implements, objects made of stone, especially of rare kinds of stone, had a high symbolic value and importance whose scope and meaning still remain to be discerned.

Raw materials, and the way in which they were exploited, reveal some traditions passed down from earlier periods, and some new world views and customs which developed in Europe after the 7th millennium BC. Particularly prominent is the entirely new economic system, primarily in food production, which demanded very complex systems of trade and made communities mutually dependent more than anything else in the history of mankind.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

INA MILOGLAV

OD GLINE DO PREDMETA – KERAMIKA U NEOLITIKU

FROM CLAY TO ARTEFACTS: POTTERY IN THE NEOLITHIC

Riječ keramika potječe od grčke riječi *keramos* što znači glina, *keramikos* označava proizvod napravljen od gline, a *Keramike tehne* vještinu pečenja keramike. U hrvatskom jeziku upotrebljavamo još i riječ lončarija i lončarstvo. Pojam lončarija obuhvaća sve lončarske, tj. keramičke proizvode, a lončarstvo označava lončarsku vještinu, odnosno umijeće (Miloglav 2011, 115).
Danas keramičke proizvode dijelimo u dvije skupine: grubu građevinsku keramiku koja obuhvaća nalaze poput opeke, crijepa, glinenih cijevi itd., te finu keramiku za svakodnevnu upotrebu.
Keramika je jedan od najčešćih materijala koje arheolozi obrađuju i analiziraju. Razlog tome je možda i činjenica što su keramički ulomci i statistički najbrojniji nalazi na arheološkim lokalitetima. Nekoliko je bitnih faktora koji tome idu u prilog. Jedan od njih je svakako glina, materijal koji je lako dostupan i lako obradiv. Druga dva su kratko vrijeme uporabe te otpornost keramike na mnoge mehanizme u arheološkom okruženju, poput oksidacije i bakteriološkog propadanja. Keramičke posude, kao i ostali artefakti napravljeni ljudskom rukom, otkrivaju nam socijalni kontekst čovjeka u prošlosti, njegovo ponašanje i svakodnevne aktivnosti te socijalnu, ekonomsku i političku uvjetovanost tih aktivnosti.
Od svih materijala koji se koriste u izradi keramike najvažnija je glina. Samo značenje riječi glina razlikuje se ovisno o području interesa, a u arheologiji glina označava materijal koji sadrži čestice minerala, koji pomiješan s vodom poprima plastičnost, pri sušenju postaje krut, a zagrijavanjem na određenoj temperaturi postiže tvrdoću, čvrstoću, kemijsku i fizičku stabilnost (Goffer 2007, 231).
U osnovi, glina je kompleksni materijal čije su najosnovnije karakteristike vrlo male čestice (manje od 0,002 mm u promjeru) i razmjerno veliki udio minerala (Orton *et al.* 1993, 114). To je mineraloški sediment nastao raspadanjem različitih magmatskih i silikatnih stijena pod djelovanjem atmosferilija i drugih utjecaja (mehaničko, kemijsko i organsko raspadanje). Sastoji se od mineraloških čestica (tzv. glinenih minerala) aluminijevih silikata koji sadrže vodu (kaoliniti, montmoriloniti, iliti, haloziti, nontroniti, alofani itd.) i raznih drugih primjesa poput kremena, hidroksida željeza, karbonata, ortoklasa i organskih ostataka (Zlatunić 2005, 63). Od svih sedimentnih stijena na zemlji 70% njih su glinena tla. Stoga i ne čudi što su ljudi odavno prepoznali svojstva gline i koristili je od najranijih prapovijesnih vremena, prvo kao proizvode koji su nastali samo sušenjem gline na suncu, a kasnije i zagrijavanjem na vatri. Nekoliko je ključnih razloga koji su utjecali na iskorištavanje gline za proizvode korištene u svakodnevnom životu. Glina je, bez dvojbe, jedan od najbogatijih, najjeftinijih i najprilagodljivijih dostupnih prirodnih materijala odavno

The word 'ceramics' is derived from the Greek word keramos, which means 'clay'. Keramikos denotes an object made of clay, while Keramike tekhne is the skill of firing ceramics. Another term used in English is 'pottery', and it is used to denote all ceramic products (Miloglav 2011, 115).
Nowadays, ceramic products are divided into two groups: rough construction-ceramic finds which include bricks, roof tiles, clay pipes etc., and fine ceramic vessels for everyday use. Pottery is among the most common materials processed and analysed by archaeologists. One of the reasons could be the fact that potsherds are statistically the most numerous finds on archaeological sites, and this is due to several important factors. One is undoubtedly clay, a material that is easily accessible and worked. Another reason is the short period of its use, and the ceramics' resistance to many mechanisms present within an archaeological environment, such as oxidation and bacteriological decay. Along with other artefacts produced by human hand, pottery reveals the social context of man in various historical periods, his behaviour and daily activities, as well as the social, economic and political circumstances prompting such activities. Clay plays the most important role among the materials used in the production of ceramic objects. The precise meaning of the word 'clay' differs with the field of expertise: in archaeology, clay denotes a material which contains mineral particles, and when mixed with water becomes plastic, when dried becomes solid, and when fired at a specific temperature becomes hard, firm, chemically and physically stable (Goffer 2007, 231).
Basically, clay is a complex material whose main characteristics are very fine particles (less than 0.002 mm in diameter) and a relatively high proportion of minerals (Orton et al. 1993, 114). It is a mineral sediment, created by decay of various magmatic and silicate rocks caused by weathering and other influences (mechanical, chemical and organic decay). Clay consists of mineral particles (the so-called clay minerals) of aluminium silicates which contain water (kaolinites, montmorillonites, illites, halosites, nontronites, allophanes, etc.) and various other admixtures such as flint, iron hydroxide, carbonates, ortoclasses and organic remains (Zlatunić 2005, 63). Of all the sediment rocks on the Earth, 70% are clay soils. Therefore, it is not surprising that humans recognized the characteristics of clay long ago and began using it in the earliest prehistoric periods, at first for products made by simple drying of clay in the sun, and later for those produced by firing. Several key factors stimulated utilization of clay for the production of everyday objects. Clay is certainly one of the most abundant, cheap and adaptable materials accessible in nature, recognized as a useful resource long ago (Rice 1987, 7). Before clay was transformed into ceramic products, such items were made of wood, stone and bone, which does not imply that clay and its characteristics had not been recognized at the time.

Slavča - Nova Gradiška, ulomak keramičke posude, kat.br. 228
Slavča - Nova Gradiška, fragment of ceramic vessel, cat. no. 228

prepoznat kao korisna sirovina za eksploataciju (Rice 1987, 7). Transformaciji gline u keramičke proizvode prethodili su drveni, kameni i koštani predmeti, što ne znači da glina i njezine karakteristike nisu bile već tada poznate i prepoznate. Najraniji poznati keramički proizvodi dokumentirani su na lokalitetu Dolní Věstonice u južnoj Moravskoj, ledenodobnom taboru lovaca na mamute (mlađi paleolitik, gravetijenska kultura oko 26000 god. pr. Kr.). Ondje su pronađene glinene figurice medvjeda i lavice te ženski kipići, tzv. Venere. Međutim, još uvijek nije potpuno jasno kada je izrada keramičkih posuda postala važna u ljudskoj povijesti i zauzela primat u izradi svakodnevnih uporabnih predmeta. Poznato je da su glinom počele više manipulirati lovačko-sakupljačke zajednice u kasnom pleistocenu i ranom holocenu (Rice 1999). Proizvodnja keramičkog posuđa i drugih utilitarnih predmeta značajnije se ipak razvija s procesom neolitizacije, sjedilačkim načinom života, kultivacijom biljaka i domestikacijom životinja. Naime, keramika je podložna lomljenu i teška za transportiranje pa je vjerojatno imala manju važnost kod lovačkih zajednica koje su se stalno selile. S druge strane, određene namirnice poput sjemenki i žitarica najbolje se mogu pripremiti i konzumirati kada su pripremljene i kuhane s vodom, a keramika je najpogodnija za takvu vrstu pripreme (Sinopoli 1991, 1-2). Keramika je u biti kombinacija četiri osnovna elementa: zemlje, vatre, vode i zraka. Nekoliko najranijih predmeta načinjenih od gline ukazuju na poznavanje tri važna principa uporabe ovog sirovinskog materijala. Jedan od prvih je spoznaja da je vlažna glina plastična te da se može oblikovati i zadržati takvu formu nakon sušenja. Druga važna prekretnica u eksploataciji gline leži u otkriću vatre kao termalnog izvora koji transformira mekanu glinu u proizvod koji je čvrst i trajan. Dodavanje različitih materijala u glinu kako bi se poboljšala

The earliest known pottery was registered at the site of Dolní Věstonice in southern Moravia, an Ice Age camp of mammoth hunters (Upper Palaeolithic, Gravettian Culture, around 26,000 BC). The finds include clay figurines depicting a bear and a lioness, and female statuettes, the so-called Venuses. However, it is not entirely clear at what point the making of pottery vessels became important in human history and gained predominance among methods of production of items for everyday use. We do know that clay started to be worked more often by communities of hunter-gatherers in the Late Pleistocene and early Holocene (Rice 1999). Nonetheless, the production of ceramic vessels and other utilitarian objects developed more significantly with the onset of neolithization, a sedentary way of life, plant cultivation and the domestication of animals. Pottery is fragile and difficult to transport, and for this reason it probably played a less important role in hunting communities that were constantly on the move. On the other hand, certain food items, such as grains and cereals, are best prepared and consumed when mixed and cooked with water, and pottery is best suited for such preparation of food (Sinopoli 1991, 1-2).
Pottery is, in reality, a combination of the four basic elements: earth, fire, water and air. Some of the earliest clay products suggest that their makers were aware of three important principles of use of this raw material. One of them is the recognition of the fact that clay is plastic, and that it can be shaped and retain its form when dried. The second important turning point in the exploitation of clay was the discovery of fire as a thermal source that transforms soft clay into a solid and durable product. Adding various substances to clay to improve its properties and hardness is a sign of complete understanding of all the possibilities offered by clay as a material suitable for further processing and maximum exploitation in daily life (Rice

njezina kvaliteta i čvrstoća, dovodi do konačnog razumijevanja svih mogućnosti koje nudi glina kao materijal pogodan za daljnju obradu i maksimalnu uporabljivost u svakodnevnome životu (Rice 1987, 8). Izrada keramičkog posuđa tako postaje transformirana eksploatacija već poznate sirovine.

Porijeklo keramičkih posuda

Mnogo je teorija o nastanku keramičkih posuda. odnosno spoznaji da se glina može zagrijavati na vatri kako bi se dobio željeni oblik koji je čvrst i trajan. Jedna od pretpostavki je da su keramičke posude bile inspirirane pukotinama u zemlji koje su nastale nakon što se zemlja posuši nakon obilnih kiša (Goffer 2007, 239-240). Ostale teorije mogu se generalno sažeti na: „arhitektonsku/građevinsku" i „kulinarsku" hipotezu, socijalnu/simboličku uvjetovanost i pojam intenziviranja resursa (za pregled vidi: Rice 1999).
„Arhitektonska/građevinska hipoteza" temelji se na usporedbama korištenja gline za konstruktivne elemente pri građenju i za konstrukciju keramičkih posuda. Tako bi prve keramičke posude nastale kao imitacija arhitektonskih tehnika koje su se već prije koristile u izgradnji kuća, a uključuju miješanje gline i slame kako bi se dobila jedna vrsta žbuke ili pak način na koji su se pravile glinene cigle koje su se također koristile u gradnji.
Zagovornici „kulinarske teorije" smatraju da su keramičke posude izmišljene nakon spoznaje da glina koja je ostavljena na suncu i koja se stvrdne može poslužiti za kuhanje, skladištenje hrane ili tekućine. Neki tvrde da se još prije toga glina koristila za oblaganje unutrašnjosti košara tako što su se sušile na suncu kako bi postale nepropusne. Na starčevačkom lokalitetu Donja Branjevina nađene su zdjele poluloptastog oblika koje su s vanjske strane imale otisak pletene košare što implicira njihovu imitaciju (Minichreiter 2007). Pobornici ove teorije o nastanku keramike također naglašavaju da se glina koristila za oblaganje peći ili jama za pečenje koje su služile za zagrijavanje kamenja i da se tada već došlo do spoznaje da se glina može stvrdnuti kada se posuši ili zagrije. Upotreba vrućih kamenja u svrhu zagrijavanja tekućine i kuhanja hrane u košarama, životinjskim mješinama ili drvenim posudama zabilježena je na mnogim arheološkim i etnološkim primjerima. Najranijom pripravom hrane na ovaj način nije se mogla postići visoka temperatura zagrijavanja tekućine u kojoj se kuhaju namirnice biljnog ili životinjskog porijekla niti su takvi predmeti mogli služiti dugotrajnoj upotrebi. S druge strane keramičke posude se mogu staviti direktno na vatru, a poteškoće u održavanju visoke temperature u posudama s velikom količinom tekućine nisu predstavljale više nikakav problem. Upravo zbog toga neki autori smatraju

1987, 8). Thus, the production of pottery became a transformed exploitation of a previously known material.

Origin of ceramic vessels

There are many theories on the origin of ceramic vessels and the notion that clay can be heated by fire and thus achieve a solid and durable form. One of the hypotheses is that ceramic vessels were inspired by the cracks in the soil which appear when the soil dries after heavy rains (Goffer 2007, 239-240). Other theories can be summarized as the 'architectonic/construction' hypothesis and the 'culinary' hypothesis, social/symbolic conditioning and the notion of resource intensification (for an overview, see: Rice 1999).
The 'architectonic/construction' hypothesis is based on comparisons of clay used for construction elements with that used for the production of ceramic vessels. According to this theory, the first pottery vessels were created as an imitation of architectural techniques used previously for the construction of houses, including the mixing of clay and straw to obtain a type of plaster, and the making of regularly-shaped clay bricks that were used for building.
Proponents of the 'culinary' hypothesis believe that ceramic vessels were invented once people realized that clay, when left in the sun and hardened can later be used for cooking and storing food and liquids. There are also claims that, prior to this, clay had been used to coat the inner side of baskets, which were then dried in the sun to make them impermeable. At the Starčevo Culture site of Donja Branjevina, semi-globular bowls have been found with imprints of willow basket on the outer surface, suggesting their imitation (Minichreiter 2007). Supporters of this theory of the creation of ceramics also emphasize that clay had been used to coat stoves or firing pits which were used to heat up stones, and that at that point people already realized that clay can become hard when dried or heated. The use of hot stones to warm up liquids and cook food in baskets, animal bladders or wooden vessels has been evidenced by many archaeological and ethnological examples. At first, when food was prepared using this method, the liquids in which foodstuffs of plant or animal origin were cooked could not be heated to high temperatures, and such vessels could not be used for a long time. In contrast with this, pottery vessels could be placed directly on the fire, and maintaining high temperatures in vessels containing large quantities of liquids was not a problem. This is precisely the reason why some authors believe that pottery became widely used – it called for less attention and monitoring during cooking, in comparison to heating stones in animal bladders, skins or baskets. From this point of view, ceramic vessels constituted a technological simplification, which eventually allowed people to devote their time to more demanding activities. In this respect,

da su keramičke posude ušle u širu upotrebu jer zahtijevaju manje pažnje u nadziranju kuhanja hrane u usporedbi sa zagrijavanjem kamenja u životinjskim mješinama, koži ili košarama. Gledano iz tog kuta keramičke posude predstavljale bi tehnološko pojednostavljenje koje je na koncu omogućilo ljudima da se posvete zahtjevnijim poslovima. U tom smislu naglašavaju da je veza između kuhanja i hrane manje bitna od veze između uloženog vremena i radne energije u nadziranju posude za kuhanje (Schiffer, Skibo 1987). Koncept intenziviranja resursa donekle se poklapa sa socijalnom/simboličkom uvjetovanošću nastanka prvih keramičkih posuda, a odnosi se na promjenu dnevnih aktivnosti kao i na društvenu organizaciju među lovačko-sakupljačkom zajednicom krajem pleistocena/početkom holocena. Kako mobilnost opada, a sjedilački način života raste, linearno je u porastu i potreba za pohranom hrane. Tako se prve keramičke posude javljaju više u područjima koje karakterizira sezonsku naseljenost, a povezuju se s hranom koja se koristila u posebnim društvenim aktivnostima poput raznih obreda i žrtvovanja. Simbolička funkcija ovih predmeta za posebnu namjenu promatrana je kroz segment ukrašavanja površine i raznih (simboličkih) motiva koji se na njoj nalaze.
Međutim. još uvijek ostaje otvoreno pitanje zašto su ljudi počeli upotrebljavati „spremišta" za hranu od gline kada su bila poznata i ona od drugih materijala?
Možda je jedan od odgovora u tome što je keramika osigurala novu tehnologiju, odnosno omogućila je da se neke nove namirnice u njoj procesuiraju. Posude od pečene gline tako su počele nuditi brojne prednosti, a neke od njih su:
1. povećanje efikasnosti u pripremi novih namirnica, posebno žitarica (ječma, pšenice) tako što su ih mogli kuhati na vatri ili peći
2. povećanje kapaciteta i dugotrajnosti čuvanja hrane, tj. žitarica
3. poboljšanje prehrane pripremom svježih namirnica
4. smanjivanje vremena potrebnog za nadziranje keramičke posude u kojoj se kuha u usporedbi s prijašnjim predmetima načinjenim od kamena, kože, kore, životinjskih mješina ili košara
5. mogućnost korištenja hrane koja sadrži toksin, a koja se nije mogla koristiti u svakodnevnoj prehrani bez kuhanja, odnosno termičke obrade
Koji god su razlozi bili ključni za eksploataciju gline u svakodnevnom životu najbitnija je bila spoznaja da se manipulacijom gline i vatre mogu dobiti predmeti koji služe za kuhanje/spremanje/skladištenje hrane ili tekućine. Tako pojava keramičkih posuda predstavlja sažimanje ljudskog iskustva i znanja koji je vezan za izbor materijala, tehnološke procese i potrebu. One predstavljaju kompromis između

some authors underline the fact that the link between cooking and food is less important than the link between the time dedicated to, and the labour invested in, monitoring the cooking pot (Schiffer, Skibo 1987). The concept of resource intensification partially coincides with the social/symbolical conditioning of the appearance of the first ceramic vessels, and it regards a change in daily activities and in social organization within hunting-gathering communities of the Late Pleistocene / Early Holocene. As the communities were less mobile, and the sedentary way of life was increasing, there was also a linear growth in the necessity to store food. Thus the first pottery appeared predominantly in areas characterized by seasonal settling, and it has been associated with food used during some special social activities, such as rituals and offerings. The symbolical function of these special-purpose objects has been considered on the basis of the decoration of their surfaces and various (symbolic) motifs present in the decoration.
Still, the question why people started using clay food 'stores', when they had such 'stores' produced from other materials, remains open.
One of the answers could be that clay brought with it a new technology, and that it allowed the processing of some new foodstuffs. Vessels made of fired clay offered a number of benefits, some of which are:
1) increased efficiency of preparing new foodstuffs, especially cereals (rye, wheat), which could be cooked on a fire or stove
2) increased capacity and duration of food (cereal) storage
3) improved diet, based on preparation of fresh food
4) less time needed for monitoring ceramic cooking pots, in comparison to previous cooking utensils made of stone, leather, bark, animal bladders or baskets
5) an opportunity to consume food containing toxins, which could not be used previously in everyday diet without being cooked, that is, thermally processed.
Whatever the key reasons for the exploitation of clay in everyday life, the most important was the awareness that, by manipulating clay and fire, one could obtain objects that could be used for cooking/preparing/storing food and liquids. Therefore, the emergence of pottery constitutes a condensation of human experience and knowledge pertaining to the selection of materials, technological processes and demands. It represents a compromise between the need and characteristics of available raw material, design, production technology and final usage.

Technology of pottery production

Pottery has been constantly prone to change. Given the technological development, its utilitarian functions, tastes and fashions, its quality, shapes, surface treatment and decoration

Brezovljani, zdjela, kat.br. 23
Brezovljani, bowl, cat. no. 23

potrebe i osobina dostupne sirovine, dizajna, tehnologije izrade i konačne upotrebe.

Tehnologija izrade keramičkih posuda

Keramika je konstantno podložna promjenama. S obzirom na razvoj tehnologije, na uporabnu funkciju, ukus i modne trendove neprestano se mijenjala kvaliteta, oblici, obrada površine, ukrašavanje. Iako su predmeti načinjeni od keramike lomljivi, oni su ipak u svojoj supstanci trajni, pa su i najbrojniji artefakti koje arheolozi nalaze na lokalitetima koja istražuju. Općenito gledajući keramika se sastoji od tri osnovna sirovinska materijala: gline - gnjecavog finozrnatog sedimenta koji postaje plastičan kada je mokar; neplastičnih primjesa – minerala i organskih tvari koji se prirodno nalaze u glini ili su joj namjerno dodani kako bi glina bila podatnija za obradu (feldspat, kalcijev karbonat, pijesak, kremen, kalcit); vode – koja se dodaje glini i njenim primjesama da bi postala plastična te pogodna za pečenje i sušenje. Ostali sirovinski materijal koji je uključen u keramičku proizvodnju su razne boje i gorivo koje se koristi pri pečenju (Sinopoli 1991, 9).
Tehnologija neolitičke keramike podrazumijeva tehnološke procese koji obuhvaćaju odabir i pripremu sirove gline, pročišćavanje gline, dodavanje primjesa i metodu izrade posude ručnim miješanjem glinene smjese, dovršavanje posude oblikovanjem, sušenje, pečenje i ukrašavanje. Tehnologija izrade ovisi o vrsti gline, te vještini, znanju, navikama i afinitetu majstora koji je izrađuje (Banning 2000, 161). Cjelokupan proces izrade keramičkih posuda može se stoga podijeliti u 7 faza:
1. Nabava i priprema gline za obradu – ova faza uključuje vađenje i transportiranje gline do mjesta gdje će se ona obrađivati, pa je zbog toga najčešće riječ o glini iz neposredne okolice. Priprema gline zahtijeva čišćenje od raznih organskih tvari koje se u njoj nalaze ili dodavanje istih kako bi se poboljšala kvaliteta. S druge strane, neke gline ne trebaju nikakvu modifikaciju prije pripreme za obradu (Knappett 2005, 678).
Na lokalitetima rane starčevačke kulture uz radni prostor zemunice koji je uključivao i keramičke peći nalazimo i jame za vađenje gline. Takve jame uobičajena su pojava od najranijih prapovijesnih dana, pogotovo kada se sirovinski materijal nalazi unutar naselja. Takve jame služile su za vađenje gline za gradnju kuće, izradu keramičkih posuda i ostalih predmeta načinjenih od keramike (utega, pršljenaka, žlica, raznih kultnih predmeta i figurica itd.).
2. Nabava i usitnjavanje primjesa - razne primjese poput minerala ili organskih tvari (trave, sjemenki, slame, školjki), te groga (smrvljene keramike) dodavale su se u glinenu smjesu kako bi se poboljšala njena kvaliteta i povećala njena otpornost. Grog u glinenoj smjesi zabilježen je kod najranijih neolitičkih kultura. On se uobičajeno dodavao glini kako bi se povećala njena otpornost na temperaturne promjene i razna oštećenja. Iako je napravljen od gline, grog nema veličinu zrnaca karakterističnu za glinu jer su mineralne osobine uništene tijekom pečenja (Velde, Druc 1999, 83).
Neke od najranijih keramičkih posuda imale su u sebi veliku količinu organskih ostataka poput trave, slame ili pljeve. Uspoređujući ih s keramikom koja u sebi ima primjese minerala pokazalo se da imaju iste kvalitete što se tiče otpornosti na termalne šokove, međutim, manje su otporne na abrazije i vrijeme sušenja je daleko veće. Prednost ovakvih posuda je u jednostavnijoj izradi i što su lako prenosive jer im je masa lakša (Rice 1999).
3. Priprema glinene paste – miješanje gline i primjesa s vodom da bi se dobila homogena smjesa koja će omogućiti glini plastičnost potrebnu za obradu. Što se tiče oblika prvih keramičkih posuda iz ranog neolitika one u osnovi imaju vrlo jednostavne loptaste ili poluloptaste oblike koji dijelom podsjećaju na mješine životinja.
4. Oblikovanje pripremljene glinene paste u željeni oblik i tretiranje površine. Sve neolitičke keramičke posude izrađene su prostoručno, koristeći tri tehnike oblikovanja (Zlatunić 2005, 70-71):
a) tehniku izvlačenja koja je primjerena za formiranje manjih posuda s ovalnim ili okruglim dnom. U ručno oblikovanu okruglu glinenu masu pritisne se palac, a drugom rukom se ona

potrebe i osobina dostupne sirovine, dizajna, tehnologije izrade i konačne upotrebe.

Tehnologija izrade keramičkih posuda

Keramika je konstantno podložna promjenama. S obzirom na razvoj tehnologije, na uporabnu funkciju, ukus i modne trendove neprestano se mijenjala kvaliteta, oblici, obrada površine, ukrašavanje. Iako su predmeti načinjeni od keramike lomljivi, oni su ipak u svojoj supstanci trajni, pa su i najbrojniji artefakti koje arheolozi nalaze na lokalitetima koja istražuju. Općenito gledajući keramika se sastoji od tri osnovna sirovinska materijala: gline - gnjecavog finozrnatog sedimenta koji postaje plastičan kada je mokar; neplastičnih primjesa – minerala i organskih tvari koji se prirodno nalaze u glini ili su joj namjerno dodani kako bi glina bila podatnija za obradu (feldspat, kalcijev karbonat, pijesak, kremen, kalcit); vode – koja se dodaje glini i njenim primjesama da bi postala plastična te pogodna za pečenje i sušenje. Ostali sirovinski materijal koji je uključen u keramičku proizvodnju su razne boje i gorivo koje se koristi pri pečenju (Sinopoli 1991, 9).
Tehnologija neolitičke keramike podrazumijeva tehnološke procese koji obuhvaćaju odabir i pripremu sirove gline, pročišćavanje gline, dodavanje primjesa i metodu izrade posude ručnim miješanjem glinene smjese, dovršavanje posude oblikovanjem, sušenje, pečenje i ukrašavanje. Tehnologija izrade ovisi o vrsti gline, te vještini, znanju, navikama i afinitetu majstora koji je izrađuje (Banning 2000, 161). The entire process of pottery production can be divided into seven phases:
procurement and preparation of clay – this phase includes extraction and transport of clay to the place where it will be processed, and for this reason clay most frequently came from the immediate surroundings. Clay preparation involves the removal of various organic substances present in the clay or their addition to improve the clay's quality. On the other hand, some types of clay need not be modified in any way prior to their preparation for processing (Knappett 2005, 678).
At Early Starčevo Culture sites, next to working spaces in dug-outs, where there were also pottery kilns, there are pits for clay extraction. Such pits have frequently been present ever since the earliest prehistoric periods, especially when the raw material could be found within the settlement. From them, clay was extracted for building houses, producing pottery vessels and other ceramic objects (weights, spindle whorls, spoons, various cult objects, figurines etc.)
2) procurement and fragmentation of admixtures – various admixtures, such as minerals and organic matter (grass, grains, straw, shells), and grog (crushed pottery), were added to the clay mixture to improve its quality and increase its resistance. Grog has been registered in the clay mixture in even the earliest Neolithic communities. It was usually added to clay in order to increase its resistance to changes in temperature and possible damage. Although it is made of clay, the size of grog particles differs from those typical of clay because their mineral properties have been destroyed by firing (Velde, Druc 1999, 83).
Some of the earliest pottery vessels contained large quantities of organic debris such as grass, straw and chaff. When compared to pottery produced with an admixture of minerals, such vessels displayed the same qualities as regards their resistance to thermal shock, but they were less resistant to abrasion, and the time needed to dry them was much longer. The advantage of such vessels lies in the simplicity of their production and in their low mass, which makes them easier to transport (Rice 1999).
3) preparation of clay paste – mixing of clay and admixtures with water to obtain a homogenous mixture which will ensure the plasticity necessary for the clay's processing. As far as the shapes of the first ceramic vessels from the Early Neolithic are concerned, they were simple globular and semi-globular shapes, recalling to some degree animal bladders.
4) shaping the prepared clay paste to obtain the desired form and surface treatment. All Neolithic pottery was made freehand, using the following three techniques (Zlatunić 2005, 70-71):
a) pulling technique, suitable for shaping smaller vessels with an oval or circular bottom. A thumb is impressed into a manually-shaped rounded clay mass, which is turned by the other hand. The turning and pressing result in the creation of the clay walls of the future vessel, and the maker determines their height and thickness.
b) ring-building technique, where simple, asymmetrical vessels of soft profiles are made from clay rings. The rings are produced by rolling the clay horizontally on a surface, or vertically between palms.
c) clay band or coil technique, used for the production of vessels of pronounced profiles.

vrti, tako da se vrtnjom i stiskanjem stvaraju glinene stijenke buduće posude i time određuje njezina visina i debljina.
b) tehniku oblikovanja pomoću glinenih prstenova kojom se izrađuju jednostavne nesimetrične posude mekih profila. Navoji su izrađeni valjanjem gline horizontalno po podlozi ili vertikalno među dlanovima.
c) tehniku glinenih traka ili zavojnica koju su koristili za izradu izrazito profiliranih posuda.
5. Sušenje posude – ovaj proces može izazvati pucanje i deformaciju posude ako se ne provodi na zadovoljavajući način. Većina deformacija na posudi tijekom sušenja događa se zbog vode. Naime, voda koja glinu čini plastičnom tijekom sušenja ishlapi, a čestice gline tada se približe jedna drugoj i posuda se uslijed takvog procesa stisne. Različite gline suše se različitom brzinom, a vrijeme sušenja ovisi o veličini kapilara kroz koje voda izlazi na površinu i ishlapljuje (Rye 1988, 21-24).
6. Pečenje posude – kao završni proces izrade keramičke posude koji se odvija u peći ili na otvorenom prostoru (ognjištu ili jami).
7. Tretmani nakon pečenja (slikanje, ukrašavanje i sl.).
Zanimljivo je da je na nekim posudama starčevačke kulture s lokaliteta Tomašanci pronađen vosak na unutrašnjoj i vanjskoj strani posude. Vosak se nanosio na posude kao jedna vrsta vodootpornog filtra/premaza kako sadržaj tekućine ne bi iscurio iz posude. On se dodavao na posudu nakon pečenja, dok je još bila vruća (Heron *et al.* 1994).

Tehnologija pečenja keramike

Pečenje je proces u kojem pri visokim temperaturama predmeti dobivaju na tvrdoći, boji i kvaliteti. Svrha pečenja je da se keramika izloži dovoljno visokoj temperaturi na isto tako dovoljno vremena, kako bi se osiguralo potpuno uništenje minerala u glini. Minimalna temperatura varira za različite minerale, najniža počinje od 500°C, a najviša od oko 800°C. Kada se zagrijava iznad ovih temperatura glina poprima karakteristike keramike, a to su čvrstoća, poroznost i otpornost na razne kemijske i fizičke promjene (Rye 1988, 96). Te su promjene ovisne o vremenu pečenja, temperaturi i atmosferi. Atmosfera može biti oksidacijska i redukcijska. Oksidacijska atmosfera pečenja postiže se ako je protok zraka neometan i ima dovoljno slobodnog kisika koji se lako veže za elemente na površini ili unutrašnjosti predmeta. Boje keramičkih posuda daju spektar od crvenkastih do žućkastih tonova, što je jedna od karakteristika kultura ranog neolitika. Za neolitičku keramiku dosta je uobičajena i nepotpuna oksidacijska atmosfera, koja se događa pri kraju procesa pečenja, zbog postupnog hlađenja i procesa dimljenja pečenih posuda unutar ognjišta ili jame. Ovakve posude imaju mrljastu površinu s

5) drying – this process can cause cracking and deformation of vessels, unless done properly. Most deformations that occur to a vessel during drying are caused by water. The water, which makes the clay plastic, evaporates during drying, causing the clay particles to get closer together, and resulting in shrinking of the vessel. Various types of clay have different drying speeds, and the time needed for drying depends on the size of the capillaries through which water escapes to the surface and then evaporates (Rye 1988, 21-24).
6) firing of vessels – the final stage of pottery production takes place in a kiln or open fire (in a fireplace or pit).
7) after-firing treatment (painting, decorating...). Interestingly, on some vessels of the Starčevo Culture discovered at the site of Tomašanci, wax was present on both the inner and the outer surfaces. The vessels – while still hot, after firing – were coated with wax, which served as a kind of water-resistant filter/coat, and prevented leaking (Heron et al. 1994).

Technology of pottery firing

Firing is a process whereby the hardness, colour and quality of objects changes under the influence of high temperatures. The purpose of firing is to expose the pottery to sufficiently high temperature for a sufficiently long time in order to completely destroy the minerals in the clay. The minimum temperature differs for various minerals, ranging from 500°C to around 800°C. When heated to temperatures in excess of these, clay obtains the qualities of ceramics, and these are hardness, porosity and resistance to various chemical and physical changes (Rye 1988, 96). The changes depend on the duration of firing, temperature and atmosphere, which can be either oxidation or reduction. An oxidation atmosphere is achieved if the air flow is unobstructed and there is sufficient free oxygen which can attach to elements on the surface or inside the object being fired. The colours of such pottery range from reddish to yellowish, and characterize cultures of the Early Neolithic. Neolithic pottery was rather frequently also produced in an incomplete oxidation atmosphere, which occurs towards the end of the firing process due to gradual cooling and smoking of fired pottery inside the fireplace or pit. The surface of pottery thus produced is tarnished and dark. A reduction atmosphere is achieved with temperatures exceeding 900ºC, when the quantity of free oxygen is insufficient. The colour of ceramics thus fired ranges from black to grey. This method of firing is entirely dependent on the quantity of organic matter in the clay mixture. The best example of reduction firing is the high-quality pottery of the Vinča Culture.
The technology of pottery firing can be divided into two categories:
Open firing – without any built structure (in an open fireplace

tamnim bojama na površini. Redukcijska atmosfera postiže se pri temperaturi većoj od 900ºC kada nema dovoljno slobodnog kisika, a boja pečene keramike varira od crne do sive. Ovakav način pečenja posve je ovisan o količini organskih tvari u glinenoj smjesi. Najbolji primjer redukcijskog načina pečenja vinčanska je keramika vrlo visoke kvalitete.
Tehnologija pečenja keramike može se podijeliti u dvije kategorije:
- *pečenje na otvorenom* bez izgrađenog objekta ili strukture (na otvorenom ognjištu ili u jami). Prva pečenja keramičkih posuda vršila su se na otvorenom, na ognjištu. Dobro osušene glinene posude stavljale bi se na zemlju, a iznad i ispod stavljalo bi se gorivo. Keramika pečena na ovaj način nejednako je pečena jer je izložena direktnoj vatri. Zbog dužine pečenja i vrlo niskih temperatura između 450 i 650ºC keramičke posude ostajale bi porozne, lomljive jer na vrlo niskim temperaturama ne dolazi do potpune razgradnje minerala.
Daljnji tehnološki napredak bio je pečenje u jami gdje su se keramičke posude slagale zajedno s gorivom (od trave, drva, šiblja). Ova tehnika zahtijeva veliku vještinu kako bi bila učinkovita. Karakteristike ovakvog načina pečenja su niska temperatura i ograničena maksimalna temperatura do 1000°C. Kada krene pečenje kontrola atmosfere je nemoguća, a lončar ne može utjecati na kvalitetu proizvoda. Položaj goriva i posuda prije pečenja može utjecati na protok zraka, ali je vrlo teško zadržati pravu oksidacijsku atmosferu tijekom cijelog procesa pečenja. Dim nema reguliranog odvoda, zbog toga je neuravnotežena i stihijska atmosfera razlog što su keramički predmeti slabije pečeni i pougljenjeni. Ovo je glavna osobina prapovijesne keramike, u prvom redu neolitičke. Kako gorivo izgara, posude su izložene zraku. Naglo hlađenje može izazvati pucanje ruba na posudama sa širokim otvorom, zbog toga se one najčešće stavljaju naopako. U takvom položaju rub se sporije zagrijava, a ujedno je izoliran pepelom i žarom za vrijeme hlađenja. Pečenje u jami pogodno je za izradu crne keramike zbog nedostatka zraka, a oksidacija se može postići izlaganjem posude dok je njezina temperatura još uvijek visoka (Rye 1988, 98).
- *pečenje u zatvorenom* (u izgrađenom objektu, tj. pećima)
Prednosti pečenja u zatvorenim objektima su: mogućnost postizanja temperature u rasponu od 1000° do 1300°C, kontrolirana atmosfera i kontrolirano vrijeme rasta temperature. Izgradnjom zaštitnih konstrukcija i zidanih svodova iznad ognjišta razvile su se prve peći. Na taj se način zadržavala temperatura i izolirala od hladnog zraka. Kasnije se ognjište odvaja od prostora za pečenje, a dodavanjem dimnjaka, odvodnih kanala, te rešetkastih pregrada poboljšava se odvod dima iz prostora za pečenje, čime se postiže potpuna oksidacijska ili redukcijska atmosfera (Horvat 1999, 47-50).

or a pit). The first pottery was fired in the open, on fireplaces. Well-dried vessels were put on the ground, and fuel was placed under and above them. The pottery fired in this way was fired unevenly, because it was exposed to direct fire. The duration of firing and very low temperatures ranging between 450 and 650ºC caused the ceramics to remain porous and fragile, because such low temperatures could not achieve complete disintegration of minerals.
Further technological progress was marked by firing in a pit, where pottery was placed together with fuel (consisting of grass, wood, wattle). In order to be effective, this technique called for great skill in the potter. Firing in a pit is characterized by low temperature, with the highest possible heat not exceeding 1000°C. Once the firing process begins, it is impossible to control the atmosphere, and the potter cannot influence the quality of his products. The way in which vessels and fuel are positioned prior to firing can affect the air flow, but it is very difficult to retain a real oxidation atmosphere throughout the firing process. Furthermore, there is no smoke exhaust, so the unbalanced and chaotic atmosphere yields pottery that is less fired and charred. This description is the main feature of prehistoric pottery, especially that produced in the Neolithic. As the fuel burns, the vessels are exposed to the air. Quick cooling can cause breakage of the rims of wide-mouthed vessels, and for this reason they are usually fired upside-down. When turned upside-down, their rims take longer to heat up, and they are also insulated by ash and embers during cooling. Pit-firing is suitable for the production of black ceramics because of the lack of air, and oxidation can be achieved by exposing the pottery while its temperature is still high (Rye 1988, 98).
Closed firing (in a purpose-built structure, that is, a kiln). The advantages of firing in closed structures are the capability of obtaining temperatures ranging from 1000° to 1300°C, a controlled atmosphere and a controlled time of temperature rise. The construction of the first protective structures and roofs above fireplaces marked the beginning of the development of kilns. Kilns allowed the temperature to be retained and provided insulation from cold air. Later, fireplaces were separated from firing areas, and when chimneys, outflow canals and barrier grids were added, the outflow of smoke from the firing chamber was improved, and a complete oxidation or reduction atmosphere could be achieved (Horvat 1999, 47-50).
The earliest Neolithic kilns have been recorded at the Starčevo Culture sites of Zadubravlje, Galovo, Gođevo, in Slavonski Brod, and on the Tržnica tell in Vinkovci (Minichreiter 2007; 2011). Those kilns are of various shapes, from dual ones, those with a round base and a narrower cylindrical neck, to oblong and rectangular ones, and even hemispherical kilns with a horseshoe-shaped base. They were built of wattle and brushwood, and

Najranije neolitičke peći zabilježene su u starčevačkoj kulturi na lokalitetima Zadubravlje Galovo, Gođevo, u Slavonskom Brodu i na telu „Tržnica“ u Vinkovcima (Minichreiter 2007; 2011). Peći su različitih oblika od dvojnih, kružne osnove s užim cilindričnim vratom, do onih izduženih i pravokutnih oblika, pa sve do tipa kalotaste peći s potkovičastom osnovom. Građene su od isprepletenog šiblja i pruća, a na vanjsku stranu ljepila se glina koja je zatim spaljena. Uobičajeno se uz ove peći nalaze i jame za vađenje gline te prostor za pripremu, pečenje i sušenje posuda, kao i pripadajući alat za obradu.
Ukratko, tehnologija procesa izrade keramike mogla bi se u grubo podijeliti na tri segmenta: oblikovanje (priprema mase za obradu i tehnike oblikovanja), tretiranje površine (obrada površine, nanos i tehnike ukrašavanja) i pečenje (atmosfera, boja i tvrdoća) (Horvat 1999, 15).

Ukrašavanje posuda

Kod tretiranja površine razlikujemo nekoliko karakterističnih tehnika. One mogu imati više funkcija, osim estetske mogu imati i praktičnu uporabnu funkciju, pa tako neke tehnike mogu više utjecati na modifikaciju oblika, a manje na površinu posude (Rice 1987, 144). Obrada površine koristi se za prikrivanje raznih nepravilnosti (izbočina, hrapave površine, pukotina) nastalih prilikom oblikovanja keramičkog predmeta, a radi se na mokroj ili na polutvrdoj djelomično sušenoj površini. Ova zadnja karakteristična je za tehniku glačanja, gdje je površina jednakomjerno zaglađena, bez nepravilnosti. Ova tehnika se izvodi trljanjem čvrstog alata (najčešće oblutka) o keramičku površinu kako bi se postiglo da se zrnca u glinenoj smjesi orijentiraju paralelno s površinom keramičkog predmeta (Velde, Druc 1999, 85).
U neolitiku tehnika glačanja najbolji efekt i dokaz vještine keramičara postiže u vinčanskoj kulturi koja je prepoznatljiva po svojoj crnoj keramici visokog, gotovo metalnog sjaja. Najkarakterističnije tehnike ukrašavanja na neolitičkoj keramici su urezivanje, utiskivanje, apliciranje i slikanje, a izvode se na nepečenoj površini. Tehnika urezivanja dijeli se još na nekoliko podtehnika, a u neolitiku prevladavaju pravilno urezivanje, duboko urezivanje, ubadanje i kaneliranje. Ove tehnike međusobno se razlikuju po vrsti i obliku alata (okrugli, šiljasti, uglati), pritisku na tretiranu površinu (pod pravim ili oštrim kutom), stanju gline (meka, polutvrda, tvrda) te iskustvu i afinitetu majstora (Horvat 1999, 29-30).
Pravilno urezivanje - radi se s alatom oštrog vrha koji se pod oštrim ili pravim kutom snažno pritiskuje, tako da reže površinu gline. Presjek urezanih linija ima oblik pravilnog ili asimetričnog slova „V“. Efekti dobiveni urezivanjem znatno se razlikuju s obzirom na stadij sušenja. Tako izdignuti i nepravilni

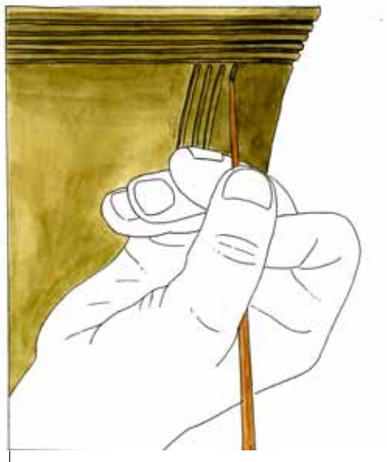
coated with clay which was then burnt. Usually, clay-extraction pits were found next to the kilns, together with space for preparation, firing and drying of the pottery, and tools for its production.
In brief, pottery-production technology can be roughly divided into three segments: shaping (preparation of clay mass and shaping techniques), surface treatment (working of the surface, coating, decoration techniques) and firing (atmosphere, colour and hardness) (Horvat 1999, 15).

Pottery decoration

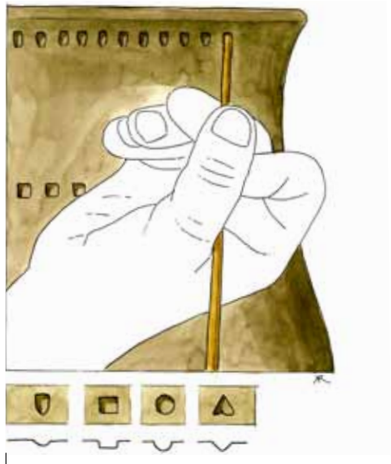
There are several characteristic techniques which can be applied to the treatment of a pottery surface. Their functions are diverse, ranging from aesthetic to practical and utilitarian, and some techniques can modify the shape rather than the surface of the vessel (Rice 1987, 144). Surface treatment is used to cover various irregularities (bulges, rough sections, cracks) created during the shaping of the pottery. It is executed on a wet or semi-hard partially dried surface. The latter is used for burnishing, with the aim of obtaining a uniformly burnished surface, with no irregularities. The technique consists of rubbing the ceramic surface with a hard tool (most often a pebble), and thus orienting grains in the clay mixture parallel to the surface of the ceramic vessel (Velde, Druc 1999, 85).
In the Neolithic, the burnishing technique gave the best results and proved the potter's skill in the Vinča Culture, with typical black pottery of a high, nearly metallic shine.
The most characteristic decorative techniques applied to Neolithic pottery were incision, impression, applied decoration and painting, all executed before firing. The incision technique can be further divided into several sub-techniques, and the most prominent among them in the Neolithic period were regular incisions, deep incisions, punctures and fluting. The techniques differ from one another in the types and shapes of the tools applied (rounded, pointed, angular), the pressure exerted against the surface that is treated (at a right or acute angle), the condition of the clay (soft, semi-hard, hard) and the experience and affinity of the craftsman (Horvat 1999, 29-30).
Regular incisions – made by a sharp-tipped tool, pressed firmly against the clay surface at an acute or right angle, so that it cuts the surface. A cross-section of the incised lines reveals the shape of a regular or asymmetrical letter V. The effects obtained by incision differ greatly depending on the stage of drying. Raised and irregular edges indicate that the surface was wet, clean lines demonstrate that incisions were made on a semi-hard surface, while thin and very shallow lines suggest that the surface was rather dry.
Fluting – made by a blunt-tipped tool, pressed against the clay

rubovi ukazuju na mokru površinu, čiste linije znače da je urezivanje napravljeno na polutvrdoj površini, a tanke i vrlo plitke linije ukazuju na vrlo suhu površinu.

Kaneliranje – radi se s alatom tupog kraja pod oštrim ili pravim kutom. Kanelirane linije su široke i plitke, a najčešće su izvedene u obliku kosih traka. U presjeku imaju oblik širokog ili plitkog slova „U“. U neolitiku se ova tehnika pojavljuje s dolaskom vinčanske kulture na ove prostore.



Tehnika pravilnog urezivanja
Regular incision technique



Tehnika ubadanja
Punctuation technique

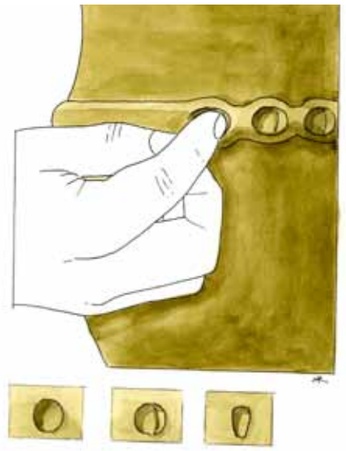
Ubadanje – ubodi se vrše u polutvrdu glinu s alatom tupog kraja, koji ostavlja različite motive po površini keramike. Motivi se razlikuju ovisno o vrsti i obliku alata te kutu i jačini pritiska na tretiranu površinu. Najčešći motivi koji se dobiju tehnikom ubadanja su: duguljasti, četvrtasti, okrugli i trokutasti. Alat koji se koristio za ukrašavanje posuda uzimao se iz okolice i to od materijala koji su prirodno bili dostupni. Najčešće se radi o drvenim i koštanim alatkama koje mogu biti u svom prirodnom obliku ili su modificirane u željeni oblik, ovisno o afinitetu majstora.
Utiskivanjem se intervenira u površinu predmeta tako da je ostala površina posude izdignuta i reljefna. S alatom se utiskuje u polutvrdu glinu, na kojoj ostaje negativ motiva koji zovemo otisak. Utiskivanje može biti izvedeno i na apliciranoj traci. Izbor alata za utiskivanje je velik, od onih prirodnih poput nokta, školjke, sjemenki, stabljike do posebnih instrumenata koji su napravljeni za izradu motiva. Neolitičko posuđe koje je

at an acute or right angle. The fluted lines are wide and shallow, most often rendered as oblique bends. Their cross-section is shaped like a wide or shallow letter U. In the Neolithic, this technique emerged with the arrival of the Vinča Culture in this region.

Punctuation – made in semi-hard clay with tools that had a blunt tip, which left diverse motifs on the pottery surface. The motifs differed according to the type and shape of tools and the angle and pressure applied against the treated surface. The most frequent motifs rendered by the punctuation technique were oblong, rectangular, rounded and triangular. The utensils needed to decorate the pottery were taken from the surroundings, and they were made of materials that could be found in nature. Most frequently, these were wooden or bone tools which were either used in their natural form or modified to obtain the desired shape, depending on the craftsman's liking.
Impressed decoration is a result of interference with the pottery surface executed in such a way that the remaining surface seems raised. Tools are used to make impressions (the negative image of the motif) in semi-hard clay. Impressions can also be made on an applied bend. There was a wide choice of impression tools, from natural ones such as nails, shells, seeds and plant stalks, to

služilo za kuhanje ili skladištenje hrane, a radi se najčešće o loncima, bilo je ukrašeno utiskivanjem prsta ili nokta ili nekog instrumenta od kosti ili drva koji je ostavljao različite motive po tijelu posude.
Tehnika apliciranja radi se na polutvrdim površinama na koje se stavljaju polutvrde aplikacije. Na rubovima ili površini oko aplikacije (na području dodira aplikacije i površine predmeta) često se pojavljuju deformacije kao što je razmazana glina. Ovakve „plastične trake" najčešće su se nanosile na predio ispod vrata posude. One su, osim estetske, vjerojatno imale i funkcionalnu karakteristiku kako bi se veće posude mogle lakše pridržavati prilikom transporta. Ovakav način ukrašavanja ostat će karakterističan kroz cijeli neolitik te će se kao tehnika nastaviti koristiti i u kulturama koje svoje naslijeđe baštine iz kultura mlađeg kamenog doba.

special instruments that were purpose-made to produce motifs. Neolithic vessels used for cooking and storing food – usually pots – were decorated with finger or nail impressions, or with various motifs impressed over the vessel's body with a tool made of bone or wood.
Applied decoration consists of semi-hard clay additions applied on semi-hard surfaces. Along the edges of applied decoration, and on surfaces surrounding them (where the application meets the vessel's surface), there often appeared deformations, for example, smeared clay. These 'plastic bends' were most frequently placed below the vessel's neck. In addition to their aesthetic function, they were probably also used to facilitate the holding of large vessels during transport. This decorating method remained typical throughout the Neolithic, and continued to be applied by the cultures which inherited the legacies of cultures of the Late Stone Age.



Tehnika utiskivanja
Impresso technique

Tehnika apliciranja
Applied decoration technique

Tehnika barbotina vrlo je specifična i vrlo karakteristična za sve prapovijesne kulture. Ovom se tehnikom postiže reljefnost površine, a spada u tehniku apliciranja. Karakteristika ove tehnike je da se prije pečenja površina predmeta oblijepi s glinom razrijeđenom u vodi ili s glinom u polutekućem stanju, te se ravnomjerno razmaže po površini stisnutim ili rastvorenim prstima. Zbog takvog oblikovanja na površini nastaju različiti visoki „grebeni" ovisno o debljini nanesene tekuće gline. Time posuda dobije na „hrapavosti", debljim stijenkama koje je štite od termalnih stresova, pogotovo kada je riječ o posudama koje su služile za zagrijavanje na vatri.

Barbotine technique is rather specific and highly characteristic of all prehistoric cultures. Its application results in a relief appearance of the surface, and it belongs to the group of applied decorations. This technique consists of coating a ceramic surface with a suspension of clay in water or semi-liquid clay prior to being fired. The suspension is spread evenly over the surface by fingers held close together or apart. Because of this procedure, various high 'ridges' appear on the surface, depending on the thickness of the applied liquid clay. Thus the vessel becomes 'rough', its walls become thicker and more apt to sustain thermal stresses, especially in the case of pots that were heated by fire. It is precisely on those vessels that barbotine is most often found.

Barbotin upravo najčešće nalazimo na takvoj vrsti posuda. Njegova funkcija mogla je također biti i u lakšem pridržavanju i rukovanju posudom, pogotovo ako je riječ o posudama većih dimenzija.

It could also have served to facilitate the holding and handling of such pots, especially when they were large.

Tehnika barbotina
Barbotine technique

Tehnika slikanja
Painting technique

Tehnika slikanja spada među estetski najučinkovitije tehnike s neograničenim mogućnostima oblikovanja, a izvodi se na nepečenoj glini bojanom masom za ulijevanje, crtanjem ukrasa (cik-cak motivi, linije, točke) na bijelu ili obojenu podlogu polusuhog nepečenog predmeta. Za bojanje se koriste mase koje u sebi imaju različite okside metala (hematit, grafit, manganovi spojevi, kaolin). Slikanje kao tehniku nalazimo već na ranim starčevačkim posudama. S vinčanskom kulturom pojavljuje se nov način slikanja koje karakterizira nanošenje boje na posudu nakon što je ona ispečena. Takav način slikanja često dovodi do skidanja boje, odnosno ukrasa jer boja nije postojana i lako otpada s površine.

Painting belongs to the most effective techniques from the aesthetic point of view, with unlimited possibility of motif rendering. It is executed on unfired clay using a coloured mass for pouring, or by drawing ornaments (zig-zag motifs, lines, dots) over a white or coloured surface of the semi-dry unfired ceramic object. Masses used for painting contain various metal oxides (hematite, graphite, manganese compounds, kaolin). Painting technique was already being used on some Early Starčevo Culture artefacts. During the Vinča Culture, a new painting technique emerged, consisting of application of paint on a fired object. The paint, that is, decoration, rendered in this technique was often lost, because it was not enduring and could easily fall off the surface.

Funkcionalnost keramičkih posuda

Prema funkcionalnim karakteristikama keramičke posude možemo podijeliti u posude za kuhanje, odnosno termičko zagrijavanje na vatri; posude za skladištenje hrane ili tekućine; posude za serviranje, odnosno konzumaciju hrane koja nije načinjena termičkom obradom. Svaka od ove tri primarne uporabne funkcije zahtijeva određene fizičke karakteristike. Posude koje su služile za kuhanje hrane na vatri zahtijevale su posebnu pažnju jer je reakcija posude na termalne uvjete kojima je izložena jedna od najosnovnijih karakteristika

Functionality of ceramic vessels

Based on their functional features, ceramic vessels can be divided into cooking pots, used for thermal processing on a fire, vessels for storing food or liquids, and vessels for the serving and consumption of food that is not thermally processed. Each of the three basic utilitarian functions required certain physical characteristics.
Pots used for cooking food on a fire required special attention because, when selecting the clay and its admixtures, thought had to be given to the reaction of the pot to the thermal conditions it

na koje se trebalo misliti prilikom odabira gline i njezinih primjesa. Konstantna zagrijavanja i hlađenja kojima je izložena keramička posuda uzrokuju razna oštećenja na posudi, odnosno termalne stresove.
Keramika je, općenito gledajući, loš vodič topline pa će vanjski dijelovi posude biti više izloženi stresu pri visokim temperaturama od unutarnjih, čije su stijenke hladnije zbog sadržaja posude. To će dovesti do bržeg pucanja posude i naposljetku do lomljenja. Ovakvi stresovi na keramici mogu se izbjeći pravilnim odabirom gline i njezinih primjesa, povećanjem broja i veličine pora te odabirom oblika posude koji će uspješno provoditi toplinu. Pri odabiru gline vrlo je važno da se koriste minerali koji imaju manji stupanj termalnog širenja (poput feldspata, kalcita), a pri tom je vrlo važna i njihova količina. Kvarc, jedan od najčešćih prirodnih i dodavanih primjesa u glini, ima vrlo veliku sposobnost termalnog širenja i zbog toga nije najpogodniji za upotrebu kod posuda za kuhanje, međutim, u malim količinama i jako usitnjen daje keramici veću otpornost na temperaturne promjene. Oblik posude također može utjecati na otpor posude termalnom stresu. Ujednačena debljina stijenki posude i izostanak oštrih rubova, te naglih promjena u obliku posude, smanjit će izloženost posude termalnom stresu, odnosno lomljenju. Upravo radi toga posude koje su služile za kuhanje najčešće imaju zaobljeno dno i jednostavnu formu radi lakšeg i ravnomjernijeg prijenosa topline (Sinopoli 1991, 14-15; Rye 1988, 27). Takvih su oblika npr. S-profilirane zdjele i lonci koji su karakteristične forme još od ranog neolitika. Jako debele stijenke posude mogu reducirati protok topline ili uzrokovati probleme tijekom sušenja, međutim, ove će posude imati veću otpornost na mehaničke stresove. Posuda za kuhanje također mora biti dovoljno velika i imati široki otvor za dodavanje i vađenje hrane, ručke ili neku drugu vrstu aplikacije kako bi se lakše podizala s vatre. Keramičke posude za kuhanje posebno su pogodne za pripremu juha, raznih vrsta variva i gulaša koje povećavaju nutritivne vrijednosti i zadržavaju sokove i okuse što dovodi do bolje i kvalitetnije ishrane. Npr. kuhanje prvih biljaka, osim što oslobađa neke štetne tvari, daje svakodnevnoj ishrani potrebne kalorije, karbohidrate, vitamine, minerale i vlakna (Rice 1999, 30-33).
Posude za skladištenje hrane također zahtijevaju nekoliko fizičkih karakteristika, od oblika do izbora glinene smjese. Kada je riječ o pohrani suhih namirnica bitno je nekoliko faktora, ovisno o tome je li pohrana kratkotrajna ili dugotrajna te koliko često se sadržaj vadio iz posude. O tim će karakteristikama ovisiti i otvor posude, kapacitet i propustljivost (Rice 1999, 34-36). Posude za skladištenje najčešće su bile smještene unutar kuće u posebnoj jami/ostavi. Uglavnom su većih dimenzija jer ne zahtijevaju učestalo pomicanje i transportiranje s mjesta na mjesto. Jedan od takvih oblika je pitos, posuda velikih dimenzija koja je služila za skladištenje žitarica ili tekućine Neke od ovih posuda imale su i poklopce da zaštite sadržaj posude od prolijevanja i prosipanja te od raznih glodavaca.
Jedna od osnovnih karakteristika posuda za serviranje, tj. konzumiranje hrane je mogućnost jednostavnog rukovanja zbog tekućeg ili polutekućeg sadržaja koji se nalazi u njoj te zbog težine ili vrućine sadržaja (Rice 1999, 36-37). Zato ovakve posude vrlo često imaju ručke ili drške, razne vrste aplikacija ili pak različitu oblikovanost tijela koje omogućuje lakše manipuliranje (poput npr. bikoničnih zdjela čija morfologija omogućava vrlo jednostavno rukovanje).
Keramičke posude, osim za procesuiranje hrane, koristile su se i u posebne svrhe, u raznim obredima i ritualima, vjerovanjima i žrtvovanjima, te kao prilozi u grobovima. Svakako nije zanemariva simbolička vrijednost pojedinih keramičkih posuda i ostalih predmeta načinjenih od pečene gline poput antropomorfnih i zoomorfnih figurica, amuleta ili žrtvenika, a koji se na prapovijesnim lokalitetima javljaju kao dio religijskih vjerovanja zajednice. Određeni simboli na pojedinim posudama mogu nam posvjedočiti o identitetu zajednice koja ga je napravila, kao i o mjestu i vremenu u kojem je predmet nastao.
Količina keramičkog materijala na arheološkim lokalitetima, kao i njena neuništivost i otpornost, pruža nam nebrojene i pri tom vrlo važne indikatore o kulturnim, socijalnim, ekonomskim, religioznim i tehnološkim postignućima određene zajednice te vremenskom periodu u kojem je nastala. Keramičke posude tako postaju naša veza s prošlim vremenima i predstavljaju jedan trenutak u vremenu. Taj trenutak u sebi nosi odgovore na ključna pitanja o funkcioniranju i organizaciji društva te nas polako uvodi u otkrivanje socijalne dimenzije ljudskog djelovanja. Keramika je, baš kao i svi ostali proizvodi koji su dio ljudske aktivnosti, producirana i upotrebljavana u društvenom kontekstu i na taj način je trebamo i promatrati. Ljudi su izrađivali posude, upotrebljavali ih, distribuirali, razbijali i odbacivali u arheološkom okruženju, a sve u kontekstu njihovog svakodnevnog života. Stoga bi keramičke posude trebale činiti okvir za istraživanje ljudskog ponašanja u prošlosti, a ne samo za određivanje kronoloških smjernica.

would be exposed to. Constant heating and cooling of the ceramic vessel causes various types of damage, i.e. thermal stress. Generally, pottery is a poor thermal conductor. Therefore, the external parts of a vessel are more exposed to stress at high temperatures than the internal parts, where the walls are cooler because of the vessel's contents. This results in cracking of the vessel, and eventually leads to its breaking. Such stresses on pottery can be avoided by proper selection of clay and admixtures, increased number and size of pores, and proper selection of a shape which will successfully conduct heat. When choosing clay, it is important to use minerals which have a smaller grade of thermal spread (such as feldspar and calcite), and their quantity is also very important. Quartz, one of the most frequent natural admixtures added to clay, has a very high capacity of thermal spread, and as such it is not best suited for cooking pots. Still, in small quantities and well crushed, it provides pottery with higher resistance to changes in temperature. The vessel's shape can also influence its resistance to thermal stress. Uniform thickness of the walls and a lack of sharp edges and sudden changes in the vessel's shape will reduce its exposure to thermal stress, i.e. breaking. This is the reason why cooking pots usually had rounded bottoms and simple shapes which ensured easier and more uniform transfer of heat (Sinopoli 1991, 14-15; Rye 1988, 27). Such were the shapes of, for example, S-profiled bowls and pots, characteristic forms since the Early Neolithic. Very thick vessel walls can reduce the flow of heat or cause problems during drying, but they will provide vessels with higher resistance to mechanical stresses. In addition, cooking pots had to be large enough and have a wide enough mouth for putting in and taking out food, and they had to have handles or some other kind of applied protrusion to allow it to be taken off the fire. Ceramic cooking pots are particularly suitable for the preparation of soups, various stews and goulashes, which increase nutritive values while maintaining juices and flavours, and thus lead to better and sounder diet. For example, the first cooking of plants not only allowed some toxic substances to be released, but it also provided the everyday diet with its required calories, carbohydrates, vitamins, minerals and fibre (Rice 1999, 30-33).
Vessels used for storing food also had to meet several physical requirements, concerning their shape and the selection of the clay mixture. When the foodstuffs stored were dry, there were several important factors, depending on whether they were going to be stored for a short or long period of time, and how often the content of the vessel was going to be extracted from it. These considerations dictated the size of the opening, the capacity and permeability of the vessel (Rice 1999, 34-36). Food was usually stored inside the house, in a separate pit/hoard. Vessels used for this purpose were mostly large, because they were not moved or transported frequently. One of the known shapes was the pithos, a large vessel used for storing cereals and liquids. Some of the vessels also had lids, which protected the contents from being spilt or infested by rodents.
One of the main features of vessels used for serving, i.e. consumption, of food was the ease of their manipulation, in respect of the liquid or semi-liquid content to be found in them, and in respect of their weight or the high temperature of their contents (Rice 1999, 36-37). Vessels used for this purpose normally had handles, various types of appliqués, or their very shapes allowed for easier manipulation (as in the case of biconical bowls, whose morphology enabled easy handling).
In addition to food processing, ceramic vessels were also used for special purposes, for various rituals, beliefs and offerings, and as grave goods. The symbolic value of certain vessels and other objects made of fired clay, such as anthropomorphic and zoomorphic figurines, amulets and altars, cannot be disregarded. Such items have been found at prehistoric sites as indicators of the religious beliefs of the community. Symbols present on certain vessels can testify to the identity of the community which created them, and to the place and time of their production.
The quantity of pottery finds discovered at archaeological sites, and their indestructibility and resistance, provide numerous and very important indications of cultural, social, economic, religious and technological achievements of certain communities, and of the time period in which they were created. Thus, ceramic vessels become our link to past periods, and they represent a moment in time. That moment contains in itself answers to key questions concerning the functioning and organization of the society, and slowly leads us to discover the social dimension of human activity. Pottery – as well as all other products resulting from human activity – was produced and utilized within a social context, and it should be studied as such. People made vessels, used them, distributed them, broke and threw them away within an archaeological context, and all of that within the scope of their daily lives. Therefore, pottery should serve as a frame for the exploration of human behaviour in the past, and not only for establishing chronological references.

DUŠAN BORIĆ

POKAPANJE I ANTROPOLOŠKI OSTACI

BURIAL AND ANTHROPOLOGICAL REMAINS

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Proučavanje pogrebne prakse je od samih početaka arheologije viđeno kao način da se dopre do ritualno-religijskih, ideoloških, simboličkih i društvenih dimenzija prošlih zajednica. Ipak, tijekom razdoblja u povijesti arheologije kao discipline u kojem su dominirali kulturno-povijesni pristupi, nije postojao eksplicitan metodološki pristup u okviru kojeg bi relevantni podaci, do kojih dolazi pri iskopavanju grobnih cjelina, mogli poslužiti za razumijevanje koje nije puki opisni pristup s nizom pretpostavljenih općih mjesta u tumačenju ovakve arheološke građe. Tek u posljednjih gotovo pola stoljeća, prije svega u anglo-saksonskom govornom području, arheologija je prolazila kroz nekoliko teorijskih pravaca koji su u značajnoj mjeri bili usmjereni k razvijanju prikladne i eksplicitne metodologije kada je u pitanju analiza podataka na temelju zabilježene pogrebne prakse (za pregled vidi Parker Pearson 1999). Prvobitne teorijske razlike između, na primjer, tradicija procesualne i postprocesualne škole u velikoj mjeri bile su izražavane upravo kroz razlike u mišljenjima o tome na koji način podaci vezani za pogrebnu praksu mogu biti analizirani ili tumačeni (npr. Binford 1972; Hodder 1979; Parker Pearson 1982). Koncept "arheologija smrti" uveden je 1980-ih (Chapman, R. *et al.* 1981) kako bi obuhvatio niz pravaca kojima je cilj razviti metodologije za razumijevanje društvenih aspekata zajednica u prošlosti koje se ocrtavaju u "konfiguracijama" pogrebnih ostataka. Ono što je novo u ovim pristupima je svijest o složenosti procesa pri kojima arheološki prepoznatljivi pogrebni podaci, poput položaja tijela, orijentacije groba, grobne konstrukcije, pridruženih grobnih priloga ili "darova" itd., mogu doprinijeti saznanjima o društvenom mjestu individua u određenoj zajednici, načinu suočavanja sa smrću, odnosu prema tijelu preminule osobe, kulturnoj tradiciji vezanoj za sahranjivanje inhumacijom ili neki drugi način odlaganja tijela (spaljivanje, ekskarnacija, kanibalizam itd.), ukrašavanju tijela itd. Tako, na primjer, prenaglašeno tretiranje grobnih priloga kao jedinog arheološki vidljivog pokazatelja za utvrđivanje socijalnog položaja pokojnika, bilo koje kulture, dominantno u kulturno-povijesnim pristupima, argumentirano je kritiziralo više autora, dajući prijedlog niza elemenata koji bi se mogli koristiti pri formalnoj analizi pogrebne građe (npr. Tainter 1978, 121–125). Na primjer, na temelju uzorka od 103 etnografska društva uočeno je da rang pokojnika u određenoj zajednici proporcionalno zavisi, prije svega, o energiji i vremenu utrošenom na sahranu pojedinca, u odnosu na postupke poput tretmana mrtvog tijela, pravljenja grobne konstrukcije i osiguravanja uvjeta za sahranu, kao i obujma i dužine trajanja pogrebnog ritualnog ponašanja (Tainter 1978, 125–128).

Since the very beginning of archaeological science, the study of mortuary practices has been seen as a method of approach to the ritual-religious, ideological, symbolical and social dimensions of past communities. However, during the period in the history of archaeology in which the predominant approaches were culture-historical, there was no explicit methodological approach which would allow the relevant data – obtained by excavation of grave units – to be used for gaining an understanding that would go beyond a mere description and a range of assumed commonplaces in the interpretation of such archaeological evidence. Only in the past nearly half a century, or very nearly, and primarily in the Anglo-Saxon world, has archaeology passed through several theoretical directions which aimed, to a significant degree, to develop an appropriate and explicit methodology for analysing data obtained from the recorded burial practice. (For an overview, see Parker Pearson 1999). The original theoretical differences between, for example, the traditions of processual and post-processual schools have largely been expressed in their divergent opinions on how to analyse or interpret data linked to mortuary customs (e.g. Binford 1972; Hodder 1979; Parker Pearson 1982). The "archaeology of death" concept was introduced in the 1980s (Chapman, R. et al. 1981) to embrace a range of directions the goal of which was to develop methodologies for understanding the social aspects of past communities as reflected in 'configurations' of funerary remains. One novelty shared by these approaches is an awareness of the complexity of the process through which archaeologically identifiable burial data, such as the position of the body, grave orientation, grave structure, grave goods or 'offerings' etc., can contribute to our understanding of an individual's social position within a community, their acceptance of death, treatment of a dead person's body, cultural tradition relating to inhumation or other method of body disposal (cremation, excarnation, cannibalism etc.), decoration of the body etc. Thus, for example, the overemphasized insistence on grave goods as the only archaeologically visible indicator of the deceased's social position, regardless of their culture – predominant in culture-historical approaches – has been a subject of well-argued criticism by several authors, who have proposed a range of elements which could be used for a formal analysis of mortuary remains (e.g. Tainter 1978, 121–125). For example, based on samples taken from 103 ethnographic societies, it has been observed that the social rank of the deceased depends primarily on the energy and time invested in his/her burial, in terms of the treatment of the dead body, construction of grave structure and ensuring prerequisites for the burial, and on the scope and duration of the burial ritual behaviour (Tainter 1978, 125–128).

Arthura Saxa i Lewisa Binforda možemo smatrati pionirima ove vrste novih pristupa pogrebnoj praksi u arheologiji krajem 60-ih i početkom 70-ih godina dvadesetog stoljeća. Ovi, i drugi, autori su početkom 70-ih godina pokušali utvrditi predvidljive obrasce odnosa između formalno identificiranih i mjerljivih elemenata pogrebne prakse i društvenih dimenzija sahranjivanja, tj. društvene strukture zajednica (Binford 1972; Saxe 1970). Oslonac za ovakve modele pronađen je u dokumentiranju relevantnih etnografskih primjera kroz pristup koji je u arheologiju uveo Lewis Binford i koji je postao poznat kao *middle-range theory*, u prijevodu "teorija srednjeg opsega". *Middle-range theory* zasniva se na ideji da se tabulacijom statistički relevantnog broja etnografskih primjera i kvantifikacijom učestalosti određenih elemenata kulturne prakse može doći do pouzdanih pokazatelja koji su kros-kulturno validni za bilo koju sferu društvenog života ljudskih zajednica. Ovakva analiza u duhu je procesualne ili nove arheologije koja ima scijentističke i pozitivističke pretenzije da arheologiju i način zaključivanja u ovoj disciplini učini bližim načinu zaključivanja u prirodnim znanostima. Ovaj pristup pretpostavlja eksplicitno i kvantifikacijom mjerljivo uspostavljanje kros-kulturnih zakonitosti koje se pod određenim prirodnim (fizičkim) ili društvenim uvjetima/ograničenjima mogu očekivati u bilo kojem društvenom kontekstu bez obzira na kulturne tradicije i utjecaje. U ovom smislu, procesualna arheologija napravila je otklon od i predstavljala je reakciju na čestu praksu kulturno-povijesnih pristupa koji su u objašnjenju kulturne promjene, prije svega, podvlačili ideju kulturnih utjecaja vezanih kako za migracije populacionih grupa tako i za difuziju pojedinačnih kulturnih elemenata. S obzirom na to da društvene pojave iz prošlosti ne mogu biti reproducirane u eksperimentalnim uvjetima kao glavni *modus operandi* u prirodnim znanostima, arheolozi procesualisti nalaze potporu u etnografskim podacima koji za arheologe pružaju kontrolni uzorak za predviđanje zakonitosti društvenih procesa vezanih, na primjer, uz razumijevanje društvenih dimenzija sahranjivanja.

Jedna ovakva kros-kulturalna teza, koja se često koristi u arheologiji za razumijevanje društvenih dimenzija sahranjivanja, poznata je kao hipoteza broj 8, iz neobjavljene doktorske disertacije Arthura Saxa (1970, 119). Ova teza odnosi se na uspostavljanje uzročno-posljedične veze između naglašavanja prava određene zajednice na kontrolu nad važnim, ali ograničenim resursima kroz izravnu vezu s precima preko uspostavljanja formalnih prostora namijenjenih isključivo odlaganju/sahranjivanju mrtvih te zajednice. Evo i same hipoteze:

Arthur Saxe and Lewis Binford can be considered pioneers of the new approaches to mortuary practice in the archaeology of the late 1960s and early 1970s. In the early 1970s, they and other authors endeavoured to detect predictable patterns of relations between formally identified and measurable elements of mortuary practice and the social dimensions of burials, that is, the social structure of communities (Binford 1972; Saxe 1970). The foundation of this model was documenting relevant ethnographic examples, using an approach, introduced into archaeology by Lewis Binford, which became known as the middle-range theory. The middle-range theory is based on the idea that tabulating a statistically relevant number of ethnographic examples and quantifying the frequency of certain elements of cultural practice can yield some reliable indicators which are cross-culturally valid for any sphere of social life in human communities. This analysis follows the spirit of the processual or new archaeology, which has scientistic and positivistic ambitions to bring archaeology and the way in which conclusions are drawn in this discipline closer to the method of drawing conclusions applied in natural science. Such an approach presumes the identification of explicit and quantifiably measurable cross-cultural laws, which can be expected in any social context, irrespective of cultural traditions and influences, if certain natural (physical) or social conditions/limitations are present. In this respect, processual archaeology deviated from, and reacted to, the frequent practice of culture-historical approaches which, when explaining cultural changes, primarily relied on the idea of cultural influences linked to population migrations and to diffusion of individual cultural elements. Given that past social changes cannot be reproduced under experimental conditions – which is the main modus operandi *of natural sciences – processualist archaeologists find support for their conclusions among ethnographic data, which provide archaeologists with a control sample that can be used to make assumptions concerning laws of social processes linked, for example, to the understanding of the social dimensions of burials.*

One such cross-cultural thesis, often used in archaeology to gain better understanding of the social dimensions of burials, is known as 'Hypothesis 8', from the unpublished doctoral dissertation by Arthur Saxe (1970, 119). The thesis regards establishing a cause-and-effect link between the rights of a community to control crucial but restricted resources and their direct ties to the ancestors, expressed by setting up formal spaces intended only for disposal/burial of the dead. Here is the hypothesis:

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Sl. 1, grobovi 54a-e položeni preko poda građevine 65/XXXVI s trapezoidnim osnovama na lokalitetu Lepenski Vir u Đerdapu, oko 6200.–5950. g. pr. Kr.
Fig. 1, graves 54 a-e, laid over the floor of building 65/XXXVI with a trapezoidal base, at the Lepenski Vir site in the Danube Gorges, ca. 6200-5950 BC

Sl. 2, grob H232 (žena, oko 25 godina) položen preko kremacijske jame na lokalitetu Vlasac u Đerdapu, oko 6500. g. pr. Kr.
Fig. 2, grave H232 (female, about 25 years of age), laid over a cremation pit at the Vlasac site in the Danube Gorges, ca. 6500 BC

> *To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (i.e., lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead, and conversely* (Saxe 1970, 119, citirao Tainter 1978, 123).

Ova definicija naknadno je proširena na temelju većeg broja etnografskih primjera tradicionalnih zajednica sa zaključkom da neki vid prisutnog rituala ili oblika ritualizacije u nedostatku sahranjivanja ili u vezi s njim također služi za naglašavanje izravnog porijekla od predaka, a u svrhu potvrđivanja prava neke grupe na ograničene resurse određenog teritorija (Goldstein 1981, 59–61). S obzirom na ovu dopunu, hipoteza se naknadno često spominje kao *Saxe/Goldstein* hipoteza. Na primjer, Ian Morris je pružio detaljnu analizu primjene ove hipoteze u kontekstu veza između zemljoposjedništva, predačkih kultova i sahranjivanja u antičkoj Grčkoj i Rimu, s važnom pomoći pisanih izvora u ovoj studiji slučaja. Morris nalazi da određeni elementi ove studije slučaja mogu podržati validnost hipoteze, ali da ona predstavlja tek jedan aspekt društvene realnosti te da su stvarni odnosi između danih elemenata gotovo uvijek značajno kompleksniji (Morris 1991). Saxeova hipoteza primijenjena je i na primjeru proučavanja đerdapske pogrebne prakse tijekom mezolitika (Radovanović 1996). I. Radovanović je predložila da se u slučaju đerdapskih zajednica tijekom mezolitika, slično nekim drugim mezolitičkim društvima širom Europe u ovom razdoblja, pojavljuju prve formalne nekropole (Sl. 1-2). Ova autorica pojavu prostora za sahranjivanje povezuje sa značajnim fokusom zajednica u Đerdapu tijekom ranog holocena na ulov ribe kao glavnog prehrambenog resursa.

> *To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (i.e., lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead, and conversely (Saxe 1970, 119, cited by Tainter 1978, 123).*

This definition has subsequently been broadened on the basis of a large number of ethnographic examples of traditional communities, resulting in a conclusion that some aspect of a ritual, or some form of ritualization, in absence of the burial or connected to it, was also used to emphasize a direct line of descent from ancestors, with the aim of reasserting a group's rights to the limited resources in a given territory (Goldstein 1981, 59–61). Given the supplementation, the hypothesis is often referred to as the Saxe/Goldstein hypothesis. For example, Ian Morris has provided a detailed analysis of the hypothesis within the context of links between land-owning, ancestor cults and burials in ancient Greece and Rome, with strong reliance on written sources in his case study. Morris believes that certain elements of this case study can support the hypothesis's validity, but that it is but one of the aspects of social reality and that real relations between given elements are almost always much more complex (Morris 1991). The Saxe hypothesis has also been applied to the study of the Danube Gorges mortuary practice during the Mesolithic (Radovanović 1996). I. Radovanović has suggested that the Mesolithic communities in this region, like some other Mesolithic societies throughout Europe, created the first formal necropolises (Fig. 1-2). The author has linked the emergence of areas dedicated to burials to the important focus of the Danube Gorges communities in the early Holocene on fishing, as the main source of food.

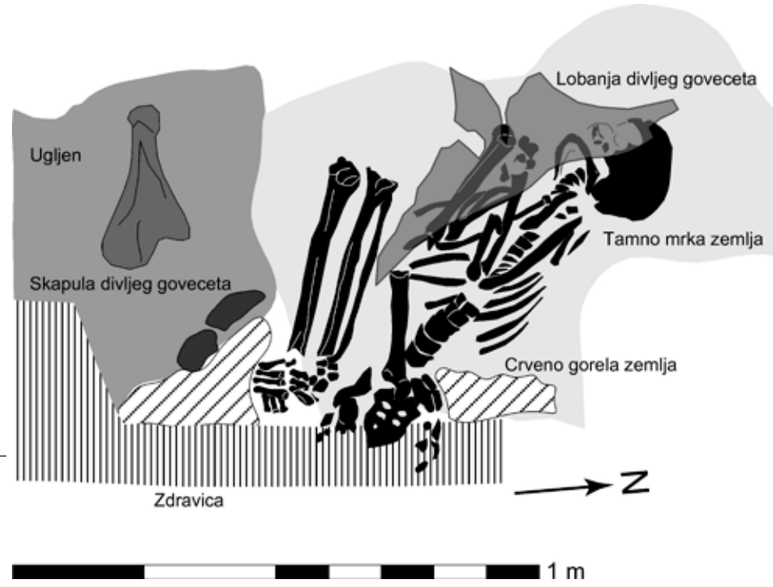
Sl. 3, iskopavanje groba H81 (muškarac, oko 40 godina) na lokalitetu Vlasac u Đerdapu, oko 6500. g. pr. Kr.
Fig. 3, excavation of grave H81 (male, approximately 40 years of age), at the Vlasac site in the Danube Gorges, ca. 6500 BC

Još jedan od pristupa vezan uz procesualnu arheologiju odnosi se na ispitivanje složenosti proučavanog društva na temelju kvantitativnih tehnika analize. Pretpostavka da se ljudska društva (kao dio biološke evolucije) "kreću suprotno od drugog zakona termodinamike, tj. u pravcu negativne entropije" ("*moving in opposition to the Second Law of Thermodynamics, i.e. in the direction of negative entropy*," Saxe 1970, 110–111), značajna je za razumijevanje značenja izračunavanja entropije u određenom sustavu. Mjerenje razine entropije u danom sustavu sahranjivanja uzima u obzir formalne elemente pogrebne prakse (npr. položaj tijela, orijentaciju itd.). Poslije izračunavanja dane vrijednosti organizirane su na skali od 0 do 1. Kada sustav odlikuje smanjena sloboda izbora, kombinacije odabranih elemenata su na minimumu i vrijednost redundantnosti (ponavljanja) bit će visoka. U ovom slučaju radi se o kompleksnom društvenom sustavu u kojem postoje ograničenja u pristupu određenim elementima pogrebne prakse. Egalitarnija društva omogućavaju veću slobodu izbora što se oslikava u nižim vrijednostima redundantnosti (Saxe 1970, 102–107; Tainter 1978, 110–114). U regionalnom okviru jugoistočne Europe ovakav pristup neolitičkim podacima pružio je John Chapman u svojim ranim publikacijama vezanim za rani neolitik Mađarske i kasnoneolitičke/eneolitičke nekropole Rumunjske i Bugarske (Chapman 1983, 12–22). Prateći Chapmanov primjer, Dušan Borić (1996) je također u okviru svog proučavanja ranoneolitičkih zajednica na području Srijema i jedine kasnoneolitičke vinčanske nekropole na Gomolavi u okviru iste mikro regije primijenio ovaj princip izračunavanja složenosti i standardizacije pogrebnog sustava.

Another approach connected to processual archaeology regards analysing the complexity of the society under study using quantitative analytical techniques. The assumption that human societies (as part of biological evolution) are "moving in opposition to the Second Law of Thermodynamics, i.e. in the direction of negative entropy" (Saxe 1970, 110–111) is important for our understanding of the relevance of calculating entropy in a given system. Measuring the level of entropy in a mortuary system takes into consideration formal elements of the funerary practice (e.g. body position, orientation etc.). Following the calculation, the values are organized on a scale ranging from 0 to 1. If a system is characterized by reduced freedom of choice, combinations of selected elements are minimal, and the redundancy (repeating) value will be high. In this case, we are dealing with a complex social system in which there were limitations regarding access to certain elements of mortuary practice. More egalitarian societies allow more freedom of choice, reflected in lower redundancy values (Saxe 1970, 102–107; Tainter 1978, 110–114). Within the regional framework of south-eastern Europe, this approach to Neolithic data was used by John Chapman in his early publications regarding the early Neolithic of Hungary and the Late Neolithic/ Eneolithic necropolises of Romania and Bulgaria (Chapman 1983, 12–22). Following Chapman's example, Dušan Borić (1996) applied the same principle of calculating the complexity and standardization of mortuary systems in his research on the Early Neolithic communities in the territory of Syrmia and the only Late Neolithic Vinča Culture necropolis at Gomolava in the same micro-region.

As regards Early Neolithic burial practice in south-eastern Europe, the predominant practice was individual graves – or, more rarely, small groups of graves – set within the settlements, in what

Sl. 4, grob 32a (žena, oko 50–60 godina) pronađen u zgrčenom položaju na lokalitetu Lepenski Vir u Đerdapu, oko 5800. g. pr. Kr.
Fig. 4, grave 32a (female, approximately 50-60 years of age), discovered in a contracted position, at the Lepenski Vir site in the Danube Gorges, ca. 5800 BC



Sl. 5, grob starije odrasle žene s glavom divljeg goveda ("zemunica" 7) na lokalitetu Golokut u Srijemu, oko 5500. g. pr. Kr.
Fig. 5, grave of an elderly adult female with the head of a wild bovine ('dugout' 7), at the Golokut site in Syrmia, ca. 5500 BC

Kada je u pitanju ranoneolitičko sahranjivanje u jugoistočnoj Europi, dominira praksa polaganja pojedinačnih ili, rjeđe, grobova u manjim grupama u okviru naselja, po svemu sudeći u prethodno napuštenim jamama. Značajna promjena u odnosu na prethodno razdoblje mezolitika, kada se pokojnici uglavnom sahranjuju u ispruženom stavu na leđima, predstavlja pojava grobova u sklupčanom ili tzv. fetusnom položaju, što postaje glavnom odlikom neolitičkog sahranjivanja (Sl. 4). Ova vrsta pogrebne prakse ima svoje korijene u neolitičkim zajednicama Bliskog Istoka, koje su, na temelju novih istraživanja migracijskih kretanja preko izotopa stroncija u zubima, vjerojatno postupno širile svoje prisustvo širom Balkana u posljednjim stoljećima 7. tisućljeća pr. Kr. (Borić, Price 2013). Upadljivo je gotovo potpuno odsustvo grobnih darova u sahranama ovog razdoblja, osim u rijetkim slučajevima, od kojih možemo spomenuti grob iz Golokuta kod Vizića u Srijemu gdje je preko sahranjene odrasle žene postavljena glava divljeg goveda (Sl. 5). Moguće je da statusne razlike u okviru ovih ranoneolitičkih društava nisu nalazile odraz u pogrebnoj praksi. Ipak, nejasno je zašto nalazimo samo jedan, vrlo mali, postotak populacije među arheološkim ostacima u okviru naselja, i ostaje pitanje što je mogao biti dominantan način sahranjivanja za ostatak populacije u ovim pretpovijesnim zajednicama? S druge strane, na kasnoneolitičkoj nekropoli na potezu Gomolava kod sela Hrtkovci u Srijemu pronađena je nekropola u okviru naselja u kojoj je bila sahranjena 31 individua. Na temelju antropološke analize sve odrasle individue muškog su spola, dok se za sahranjenu djecu na ovoj nekropoli može samo pretpostaviti da su također bila muškog spola (Sl. 6 a, b). Ovdje uočavamo naglasak na rodnom diferenciranju u okviru zajednice koja je obitavala na ovom

appear to be previously abandoned pits. A significant change in comparison to the previous Mesolithic period, when the dead were mostly laid in graves in supine position, is the emergence of contracted positions, with bodies in the so-called foetal position, which became the main feature of Neolithic burials (Fig. 4). Such mortuary practice had its roots in the Neolithic communities of the Near East, which – based on recent research into migration flows revealed by strontium isotope in teeth – probably gradually spread throughout the Balkans during the last centuries of the 7th millennium BC (Borić, Price 2013). A striking feature of burials of this period is the almost complete absence of any grave goods, except for some rare cases. One such case is a grave in Golokut, near Vizić in Syrmia, in which the head of a wild bovine was placed over the body of a buried adult woman (Fig. 5). Perhaps differences in status within these Early Neolithic societies were not reflected in their mortuary practices. Nonetheless, it remains unclear why only a small portion of the population can be found among archaeological remains discovered within the settlements, and the question remains what the dominant burial method for the rest of the population of these prehistoric communities might have been. On the other hand, the Late Neolithic necropolis at the site of Gomolava, near the village of Hrtkovci in Syrmia, was discovered within the settlement, and it contained the bodies of 31 people. Anthropological analysis has revealed that all the buried adults were males, and as far as the buried children go, it can only be assumed that they were also male (Fig. 6 a, b). This points to gender differentiation within the community that occupied this location, and the selection of individuals who were buried here probably depended on their affiliation to a wider group connected by kinship. Graves vary in terms of the quantity of grave goods: in some of them, there was a number of decorated

Sl. 6 a,b, dječji grob 8 s grobnim keramičkim darovima i perlama od malahita (ruda bakra) na lokalitetu Gomolava u Srijemu, oko 4600. g. pr. Kr.
Fig. 6 a, b, sub-adult grave 8 with ceramic grave goods and malachite (copper ore) beads, at the Gomolava site in Syrmia, ca. 4600 BC

mjestu, a gdje je odabir onih koji će biti sahranjeni vjerojatno ovisio o pripadnosti široj srodničkoj grupi. Grobovi se razlikuju po količini grobnih darova – i dok u nekim grobovima nalazimo darove poput većeg broja ukrašenih keramičkih posuda (u kojima su vjerojatno bili pohranjeni hrana i piće za pokojnikov put na drugi svijet) (Sl. 6), kamenih sjekira i čak jedne bakrene grivne u jednom grobu odraslog muškarca (Sl. 7) ili perli od bakra u jednom dječjem grobu (Sl. 6a), s druge stane, neki grobovi nemaju niti jedan grobni dar. Ovo bi moglo govoriti o statusnim razlikama među pokojnicima i o njihovom mjestu u okviru šire zajednice u trenutku smrti. Ipak, kao što ćemo vidjeti u daljem tekstu, ovakvo variranje u broju pogrebnih darova treba uzeti samo kao jedan od pokazatelja moguće društvene diferencijacije. Navedeni primjeri ilustriraju na koji način proučavanje pogrebne prakse kroz arheološke podatke doprinosi našem razumijevanju društvenih odnosa u pretpovijesnim zajednicama ovog područja.

Kada je u pitanju pogrebna praksa, etnografski primjeri također naglašavaju važnost prostornih odnosa u okviru nekropola. Uočeno je, na primjer, da se starosni i srodnički odnosi uopće u tradicionalnim zajednicama ogledaju ponajprije u organizaciji prostora (Whitelaw 1991). U okviru novijih studija u jugoistočnoj Europi koje se bave prostornom analizom nekropola, možemo izdvojiti studiju Johna Chapmana *Tensions at Funerals* koja kao studije slučaja

ceramic vessels (probably containing food and drink for the deceased's journey to the afterlife) (Fig. 6), stone axes and even a copper armlet in an adult male's grave (Fig, 7), or copper beads in an infant's grave (Fig. 6a); on the other hand, some graves did not contain a single grave good. This could reflect differences in the statuses of the deceased and their position within the wider community at the moment of their death. However, as we will present below, variation in the number of grave goods should be taken as just one of the indicators of possible social differentiation. The examples mentioned illustrate how a study of mortuary practices on the basis of archaeological evidence can contribute to our understanding of social relations in the prehistoric communities of this region.

When it comes to mortuary practices, ethnographic examples also highlight the importance of spatial relations within necropolises. For example, it has been noted that seniority and general kinship relations within traditional communities are reflected primarily in spatial organization (Whitelaw 1991). In the context of recent research carried out in south-eastern Europe and focusing on spatial analysis of necropolises, we can single out John Chapman's study Tensions at Funerals*, which takes the intra-mural Late Neolithic necropolis of Kisköre-Damm in Hungary, the Early Eneolithic necropolis of Tiszapolgár-Basatanya and the Late Eneolithic necropolis of Budakalász as case studies (Chapman 2000a,b). Chapman suggests that graves lines be used as units*

uzima intramuralnu kasnoneolitičku nekropolu Kisköre-Damm u Mađarskoj, ranoeneolitičku nekropolu Tiszapolgár-Basatanya i kasnoeneolitičku nekropolu Budakalász (Chapman 2000a,b). Chapman predlaže korištenje grobnih redova kao analitičkih jedinica u razumijevanju onoga što naziva arheologija "mikro-tradicije". U pozadini ovakve analize je teorijski pristup poznat kao kategorijska analiza i dinamički nominalizam (npr. Blake 1999). Ideja je otkrivanje pojava poput određenih normi u sahranjivanju u okviru grobnih redova i način na koji takve norme ili "mikro-tradicije" s vremenom postaju dominantne norme pogrebne prakse šire zajednice u okviru određene regije. S druge strane, takav pristup treba dopustiti izdvajanje nekih drugih nastajućih normi u pogrebnoj praksi, a koje ostaju vezane samo za određene grupe/redove grobova. Teorijska ambicija ovakvog pristupa je da se u arheološkoj analizi ukloni dihotomija između strukture (tj. određene grobne prakse viđene kao sinkrone, atemporalne i nepromjenljive tradicije) i individualnih aktera i njihovog djelovanja u okviru postojećeg repertoara normi u pogrebnoj praksi. Ovo se može ostvariti ispitivanjem dinamike između naslijeđene tradicije u sahranjivanju i nastajućih inovacija koje se u danoj pogrebnoj praksi mogu očekivati na mikro planu.

Procesualna arheologija također je u analizi pogrebne prakse uvela razliku između elemenata koji su pokazatelji vertikalne za razliku od horizontalne društvene diferencijacije. Vertikalna diferencija tako se odnosi na pitanje statusa i prestiža pojedinaca u određenoj zajednici a koji se mogu "očitati" preko arheološki prepoznatljivih elemenata, poput "bogatih" grobnih priloga ili količine energije uložene u pogrebnu konstrukciju, tretmana mrtvog tijela itd. S druge strane, horizontalna diferencijacija se odnosi na elemente pogrebnog ritusa koji pojedince u okviru određene zajednice razlikuju na temelju njihove pripadnosti određenim društvenim grupama po osnovi srodničke ili neke druge bliskosti (npr. razlike u predmetima za ukrašavanje ili srodničko prostorno grupiranje u okviru nekropola). Razmatranja o društvenoj diferencijaciji i statusa, koji se odražava kroz grobne darove i ostale pretpostavljene odlike vertikalnog raslojavanja,u pretpovijesnoj arheologiji jugoistočne Europe naročito su popularne kada je u pitanju razdoblje kasnog neolitika i eneolitika (npr. Bailey 2000; Borić 1996; Chapman 1991; Raczky, Anders 2006; Siklósi 2004, 2010; Zalai-Gaál 1986) i ranog brončanog doba (vidi O'Shea 1996 kada je u pitanju analiza ranobrončandobne nekropole u Mokrinu; također Porčić, Stefanović 2009). Pitanje vertikalne diferencijacije često se pojavljuje u kontekstu dječjih grobova s "bogatim" darovima u vidu predmeta položenih s određenom individuuom ili onih predmeta koji su služili kao osobni ukras. Ovakvi primjeri "bogatih" dječjih grobova postavljaju

of analysis when attempting to understand what he terms 'micro-traditions'. The background of this analysis is the theoretical approach known as categorical analysis and dynamic nominalism (e.g. Blake 1999). The idea is to discover phenomena such as certain norms within burials in lines, and the way in which such norms or 'micro-traditions' in time became the dominant norms of the mortuary practice of a wider community in a given region. On the other hand, such an approach should allow identification of some other emerging norms in mortuary practice which remained tied exclusively to certain groups/lines of graves. The theoretical ambition of this approach is to remove from archaeological analysis the dichotomy between the structure (that is, certain mortuary practices viewed as synchronic, atemporal and unchangeable tradition) and individual actors and their functioning within the existing repertoire of mortuary practice norms. Such a goal can be achieved by questioning the dynamics between inherited funerary tradition and emerging innovations which can be expected at the micro-level of a given mortuary practice.

In addition, processual archaeology has introduced, into the analysis of mortuary practices, a separation between elements indicating a vertical social differentiation and those indicating a horizontal one. Vertical differentiation regards the status and prestige of an individual within a community, which can be 'read' from recognizable archaeological elements, such as 'rich' grave goods or the amount of energy invested in grave structure, treatment of the dead body etc. On the other hand, horizontal differentiation refers to elements of the burial rite which distinguish among individuals within a community on the basis of their affiliation to certain social groups, on the basis of kinship or some other close relationship (e.g. differences in ornamental items or the spatial grouping of relatives in a necropolis). In the prehistoric archaeology of south-eastern Europe, the consideration of social differentiation and status, reflected in grave goods and other presumed features of vertical differentiation, has been particularly popular when it comes to the periods of the Late Neolithic and Eneolithic (e.g. Bailey 2000; Borić 1996; Chapman 1991; Raczky, Anders 2006; Siklósi 2004, 2010; Zalai-Gaál 1986) and the Early Bronze Age (see O'Shea 1996 for an analysis of the Early Bronze Age necropolis at Mokrin; also Porčić, Stefanović 2009). The issue of vertical differentiation is often raised in the context of subadult graves with 'rich' grave goods laid alongside the body, or items which were used as personal ornaments. Examples of such 'rich' child graves raise a dilemma as to whether they may have been indicators of hereditary status and social inequality. This assumption relies on the idea that rich grave goods and personal ornaments in adult graves could be an indication of the social status earned during

dilemu oko toga radi li se u takvim slučajevima možda o pokazateljima nasljednog statusa i društvenu nejednakost. Ova pretpostavka počiva na ideji da bogati grobni prilozi ili osobni ukrasi u grobovima odraslih mogu ukazivati na društveni status postignut tijekom života određene individue dok se kod dječjih grobova, osobito u slučaju vrlo mlade djece, ne može očekivati postignuti društveni status te se pretpostavlja da je nasljedni status i postojanje društvene nejednakosti najvjerojatnije objašnjenje za neočekivano bogate dječje grobove. Argumenti u prilog nasljednog društvenog statusa i društvene nejednakosti u slučaju bogatih dječjih grobova spuštaju pojavu ovog društvenog fenomena čak na razdoblje gornjeg paleolitika (npr. Vanhaeren, d'Errico 2005; za kritiku vidi Gamble 2007, 149–150). Kada je u pitanju razdoblje mezolitika u Đerdapu, gdje nalazimo veliku građu za proučavanje društvenih dimenzija pogrebne prakse, usprkos ideji da se radi o kompleksnim zajednicama lovaca-sakupljača-ribolovaca tijekom kasnog mezolitika ove regije (Radovanović, Voytek 1997; Voytek, Tringham 1989; za kritiku ovog gledišta vidi Bonsall 2008, 276), nije se u većoj mjeri razmatralo pitanje vertikalne diferencijacije i društvene nejednakosti.

Upravo je pitanje očitavanja društvenih nejednakosti i statusa na temelju podataka o pogrebnoj praksi bilo presudno da se krajem 1970-ih pojavi kritika, koja je bila dio šire post-procesualne kritike, koja je svoju oštricu uperila protiv uspostavljanja izravnog izjednačavanja energije i resursa uloženih u grobnu konstrukciju i/ili količine grobnih darova, s jedne, i društvenog statusa i važnosti određenih individua tijekom njihovih života, s druge strane. Arheolozi postprocesualisti, predvođeni Ianom Hodderom, ukazivali su na činjenicu da sustav simboličkih elemenata materijalne kulture u pogrebnom prostoru rijetko oslikava stvarne društvene odnose u životu određene zajednice. Prije bi se moglo reći da su predstave društvenih odnosa na temelju, na primjer, prisustva i količine darova položenih s pokojnicima u grobovima u velikoj mjeri tek iskrivljena slika stvarnih društvenih odnosa (Hodder 1979; Parker Pearson 1982). Očigledan primjer ovakve ideološke distorzije je islamski običaj sahranjivanja umotavanjem tijela i bez ikakvih pogrebnih darova. U ranim postprocesualnim pristupima dominira ideja koja potječe iz marksističke teorije po kojoj je ideološko iskrivljenje stvarnosti vrlo česta društvena pojava, a u odnosu na činjenicu da individualni akteri često "subverzivno" djeluju u različitim arenama društvene stvarnosti, od kojih je pogrebni prostor jedna takva arena *par excellence*. Sami etnološki primjeri, kada je u pitanju pogrebna praksa, često ukazuju na kompleksnost koja karakterizira repertoar značenja koja se pridaju određenim elementima pogrebne prakse sa stalnom

a person's life, whereas in subadult graves, especially in cases of infants, the social status could not have been earned, and is therefore assumed to have been hereditary. The existence of social inequality is, in the opinion of some authors, the most plausible explanation of unexpectedly rich child graves. Arguments in favour of a hereditary social status and social inequality in the case of rich child graves take the emergence of this social phenomenon to as early as the Upper Palaeolithic (e.g. Vanhaeren, d'Errico 2005; for criticism, see Gamble 2007, 149-150). Large amounts of evidence which would allow a study of the social dimensions of mortuary practice have been found in the Danube Gorges, originating from the Mesolithic period; but, regardless of the idea that in the Late Mesolithic there lived complex communities of hunter-gatherer-fishers (Radovanović, Voytek 1997; Voytek, Tringham 1989; for criticism of this view, see Bonsall 2008, 276), the issue of vertical differentiation and social inequality has not been considered to any significant extent.

The discerning of social inequalities and status from the evidence of mortuary practices was a key issue in the late 1970s, which prompted criticism – which was part of a wider post-processual criticism – targeting direct equalization between the energy and resources invested in grave structure and/or quantity of grave goods, on the one hand, and the social status and importance of the individuals during their lives, on the other hand. Processualist archaeologists, led by Ian Hodder, pointed to the fact that the system of symbolic elements of material culture found within a burial space rarely reflects real social relations in a community's life. Such conceptions of social relations based on, for example, the presence and quantity of grave goods laid with the deceased, can rather be said to be, to a large extent, just a distorted image of real social relations (Hodder 1979; Parker Pearson 1982). A clear example of such an ideological distortion is the Islamic custom of wrapping the dead body and burying it without any grave goods. The predominant idea in early post-processualist approaches – which was derived from the Marxist theory according to which an ideological distortion of reality is a very common social phenomenon – was that individual actors often act 'subversively' in various arenas of social reality, and that the burial space was one such arena par excellence. When it comes to mortuary practice, even ethnological examples often point to the complexity characteristic of the repertoire of meanings attributed to certain elements of mortuary practice, with the constant dynamic of their reinterpretation, thus emphasizing the need for methodological caution when considering information on mortuary practices from ethnographic descriptions (Ucko 1969). Social anthropologist Edmund Leach is critical of the very methodology of collecting critical amounts of examples from ethnological material for a statistically relevant generalization (e.g. Carr 1995),

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

dinamikom u njihovoj ponovnoj interpretaciji, govoreći o potrebi da se saznanja o pogrebnoj praksi iz etnografskih opisa moraju metodološki uzimati s rezervom (Ucko 1969). Društveni antropolog Edmund Leach kritizira samu metodologiju skupljanja kritične količine primjera iz etnološke građe za statistički relevantnu generalizaciju (npr. Carr 1995), nazivajući takav pristup "proizvođenjem tablično prikazanih gluposti" ("*producing tabulated nonsense*") (Leach 1964, 299). Leach ovdje ukazuje na nesvodivost neprestane dinamike u okviru ljudskih društava i kulturnih obrazaca na tablično posložene podatke.

U današnjem kontekstu pluralizma u postojećim teorijskim pristupima u arheologiji nalazimo kako prevladavajuće procesualne tako i prevladavajuće postprocesualne pristupe u analizi arheološki prepoznatljivih elemenata pogrebne prakse. Međutim, većina autora koji proučavaju arheološku građu kako bi razumjeli društvene dimenzije sahranjivanja bi se sigurno složila da je teško prihvatljivo uzimati sustav odnosa u pogrebnom prostoru kao direktan odraz društvene realnosti bilo koje zajednice. Postprocesualistički pristupi i utjecaji iz socijalno-antropološke literature i drugih humanističkih i društvenih znanosti doveli su do pristupa pogrebnoj praksi koji umjesto statusa usmjeravaju pažnju na važnost rodnih odnosa (npr. Chapman, J. 1997; Handsman 1991; Sofaer Derevenski 1997a,b; Stratton, Borić 2012), korporealnost mrtvog tijela (npr. Borić 2005; radovi u Borić, Robb 2008; Fowler 2001; papers in Hamiliakis *et al.* 2001; Joyce 2008; Meskell, Joyce 2003; Sofaer 2006), društvenog pamćenja (npr. Borić 2003, 2010; Bradley 2002) itd.

U posljednjih nekoliko desetljeća, dvije zbirke antropoloških tekstova imale su značajan utjecaj na bolje razumijevanje kompleksnosti pogrebne prakse u arheologiji s važnim etnografskim ilustracijama. U pitanju su zbirke radova *Death and the Regeneration of Life* (Bloch, Parry 1982) i *Celebrations of Death: The Anthropology of Mortuary Ritual* (Huntington, Metcalf 1992). Slično, rad francuskog povjesničara Philippea Arièsa imao je također važan utjecaj u primjeni društveno konstruktivističkog pristupa vezano za razvoj specifičnih odnosa prema smrti u različitim društvenim kontekstima (Ariès 1981).

Važna demarkacijska linija u proučavanju pristupa vezanih za odnos prema mrtvom tijelu podvlači se u analitičkom odvajanju primarnih i sekundarnih sahrana. Na mnogim pretpovijesnim lokalitetima, pored primarnih, artikuliranih sahrana, često se javljaju bilo pokazatelji ekshumacije pojedinih dijelova skeleta i/ili sekundarno sahranjivanje dijelova skeleta na drugim lokacijama. Jedan od primjera je polaganje odvojene glave

describing this approach as "producing tabulated nonsense" (Leach 1964, 299). Here Leach points to the impossibility of reducing the incessant dynamics of human societies and cultural patterns to data sheets.

In today's pluralistic context, among current theoretical approaches in archaeology there are both predominantly processual and predominantly post-processual approaches used to analyse archaeologically recognizable elements of mortuary practices. However, the majority of authors studying archaeological evidence in an attempt to understand the social dimensions of burials would certainly agree that it is hardly acceptable to take the system of relations within a burial space as a direct reflection of the social reality of any community. Post-processualist approaches and influences of social anthropology literature and other fields of study within the humanities and social sciences have brought about an approach to mortuary practice which focuses not on status, but rather on the importance of gender relations (e.g. Chapman, J. 1997; Handsman 1991; Sofaer Derevenski 1997a,b; Stratton, Borić 2012), corporeality of the dead body (e.g. Borić 2005; papers in Borić, Robb 2008; Fowler 2001; papers in Hamiliakis et al. 2001; Joyce 2008; Meskell, Joyce 2003; Sofaer 2006), social memory (e.g. Borić 2003, 2010; Bradley 2002) etc.

In the past several decades, two collections of anthropological papers, including important ethnographic illustrations, have had a significant impact on the better understanding of the complexity of mortuary practices in archaeology. These were the collections Death and the Regeneration of Life (Bloch, Parry 1982) and Celebrations of Death: The Anthropology of Mortuary Ritual (Huntington, Metcalf 1992). *Similarly, the influence of the work by French historian Philippe Ariès was also significant for the application of the social constructivist approach in relation to the development of specific attitudes to death in various social contexts (Ariès 1981).*

Within the study of various attitudes to the dead body, an important demarcation line is drawn by the analytical separation of primary and secondary burials. At many prehistoric sites, in addition to primary, articulated burials, there are also indications of exhumation of certain parts of the skeleton and/or secondary burial of parts of the skeleton in other locations. One such example is the laying of the severed head of a child of around 2 years of age, together with a stag's head, over a grave in which several bodies had been buried, at the Mesolithic site of Vlasac (Fig. 8) (Borić 2010). Such a practice deviates largely from our Western/ideological/religious system (but note the phenomenon of relics, in terms of parts of the bodies of Christian saints, e.g. Harré 1991), and speaks of a very different attitude to the

Sl. 7, grob 12 (muškarac?, odrasla osoba) sahranjen na lijevom boku i pronađen s bakrenom grivnom na zglobu ruke i kamenom sjekirom na lokalitetu Gomolava u Srijemu, oko 4600. god. pr. Kr.
Fig. 7, grave 12 (adult/male?), buried on his left side and discovered with a copper armlet round one wrist and a stone axe, at the Gomolava site in Syrmia, ca. 4600 BC

djeteta starog oko 2 godine zajedno s jelenskom lubanjom, a iznad grobnice u kojoj je pronađeno nekoliko grobova na istom mjestu na mezolitičkom nalazištu Vlasac (Sl. 8) (Borić 2010). Ovakva praksa značajno odstupa od našeg, zapadnog vrijednosnog/ideološkog/religijskog sustava (ali obratiti pažnju na fenomen relikvija u vidu dijelova tijela svetaca u kršćanstvu, npr. Harré 1991), i govori o sasvim drugačijem odnosu prema mrtvom tijelu i njegovoj mogućoj fragmentaciji. Utjecajan tekst u ovom kontekstu je studija Michaela Shanksa i Christophera Tilleya o procesima subjektifikacije s naglaskom na ideološkoj distorziji kada je u pitanju manipulacija ljudskih kostiju odvojenih od tijela u regionalnom kontekstu britanskog ranog neolitika (Shanks, Tilley 1982). Ovi autori smatraju da je namjerno odvajanje i naknadno sekundarno sahranjivanje ljudskih kostiju po određenim klasifikatornim shemama imalo veze s podčinjavanjem individualnosti članova zajednice pripadnosti i važnosti društvenih grupa i šire zajednice u ovom regionalnom kontekstu u danom razdoblju. U skorije vrijeme, Chris Fowler primjenjuje ideju Judith Butler o performativnosti kao načinu da se materijaliziraju "regulatorni ideali" spola i roda. Iz ovakvog teorijskog okvira proizlazi tumačenje ovog autora u vezi s odvojenim ljudskim kostima pronađenim na neolitičkim nalazištima u Britaniji - ovakvo sekundarno pohranjivanje odvojenih kostiju viđeno je kao potentno referenciranje različitih aspekata ličnosti (*personhood*) kao relacijskog entiteta (Fowler 2001). Na ovaj način, po Fowleru, također se naglašava gubitak individualnosti u okviru ovog neolitičkog konteksta zbog ideje o "prostoru iskustva" ("*fields of experience*") čime se naglasak stavlja na (re)produkciju i subverzivnost ličnosti kao idealne kategorije.

Zanimljiva i relevantna etnografska studija, kada je u pitanju dokumentiranje prakse sekundarnog sahranjivanja na Balkanu, je studija Nadie Seremetakis o području Srednji Mani (*Mesi Manni*) na Peloponezu, gdje je dobro dokumentirana praksa sekundarnog sahranjivanja koju vrše isključivo žene 5 ili 7 godina nakon smrti svojih bližnjih. Ovo je podrazumijevalo iskopavanje skeleta, čišćenje kostiju, njihovo izlaganje na suncu i mazanje maslinovim uljem, a zatim pažljivo sakupljanje

dead body and its possible fragmentation. In this context, an influential text is the study by Michael Shanks and Christopher Tilley on processes of subjectivization, with an emphasis on ideological distortion, when it comes to manipulating human bones separated from the body, in the regional context of the British Early Neolithic (Shanks, Tilley 1982). The authors believe that deliberate separation and subsequent secondary burying of human bones, following certain classification schemes, related to the subordination of the individuality of community members to their affiliation and the importance of social groups and wider communities in the given period of this region. Recently, Chris Fowler has applied the idea of Judith Butler on performativity as a way of materializing 'regulatory ideals' of sex and gender. This is the theoretical background for the author's interpretation of separated human bones discovered in Neolithic sites in Britain. He believes that such secondary burying of separated bones is a strong referencing of various aspects of personhood, as a relational entity (Fowler 2001). According to Fowler, in this way the loss of individuality is also underlined within this Neolithic context, because of the idea of 'fields of experience', which places emphasis on (re)production and the subversive nature of personality as an ideal category.

When it comes to documenting secondary-burial practice in the Balkans, an interesting and relevant ethnographic study was made by Nadia Seremetakis, concerning the territory of Central Mani (Mesi Manni) on the Peloponnese. There the practice of secondary burial – performed exclusively by women, 5 or 7 years after the death of their loved ones – has been well documented. The process encompasses exhumation of the skeleton, cleaning the bones, their exposure to the sun and oiling with olive oil, only for the bones to be carefully collected, down to the smallest part of the skeleton, and buried once more (Seremetakis 1991). In her analysis of this ethnography, Seremetakis emphasized the following: "... the issue is not final separation from the dead, but maintaining contact between beings who have residual social relations based on shared substance and exchange and now happen to inhabit separate domains" (Seremetakis 1991, 15).

svakog i najmanjeg dijela skeleta i njihovo sekundarno sahranjivanje (Seremetakis 1991). U svojoj analizi ove etnografije Seremetakis podvlači sljedeće: "...ne radi se o konačnom odvajanju od mrtvih, već o održavanju veza s bićima koja i dalje posjeduju tragove društvenih odnosa u vezi s dijeljenjem iste tvari i koja sudjeluju u međusobnoj razmjeni dok obitavaju u posebnim domenama realnosti" ("*... the issue is not final separation from the dead, but maintaining contact between beings who have residual, social relations based on shared substance and exchange and now happen to inhabit separate domains*") (Seremetakis 1991, 15; prijevod autora).

U širem kontekstu rasprave o značenju pogrebne prakse za analizu društvene stvarnosti, Seremetakis smatra da je često u antropološkoj literaturi prevladavao pristup da se domena smrti, u tradiciji Durkheimove škole, prije svega tretira na funkcionalistički način, tj. kao zamjena za razmatranje drugih "važnijih" elemenata društvenog života: "govoriti o smrti znači zapravo govoriti o srodstvu, nasljeđivanju, plodnosti žena, društvenoj moći muškaraca" ("*to talk about death is to really talk about kinship, inheritance, the fertility of women, the social power of men*") (Seremetakis 1991, 13; prijevod autora). U suprotnosti s ovim trendom, ova autorica naglašava duge kontinuitete u pogrebnim praksama, njihovu kulturnu specifičnost i nediskurzivni karakter određenih elemenata pogrebnog ritusa. Sve ovo postavlja suštinski dis-sinkronicitet između pogrebne prakse i ostalih društvenih institucija (Seremetakis 1991, 15; vidi Ariès 1981). Iz ovog razloga ne možemo očekivati simetrično ogledanje društvenog poretka u pogrebnoj praksi. Ova autorica predlaže "tretiranje pogrebnih rituala kao arena društvenog osporavanja, prostora u kojem se heterogeni i antagonistički kulturni kodovi i društveni interesi susreću i ukrštaju" ("*to treat death rites as an arena of social contestation, a space where heterogeneous and antagonistic cultural codes and social interests meet and tangle*") (Seremetakis 1991, 15).

Mnoge od teorijskih tema koje smo dotaknuli u prethodnom pregledu od velike su važnosti u analizi pogrebne prakse u različitim razdobljima pretpovijesti. Među ovim temama su: oslikavanja vertikalne i horizontalne društvene diferencijacije u arheološki prepoznatljivim elementima pogrebne prakse, razlikovanje postignutog od nasljednog statusa, prepoznavanje društvene nejednakosti na temelju pogrebne prakse različitih starosnih i rodnih grupa, prostorno grupiranje grobova određenih društvenih grupa, izražavanje teritorijalnosti odlaganjem pokojnika na specifično društveno i/ili ekonomski markiranim lokacijama, značaj i značenje ekshumacije primarnih sahrana i sekundarno sahranjivanje odvojenih dijelova tijela, ukrašavanje tijela itd.

Sl. 8, odvojena glava djeteta (2–3 godine) grob H21 i jelenska lubanja postavljene nakon ritualnog "zatvaranja" grobnog mjesta na lokalitetu Vlasac u Đerdapu, oko 5950. g. pr. Kr.
Fig. 8, severed head of a child (2-3 years of age), grave H21, and a stag's skull, set after the ritual 'closing' of the grave at the Vlasac site in the Danube Gorges, ca. 5950 BC

In the wider context of the discussion on the importance of mortuary practices for the analysis of social reality, Seremetakis believes that the prevalent approach within anthropological literature often entails a functionalist treatment of the death domain, following the tradition of Durkheim's school, implying that it is taken as a substitute for considering other 'more important' elements of social life: "to talk about death is to really talk about kinship, inheritance, the fertility of women, the social power of men") (Seremetakis 1991, 13). In contrast to such a trend, the author emphasizes long continuities of funerary practices, their cultural specificities and the non-discursive character of certain elements of the mortuary rite. All of this establishes a fundamental dissynchronicity between the mortuary practice and other social institutions (Seremetakis 1991, 15; see Ariès 1981). Therefore, we cannot expect social order to be symmetrically reflected in the mortuary practice. The author urges us "to treat death rites as an arena of social contestation, a space where heterogeneous and antagonistic cultural codes and social interests meet and tangle" (Seremetakis 1991, 15).

Many of the theoretical topics touched upon in the above overview are very important for the analysis of mortuary practices in various periods of history. These topics include: reflection of vertical and horizontal social differentiation in archaeologically identifiable elements of mortuary practice, distinction between earned and hereditary status, recognizing social inequalities on the basis of mortuary practices applied to various age and gender groups, spatial grouping of graves of certain social groups, expressing territoriality by burying the dead in locations specifically marked in social and/or economic terms, importance and meaning of exhumation of primary burials and secondary burials of separated body parts, decorating the body etc.

MAJA PASARIĆ

OD ZOOMORFNE PLASTIKE DO ŽRTVENE ŽIVOTINJE - ŽIVOTINJE I NEOLITIČKE KULTNE PRAKSE

FROM ZOOMORPHIC ORNAMENTS TO SACRIFICIAL ANIMALS: - ANIMALS IN NEOLITHIC CULT PRACTICES

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Životinjski svijet oduvijek je blisko povezan s ljudskim. Složena mreža različitih odnosa između čovjeka i životinje stvarala se od početka njihova života na zemlji pa sve do danas. Zajednice ljudi i ostalih živih bića međusobno su utjecale jedna na drugu kroz slijed prapovijesnih razdoblja u skladu s njihovim osobitim kulturološkim, regionalnim i ekološkim značajkama. Tijekom prapovijesti životinje su čovjeku nesumnjivo bile iznimno važne kao izvor hrane, sirovina, a zatim i radne snage. No značajna uloga životinja ne otkriva se isključivo u okvirima njihove raznovrsne ekonomske iskoristivosti već je, između ostaloga, vidljiva i u upornoj i postojanoj pojavnosti kao dijela čovjekove mitsko-religijske svijesti, njegova simboličkog mišljenja i djelovanja te umjetničkog izraza. U navedenim okvirima životinje privlače pozornost još od paleolitika.

No za razliku od njegova paleolitičkog prethodnika, neolitičkog čovjeka povezuje se s pretežnim prebivanjem na jednom mjestu, većim ljudskim zajednicama čija se organizacija života temelji na poljodjelstvu i stočarstvu uz koegzistenciju s ranijim oblicima privređivanja, poput lova, ribolova i sakupljačke djelatnosti (Težak-Gregl 1998). Postupno i u skladu s ekološkim uvjetima čovjek svoj način života veže uz zemlju od koje privređuje te se suživljava s njenim prirodnim otkucajima i ciklusima o kojima je znatno ovisan. Razdoblje neolitika otvara novo poglavlje i u perspektivi odnosa čovjeka i životinje.

Pojava stočarstva i uzgoja životinja podrazumijeva i promjene u relacijama između ljudi i ostalih živih bića do kojih dolazi posredstvom domestikacije potonjih. Premda različiti aspekti domestikacije ovdje neće biti razmatrani, potrebno je naglasiti da je njena pojava općenito imala dalekosežne posljedice za obje živuće vrste. Životinje postaju aktivnim dijelom zajednice neolitičkog čovjeka, a životi ljudi i ostalih živih bića u mnogočemu međuzavisni na razini svakodnevnice.

Kao jedna od mnogobrojnih uloga koje životinje mogu imati u ljudskom društvu često se ističe ona u kojoj se animalne karakteristike uobličuju u metafore, odnosno ona u kojoj se animalno manifestira kao simbol. Možemo pretpostaviti da su predodžbe neolitičkog čovjeka o svijetu koji ga okružuje bile povezane sa sviješću o cikličkom slijedu života i smrti, povezanosti čovjeka i prirode, vidljivog i nevidljivog svijeta. S čovjekovim nastojanjem pronalaska svoga mjesta u navedenoj matrici uobličuje se i specifični mitski svjetonazor te odnos prema nadnaravnom, vjerovanja i njihova praksa u okvirima kojih određene animalističke predodžbe, dakako, neće biti rijetkost.

Smatra se da su prikazi životinja kao i, u pojedinim slučajevima, njihovi koštani ostaci zahvalna građa za promišljanje simboličke uloge životinja u pojedinim zajednicama. Česta i vrlo raširena pojava životinja na različitim predmetima materijalne kulture tijekom cijele prapovijesti

The world of animals has always been closely linked to that of humans. The complex network of diverse relations between man and animal has been developing ever since their first appearance on Earth. Communities of human and other living beings have influenced one another throughout various periods of prehistory, in line with particular cultural, regional and environmental features.

In prehistory, animals undoubtedly played a vital role for humans as a source of food, raw materials and, later, also labour. But the important role of animals is reflected not only in the various possibilities of their economic exploitation, but also, among other things, in their persistent and constant presence within man's mythological and religious consciousness, his symbolical thoughts and actions, and his creative expression. In these spheres, animals have attracted attention ever since the Palaeolithic.

However, unlike his Palaeolithic predecessor, Neolithic man is associated with permanent settlements, and with larger human communities whose life was organized by herding and tilling, performed in parallel with some earlier economic activities, such as hunting, fishing and gathering (Težak-Gregl 1998). Gradually, depending on environmental circumstances, man tied his way of life to the soil he used to produce food, and adjusted his life to the natural pulses and cycles he was largely dependent on.

The Neolithic period also marked a new chapter in the relation between man and animals. The emergence of herding and stock-rearing implied changes in relations between human and non-human creatures, brought about by the domestication of the latter. Though various aspects of domestication will not be discussed here, we should underline that the appearance of domestication had far-reaching consequences for both forms of life. Animals became active participants in Neolithic human communities, and the lives of human and other living beings were very much interdependent on a daily basis.

One of the many roles played by animals in human societies is that in which animal characteristics are used as metaphors, and what is typical of the animals is taken as a symbol. We can assume that Neolithic man's perceptions of the world surrounding him were linked to the cycle of life and death, ties between man and nature, between the visible and invisible worlds. As man endeavoured to identify his place in the matrix described, a specific mythical worldview developed, including considerations of the supernatural, beliefs and practices within which certain animalistic conceptions were not rare.

Depictions of animals, and in some cases remains of their bones, have been taken as useful evidence for research on the symbolic roles of animals in individual communities. The frequent and widely-distributed portrayals of animals on various artefacts originating from throughout prehistory – despite possible difficulties in their interpretation – make it impossible to ignore their presence, and place them in the intersection of artistic

Galovo, zoomorfna figurina, protoma svinje, kat.br. 88
Galovo, zoomorphic figurine, protome of a pig, cat. no. 88

usprkos svim mogućim teškoćama pri interpretaciji onemogućuje zanemarivanje njihove materijalnosti, smještajući ih u sjecište umjetničkog izražavanja i magijsko-religijskog djelovanja. Premda je na prostoru Hrvatske, u danom trenutku, zamjetna skromnija učestalost takve vrste nalaza u odnosu na bogati neolitički *bestijarij* pojedinih kultura jugoistočne Europe poput Cucuteni ili vinčanske kulture koje se odlikuju brojnošću zoomorfnih prikaza, neolitičke kulture na tlu kontinentalne Hrvatske također poznaju oblikovanje životinjskog lika izvedenog najčešće u vidu zoomorfnih figurica ili spoja recipijenta i životinjskog tijela.

Životinjski lik i keramičko oblikovanje kultnih funkcija

Pozornost privlači upravo činjenica da je pojava životinjskog lika često vezana uz vrstu keramičkog oblikovanja za koju se pretpostavlja da je bila upotrebljavana u kultne svrhe. To su prije svega žrtvenici i keramičke posude neobičnih i nesvakidašnjih oblika (Težak-Gregl 1998). Ponekad je kod keramičkih posuda prisutnost zoomorfnih aplikacija - životinjskih glavica kao zamjena za čitavu životinju - na njihovim stijenkama ono što posudama pridaje posebno značenje, određuje ih kao posebnu skupinu nalaza te ih smješta izvan okvira svakodnevne upotrebe. Životinjske protome na posudama česte su unutar sopotske kulture o čemu svjedoče nalazi njihovih ulomaka s nalazišta Osijek - Hermanov vinograd (Šimić 2008a), Kneževi Vinogradi (Šimić 1995) te Stari Perkovci (Marković, Botić 2008). Premda je tijekom neolitika kod zoomorfnih protoma na keramičkim posudama tipična stilizacija kod dvaju protoma iz Starih Perkovaca pretpostavlja se da su oblikovane kao glave medvjeda (Marković, Botić 2008), a ističe se i lijepo izvedena protoma s ptičjom glavom

creation and magic-religious activity. The frequency of such finds is noticeably lower in the territory of Croatia in comparison to the rich Neolithic bestiary of some cultures of south-eastern Europe, such as the Cucuteni and Vinča cultures, characterized by numerous zoomorphic depictions. Nonetheless, the Neolithic cultures of continental Croatia also portrayed animal, most often as plastic zoomorphic figurines and combinations of receptacles and animal-shaped bodies.

Animal figures and pottery with cult functions

Our attention is drawn to the fact that animal figures often coincide with pottery assumed to have been used for cult rituals. These were primarily altars and ceramic vessels of unusual and extraordinary shapes (Težak-Gregl 1998). The presence of zoomorphic appliques – small animal heads representing entire animals – on the walls of receptacles is sometimes what gave those receptacles a special significance, and sets them aside as a special group of finds which were not in everyday use. Animal protomes on vessels were frequent within the Sopot Culture, as evidenced by the discovery of their fragments at the sites of Herman's Vineyard in Osijek (Šimić 2008a), Kneževi Vinogradi (Šimić 1995) and Stari Perkovci (Marković, Botić 2008). Although the Neolithic zoomorphic protomes on pottery vessels are typically stylized, the two protomes from Stari Perkovci are likely to have been shaped as bear heads (Marković, Botić 2008). Another protome that stands out features a bird head and was found at Sopot. It is believed to have been shaped after the Vinča Culture models (Dimitrijević 1968).
Animalistic elements can also be found on small altars, consisting of a rectangular slab on four cork-shaped legs, with zoomorphic protomes on the corners. This type of altar is frequently found within the Starčevo Culture, with several distinguishable variants,

Samatovci, zoomorfna figurina životinje ukrašena udubljenim točkama, kat.br. 221
Samatovci, zoomorphic figurine of animal decorated with depressed dots, cat. no. 221

sa Sopota za koju se smatra da je izrađena prema vinčanskim uzorima (Dimitrijević 1968).
Životinjska obilježja nalazimo i kod malih žrtvenika u obliku četverokuta na četiri čepaste noge na čijim su uglovima smještene zoomorfne protome. Ovaj tip žrtvenika čest je u okvirima starčevačke kulture gdje je moguće prepoznati i nekoliko njegovih inačica na što upućuju i nalazi iz starčevačkog naselja Slavonski Brod - Galovo (Minichreiter 2007). Poznaje ga i sopotska kultura, a premda se smatraju rijetkom pojavom u kompleksu kultura linearnotrakaste keramike jedan lijepi primjerak pronađen je i na nalazištu korenovske kulture u Kaniškoj Ivi (Dimitrijević 1979a; Težak-Gregl 1998; Marković, Botić 2008). Iako pretežno izvedene u stiliziranoj maniri čini se da većina životinjskih protoma sa žrtvenika iz kontinentalne Hrvatske podsjeća na glave psa ili svinje (Minichreiter 1992b, 2007; Težak-Gregl 2003). Ovu posljednju životinju sa sigurnošću prepoznajemo u realistično izvedenoj i lijepo oblikovanoj protomi s Galova koja nije osamljen primjer u okvirima starčevačke kulture (Minichreiter 2007). Lijepo oblikovana figurica svinje pronađena je i na lokalitetu Donja Branjevina u Srbiji (Karmanski 1968).
Žrtvenici u obliku životinja također nisu rijetka pojava tijekom neolitika na europskom tlu. S naših prostora pažnju privlači nalaz žrtvenika za koji se temeljem oblika tijela (premda mu nedostaje glava) i repa životinje pretpostavlja da je izveden u obliku goveda (najvjerojatnije bika s obzirom na to da su na donjoj strani tijela prikazane muške spolne oznake) s plitkom posudicom smještenom u predjelu leđa pronađen na lokalitetu Galovo (Minichreiter 2007). Figurice bika već su i ranije zabilježen nalaz na našem području no, kako se ističe, žrtvenik u obliku goveda prvi je nalaz takve vrste kod nas (Minichreiter 2007). Susjedna nalazišta poput starčevačkog naselja Donja Branjevina bilježe sličan tip žrtvenika izvedenog u obliku svinje

as demonstrated by finds from the Starčevo Culture settlement at Galovo in Slavonski Brod (Minichreiter 2007). Such altars were also present in the Sopot Culture, and although considered rare within the complex of cultures of the Linear Pottery, a very fine example has been found at the Korenovo Culture site in Kaniška Iva (Dimitrijević 1979a; Težak-Gregl 1998; Marković, Botić 2008). Despite the fact that most of the animal protomes are stylized, it would appear that those originating from altars found in continental Croatia mostly resemble dog or pig heads (Minichreiter 1992b, 2007; Težak-Gregl 2003). A pig can be identified with certainty in the realistically-rendered protome from Galovo, which is not a unique example of the kind in the framework of the Starčevo Culture (Minichreiter 2007). A beautifully shaped pig figurine has also been found at the site of Donja Branjevina in Serbia (Karmanski 1968).
Altars shaped like animals were also not rare elsewhere in Europe during the Neolithic. In Croatian territory, one interesting find is an altar with the head missing, but which is believed to have been shaped like a bovine, judging by the form of the body and tail (probably a bull, given the male genitals on the lower side of the body). The altar, discovered at the site of Galovo, also features a shallow vessel in the animal's back (Minichreiter 2007). Bull figurines from earlier periods have also been found in this region, but this bull-shaped altar is the first find of its kind in Croatia (Minichreiter 2007). Neighbouring sites, such as the Starčevo settlement of Donja Branjevina, have yielded a similar type of altar, shaped like a pig, with a somewhat deeper double receptacle (Karmanski 1968). Receptacles – deeper or shallower – could also be positioned on the animal's back, which is the case with a somewhat worse-preserved zoomorphic figure from Galovo, and a completely differently-rendered animal figurine of the Brezovljani type of the Sopot Culture, which features an opening in place of the head – possibly used as a socket for fixing a separate

Galovo, zoomorfni žrtvenik u obliku goveda, kat.br. 85
Galovo, zoomorphic altar in bovine shape, cat. no. 85

s nešto dubljim, dvojnim recipijentom (Karmanski 1968). Recipijenti, dublji ili plići, mogu biti smješteni i na leđima životinje kao u slučaju lošije sačuvane zoomorfne figure iz Galova ili posve drugačije oblikovane životinjske figurice brezovljanskog tipa sopotske kulture koja umjesto glave ima otvor u koji se možda usađivala posebno izrađena glava (Težak-Gregl 1998; Minichreiter 2007). Uzimajući u obzir širi prostor Hrvatske lijepe primjerke oblikovnog zajedništva recipijenta i životinjske figure nalazimo tijekom neolitika na jadranskoj obali u okvirima danilske i hvarske kulture gdje su posebno zanimljive one u obliku medvjeda s posudicom na leđima (Batović 1979).
Navedeni primjeri - bilo da je riječ o pojedinim dijelovima životinje, najčešće glavama kao u slučaju stiliziranih zoomorfnih protoma na posudama ili četvrtastim žrtvenicima ili o žrtvenicima u obliku životinje - svjedoče o zoomorfnim obilježjima kao prepoznatljivim karakteristikama ovih predmeta i važnim parametrima pri stvaranju njihova značenja. Premda točnu namjenu većine ovih predmeta danas teško određujemo, na što često utječe i nedostatak podataka o njihovim primarnim upotrebnim kontekstima, oni u svakom slučaju upućuju na predodžbe o životinjskom tijelu kao recipijentu, nositelju recipijenta ili njegovoj oznaci te pojedinim životinjskim tijelima samima kao mogućim recipijentima specifičnih sadržaja. Uz pretpostavku da su ovi predmeti bili primijenjeni u kultne svrhe vrijedi istaknuti da posude korištene u obrednim praksama prati složen simbolizam, a često ih određuje upravo ono što je u njima sadržano (Durand 1991). Stoga je zanimljivo da je neke četvrtaste žrtvenike sa životinjskim protomama moguće povezati sa stambenim objektima u kojima su bili locirani uz ognjišta, a s obzirom na manje dimenzije recipijenata žrtvenika razvile su se i pretpostavke o njihovoj upotrebi kod žrtvenih prinosa simboličnih količina prvih plodova nakon

head (Težak-Gregl 1998; Minichreiter 2007). If we consider the wider territory of Croatia, fine examples of receptacles featuring animal shapes from the Neolithic have been found on the Adriatic coast, at the sites of the Danilo and Hvar cultures. Particularly interesting among them are those shaped like bears with receptacles on their backs (Batović 1979).
These examples – whether individual parts of animals, most often heads (as in the case of stylized zoomorphic protomes on vessels or rectangular altars), or altars shaped like animals – demonstrate that zoomorphic elements are recognizable features of those items and important parameters for the deliberation of their meaning. Although it is difficult to establish precise usage of most of the items mentioned, often due to the lack of data concerning their use-related primary contexts, they undoubtedly reflect the conception of an animal's body as a receptacle, receptacle-bearer or its mark, and of individual animal bodies as possible containers of specific contents. Such items were probably used for cult purposes, and it is therefore worth mentioning that vessels used for ritual practices were accompanied by complex symbolism, and often defined by what was contained in them (Durand 1991). Interestingly, some rectangular altars with animal protomes can be linked to residential houses, within which they were found by the fireplace. In view of the small size of the altars' receptacles, hypotheses have been made regarding their possible usage for offerings of symbolic quantities of the first corn or grape harvest yields, a specific practice of various farming communities throughout history (Težak-Gregl 2003). Small animal heads on altars, and on vessels, are often stylized, making it difficult to establish the exact animal species they represent, and thus also to consider their possible symbolism. As noted above, they might not represent any specific species, but rather a general animalistic symbol (Težak-Gregl 2003). If that is the case, we can see them as personalization of material, cosmic and spiritual principles and forces (Chevalier, Gheerbrant 1994). Sometimes, however,

Kaniška Iva - Osušak, žrtvenik sa životinjskim protomama, kat.br. 164
Kaniška Iva - Osušak, altar with animal protome, cat. no. 164

nove žetve ili berbe, što je i kroz povijest bila specifična praksa različitih zemljoradničkih zajednica (Težak-Gregl 2003). Životinjske glavice na žrtvenicima, kao i one na posudama, često su izvedene u stiliziranoj maniri koja otežava točno definiranje životinjske vrste, a time i daljnje razmatranje njene moguće simbolike. Kako je već primijećeno, moguće je i da njihova namjena nije prikaz određene životinjske vrste već animalnog simbola općenito (Težak-Gregl 2003). Tada ga možda možemo promatrati i kao personalizaciju materijalnih, kozmičkih i duhovnih principa i snaga (Chevalier, Gheerbrant 1994). Ponekad su fizička obilježja nekih životinja ipak jasno prepoznatljiva te možemo pretpostaviti da izdvojeni i prikazani dijelovi njihova tijela kao zamjena za čitavu životinju mogu imati važne simbolične naznake za svaku pojedinu kulturu.

Samostalne životinjske figurice

U tom smislu pozornost privlače i trodimenzionalne životinjske figurice koje, premda podložne različitim tumačenjima, također pozivaju na barem izokolno propitivanje njihove moguće kultne funkcije. Tako se, među skromnim i pretežno stiliziranim neolitičkim životinjskim figuricama s prostora kontinentalne Hrvatske često svedenih samo na ulomke tijela, ističe realistično i lijepo oblikovana figurica bika pronađena na nalazištu sopotske kulture Osijek - Hermanov vinograd (Šimić 1995). Afinitet sopotske kulture prema životinjskom liku vidljiv je i u nemalom broju zoomorfnih figurica koje se, premda je riječ o slučajnim ili površinskim nalazima, izdvajaju po svom ukrasu. S Hermanovog vinograda potječe i vrlo zanimljiva životinjska figurica (Šimić 2008a) od koje je sačuvana glava s plastično izvedenim i vertikalno položenim ustima, vrat i dio izduženog tijela ukrašen urezivanjem i ubadanjem. Ukras nosi i vrat, odnosno sačuvani dio torza životinjske figurice od koje je očuvana još i glava čije nas oblikovanje možda može podsjetiti na glavu medvjeda. Uši na glavi izvedene su poput ušice, a

physical features of the animals are clearly discernable and allow the assumption that the parts of their bodies which were singled out and represented are provided as proxies for the whole animals, and as such they can have important symbolic meaning for each culture.

Individual animal figurines

Particularly interesting, in this respect, are three-dimensional animal figurines which have been the subjects of various interpretations, but they also invite a circumspect consideration of their possible cult function. Among the modest, and mostly stylized, Neolithic animal figurines discovered in continental Croatia, often represented only by fragments of their bodies, there is also a realistically and beautifully rendered figurine found at the Sopot Culture site of Herman's Vineyard in Osijek (Šimić 1995). The Sopot Culture's affinity for animal figures is reflected in a large number of zoomorphic figurines which – though these are chance or surface finds – feature particular ornaments. A very interesting animal figurine has been discovered at Herman's Vineyard (Šimić 2008a). Its head has been preserved, with nicely shaped vertical mouth, neck and part of the elongated body decorated with incisions and punctuations. The neck, that is, the preserved part of the animal torso, is also decorated, and its head is shaped to resemble a bear's head. The ears are made like eyelets, and the eyes are marked by incisions. It is even possible that the figurine was decorated with red paint (Šimić 1995). Other decorated examples include zoomorphic figurines from Samatovci and Sopot, among which two pigs and a sheep have been identified (Dimitrijević 1979a). Thus far, the only representation of a deer among the Neolithic plastic figures has been discovered in a Starčevo Culture dug-out at Galovo. The finely shaped figurine is adorned with zig-zag motifs (Minichreiter 2007). We should also mention the interesting discovery of a ceramic duck head associated with a burial in a dug-out at Galovo. The bird's head

oči naglašene urezivanjem, postoji i mogućnost da je figurica bila ukrašena crvenom bojom (Šimić 1995). U ukrašene primjerke ubrajaju se i zoomorfne figurice iz Samatovaca i Sopota među kojima su prepoznate dvije figurice svinje i jedna ovna (Dimitrijević 1979a). Zasada jedini prikaz srne među neolitičkom plastikom pronađen je u zemunici starčevačke kulture na Galovu - riječ je o lijepo oblikovanoj figurici ukrašenoj cik-cak motivima (Minichreiter 2007). Spomenimo i zanimljiv nalaz keramičke glave patke koji se veže uz ukopni prostor pokojnika u zemunici s Galova. Glava ptice pronađena je nekoliko desetaka centimetara iznad glave muškarca zajedno s ulomcima „žrtvenih stolova" i glinenim diskovima koji su se nalazili u zemlji kojom je pokojnik bio prekriven (Minichreiter 2007). Da je starčevačka kultura bila upoznata s prikazivanjem ove vodene ptice svjedoči i glava patke pronađena u objektu starčevačke kulture na nalazištu Kneževi Vinogradi (Šimić 2004).

Ove životinjske likove nije jednostavno protumačiti. Moguće je da oni prikazuju životinje koje su ljudi uzgajali ili lovili, o kojima su se brinuli ili ih čak i štovali te je dio njih mogao biti uključen i u pojedine kultne prakse. Prapovijesni umjetnički izraz kroz koji određena zajednica umrežuje različita ekonomska, ekološka, magijsko-religijska i druga značenja ne moramo promatrati isključivo kroz prizmu pukog prikazivanja nekog postojećeg stanja već i u okvirima njegova aktivna djelovanja na zajednicu koja ga stvara (Gell 1998). Neki od spomenutih, u glini oblikovanih, životinjskih likova mogli su imati i apotropejsku, profilaktičku, lustrativnu ili kurativnu i drugu moć, a time i utjecati na specifične promjene u svojoj okolini. U svakom slučaju, relativno učestala pojava životinjskih figurica i druge zoomorfne idoloplastike, onemogućuje zanemarivanje simboličke uloge životinja u prapovijesnim populacijama.

Žrtvene životinje

Distribucija i konteksti pojavnosti životinjskih koštanih ostataka također mogu upućivati na različite animalističke predodžbe i s njima povezana vjerovanja o životinjama. Životinje i njihovi ostaci mogli su biti uključeni u različite obredne postupke neolitičkih zajednica i to na brojne načine. Cjeloviti ukopi životinja ili ukopi pojedinih dijelova njihova tijela vrsta su nalaza koja se najčešće povezuje s kultnim praksama. Ukopi nekih vrsta životinja javljaju se već tijekom neolitika srednje Europe. Najčešće je riječ o psima i svinjama, životinjama koje su imale najrazličitije uloge u životu neolitičkih zajednica. Prema dosadašnjem stanju istraženosti životinjskih ukopa na prostoru kontinentalne Hrvatske tijekom neolitika gotovo da i nema, a njihov se broj kao i raznovrsnost znatno povećavaju s razdobljem eneolitika. Mnogo više uvida u

was found several dozens of centimetres above the head of a man, together with fragments of "sacrificial tables" and clay discs located in the earth which covered the deceased (Minichreiter 2007). The fact that the Starčevo Culture was familiar with representations of this water bird is further evidenced by the duck's head discovered in a Starčevo Culture house at the site of Kneževi Vinogradi (Šimić 2004).

These animal figures cannot be interpreted easily. They could be representing animals that were bred or hunted by people, or animals people cared about or even worshipped, and some of them could have been used in certain cult practices. The prehistoric artistic expression in which a certain community interweaved various economic, environmental, magic, religious and other meanings should be viewed not only through a prism of mere representation of a current situation, but also bearing in mind its active impact on the community which created it (Gell 1998). Some of the animal figures mentioned above, shaped from clay, could have had an apotropaic, prophylactic, lustrative, curative or other power, and thus also caused specific changes in their environments. Be that as it may, the rather frequent appearance of animal figurines and other zoomorphic ideoplastic pieces makes it impossible to disregard the symbolic role of non-human creatures in prehistoric populations.

Sacrificial animals

The distribution and contexts in which animal bone remains are found can also indicate various animalistic conceptions and related beliefs concerning animals. Animals and their remains could have been involved in various ritual activities of the Neolithic communities, and this could have been done in a number of ways. The finds most often associated with cult practices are burials of complete animals or individual parts of their bodies. Burials of certain animal species emerge during the Neolithic in Central Europe. Most often, these were dogs and pigs – animals which played very diverse roles in the lives of Neolithic communities. Based on the current state of research, in the Neolithic, animal burials barely existed in continental Croatia, but their number and diversity increased significantly during the Eneolithic. Finds from neighbouring regions provide much more insight into the Neolithic animal burials.

For example, a double burial of dogs has been discovered in the Vinča layer at Gomolava. The animals were laid in the ground in their anatomic position, turned with their bellies towards one another (Brukner 1980). Although, in the territory of Central Europe, dog burials were practised throughout prehistory, they seem to have been most numerous during the middle and late Neolithic (Kyselý 2002). They were particularly frequent in the Lengyel Culture, but they were also known in the Linear Pottery

Osijek - Filipovica/Hermanov vinograd, figurica bika, MSO-481
Osijek – Filipovica/Herman's vineyard, small figure of bull, MSO-481

neolitičke ukope životinja omogućuju nalazi s nama susjednih područja.

Primjerice, dvostruki ukop pasa pronađen je u vinčanskom sloju na Gomolavi gdje su životinje bile položene u zemlju u anatomskom položaju okrenuti međusobno trbusima (Brukner 1980). Premda su ukopi pasa na srednjoeuropskom prostoru prisutni tijekom čitave prapovijesti njihova najveća brojnost zabilježena je za vrijeme trajanja srednjeg i kasnog neolitika (Kyselý 2002). Osobito su česti u *lenđelskoj kulturi* a poznaje ih i kultura linearnotrakaste keramike i Herpály kultura (Gimbutas 1982; Zalai-Gaál 1994; Zalai-Gaál *et al.* 2011). Veliki broj ukopanih psećih lubanja u jamama unutar naselja lenđelske kulture potaknuo je i pretpostavke da se tijekom tog perioda na prostoru Karpatske kotline razvila jedna vrsta kulta lubanje (Zalai-Gaál 2009). Slično je i sa svinjama čiji su ukopi također brojni tijekom kasnog neolitika u Europi te ih nalazimo u okvirima Münchshöfen i lenđelske kulture te kultura linearnotrakaste i ubodnotrakaste keramike (Behrens 1964; Žid 2000; Zalai-Gaál *et al.* 2009).

Kako se životinjski ukopi tijekom neolitika javljaju prije svega u okvirima naselja ne iznenađuje činjenica da neke od njih možemo povezati s praksom žrtvovanja životinja prilikom utemeljenja naselja ili gradnje stambenog prostora. Tako u jami smještenoj među kućama koje su svojim rasporedom tvorile mali pravokutni prostor, u okviru Herpály kulture, na istoimenom nalazištu u Mađarskoj nalazimo osam psećih kostura položenih na dnu jame uz rub kuće (Zalai-Gaál 1994). Na prostoru Češke, na nalazištu kulture ubodnotrakaste keramike Postoloprty zabilježeni su ukopani ostaci svinje i drugih životinja pronađenih u temelju zidova kuće (Soudský 1955). Na sličnu praksu možda ukazuje i ukop svinje ispod ognjišta unutar kuće na nalazištu Twann u Švicarskoj koje se pripisuje Cortaillod kulturi (Becker, Johansson 1981). Pretpostavke o kultnom karakteru pojedinih ukopanih dijelova

Culture and the Herpály Culture (Gimbutas 1982; Zalai-Gaál 1994; Zalai-Gaál et al. 2011). The large number of dog skulls buried in pits within settlements of the Lengyel Culture has prompted hypotheses on the emergence of a skull cult during the period in the territory of the Carpathian Valley (Zalai-Gaál 2009). The great number of pig burials from the late Neolithic in Europe, found within the Münchshöfen and Lengyel cultures, and within Linear Pottery and Stichband Pottery cultures (Behrens 1964; Žid 2000; Zalai-Gaál et al. 2009) is a similar case.

Given that, in the Neolithic, animal burials were located primarily within settlements, it is not surprising that some of them can be associated with animal sacrifices made when a settlement was founded or a residential house built. Thus, in Herpály – at the site of the culture bearing the same name – eight dog skeletons have been found at the bottom of a pit located among houses laid out in such a way that they formed a small rectangular space in between (Zalai-Gaál 1994). In the territory of the Czech Republic, at the site of the Stichband Pottery Culture of Postoloprty, buried remains of a pig and other animals have been found in the foundations of house walls (Soudský 1955). A similar practice is suggested by the pig burial under the fireplace in a house at the site of Twann in Switzerland, attributed to the Cortaillod Culture (Becker, Johansson 1981). Hypotheses on the cult function of buried parts of animal bodies, and their sacrifice during the construction of residential houses, have also been made in relation to certain finds from the Starčevo Culture settlements in continental Croatia (Minichreiter 1993, 2000). These were bovine horns buried under a set of ceramic dishes and animal bone remains in dug-outs at the sites of Galovo and Zadubravlje. Generally, it is believed that such sacrifices were supposed to provide protection and prosperity for the residents, and for the entire community. The choice of the animal to be sacrificed could have been linked to specific animalistic conceptions and beliefs.

životinjskog tijela, odnosno o njihovoj žrtvenoj funkciji prilikom gradnje stambenog prostora vežu se i za pojedine nalaze iz naselja starčevačke kulture na području kontinentalne Hrvatske (Minichreiter 1993; 2000). Riječ je o goveđim rogovima ukopanim ispod skupine keramičkog posuđa i ostataka životinjskih kostiju u zemunicama na nalazištima Galovo i Zadubravlje. Općenito se smatra da su ovakve žrtve trebale omogućiti zaštitu te prosperitet stanara, odnosno cjelokupne zajednice. Odabir žrtvene životinje mogao je imati i veze sa specifičnim animalističkim predodžbama i vjerovanjima.

SVINJA

Poznata je pretpostavka da se tijekom neolitika svinja kao važna kultna životinja povezivala s plodnošću. Nastanak ritualnog odnosa prema svinjama tijekom ovog razdoblja povezuje se s pojavom poljodjelstva i uzgojem žitarica (Hoti 1993), a na njihovu direktnu vezu upućuju fragmenti glinenih figurica svinja s lokaliteta Cucuteni kulture Luka Vrubleveckaja u Ukrajini koje po tijelu imaju otiske žita (Gimbutas 1982). Kao sveta i žrtvena životinja plodnosti svinja je bila zadužena za plodnost polja i životinja te cjelokupne zajednice, a prema nekim pretpostavkama ona ponekad utjelovljuje i lik božanstva plodnosti (Hoti 1993). Na važnost svinje u kultnom životu neolitičkih zajednica ukazuje raširena pojava njezina lika na različitim predmetima materijalne kulture ritualnog karaktera - karakteristike koje možemo naslutiti već i kod lijepo oblikovanih protoma svinja ili žrtvenika u obliku svinja u okvirima starčevačke kulture potkrjepljuju mnogobrojni nalazi sa šireg prostora jugoistočne Europe. Neolitičke kulture poput vinčanske ili Karanovo kulture poznaju i posude s poklopcima ili ručkama u obliku svinjske glave, figure svinja većih dimenzija te svinjske glave ili maske u prirodnoj veličini od kojih su neke ukrašene i naušnicama (Gimbutas 1982; 1991). Pronađene su i ženske statuete sa svinjskom glavom koje su potaknule promišljanja o prikazima božanstva sa svinjskom glavom, odnosno o ideji stapanja božanstva plodnosti sa životinjom koja ga otjelovljuje u svakodnevnom životu (Hoti 1993). I dok samostalne ukope svinja najčešće povezujemo s kultom plodnosti i/ili žrtvama prilikom gradnje kuće sasvim drugačiju funkciju ima pojava donjih čeljusti i očnjaka divljih svinja u ljudskim grobovima koju susrećemo u okvirima lenđelske kulture koji se tumače kao statusni simboli ili trofeji (Zalai-Gaál *et al.* 2009).

PAS

Osim svinja i psi se tijekom neolitika javljaju kao važne žrtvene životinje. Samostalni ukopi pasa osim sa žrtvenom funkcijom prilikom gradnje kuće povezuju se i s kultnom ulogom psa kao čuvara koji svoju ulogu zadržava i nakon smrti. O posljednjem nam mogu svjedočiti ukopi pasa u jamama na samom ulazu u naselja lenđelske kulture Künzing-Uternberg i Bučany (Petrasch 2010) kao i ukop psa u neolitičkom naselju Pontetaro u sjevernoj Italiji "čije su stražnje noge bile odstranjene s očitom namjerom da ga se zadrži na mjestu koje je trebao čuvati" (Brea *et al.* 2010). Premda ukope pasa (kao uostalom i svinja) u ljudskim grobovima češće nalazimo tijekom eneolitika zamjetna je njihova pojava u grobu s čovjekom već u okvirima lenđelske kulture. U tom slučaju njihova se uloga povezuje uz osobe višeg statusa kao što su „vođe", lovci ili osobe koje su se bavile zanimanjima bitnim za život zajednice te kao grobni prilozi pokazuju visoki statusni simbol ukopanih (Zalai-Gaál *et al.* 2011). S druge strane, možda ih također možemo promatrati i kao životinje koje vode dušu umrlog na drugi svijet (Gräslund 2004) budući da se simboličko-mitološko značenje psa povezuje i s transformacijom životne sile. Posljednje se prepoznaje i kroz određene aspekte religijske uloge psa tijekom neolitika, a razmatranja specifičnih prikaza na predmetima materijalne kulture pojedinih neolitičkih kultura sa šireg europskog područja ukazala su na vezu ove životinje sa smrću, podzemnim svijetom te mračnim aspektom božanstva (Hoti 1993).

GOVEDO

Među životinjama koje su zauzimale posebno mjesto u animalističkim predodžbama neolitičkih zajednica ističe se govedo. Prikazi goveda ili pojedinih dijelova njihovih tijela nerijetko se javljaju tijekom neolitika na širem europskom prostoru, a mnogi od njih upravo svjedoče o istaknutoj kultnoj ulozi ove životinje. Na promišljanje ovog posljednjeg potiče nas i nalaz žrtvenika u obliku bika sa starčevačkog nalazišta Galovo (Minichreiter 2007). Figuralna oblikovanja bovida poznaju i druga naselja starčevačke kulture, poput Dobanovaca u susjednoj Srbiji, gdje je osim male figurice bika s naglašenim rogovima i repom zabilježen i ulomak rogate skulpture te rogolik amulet (Todorović 1968). Kada je riječ o bovidima zanimljivo je upravo oblikovno izdvajanje glave i rogova životinje kao dijelova tijela koji nose snažne simboličke konotacije te svojom pojavom daju posebno značenje predmetima na kojima se nalaze. Primjerice, u pojedinim neolitičkim kulturama jugoistočne Europe, poput Cucuteni kulture, koja poznaje i slikane prikaze ovih životinja, rogovi bovida izvedeni su kao plastične aplikacije na keramičkim posudama ili kao njihove ručke (Hoti 1993).
Premda o fenomenu ukopa goveda u Europi možemo govoriti tek od eneolitika, neolitičko razdoblje bilježi praksu ukapanja lubanja i/ili rogova ovih životinja. Ove ukope povezujemo sa stambenim i ukopnim prostorima o čemu svjedoče nalazi sa starčevačkih naselja Zadubravlje i Galovo (Minichreiter 1993;

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Osijek - Filipovica/Hermanov vinograd, glava zoomorfne figurine, MSO-1444
Osijek – Filipovica/Herman's vineyard, head of zoomorphic figurine, MSO-1444

PIG

It is a well-known assumption that, in the Neolithic, the pig was an important cult animal, associated with fertility. The development of ritual treatment of pigs during this period is related to the emergence of tilling and cultivation of crops (Hoti 1993). The direct link between the two is suggested by fragments of clay pig figurines from the Cucuteni Culture site of Luka Vrubleveckaja in Ukraine, with corn imprints on their bodies (Gimbutas 1982). As a sacred and sacrificial animal relating to fertility, the pig was tasked with the fertility of fields, animals, and the whole community, and there are also suggestions that in certain instances it embodied the fertility deity (Hoti 1993). The importance of the pig in the cult life of Neolithic communities is further demonstrated by the wide distribution of its depictions on various artefacts of ritual characteristics. Such characteristics, which can be detected already on the beautifully shaped pig protomes and pig-shaped altars of the Starčevo Culture, are supported by numerous finds from the wider region of south-eastern Europe. Neolithic cultures such as the Vinča and Karanovo cultures were also familiar with containers with lids or handles shaped like pig heads, larger pig figures and life-sized masks, some of which were adorned with earrings (Gimbutas 1982, 1991). Furthermore, female statuettes with pig heads have also been found, prompting discussions on representations of deities with pig heads, that is, a merger of the fertility deity with the animal embodying it in everyday life (Hoti 1993). However, while burials of individual pigs are often associated with the fertility cult and/or sacrifices made on constructing a house, the lower jaws and fangs of wild boars discovered in human graves of the Lengyel Culture had a completely different function – they have been interpreted as status symbols or trophies (Zalai-Gaál et al. 2009).

DOG

In addition to pigs, dogs also emerge during the Neolithic as important sacrificial animals. Individual dog burials have been interpreted as sacrifices made when a house was built, and also associated with the cult role of the guard dog, which keeps its role even after death. The latter is evidenced by dog burials in pits at the very entrance to the Lengyel Culture settlements of Künzing-Uternberg and Bučany (Petrasch 2010), and the burial of a dog in the Neolithic settlement of Pontetaro in northern Italy, "whose rear legs were removed in an obvious attempt to keep it in the place it was supposed to guard" (Brea et al. 2010). Although dogs (and also pigs) buried in human graves are more often found in the Eneolithic, it should be noted that they already appear in the Lengyel Culture in the same graves as humans. In such cases, their role is associated with persons of higher rank, such as 'leaders', hunters and those engaging in occupations important to the life of the community. As grave goods, they indicate the high status of the deceased (Zalai-Gaál et al. 2011). On the other hand, perhaps they can also be viewed as animals that carried the souls of the deceased to the other world (Gräslund 2004), since the symbolic and mythological meaning of the dog is also linked to the transformation of the life force. This can be recognized in certain aspects of the religious role of the dog in the Neolithic, and analyses of specific depictions on artefacts of individual Neolithic cultures in the wider territory of Europe have suggested that this animal was linked to death, the underworld and dark aspects of the deity (Hoti 1993).

BOVINE

Among animals which held special places in the animalistic conceptions of Neolithic communities, bovine animals were particularly important. Portrayals of bovine animals or individual parts of their bodies appear often during the Neolithic in the wider European region, and many of them testify to the prominent cult function of the animal. Such consideration is also prompted by the discovery of a bull-shaped altar at the Starčevo Culture site at Galovo (Minichreiter 2007). Plastic bovine figures have been found in other Starčevo Culture settlements, too. For example, in Dobanovci in neighbouring Serbia, in addition to a small bull figurine with pronounced horns and tail, a fragment of a horned sculpture and a horn-shaped amulet have also been discovered (Todorović 1968). In respect of bovines, it is interesting that the animal's head and horns are singled out as those elements of the body that carry strong symbolic connotations and thus provide special meaning to the objects they are attached to. For example, in some Neolithic cultures of south-eastern Europe, such as the Cucuteni Culture, where these animals were also painted, bovine horns were made as three-dimensional appliques on pottery vessels, or they served as vessel handles (Hoti 1993).
Although in Europe bovine burials have been registered as a widely spread phenomena during the Eneolithic, skulls and/or horns is evidenced in the Neolithic period. Such burials are associated with residential and burial spaces, as demonstrated by finds from the Starčevo Culture settlements at Zadubravlje and

Dobrovac - Kučište I, poklopac sa zoomorfnom ručkom, kat.br. 157
Dobrovac - Kučište I, lid with zoomorphic handle, cat. no. 157

2007), odnosno zemunicama u kojima se ponekad javljaju i u izravnoj vezi s pokojnicima na što upućuju nalazi iz Golokuta iz susjedne Srbije (Petrović 1987) ili sa žrtvenim jamama u kojima se lubanje s rogovima nalaze i uz druge predmete materijalne kulture kako je zabilježeno na nalazištu sopotske kulture Bicske u Mađarskoj (Bánffy 1990/1991) ili nalazištu Cucuteni kulture Traian u Rumunjskoj (Dumitrescu 1957). Posebno je zanimljiv nalaz potiske kulture s nalazišta Herpály u Mađarskoj koji svjedoči o žrtvenoj funkciji goveda prilikom utemeljenja kuće kao i sakralizaciji njena unutarnja prostora prisustvom glinenih rogova - rogovi bika bili su ukopani ispod kuće dok je bukranij bio položen na zidu kuće povrh ognjišta (Bánffy 1990/1991). Široko rasprostranjeni bukraniji i konsekrativni rogovi (keramički žrtvenici rubova izvedenih u obliku rogova), predmeti čije porijeklo povezujemo s glavom bika, važni su simboli kultnog odnosa prema biku tijekom neolitika o kojem mogu svjedočiti i različiti postupci s glavama ovih životinja (Hoti 1993). Ova vrsta nalaza može nositi i izravna religijska i sakralna značenja budući da ih je moguće povezati i s kultom plodnosti, pa i ženskim božanstvom života i smrti čiji je pratitelj, tijekom neolitika na širem europskom prostoru, upravo bik zajedno sa svim svojim simbolima (Hoti 1993).

Bez sumnje, i druge su životinje imale istaknuta mjesta u svjetonazoru neolitičkih zajednica. Na specifične predodžbe o drugim moćnim rogatim životinjama ukazuje i nedavni nalaz vinčanske kulture sa sjeveroistoka Hrvatske. Riječ je o rogovima jelena velikih dimenzija iz Bapske za koje se pretpostavlja da su kao lovački trofej bili položeni na pročelju kuće (Novi list: "*Arheolozi u Slavoniji pronašli rogove jelena kapitalca stare 6500 godina*"). Time je polaganje životinjske glave na zid kuće moglo imati i određene implikacije za društveni život njenih stanovnika dok nalaz lijepo oblikovane, ukrašene figurice srne iz zemunice u starčevačkom naselju Galovo svjedoči o međuodnosu ljudi i ovog životinjskog lika i unutar njihova stambena prostora. Možemo pretpostaviti da su domaće i divlje životinje na različite i specifične načine utjecale na živote prapovijesnih ljudskih populacija. Životinjski svijet neizostavan je dio čovjekove mitsko-religijske svijesti pa stoga ne iznenađuju ni višeslojne razine njegove prisutnosti pri različitim izrazima religijskog štovanja.

U neolitiku kontinentalne Hrvatske zabilježena je pojava životinjskog lika na predmetima materijalne kulture za koje se pretpostavlja da su imali kultnu funkciju. Riječ je o keramičkim posudama čija se posebnost naznačuje dijelovima životinjskog tijela, u funkciji oznake animalnog simbola općenito ili specifičnog životinjskog lika. Kultna, sakralna namjena žrtvenika također je dodatno naglašena animalnim atributima ili je njegovo oblikovanje i samo zoomorfno. U nedostatku konkretnijih podataka, odnosno dubljeg uvida u upotrebu samostalnih životinjskih figurica o njihovim poveznicama s kultnim praksama možemo tek nagađati. No dok pojedini predmeti zoomorfnih karakteristika s područja kontinentalne Hrvatske kultne uloge određenih životinjskih likova tek naznačuju, srodni nalazi sa šireg europskog prostora omogućuju nešto dublje uvide u njihova moguća značenja. Koštani animalni ostaci svjedoče i o korištenju čitavog životinjskog tijela ili pojedinih njegovih dijelova u različitim obrednim praksama neolitičkih zajednica. Pritom se prije svega ističu žrtvene funkcije životinja, no istovremeno mogu biti važne i one simbolične razine u kojima životinje figuriraju kao oličenja plodnosti, obilja i blagostanja, cikličke obnove životne sile, odnosno njene transformacije. U pojedinim slučajevima animalni simbol javlja se i kao oznaka društvenog statusa. Ipak, u skladu s agrarnim tradicijama, plodnost zemlje i životinja, odnosno prosperitet cjelokupne zajednice smatraju se ključnim intencijama neolitičkih zemljoradničkih zajednica, odrednicama njihova svjetonazora i obrednog ponašanja, a neke od kultnih uloga životinja koje prepoznajemo tijekom neolitika moći ćemo pratiti i u narednim prapovijesnim razdobljima.

Galovo (Minichreiter 1993, 2007), with dug-outs in which they are sometimes directly linked to the deceased, as suggested by finds from Golokut in neighbouring Serbia (Petrović 1987), and with sacrificial pits in which skulls with horns can be found together with other artefacts, as evidenced at the Sopot Culture site of Bicske in Hungary (Bánffy 1990/1991) and the Cucuteni Culture site of Traian in Rumania (Dumitrescu 1957). A particularly interesting find of the Tisza Culture from the site of Herpály in Hungary testifies to the sacrifice of bovines during the laying of house foundations and to the consecration of the interiors by the presence of clay horns – bull's horns were dug into the ground in front of the house, while a bucranium was set on the wall above the fireplace (Bánffy 1990/1991). The widely distributed bucrania and horns of consecration (ceramic altars with edges shaped like horns) – items associated with a bull's head – are important symbols of the cult status of the bull throughout the Neolithic, further indicated by various procedures involving bull's heads (Hoti 1993). Such items could carry direct religious and sacred meanings, since they could be linked to the fertility cult, and even to the female deity of life and death, which in the Neolithic, in the wider territory of Europe, was accompanied by the bull with all of its symbols (Hoti 1993).

There is no doubt that other animals also had prominent places in the worldview of Neolithic communities. A recent find of the Vinča Culture in north-eastern Croatia suggests that the community held some specific views concerning other powerful horned animals. The large stag horns discovered in Bapska – assumed to be a hunting trophy – were set on the facade of the house. (Novi list: "In Slavonia, archaeologists find stag horns 6500 years old".) Placing an animal's head on a house wall could have certain implications for the social life of its residents. At the same time, the beautifully-rendered decorated deer figurine found in a dug-out in the Starčevo Culture settlement of Galovo testifies to the interrelation between people and this animal even within a residential space. We can assume that both domestic and wild animals influenced the lives of prehistoric human populations in varied and specific ways. The world of animals is a vital element of man's mythical and religious consciousness, and thus the many layers of its presence in various expressions of religious worship are not surprising.

In the Neolithic period, in continental Croatia, animal figures appear on artefacts believed to have had a cult function. These are pottery vessels, made special by elements of animal bodies, functioning as general animalistic symbols or representations of specific animals. The cult function of the altar was additionally emphasized by animal attributes, or the entire altar was of a zoomorphic shape. Given the lack of more specific data and a deeper insight into the use of individual animal figurines, we can only speculate about their ties to cult practices. But, while artefacts with zoomorphic characteristics from continental Croatia only suggest possible roles of certain animal figures, similar finds from the wider territory of Europe allow deeper understanding of their possible meanings. Animal bone remains demonstrate that either whole animal bodies or some of their parts were used in various ritual practices of Neolithic communities. Sacrifices of animals are particularly prominent, but their symbolic roles are also important, in which animals represent embodiments of fertility, abundance and prosperity, of the cyclical renovation of the life force and its transformation. In some cases the animalistic symbol serves as a marker of social status. Nonetheless, in line with agrarian traditions, fertility of the land and animals, that is, prosperity of the entire community, is considered to be the key concern of the Neolithic farming communities, the determinant of their worldview and their ritual behaviour. In the following periods of prehistory we will be able to trace some of the cult functions of animals identified in the Neolithic.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

POPIS LITERATURE

LITERATURE

Ammerman A. J., Cavalli-Sforza L. L. 1971, Measuring the Rate of Spread of Early Tarming in Europe, Man 6(1), 674–688.

Ammerman A. J., Cavalli-Sforza L. L. 1984, The Neolithic Transition and the Genetics of Populations in Europe, Princeton University Press, Princeton, New Jersey.

Amzallag, N. 2009, From Metallurgy to Bronze Age Civilizations: The Synthetic Theory, American Journal of Archaeology 113, 497 – 519.

Antonović, D. 2002, Copper Processing in Vinča. New Contributions to the Thesis About Metallurgical Character of Vinča Culture, Starinar 52, 27 – 45.

Antonović, D. 2006, Malachite Finds in Vinča Culture: Evidence of Early Copper Metallurgy in Serbia, Metallurgical & Material Eingeneering, Vol. 12, 85 – 93.

Antonović, D. 2009, Prehistoric Cooper Tools from the Teritorry of Serbia. Journal of Mining and Metallurgy 45 (2). 165 – 174. 2009.

Ariès, P. 1981, The Hour of Our Death, New York, Alfred A. Knopf.

Arenas M., François O., Currat M., Ray N., Excoffier L. 2013, Influence of Admixture and Paleolithic Range Contractions on Current European Diversity Gradients, Molecular Biology and Evolution 30(1), 57–61.

Bailey, D.W. 2000, Balkan Prehistory. Exclusion, Incorporation and Identity. London and New York: Routledge.

Bakić, B. 2001, Prehrana korisnika Vele špilje u svjetlu prehrane stanovnika u neolitiku. Izdanja Hrvatskog arheološkog društva 20, Zagreb, 125–131.

Balen, J. 2006, Neolitik, in: Mihelić, S.(ed.), Trgovina i razmjena u prapovijesti, Arheološki muzej Zagreb, Zagreb.

Balen, J. 2007, Ivandvor-šuma Gaj, Hrvatski arheološki godišnjak 3/2006, 14-16.

Balen, J. 2008, Apsolutni datumi sa zaštitnih istraživanja na prostoru Slavonije kao prilog poznavanju kronologije srednjeg eneolitika, Vjesnik Arheološkog muzeja u Zagrebu 3.s. XLI, 17-35.

Balen, J. 2009, Tomašanci – Palača, Hrvatski arheološki godišnjak 5/2008, 60-62.

Balen, J., Kurtanjek D., Balen, D. 2002, Kamene alatke s nalazišta Samatovci iz fundusa Arheološkog muzeja u Zagrebu, Opuscula Archaeologica 26, 19-39.

Balen, J., Burić, M. 2006, Litički nalazi sopotske kulture na području Hrvatske, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 35-38.

Balen, J., Potrebica, H. 2006, Nalazište Radovanci u Požeškoj kotlini, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 21-27.

Balen, J., Bilić, T., Bunčić, M., Drnić, I., Solter, A. 2009, Rezultati zaštitnih istraživanja na lokalitetu Ivandvor – šuma Gaj, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XLII, 23-72.

Balen, J., Gerometta, K., Burić, M., Chronology and settlement of the Starčevo culture in northern Croatia, in press.

Balen, J., Gerometta, K. 2011, Nalazi žrtvenika i figuralne plastike starčevačke kulture s lokaliteta Tomašanci – Palača, in: Dizdar, M. (ed.), Panonski prapovijesni osviti. Zbornik radova posvećen Korneliji Minichreiter uz 65. obljetnicu života, Institut za arheologiju, Zagreb, 83-103.

Bánffy, E. 1990/1991, Cult and archaeological context in Middle and South-East Europe in the Neolithic and the Chalcolithic, Antaeus 19/20, 183–249.

Bánffy, E. 1997, Cult objects of the Neolithic Lengyel culture: connections and interpretation, Budapest, Archaeolingua.

Bánffy, E. 2000, The Late Starčevo and the Earliest Linear Pottery Groups in Western Transdanubia, Documenta Praehistorica XXVII, Ljubljana, 173-187.

Banffy, E. 2002, A unique southeastern vessel type from early chalcolithic Transdanubia: dana on the „western route“, Acta Archaeologica Academiae Scientiarum Hungaricae LIII/1-3, Budapest, 41-60.

Bánffy, E. 2004, Advances in the Research of the Neolithic Transition in the Carpathian Basin, in: Lukes, A., Zvelebil, M (eds.), LBK Dialogues. Studies in the formation of the Linear Pottery Culture, BAR InternationalSeries 1304, Oxford, 49-71.

Bánffy, E. 2007, Cultural contacts between the Neolithic Eastern and Western Hungary (the findings of the 1957 Csőszhalom excavation), In J.K. Kozłowski and P. Raczky (eds), The Lengyel, Polgár and related cultures in the Middle/ Late Neolithic in central Europe, Kraków, Polska Akademia Umiejętności, 71–81.

Bánffy, E., Oross, K. 2009, Entwicklung und Dynamik der Linearbandkeramik in Transdanubien, in: Zeeb-Lanz, A. (ed.), Krisen-Kulturwandel-Kontinuitäten. Zum Ende der Bandkeramik in Mitteleuropa, Beiträge der Internationalen Tagung in Herxheim bei Landau (Pfalz), Rahden/Westf., 219-241.

Banffy, E., Sümegi, P. 2011, The [environ-]mental contexts of earliest Neolithic settlement and architecture in western Hungary, in A. Hadjikoumis, E. Robinson & S. Viner (eds.), The Dynamics of Neolithisation in Europe. Studies in honour of Andrew Sherratt. Oxbow Books

Banning, E. B. 2000, The Archaeologist's Laboratory. The Analysis of Archaeological Data. Interdisciplinary Contributions to Archaeology, Springer, New York.

Barfield, L. 1972, The first Neolithic cultures of Northeastern Italy, Fundamenta A/3, Teil 7, 182–216.

Barna, P. J., Pásztor, E. 2011, Different Eays of using space: traces of domestic and ritual activities at a Late Neolithic Settlement at Sormás-Török-földek, Documenta Praehistorica XXXVIII, Ljubljana, 185-206.

Bartosiewicz, L. 2005, Plain talk: animals, environment and culture in the Neolithic of the Great Hungarian Plain. In D. Bailey, A. Whittle and V. Cummings (eds), (un)settling the Neolithic, 51–70. Oxford: Oxbow Books.

Batović, Š. 1973, Odnos jadranskog primorja prema području jugoistočnih Alpa u neolitu i eneolitu. Arheološki vestnik 24, Ljubljana, 62-127.

Batović, Š. 1979, Jadranska zona, u: A. Benac (ed.), Praistorija jugoslavenskih zemalja II, Sarajevo, 473–634.

Battaglia V. and 17 authors 2009, Y-chromosomal evidence of the cultural diffusion of agriculture in southeast Europe, European Journal of Human Genetics 17(6), 820–830.

Benac, A. 1962, Studien zur Stein- und Kupferzeit im nordwestlichen Balkan. Bericht der Römisch-Germanischen Kommission des Deutschen ArchäologischenInstitutes 42/1961.

Benac, A. 1964, Studije o kamenom i bakarnom dobu u sjeverozapadnom Balkanu, Sarajevo.

Benac, A. 1971, Obre II, Glasnik zemaljskog muzeja Bosne i Hercegovine, n.s. 26, Sarajevo, 87-96.

Benac, A. 1979, Prelazna zona, u: A. Benac (ed.), Praistorija jugoslavenskih zemalja II, Sarajevo, 363-470.

Becker, C., Johannson, F. 1981, Die neolithischen Ufersiedlungen von Twann 11. Tierknochenfunde. 2. Bericht. Bern, Staatlicher Lehrmittelverlag.

Behrens, H. 1953, Ein Siedlungs- und Begräbnisplatz der Trichterbecherkultur bei Weissenfels and der Saale. Jahresschrift der Mitteldeutsche Vorrgeschichte 37.

Berger J.-F., Guilaine J. 2009, The 8200calBP abrupt environmental change and the Neolithic transition: A Mediterranean perspective, Quaternary International 200, 31–49.

Biagi, P. 2003, A review of the late Mesolithic in Italy and its implications for the Neolithic transition, in: A. J. Ammerman, P. Biagi (eds.), The widening harvest: the Neolithic transition in Europe: looking back, looking forward, Archaeological Institute of America, Boston, 133–155.

Biagi P., Spataro M. 2001, Plotting the evidence: Some aspects of radiocarbon chronology of the Mesolithic-Neolithic transition in the Mediterranean basin, Atti della Societa per la Praistoria e Protoistoria della Regione Friuli-Venezia Giulia 12, 15–54.

Biagi, P., Spataro, M. 2005, New observation on the Radiocarbon Chronology on the Starčevo-Kriš and Koros cultures, in: Nikolova, L., Fritz, J., Higgins, J. (eds.), 2005, Prehistoric Archaeology & Anthropological Theory and Education, RPRP 6-7.

Biagi P., Shennan S., Spataro M. 2005, Rapid rivers and slow seas? New data for the radiocarbon chronology of the Balkan peninsula, in: L. Nikolova, J. Higgins (eds.), Prehistoric archaeology & anthropological theory and education, Reports of Prehistoric Research Projects 6–7. International Institute of Anthropology, Salt Lake City & Karlovo, 41–50.

Bickle, P. 2013, Of time and the house: the early Neolithic communities of the Paris Basin and their domestic architecture, in: D. Hofmann and J. Smyth (eds), Tracking the Neolithic house in Europe: sedentism, architecture and practice, 151–81. New York: Springer.

Binford, L. 1972, Mortuary practices: Their study and their potential, in: L. Binford, An archaeological perspective. New York and London: Seminar Press, 208–243.

Blake, E. 1999, Identity-mapping in the Sardinian Bronze Age, European Journal of Archaeology 2(1), 55–75.

Bloch, M., Parry, J. (eds.), 1982, Death and the Regeneration of Life. Cambridge, Cambridge University Press.

Boardman, S., Jones, G. 1990, Experiments on the effects of charring on cereal plant components, Journal of Archaeological Science 17(1), 1-11.

Boaretto E. and 12 authors 2009, Radiocarbon dating of charcoal and bone collagen associated with early pottery at Yuchanyan Cave, Hunan Province, China, Proceedings of the National Academy of Sciences of the USA 106, 9595–9600.

Bogaard, A. 2004, Neolithic farming in central Europe: an archaeobotanical study of crop husbandry practices, London, Routledge.

Bogaard, A. 2011, Farming practice and society in the central European Neolithic and Bronze Age: an archaeobotanical response to the secondary products revolution model, in: Hadjikoumis A., Robinson E., Viner S. (eds.), The Dynamics of Neolithisation in Europe: Studies in honour of Andrew Sherratt, Oxford, Oxbow Books, 266-283.

Bogaard, A., Bending, J., Jones, G. 2007, Archaeobotanical evidence for plant husbandry and use, in: A. Whittle (ed.), The Early Neolithic on the Hungarian Plain: Investigations of the Körös culture site of Ecsegfalva 23, County Békés. Volume II. Budapest: Varia Archaeologica Hungarica, pp. 421-446.

Bogaard, A., Frasera,R., Heatonb,T.H.E., Wallacec, M. Vaiglovaa, P., Charlesa, M., Jonesc, G., Evershedd, R.P., Styringa, A.K., Andersene,N.H., Arbogastf,R.-M., Bartosiewicz, L. Gardeisenh, A., Kanstrupi,M., Maierj,U., Marinovak,E., Ninovl,L., Schäferm, M., Stephann, E. 2013, Crop manuring and intensive land management by Europe's first farmers, PNAS 110 (31), 12598-12594.

Bogdanović, M. 1988, Architecture and Structural Features at Divostin, in: A. McPherron & D. Srejović (eds.), Divostin and the Neolithic of Central Serbia, Kragujevac – Pittsburgh, 35–142.

Bogucki, P. 1982, Early Neolithic subsistence and settlement in the Polish lowland, Oxford: British Archaeological Reports.

Bogucki, P. 1988, Forest farmers and stockherders: early agriculture and its consequences in north-central Europe, Cambridge: Cambridge University Pres.

Bogucki, P. 1995, The largest buildings in the world 7,000 years ago, Archaeology 48, 57–9

Bogucki P. 1996, The spread of early farming in Europe, American Scientist 84(3), 242–253.

Bogucki, P. 2008, Animal Exploitation by the Brześć Kujawski Group in the Brześć Kujawski and Osłonki Region, in: R. Grygiel (ed.), Neolit i Początki Epoki Brązu w Rejonie Brześcia Kujawskiego and Osłonek (The Neolithic and Early Bronze Age in the Brześć Kujawski and Osłonki Region), Vol. 2, 1581–704. Łódź: Konrad Jażdżewski Foundation for Archaeological Research/Museum of Archaeology and Ethnography.

Bogucki, P., Grygiel, R. 1993, The first farmers of central Europe: a survey article, Journal of Field Archaeology 20, 399–426.

Bökönyi, S. 1974, History of Domestic Mammals in Central and Eastern Europe, Akadémiai Kiadó, Budapest.

Bökönyi, S., 1989, Animal husbandry of the Körös-Starčevo complex: its origin and development, in: Bökönyi, S.(ed.), Neolithic of Southeastern Europe and its Neareastern connestions, International conference 1987 Szolnok-Szeged, Varia Archaeologica Hungarica 2, Budapest, 13-17.

Bonsall, C. 2008, The Mesolithic of the Iron Gates, in: G.N. Bailey & P. Spikins (eds.), Mesolithic Europe: pp. 238-279, Cambridge: Cambridge University Press.

Bonsall C., Mlekuž D., Bartosiewicz L., Pickard C. 2013, Early Farming Adaptations of the Northeast Adriatic Karst, in: S. Colledge, J. Conolly, K. Dobney, K. Manning and S. Shennan (eds.), The Origins and Spread Of Domestic Animals in Southwest Asia and Europe, Left Coast Press Inc. Walnut Creek, 145-160.

Borić, D. 1996, Social dimensions of mortuary practices in the Neolithic: A case study, Starinar 47, 67–83.

Borić, D. 2003, 'Deep time' metaphor: mnemonic and apotropaic practices at Lepenski Vir, Journal of Social Archaeology 3(1), 41–75.

Borić, D. 2005, Body metamorphosis and animality: Volatile bodies and boulder artworks from Lepenski Vir, Cambridge Archaeological Journal 15(1), 35–69.

Borić, D. 2008, First Households and 'House Societies' in European Prehistory, in: A. Jones (ed.), Prehistoric Europe, 109–142. Malden, MA: Blackwell Publishing.

Borić, D. 2009, Absolute dating of metallurgical innovations in the Vinča Culture of the Balkans, in: T. K. Kienlin & B. W. Roberts (eds.), Metals and Societies. Studies in honour of Barbara S. Ottaway, 191–245. Universitatsforschungen zur prahistorischen Archaologie. Bonn: Habelt.

Borić, D. 2010, Happy forgetting? Remembering and dismembering dead bodies at Vlasac, in: D. Borić (ed.), Archaeology and Memory. Oxford: Oxbow, 48–67.

Borić, D., Price, T.D. 2013, Strontium isotopes document greater human mobility at the start of the Balkan Neolithic, Proceedings of the National Academy of Sciences 110(9), 3298–3303.

Borić, D., Robb, J. (eds.), 2008, Past Bodies: Body-Centred Research in Archaeology. Oxford: Oxbow Books.

Borojević, K. 2006, Terra and Silva in the Pannonian Plain: Opovo agro-gathering in the Late Neolithic. Oxford: British Archaeological Reports, International Series 1563.

Bradley, R. 2001, Orientations and origins: a symbolic dimension to the longhouse in Neolithic Europe. Antiquity 75, 50–6.

Bradley, R. 2002, The Past in Prehistoric Societies. London and New York: Routledge.

Brami M., Heyd V. 2011, The origins of Europe's first farmers: The role of Hacılar and Western Anatolia, fifty years on, Praehistorische Zeitschrift 86(2), 165–206.

Brown, B. M. 1987, Population Estimation from Floor Area: a Restudy of 'Naroll's Constant, Cross-Cultural Research 21/1, 1–49.

Brea M.B., Mazzieri P., Micheli R. 2010, People, dogs and wild game: evidence of human-animal relations from Middle Neolithic burials and personal ornaments in northern Italy, Documenta Praehistorica XXXVII, 125–146.

Bregant, T. 1974, Elementi jadransko-mediteranske kulturne skupine v alpskem faciesu lengyelske kulture, Situla 14/15, Ljubljana, 35-43.

Breunig, P. 1987, C14-chronologie des vorderasiatischen, südost-und mitteleuropäischen Neolithikums. Fundamenta. Monographien zur Urgeschichte A13, Institut für Ur und Frühgeschichte der Universität zu Köln, Köln-Wien.

Brukner, B. 1965, Neolitski i ranoeneolitski sloj na Gomolavi, Rad Vojvođanskih Muzeja 14, 137-175.

Brukner, B. 1974, Paleolit i mesolit, in: Popović, P. (ed.), Praistorija Vojvodine, Monumenta Archaeologica 1, Institut za izučavanje istorije Vojvodine, Savez arheoloških društava Jugoslavije, Novi Sad, 17-29.

Brukner, B. 1980, Naselje vinčanske grupe na Gomolavi - neolitski i ranoeneolitski sloj. Izveštaj sa iskopavanja 1967.-1976. g., Rad vojvođanskih muzeja 26, 5–55.

Brukner, B. 1981, Zum Problem der Auflösung der frühäneolitischen Kulturen in Südost-Pannonien, Archaeologia lugoslavica XX-XXI, 1980-1981, 16-26.

Brukner, B. 1988, Die Siedlung der Vinča–Gruppe auf Gomolava (Die Wohnschicht des Spatneolithikums und Fruhaneolithikums – Gomolava Ia, Gomolava Ia–b und Gomolava Ib) und der Wohnhorizont des aneolithischen Humus (Gomolava II). Gomolava. Cronologie und Stratigraphie der vorgeschichtlichen und antiken Kulturen der Donauniederung und Sudosteuropas, hrsg. von N. Tasić, J. Petrović, 19–38. Novi sad–Beograd: Vojvođanski muzej – Balkanološki institut.

Brukner, B. 1997, Proto-starčevo white painted pottery and early painted pottery of SE Europe: Simmilarities and Differences, Anatolica 23, 243-268.

Budja, M. 1988, Moverna vas: neolitsko in eneolitsko najdišče, Arheološki pregled, Ljubljana, 50-55.

Budja, M. 1989, Arheološki zapisi na površju, palimpsesti preteklih stanj, Poročilo o raziskovanju paleolita, neolita in eneolita v Sloveniji XVII, Ljubljana, 83-102.

Budja, M. 1990, Moverna vas, Črnomelj, in: Arheološka najdišča Dolenjske. ARHEO - posebna številka izdana ob 100 - letnici arheoloških raziskav v Novem Mestu 13.9.1980 - 13.9.1990, Ljubljana, 13-16.

Budja, M. 1992, Pečatniki v slovenskih neolitskih kontekstih. Poročilo o raziskovanju paleolita, neolita in eneolita v Sloveniji XX, Ljubljana, 95-109.

Budja, M. 1992 (1995), Neolithic and Eneolithic settlement patterns in the Bela krajina Region of Slovenia, Mem. Museo Civ. St. Nat. Verona, Sez. Scienze Uomo 4, Verona, 119-127.

Budja, M. 1993 (1994), Neolithic Studies in Slovenia: An Overwiev, Atti della Società per la Preistoria e Protostoria della Regione Friuli -Venezia Giulia VIII, Trieste, 7-28.

Budja, M. 1996, Neolithization in the Caput Adriae region: between Herodotus and Cavalli-Sforza, Poročilo o raziskovanju paleolitika, neolitika in eneolitika v Sloveniji XXIII, 69–76.

Budja, M. 1999, The transition to farming in Mediterranean Europe – an indigenous respond. Documenta Praehistorica XXVI, 119–142.

Budja, M. 2001, The transition to farming in Southeast Europe: perspectives from pottery, Documenta Praehistorica XXVIII, 27–47.

Budja, M. 2009, Early Neolithic pottery dispersals and demic diffusion in Southeastern Europe, Documenta Praehistorica XXXVI, 117–137.

Budja, M. 2010, The neolithisation of South-Eastern Europe: From Y-Chromosome dispersals to Ceramic Figurines, in: D. Gronenborn, J. Petrasch (eds.), The Spread Of The Neolithic To Central Europe. International Symposium, Mainz 24 June – 26 June 2005. RGZM – Tagungen Band 4. Römisch-Germanisches Zentralmuseum, Verlag des Römisch-Germanischen Zentralmuseums Mainz, Mainz, 107–139.

Budja, M. 2013, Neolithic pots and potters in Europe: the end of 'demic diffusion' migratory model, Documenta Praehistorica XL, 39-55.

Budja, M., Ogrinc N., Potočnik D., Žigon D., Žibrat Gašparič A. 2013, Transition to farming – transition to milk culture: Mala Triglavca case study, Documenta Praehistorica XL, 97–118.

Burger J. 2010, Population genetics of the European Neolithic and the role of lactase persistencem, in: G. Grupe, G. McGlynn and J. Peters (eds.), Documenta Archaeobiologiae, Archaeobiodiversity, A European Perspective. Documenta Archaeobiologiae 8, Verlag Marie Leidorf GmbH. Rahden/Westf., 11–19.

Burger, J., Kirchner, M., Bramanti, B., Haak, W., Thomas, M. G. 2007, Absence of the lactase-persistence-associated allele in early Neolithic Europeans, Proceedings of National Academy of Sciences 104 (10), 3736-3741.

Burger J., Thomas M. G. 2011, The Palaeopopulationgenetics of Humans, Cattle and Dairying in Neolithic Europe, in: R. Pinhasi, J. T. Stock (eds.), Human Bioarchaeology of the Transition to Agriculture, John Wiley & Sons, Ltd. Chichester, 371–384.

Burić, M. 2007, Bapska-Gradac, Hrvatski arheološki godišnjak 3/2006, 33-34.

Burić, M. 2008, Bapska-Gradac, Hrvatski arheološki godišnjak 4/2007, 45-46.

Burić, M. 2009a, Bapska-Gradac, Hrvatski arheološki godišnjak 5/2008, 69-71.

Burić, M. 2009b, Vinčanska kultura i njezin uticaj na neolitik istočne Hrvatske, nepublicirana doktorska disertacija, Filozofski fakultet u Zagrebu.

Burić, M. 2009c, Povijest arheološkog istraživanja Gradca u Bapskoj, Vjesnik arheološkog muzeja u Zagrebu, 3.s., XLII, 489-507.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Burić, M. 2014, Problems of the Late Neolithic Absolute Chronology in Eastern Croatia, Eurasia Antiqua 19, in press.

Burić, M., Težak-Gregl T. 2010, Das Grab 3 in Vinkovci – Ein Betrag zur relativen Chronologie der Starčevo und Vinča-Kultur, in: Šuteková, J.; Pavúk, P.; Kalábková, P.; Kovár, B. (eds.), Panta Rhei, Studies in Chronology and Cultural Development of South-Eastern and Central Europe in earlier Prehistory Presented to Juraj Pavúk on the Occasion of his 75th Birthday, Bratislava, 59-66.

Byrd, B. F. 2005, Reassessing the Emergence of Village Life in the Near East, Journal of Archaeological Research, Vol. 13, No. 3, 231-290.

Carr, C. 1995, Mortuary practices: Their social, philosophical, religious, circumstantial and physical determinants, Journal of Archaeological Method and Theory 2(2), 105–200.

Cauvin, J. 2000, The birth of the gods and the origins of agriculture, Cambridge: Cambridge University Press.

Cavalli-Sforza L. L., Menozzi P., Piazza A. 1994, The History and Geography of Human Genes, Princeton University Press, Princeton, New York.

Chapman, J. 1981, The Vinča Culture of South-East Europe: Studies in Chronology, Economy and Society, Oxford: British Archaeological Report, International Series 117

Chapman, J. 1983, Meaning and Illusion in the Study of Burial in Balkan Prehistory, in: Poulter, A.G. (ed.), Ancient Bulgaria. Papers presented to the international Symposium on the Ancient History and Archaeology of Bulgaria, University of Nottingham, 1981 I. Nottingham: University of Nottingham, 1–42.

Chapman, J. 1989, The Early Balkan Village, in: S. Bokonyi (ed.), Neolithic of Southeastern Europe and its Near Eastern Connections, Varia Archaeologia Hungarica II, International Conference 1987, Szolnok-Szeged, Budapest – Szolnok, 33–53.

Chapman, J. 1991, The creation of social arenas in the Neolithic and Copper Age of south-east Europe: The case of Varna, in: P. Garwood, P. Jennings, R. Skeates and J. Toms (eds.), Sacred and Profane, Oxford: Oxbow, 152–171.

Chapman, J. 1994, Social power in the early farming communities of Eastern Hungary-perspectives from the Upper Tisza region, Josa Andras Muzeum Evkönyve 36, 79-99.

Chapman, J. 1996, Why was the Vinča–Belo Brdo tell occupied for so long, in: B. Brukner (ed.), From Starčevo to Vinča Culture, Zrenjanin: Narodni muzej.

Chapman, J. 1997a, Changing gender relations in the later prehistory of Eastern Hungary, in: J. Moore and E. Scott (eds.), Invisible people and processes. Writing women and children into European archaeology, Leicester: Leicester University Press, 131–149.

Chapman, J. 1997b, The origins of tells in Eastern Hungary, in: P. Topping (ed.), Neolithic landscapes. Neolithic Studies Seminar Papers 2. Oxbow Monograph 86, 139-164, Oxford.

Chapman, J. 2000a, Tensions at funerals: Micro-tradition analysis in later Hungarian prehistory, Budapest: Archaeolingua.

Chapman, J. 2000b, Tension at funerals: Social practices and the subversion of community structure in later Hungarian prehistory. In M.-A. Dobres and J. Robb (eds.), Agency in archaeology. London: Routledge, 169–195.

Chapman, J. 2000c, Pit–Digging and Structured Deposition in the Neolithic and Coper Age, Proceedings of the Prehistoric Society 66, 61–87.

Chapman, J. 2008, Meet the ancestors: settlement histories in the Neolithic. Living Well Together? Settlement and Materiality in the Neolithic of South– East and Central Europe, in: Bailey, D., Whittle, A., Hofmann, D. (eds), 68–80, Oxford: Oxbow books.

Chapman, J., Shiel, R., Batović, Š. 1996, The Changing Face of Dalmatia, Leicester: Leicester University Press.

Chapman, J., Gaydarska, B.I., Balen, J. 2012, Spondylus ornaments in the mortuary zone at Neolithic Vukovar on the Middle Danube. Vjesnik Arheološkog muzeja u Zagrebu, 3. s., XLV, 191-210.

Chapman, J., Gaydarska, B. forthcoming. Spondylus gaederopus/glycemeris exchange networks in the European Neolithic and Chalcolithic, in: C. Fowler, J. Harding and D. Hofmann (eds), The Oxford Handbook of Neolithic Europe, Oxford: Oxford University Pres.

Chapman, R., Kinnes, I., Randsborg, K. (eds.), 1981, The Archaeology of Death, Cambridge, Cambridge University Press.

Chevalier J., Gheerbrant A. 1983, Rječnik simbola: mitovi, sni, običaji, geste, oblici, likovi, boje, brojevi, Zagreb, Nakladni zavod Matice hrvatske.

Childe, G. V. 1929, The Danube in Prehistory, Clarendon Press, Oxford.

Childe, G. V. 1939, The Orient and Europe, American Journal of Archaeology 43(1), 10–26.

Childe, G. V. 1951, Man Makes Himself, Watts & Co, London.

Childe, G. V. 1957, Prehistory of European Society, Institute of Archaeology, University College London.

Childe, G. V. 1958, The Dawn of European Civilization, Alfred A. Knopf, Inc, New York.

Colledge, S., Conolly, J. 2007, A review and synthesis of the evidence for the origins of farming on Cyprus and Crete, in: S. Colledge and J. Conolly (eds), The Origins and Spread of Domestic Crops in Southwest Asia and Europe, Left Coast Press, Walnut Creek, California, 53-74.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Conneller, C., Milner, N., Taylor, B., Taylor, M. 2012, Substantial settlement in the European Early Mesolithic: new research at Star Carr, Antiquity 86 (2012), 1004 – 1020.

Coon, C. S. 1939, The Races of Europe, The Macmillan Company, New York.

Coudart, A. 1998, Architecture et société néolithique: l'unité et la variance de la maison danubienne, Paris: Éditions de la Maison des Sciences de l'Homme.

Craig, O. E., Chapman, J., Heron, C., Willis, L. H., Bartosiewicz, L., Taylor, G., Whittle, A., Collins, M. 2005, Did the first farmers of central and eastern Europe produce dairy foods?, Antiquity 79, 882-894.

Crnobrnja, A. 2011, Arrangement of Vinča Culture figurines: a study of social structure and organisation, Documenta Praehistorica XXXVIII, 131 – 148.

Crnobrnja, A. 2012, Group identities in the Central Balkan Late Neolithic, Documenta Praehistorica XXXIX, 155–165.

Currat, M. 2012, Consequences of population expansions on European diversity, in: E. Kaiser, J. Burger and W. Schier (eds.), Population Dynamics in Prehistory and Early History. New Approaches Using Stable Isotopes and Genetics, Topoi, Berlin Studies of the Ancient World, Walter de Gruyter & Co, Berlin, 3–16.

Cyrek, K., Grygiel, R., Nowak, K. 1983, Podstawy wydzielenia mezolitu ceramicznego na Niżu Polskim, in: T. Malinowski (ed.), Problemy epoki kamienia na Pomorzu, 85–110, Słupsk: Wyższa Szkoła Pedagogiczna w Słupsku.

Czerniak, L. 1980, Rozwój Społeczeństw Kultury Późnej ceramiki Wstęgowej na Kujawac,. Poznán: Adam Mickiewicz University.

Czekaj-Zastawny, A., Kabaciński, J., Terberger, T., Ilkiewicz, J. 2013, Relations of Mesolithic hunter-gatherers of Pomerania (Poland) with Neolithic cultures of central Europe, Journal of Field Archaeology 38, 195–209.

Çakırlar C. 2012, Neolithic Dairy Technology at the European-Anatolian Frontier: Implications of Archaeozoological Evidence from Ulucak Höyük, Izmir, Turkey, ca. 7000–5700 cal. BC, Anthropozoologica 47(2), 77–98.

Darvill, T., Thomas, J. 2001, Neolithic enclosures in Atlantic northwest Europe: some recent trends, Neolithic Enclosures in Atlantic Northwest Europe, ed. T. Darvill and J. Thomas, 1–23, Oxford: Oxbow Books.

Davis, S. J. M. 1987, The Archaeology of Animals, Routledge, London.

Davison, K., Dolukhanov, P. M. Sarson, G. R., Shukurov, A., Zaitseva, G. I. 2007, A Pan-European model of the Neolithic, Documenta Praehistorica XXXIV, 139–154.

Davison, K., Dolukhanov, P. M., Sarson, G. R., Shukurov A., Zaitseva, G. I. 2009, Multiple sources of the European Neolithic: Mathematical modelling constrained by radiocarbon dates, Quaternary International 203, 10–18.

Deguilloux, M.-F., Leahy, R., Pemonge M.-H., Rottie, S. 2012, European Neolithization and Ancient DNA: An Assessment, Evolutionary Anthropology 21, 24–37.

Der Sarkissian, C. and 15 authors 2013, Ancient DNA Reveals Prehistoric Gene-Flow from Siberia in the Complex Human Population History of North East Europe, PLoS Genetics 9(2), e1003296.

Dimitrijević, S. 1961, Problem neolita i eneolita u sjeverozapadnoj Jugoslaviji, Opuscula archaeologica 5.

Dimitrijević, S. 1968, Sopotsko-Lenđelska kultura. Monographie Archaeologicae 1, 1–123.

Dimitrijević, S. 1969a, Das Neolithikum in Syrmien, Slawonien und Nordwestkroatien, Archaeologia Iugoslavica X, 39-76.

Dimitrijević, S. 1969b, Starčevačka kultura u Slavonsko-srijemskom prostoru i problem prijelaza ranog u srednji neolit u srpskom i hrvatskom podunavlju, Gradski muzej u Vukovaru, Vukovar.

Dimitrijević, S. 1971, Zu einigen Fragen des Spätneolithikums und Frühäneolithikums in Nordjugoslawien, Actes I, Beograd, 141-172.

Dimitrijević, S. 1974, Problem stupnjevanja starčevačke kulture s posebnim obzirom na doprinos južnopanonskih nalazišta rešavanju ovih problema, in: Tasić, N (ed.), Počeci ranih zemljoradničkih kultura u Vojvodini i srpskom Podunavlju, Materijali 10, Srpsko arheološko društvo, Gradski muzej Subotica, Beograd.

Dimitrijević, S. 1978, Neolit u sjeverozapadnoj Hrvatskoj (pregled stanja istraživanja do 1975. godine), Arheološka istraživanja u sjeverozapadnoj Hrvatskoj, Izdanja Hrvatskog arheološkog društva sv. 2, 71-129.

Dimitrijević, S. 1979a, Sjeverna zona, u: Benac, A. (ed.), Praistorija jugoslavenskih zemalja II, Sarajevo, 229–362.

Dimitrijević, S. 1979b, Lasinjska kultura, u: Benac, A. (ed.), Praistorija jugoslavenskih zemalja III, Sarajevo, 137-181.

Dimitrijević, V., Tripković, B. 2006, Spondylus and Glycymeris Bracelets: Trade Reflections at Neolithic Vinča – Belo Brdo, Documenta Praehistorica XXXIII, 1–16.

Dizdar, M. 1999, Željezno doba, in: Vinkovci u svijetu arheologije, Katalog izložbe, Vinkovci, 39-48.

Dizdar, M., Krznarić Škrivanko, M. 2000, Prilog poznavanju starčevačke arhitekture u Vinkovcima, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XXXII-XXXIII, 7-22.

Dolukhanov, P., Shukurov, A., Gronenborn, D., Sokoloff, D., Timofeev, V., Zaitseva, G. 2005, The chronology of Neolithic dispersal in Central and Eastern Europe, Journal of Archaeological Science 32, 1441–1458.

Dolukhanov, P., Mazurkevich, A. M., Shukurov, A. 2009, Early Pottery Makers in Eastern Europe: Centres of Origins, Subsistence and Dispersal, in: P. Jordan, M. Zvelebil (eds.), Ceramics before farming. The dispersal of pottery among prehistoric Eurasian hunter-gatherers, Left Coast Press, Walnut Creek, CA, 237–253.

Drașovean, F. 2007, The Neolithic Tells from Parța and Uivar. Similarities and Diferences of the Organization of the Social Space, Analele Banatului, Arheologie–Istorie 15, 19–28.

Dujmić, D. 2010, Kneževi Vinogradi-Osnovna škola, Hrvatski arheološki godišnjak 6/2009, 24-25.

Dular, J. 1985, Arheološka topografija Slovenije, Topografsko področje XI (Bela Krajina).

Dular, J. 2001, Neolitska in eneolitska višinska naselja v osrednji Sloveniji, Arheološki vestnik 52, Ljubljana, 89-106.

Dular, J., Križ, B., Svoljšak, D., Tecco-Hvala, S. 1991, Utrjena prazgodovinska naselja v Mirenski in Temeniški dolini, Arheološki vestnik 42, Ljubljana, 65-198.

Dumitrescu, H. 1957, Découvertes concernant un rite funéraire magique dans l'aire de la civilisation de la céramique peinte du type, Dacia 1, 97–116.

Durand, G. 1991, Antropološke strukture imaginarnog, Uvod u opću arhetipologiju, Zagreb, August Cesarec.

Durman, A. 1983, Metalurgija vučedolskog kulturnog kompleksa, Opuscula Archaeologica 8.

d'Errico, F., Vanhaeren, M., Barton, N., Bouzouggar, A., Mienis, H., Richter, D., Hublin, J.J., McPherron, S., Lozouet, P. 2009, Additional evidence on the use of personal ornaments in the Middle Paleolithic of North Africa, PNAS vol. 106 no. 38, 16051-16056.

Edwards, C. J., Bollongino, R., Scheu, A., Chamberlain, A., Tresset, A., Vigne, J.-D., Baird, J. F., Larson, G., Ho, S. Y. W., Heupink, T. H., Shapiro, B., Freeman, A. R., Thomas, M. G., Arbogast, R.-M., Arndt, B., Bartosiewicz, L., Benecke, N., Budja, M., Chaix, L., Choyke, A. M., Coqueugniot, E., Döhle, H.-J., Göldner, H., Hartz, S., Helmer, D., Herzig, B., Hongo, H., Mashkour, M., Özdogan, M., Pucher, E., Roth, G., Schade-Lindig, S., Schmölcke, U., Schulting, R. J., Stephan, E., Uerpmann, H.-P., Vörös, I., Voytek, B., Bradley, D. G., Burger, J. 2007, Mitochondrial DNA analysis shows a Near Eastern Neolithic origin for domestic cattle and no indication of domestication of European aurochs, Proceedings of the Royal Society, B Biological Sciences 274, 1377-1385.

Einwogerer, T., Simon, U. 2008, Die Gravettien fundstelle Krems-Wachtberg, Archäologie Österreichs 19(1), 38–42.

Enattah, N. S., Sahi, T., Savilahti, E., Terwilliger, J. D., Peltonen, L., Järvelä, I. 2002, Identification of a variant associated with adult-type Hypolactasia, Nature Genetics 30, 233–237.

Enattah, N. S. and 26 authors 2007, Evidence of Still-Ongoing Convergence Evolution of the Lactase Persistence T–13910 Alleles in Humans, The American Journal of Human Genetics 81, 615–625.

Esin, U. 2007, Früheste Metallurgie in Anatolien, in: Die ältesten Monumente der Menschheit, Karlsruhe, 214 – 218.

Evans, J. G. 2005, Memory and ordination: environmental archaeology in tells, in: D. W. Bailey, A. Whittle & V. Cummings (eds.), (Un)settling the Neolithic, 112-125, Oxford, Oxbow Books.

Evershed, R. P. and 21 authors 2008, Earliest date for milk use in the Near East and southeastern Europe linked to cattle herding, Nature 455, 528–531.

Fabec, T. 2003, Neolithisation of the Karst, Arheološki Vestnik 54, 73-123.

Farbstein, R., Radić, D., Brajković, D., Miracle, P. T. 2012, First Epigravettian Ceramic Figurines from Europe (Vela Spila, Croatia), PLoS One 7(7), e41437.

Filipec, K., Šiša Vivek, M. 2007, Stari Perkovci-Debela šuma, Hrvatski arheološki godišnjak 3/2006, 69-71.

Filipec, K. Roksandić, D., Šiša Vivek, M., Karneluti M. 2009, Arheološke slike iz Slavonije: arheološka istraživanja na trasi autoceste Beli Manastir – Osijek – Svilaj, Zbirka Odsjeka za arheologiju, knjižica 1, Zagreb.

Forenbaher, S., Miracle, P. T. 2005, The spread of farming in the eastern Adriatic, Antiquity 79(305), 514–528.

Forenbaher, S., Miracle, P. T. 2006, Pupićina Cave and the spread of farming in the Eastern Adriatic, in: P. T. Miracle, S. Forenbaher (eds.), Prehistoric herders of northern Istria: the archaeology of Pupićina Cave. Vol. 1, Arheološki Muzej Istre, Pula, 483–523.

Forenbaher, S., Kaiser T., Miracle, P. T. 2013, Dating the East Adriatic Neolithic, European Journal of Archaeology 16(4), 589–609.

Fowler, C. 2001, Personhood and social relations in the British Neolithic with a study from the Isle of Man, Journal of Material Culture 6(2), 137–163.

Frame, S. 2008, Prehrana i gozbe u Grapčevoj špilji, in: Forenbaher, S., Kaiser, T. (eds.), Grapčeva špilja: pretpovijesni stan, tor i obredno mjesto, 85-121, Književni krug, Split.

Fuller, D., Stevens, C. 2009, Agriculture and the development of complex societies: An archaeobotanical agenda, in: A. Fairbairn and E. Weiss (eds.), From Foragers to Farmers: Papers in Honour of Gordon C. Hillman, Oxford: Oxbow Books, pp. 37-57.

Furholt, M. 2012, Kundruci: Development of Social Space in a Late Neolithic Tell Settlement in Central Bosnia, in: R. Hofmann, F.-K. Moetz & J. Müller Tells: Social and Environmental Space, Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th –18th March 2011)" in Kiel, Volume 3, 203-220, Verlag Dr. Rudolf Habelt GmbH, Bonn.

Gamble, C. 1993, Exchange, foraging and local hominid networks, in: Scarre, C., Healy, F. (ed.), Trade and exchange in prehistoric Europe, Oxbow monograph 33, Oxford, 35-44.

Gamble, C. 1995, Lithics and Social Evolution, in: Schofield, A.J., (ed.), Lithics in context. Suggestion for the future direction of Lithic Studies, Lithic Studies Society Occasional Paper No. 5, Lithic Studies Society, London, 19-27.

Gamble, C. 1999, The Palaeolithic Societies of Europe, Cambridge University Press, Cambridge.

Gamble, C. 2007, Origins and revolutions, Cambridge, Cambridge University Press.

Gluza, I. 1983, Neolithic cereals and weeds from the locality of the Lengyel culture at Nowa Huta-Mogila near Cracow, Acta Palaeobotanica 23, 123–184.

Garašanin, M. 1951, Hronologija vinčanske grupe, Ljubljana.

Garašanin, M. 1959, Period prelaza iz neolita u metalno doba u Vojvodini i severnoj Srbiji, Starinar N.S. IX-X/1958-1959, 19-36.

Garašanin, M. 1961, Nosa – Biserna obala, praistorijsko naselje, Starinar XI, 228-229.

Garašanin, M. 1971, Genetische und chronologische Probleme des frühkeramischen Neolithikums auf dem mittleren Balkan, in: Actes du VIIIe CISPP I, Beograd, 73-84.

Garašanin, M. 1973, Praistorija na tlu Srbije, Beograd.

Garašanin, M. 1979a, Centralnobalkanska zona, u: Benac, A. (ed.), Praistorija jugoslavenskih zemalja II, Sarajevo, 79–212.

Garašanin, M. 1979b, Vinčanska grupa, u: Benac, A. (ed.), Praistorija jugoslavenskih zemalja II, Sarajevo, 144-207.

Garašanin, M. 1996, Razgovori o arheologiji, Beograd.

Garašanin, M., Radovanović, I. 2001, A pot in house 54 at Lepenski Vir I, Antiquity 75(287), 118–125.

Gaul, J. H. 1942, Possibilities of Prehistoric Metallurgy in the East Balkans Penninsula, American Journal of Archaeology, Vol. 46, No. 3, 400-409.

Gell, A. 1998, Art and Agency: an Anthropological Theory, Oxford, Calerndon Press.

Geneste, J.M. 1998, Les Industries de la Grotte Vaufrey: technologie du débitage, économie et circulation de la matière première lithique, in: Rigaud, J.P., (ed.), La Grotte Vaufrey à Cenac et Saint-Julien (Dordogne), Paleoenvirnmentsm chronologie et activités humaines. Mémoires de la Société Préhistorique Française 19, 441-518.

Gerbault, P. 2012, Milking the data. Modelling the coevolution of lactase persistence and dairying in Europe, in: F. Feulner, P. Gerbault, R. Gillis, H. Hollund, R. Howcroft, M. Leonardi, A. Liebert, M. Raghavan, M. Salque, O. Sverrisdóttir, M. Teasdale, N. van Doorn and C. Wright (eds.), May Contain Traces of Milk, Investigating the role of dairy farming and milk consumption in the European Neolithic. Lactose Persistence and Early Cultural History of Europe, LeCHE, The University of York, Heslington, 191–210.

Gerbault, P., Moret C., Currat, M., Sanchez-Mazas, A. 2009, Impact of Selection and Demography on the Diffusion of Lactase Persistence, PLoS One 4(7), e6369.

Gerbault, P., Liebert, A., Itan, Y., Powell, A., Currat, M., Burger, J., Swallow, D. M., Thomas M. G. 2011, Evolution of lactase persistence: an example of human niche construction, Philolosphical Transactions of Royal Society B 366, 863–877.

German, K. 2009, Early Hunter-Gatherer Ceramics in Karelia, in: P. Jordan, M. Zvelebil (eds.), Ceramics before farming. The dispersal of pottery among prehistoric Eurasian hunter-gatherers, Left Coast Press, Walnut Creek, CA, 255–279.

Gimbutas, M. 1982, Goddesses and Gods of Old Europe, Myths and Cult Images, Berkeley, University of California Press.

Gimbutas, M. 1991, The Civilization of the Goddess, The World of Old Europe, San Francisco, HarperCollins.

Gogaltan, F. 2003, Die neolitische Tellsiedlungen im Karpatenbecken. Ein Überblick. Morgenrot der Kulturen. Frühe Etappen der Menschheitsgeschichte in Mittel- und Südosteuropa. Festschrift für Nándor Kalicz zum 75. Geburtstag, Archaeolingua 15, Budapest, 223-262.

Goffer Z. 2007, Archaeological Chemistry, Wiley-Interscience.

Goldstein, L. 1981, One-dimensional archaeology and multi-dimensional people: Spatial organisation and mortuary analysis, in: R. Chapman, I. Kinnes & K. Randsborg (eds.), The Archaeology of Death, Cambridge: Cambridge University Press, 53–69.

Goldstein, D. B., Chikhi, L. 2002, Human migrations and population structure: what we know and why it matters, Annual Review of Genomics and Human Genetics 3, 129–152.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Goring-Morris, A. N., Belfer-Cohen, A. 2008, A Roof Over One's Head: Developments in Near Eastern Residential Architecture Across the Epipalaeolithic–Neolithic Transition, in: Jean-Pierre Bocquet-Appel & Ofer Bar-Yosef (eds.), The Neolithic Demographic Transition and its Consequences, 239-286, Springer.

Gräslund, A.S. 2004, Dogs in graves - a question of symbolism?, in: Frizell B.S. (ed.), Pecus: Man and Animal in Antiquity, Proceedings of the conference at the Swedish Institute in Rome, September 9-12, 2002. Rim, Svenska Institutet i Rom, 167–176.

Grbić, M. 1929, Pločnik, eine Prähistorische Asiedlung aus der Kupferzeit, 8 – 17.

Greenfield, H., Draşovean, F. 1994, Preliminary Report on the 1992 Excavations at Foeni-Salaş: An Early Neolithic Starčevo-Criş settlement in the Romanian Banat, Analele Banatului 3, 45–93.

Greenfield, H., Jongsma, T. 2006, The Intrasettlement Spatial Structure of Early Neolithic Settlements in Temperate Southeastern Europe: A View from Blagotin, Serbia, in: Robertson, E.C., Seibert, J. D. Fernandez, D.C., Zender, M. U. (eds.), Space and Spatial Analysys in Archaeology, University of Calgary Press, 69-79.

Gronenborn, D. 1999, A Variation on a Basic Theme: The Transition to Farming in Southern Central Europe, Journal of World Prehistory 13(2), 123-210.

Gronenborn, D. 2007, Beyond the models: 'Neolithisation' in Central Europe, Proceedings of the British Academy 144, 73–98.

Gronenborn, D. 2009, Climate fluctuations and trajectories to complexity in the Neolithic: towards a theory, Documenta Praehistorica XXXVI, 97–110.

Gronenborn, D. 2011, Early pottery in Afroeurasia – Origins and possible routes of dispersal, in: S. Hartz, F. Lüth and T. Terberger (eds.), The early Pottery in the Baltic. Workshop Schleswig, October 2006. Bericht der Römisch-Germanischen Kommission 89, Römisch Germanische Kommission des Deutschen Archäologischen Instituts, Frankfurt a. M., 59–88.

De Grooth, M, E. TH. 1997, The social context of neolithic flint mining in Europe, in: Schild, R., Sulgostowska, Z.(eds.), Man and Flint, Proccedings of the VIIth International Flint Symposium Warszawa – Ostrowiec Świętokrzyski sptember 1995, Institute of Archaeology and Ethnology Polish Academy of Science, Warszawa, 71 – 77.

Grygiel, R. 2008, Neolit i Początki Epoki Brązu w Rejonie Brześcia Kujawskiego and Osłonek (The Neolithic and Early Bronze Age in the Brześć Kujawski and Osłonki Region), Vol. 1. Łódź: Konrad Jażdżewski Foundation for Archaeological Research/Museum of Archaeology and Ethnography.

Guilaine, J. 2007, Die Ausbreitung der neolithischen Lebensweise im Mittelmeerraum, in: C. Lichter (ed.), Vor 12.000 Jahren in Anatolien, Die altesten Monumente der Menschheit, Badisches Landesmuseum Karlsruhe, Stuttgart, 166–176.

Guštin, M. 2005, Savska skupina lengyelske kulture, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 7-22.

Guštin, M., Tomaž, A., Kavur, B. 2005a, Drulovka pri Kranju, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 37-63.

Guštin, M., Tomaž, A., Kavur, B., Jakimovski, A., Mileusnić, Z., Tiefengraber, G., Hincak, Z. 2005b, Neolitska naselbina Čatež-Sredno polje, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 101-112.

Gyulai, F. 2010, Archaeobotany in Hungary: Seed, Fruit, Food and Beverage Remains in the Carpathian Basin from the Neolithic to the Late Middle Ages, Budapest: Archaeolingua.

Hallgren, F. 2009, 'Tiny Islands in a Far Sea' – On the Seal Hunters of Åland, and the Northwestern Limit in the Spread of Early Pottery, in: P. Jordan, M. Zvelebil (eds.), Ceramics before farming. The dispersal of pottery among prehistoric Eurasian hunter-gatherers, Left Coast Press, Walnut Creek, CA, 375–393.

Halstead, P., O'Shea, J. M. (eds.), 1989, Bad Year Economics: Cultural responses to risk and uncertainty, Cambridge: Cambridge University Press.

Halstead, P. 1995, Plough and power: the economic and social significance of cultivation with the ox-drawn ard in the Mediterranean, Bulletin on Sumerian Agriculture 8, 11-22.

Hamilakis, Y., Pluciennik, M., Tarlow, S. (eds.), 2001, Thinking through the Body, Archaeologies of Corporeality, New York: Academic/Kluwer Press.

Handsman, R. G. 1991, Whose art was found at Lepenski Vir? Gender relations and power, in: J. Gero & M. W. Conkey (eds.), Engendering Archaeology: Women in Prehistory, Oxford: Blackwell, 329–365.

Hansen, S., Toderaş, M. 2010, Pietrele und die neuen Dimensionen kupferzeitlicher Siedlungen an der Unteren Donau, in: S. Hansen (ed.), Leben auf dem Tell als soziale Praxis. Beiträge des Internationalen Symposiums in Berlin vom 26.–27. Februar 2007. Kolloquien zur Vor- und Frühgeschichte 14. Bonn: Habelt 2010, 85–105.

Harej, Z. 1986, Kultura kolišč na Ljubljanskem barju, Partizanska knjiga, Ljubljana.

Harré, R. 1991, Physical Being. A Theory of Corporeal Psychology, Oxford: Blackwell.

Hather, J. G. 1991, The identification of charred archaeological remains of vegetative parenchymous tissue, Journal of Archaeological Science 18(6), 661-675.

Hauptmann, H., Özdoğan, M. 2007, Die Neolitischen Revolution in Anatolien, in: Die ältesten Monumente der Menschheit, Karlshrue, 26-37.

Henshilwood, C.S., Marean, C.W. 2003, The Origin of Modern Human Behavior. Critique of the Models and Their Test Implications, Current Anthropology 44 (5), 627-651.

Heron, C., Nemcek, N., Bonfield, K. M., Dixon, D., Ottaway, B. S. 1994, The Chemistry of Neolithic Beeswax, Naturwissenschaften 81, 266-269.

Hillebrand, J. 1928, A Nyírlugosi obsidiannucleus-depotleletröl, Archaeologiai Értesitő 42, 39-42.

Hillman, G. 1981, Reconstructing crop husbandry practices from charred remains of crops, in: R. Mercer (ed.), Farming Practices in British Prehistory, Edinburgh: Edinburgh University Press, pp. 123-162.

Hodder, I. 1979, Social Structure and Cemeteries: A Critical Appraisal, in: P. Rahtz, T. Dickinson and L. Watts (eds.), Anglo-Saxon Cemeteries. The Fourth Anglo-Saxon Symposium at Oxford, Oxford: BAR British Series 82, 161–169.

Hodder, I. 1990, Domestication of Europe. Structure and Contingency in Neolithic Societies, Oxford: Blackwell.

Hodder, I. 2005, The spatio-temporal organisation of the early 'town' at Çatalhöyük, in: Bailey, D., Whittle, A. & Cummings, V. (eds.), (Un)settling the Neolithic, Oxford: Oxbow Books, 126-139.

Hofmann, R. 2012, Style and Function of Pottery in Relation to the Development of Late Neolithic Settlement Patterns in Central Bosnia, in: R. Hofmann, F.-K. Moetz & J. Müller Tells: Social and Environmental Space, Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th –18th March 2011)" in Kiel, Volume 3, Verlag Dr. Rudolf Habelt GmbH, Bonn, 181-202.

Horvat, M. 1989, Ajdovska jama pri Nemški vasi, Razprave Filozofske fakultete, Ljubljana.

Horvat, M. 1999, Keramika. Tehnologija keramike, tipologija lončenine, keramični arhiv. Razprave Filozofske fakultete, Znanstveni inštitut Filozofske fakultete, Ljubljana.

Horvat, M. 2005, Col 1 pri Podgračenem, Tipološka opredelitev neolitskega keramičnega zbira SE 002/1/1, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture,Annales Mediterranea. Koper, 145-153.

Horvat, M. 2009, Prvi prebivalci v Posavju, in: Barachini, J. (ed.), Ukročena lepotica, Sava in njene zgodbe, Sevnica, 25-35.

Horváth, L. A., Simon, K. H. 2003, Das Neolithikum und die Kupferzeit in Südwesttransdanubien, Budapest, Magyar Nemzeti Múzeum.

Hoti, M. 1993, Prethistorijski korijeni nekih aspekata grčke religije, Doktorska disertacija, Zagreb, Filozofski fakultet Sveučilišta u Zagrebu.

Hršak, T. 2010, Grabrovac-Ciglana, Hrvatski arheološki godišnjak 6/2009, 21-23.

Hršak, T., Pavlović, I. 2007, Kaznica-Rutak, Hrvatski arheološki godišnjak 3/2006, 16-17.

Huntington, R., Metcalf, P. 1992, Celebrations of Death: The Anthropology of Mortuary Ritual (2nd edition), Cambridge: Cambridge University Press.

Hurcombe, L. 2009, Looking for prehistoric basketry and cordage using inorganic remains: the evidence from stone tools, in: L.Longo and N.Skakun (eds.), "Prehistoric Technology" 40 years later: Functional Studies and the Russian Legacy, Oxford, BAR IS.

Ingram, C. J. E., Elamin, M. F., Mulcare, C. A., Weale, M. E., Tarekegn, A., Oljira Raga, T., Bekele, E., Elamin, F. M., Thomas, M. G. Bradman, N., Swallow, D. M. 2007, A novel polymorphism associated with lactose tolerance in Africa: multiple causes for lactase persistence?, Human Genetics 120, 779–788.

Ingram, C. J. E., Mulcare, C. A., Itan, Y., Thomas, M. G., Swallow, D. M. 2009, Lactose digestion and the evolutionary genetics of lactase persistence, Human Genetics 124, 579–591.

Itan, Y., Powell, A., Beaumont, M.A., Burger, J., Thomas, M.G. 2009, The Origins of Lactase Persistence in Europe, PLOS Computational Biology 5(8), e1000491.

Itan, Y., Jones, B. L., Ingram, C. J., Swallow, D. M., Thomas, M. G. 2010, A worldwide correlation of lactase persistence phenotype and genotypes, BMC Evolutionary Biology 10, 36. doi: 10.1186/1471–2148–10–36.

Jobling, M. A., Hurles, M. E., Tyler-Smith, C. 2004, Human Evolutionary Genetics: Origins, Peoples and Disease, Garland Science, New York.

Johansson, C. 2012, Origin of the Egyptian Domestic Cat, Uppsala University.

Jongsma, T. L. 1997, Distinguishing Pits from Pit Houses through Daub Analysis: The Nature and Location of Early Neolithic Starčevo-Criş Culture Houses at Foeni-Salaş, Romania, Unpublished master's thesis, Department of Anthropology, University of Manitoba, Winnipeg, Manitoba.

Jongsma, T. L., Greenfield, H. J. 2011, Architectural Technology and the Spread of Early Agricultural Societies in Temperate Southeastern Europe, in: J. Gillespie, S. Tupakka, and C. de Mille (eds.), On Being First: Cultural Innovation and Environmental

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Consequences of First Peopling, Chacmool Archaeological Association, University of Calgary, Calgary, Alberta, 181–200.

Jones, G. 2005, Garden cultivation of staple crops and its implications for settlement location and continuity, World Archaeology 37(2), 164-176.

Jones, G., Valamoti, S., Charles, M. 2000, Early crop diversity: a »new« glume wheat from northern Greece, Vegetation History and Archaeobotany 9(3), 133-146.

Jones, M. 1985, Archaeobotany beyond subsistence reconstruction, in: Barker ,G., Gamble, C. (eds.), Beyond Domestication in Prehistoric Europe, London, Academic Press, 107-128.

Jovanović, B. 1965, Opšta stratigrafija Gomolave, Rad Vojvođanskih Muzeja 14, 113-135.

Jovanović B. 1968, Istorijat keramičke industrije u neolitu i ranom eneolitu centralnog Balkana, in: L. Trifunović (ed.), Neolit centralnog Balkana, Narodni muzej, Beograd.

Jovanović, B. 1971, Metalurgija eneolitskog perioda Jugoslavije, Beograd.

Jovanović, B. 1974, Relativnohronološki odnosi strarijeg neolita Đerdapa i Vojvodine, Materijali SADJ 10, 31-49.

Jovanović, B. 1979, Rudarstvo i metalurgija eneolitskog perioda Jugoslavije, u: Tasić, N. (ed.), Praistorija jugoslavenskih zemalja III, Sarajevo, 27-55.

Jovanović, M. 2011, Gospodari gline i žita, iz života praistorijskih zemljoradnika u Podunavlju, in: Jovanović, M. (a.i.) Gospodari gline i žita, Novi Sad, Muzej Vojvodine, 13-57.

Jovanović, B., Glišić, J. 1961, Eneolitsko naselje na Kormadinu kod Jakova, Starinar 11, 113-139.

Joyce, R. 2008, Ancient Bodies, Ancient Lives, London, Thames and Hudson.

Kaczanowska, M. 2003, Distribution of raw materials used in the chipped stone industry of the Western Linear Band Pottery Culture and the Eastern Linear Pottery Culture in the Circum-Carpathian area, in: Burnez-Lanotte, L. (ed.), Production and Management of Lithic Materials in the European Linearbankeramik, Acts of hte XIV UISPP Congress, BAR International Series, Acrhaeopress, Oxford, 5-10.

Kaczanowska, M., Kozłowski J.K. 1997, Neolithic vs Eneolithic lithic raw material procurement, technology and exchange in Eastern Europe, in: M. Lazić (ed.), Zbornik Dragoslava Srejovića, Centar za arheološka istraživanja filozofskog fakulteta, Beograd, 223-233.

Kaiser, T., Voytek, B. 1983, Sedentism and econominc change in the Balkan Neolithic, Journal of Anthropological Archaeology 2, 323-353.

Kalicz, N. 1988, Beiträge zur Entstehungsfrage der Lengyel-Kultur, Slovenska Archeológia XXXVI-1, 105-118.

Kalicz, N. 1993, Le basin du Danube moyen, la plaine Pannonienne, in: Kozlowski, J. (ed.), Atlas du Neolithique Europeen: Vol. 1 L'Europe orientale, Liège, Université de Liège, 285–342.

Kalicz, N. 2001, Der Neuere Forschungsstand über die Lengyel Kulturm, in: Regenye, J. (ed.), Sites and stones: Lengyel Culture in Western Hungary and beyond. A review of current Research, Megyei Múzeumi Igazga Tóság, Veszprém, 7-12.

Kalicz, N. 2006, Siedlungsfunde der spätesten phase der Lengyel-Kultur bei Nagykanizsa (Südwestungarn) (Die lezten zwei drittel des 5. Jhrtausends v. chr., kalibriert), in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 53-74.

Kalicz, N., Makkay, J. 1972, A neolitikus Sopot-Bicske kultúra (Die neolithische Sopot-Bicske-kultur), Archaeologiai Értesitő 99/1, 3-14.

Kalicz, N., Makkay, J. 1977, Die Linienbandkeramik in der Grossen Ungarischen Tiefebene, Budapest

Kalicz, N., Biró, K.T., Virág, Z. M. 2002, Vörs Máriaasszony-sziget, Archaeological Investigations in Hungary 1999, 15-26.

Kalicz, N., Kreiter, E., Tokai, Z. M. 2007, Die Rolle der Sopot-Kultur in der Entstehung der Lengyel-Kultur auf Grund der neuen Ausgrabungen in Südwestungarn, in: Kozłowski, J.K., Raczky, P. (ed.), The Lengyel, Polgár and related cultures in the Middle/Late Neolithic in Central Europe, Kraków, 29-47.

Karkanas, P., Koumouzelis, M., Kozlowski, J.K., Sitlivy, V., Sobczyk, K.,Berna, F., Weiner, S. 2004, The earliest evidence for clay hearths:Aurignacian features in Klisoura Cave 1, southern Greece, Antiquity 78(301), 513-525.

Karmanski, S. 1968, Žrtvenici, statuete i amuleti sa lokaliteta Donja Branjevina kod Deronja, Odžaci, Arheološka sekcija.

Karmanski, S. 2000, Donja Branjevina, Odžaci.

Karmiris, I. E., Nastis, A. S. 2007, Intensity of livestock grazing in relation to habitat use by brown hare (Lepus europaeus), Journal of Zoology 271 (2), 193-197.

Károlyi, M. 1992, The Early Copper Age in County Vas, Szombathely, Öskorunk I.

Kavur, B. 2005, Kamnita orodja na najdišču Čatež-Sredno polje, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 131-144.

Keally, C. T., Taniguchi, Y., Kuzmin, Y. V. 2003, Understanding the Beginnings of Pottery Technology in Japan and Neighboring East Asia, The Review of Archaeology 24, 3–14.

Kienlin, T. 2012, Patterns of Change, or: Perceptions Deceived? Comments on the Interpretation of Late Neolithic and Bronze Age Tell Settlement in the Carpathian Basin, in: T. L. Kienlin & A. Zimmerman (eds.), Beyond Elites. Alternatives to Hierarchical Systems in Modelling Social Formations, Verlag Dr. Rudolf Habelt GmbH, Bonn, 251-310.

King, R. J., Underhill, P. A. 2002, Congruent distribution of Neolithic painted pottery and ceramic figurines with Ychromosome lineage, Antiquity 76(293), 707–714.

King, R. J. and 11 authors 2008, Differential Y-chromosome Anatolian Influences on the Greek and Cretan Neolithic, Annals of Human Genetics 72, 205–214.

Klasen, L., Casen, S., Pétrequin, P. 2012, Alpine axes and early metallurgy, in: P. Pétrequin, S. Casen, M. Errera, L. Klasen, A. Sheridan and A.-M. Pétrequin (eds), Jade: Grandes haches alpines du Néolithique européen. Ve et IVe millénaires av. J.C., 1280–1309, Besançon: Preses Universitaires de Franche-Comté.

Klopfleisch, F. 1884, Vorgeschichtliche Altertümer der Provinzen Sachsen und angrenzender Gebiete II, Salle.

Knappet, C. 2005, Pottery, in: Maschner, H. D. G., Chippindale, C. (eds.), Handbook of Archaeological Methods vol. II., Altamira Press, Oxford, 673-714.

Kohler-Schneider, M. 2003, Contents of a storage pit from Late Bronze Age Stillfried, Austria: another record of the »new« glume wheat, Vegetation History and Archaeobotany 12(2), 105-111.

Komšo, D. 2006a, The Mesolithic in Croatia, Opuscula archaeologica 30, 55-92.

Komšo, D. 2006b, Kargadur, Hrvatski arheološki godišnjak 2/2005, 212-214.

Korošec, J. 1956, Neolitična naselbina v Drulovki pri Kranju, Arheološki vestnik 7/1, Ljubljana, 3-28.

Korošec, J. 1957, Lengyelska kulturna skupina v Bosni, Sremu in Slavoniji, Arheološki vestnik VIII/3-4, 175-203.

Korošec, J. 1960, Drulovka, Zbornik Filozofske fakultete III/4, Ljubljana.

Korošec, J. 1962, Nekaj neolitskih in eneolitskih problemov v okolici Križevcev na Hrvatskem, Zbornik Filozofske fakultete IV/1, Ljubljana.

Korošec, J. 1964, Kulturne ostaline na kolišču ob Resnikovem prekopu odkrite v letu 1962, Poročilo o raziskovanju neolita in eneolita v Sloveniji I, Ljubljana, 25-46.

Korošec, J. 1965, Neo- in eneolitski elementi na Ptujskem gradu, Poročilo o raziskovanju neolita in eneolita v Sloveniji II, Ljubljana, 5-53.

Korošec, P. 1975, Poročilo o raziskavah v Ajdovski jami 1967. leta, Poročilo o raziskovanju neolita in eneolita v Sloveniji IV, Ljubljana, 170-209.

Kossinna, G. 1911, Die Herkunft der Germanen. Zur Methode der Siedlungsarchäologie, Mannus-Bibliothek, Band 6, Würzburg.

Kotsakis, K. 1999, What Tells Can Tell: Social Space and Settlement in the Greek Neolithic, in: P. Halstead (ed.), Neolithic Society in Greece, Sheffield, Academic Press, 66–76.

Kotsakis, K. 2006, Settlement of Discord: Sesklo and the Emerging Household, in: N. Tasić & C. Grozdanov (eds.), Homage to Milutin Garašanin, Serbian Academy of Sciences and Arts; Macedonian Academy of Sciences and Arts, Belgrade, 207-220.

Krajcar - Bronić, K., Minichreiter, K., Obelić, B., Horvatinčić, N. 2004, The oldest early Neolithic (Starčevo culture) settlements in Croatia: Zadubravlje-Dužine and Slavonski Brod – Slavonski Brod – Galovo, Radiocarbon and Archaeology, Fourth Inetrnational Symposium, Oxbow books: Oxford.

Krajcar-Bronić I., Minichreiter, K. 2007, 14C dating of Early Neolithic settlement Slavonski Brod - Galovo near Slavonski Brod in Northern Croatia, Nuclear Instruments and Methods in Physics Research A 580, 714-716.

Krauß, R. 2011, On the 'Monochrome' Neolithic in Southeast Europe, in: Krauß (ed.), Beginnings – New Research in the Appearance of the Neolithic between Northwest Anatolia and the Carpathian Basin, Papers of the International Workshop 8th–9th April 2009, Istanbul, Menschen – Kulturen – Traditionen, Forschungscluster 1. Verlag Marie Leidorf GmbH, Rahden/Westf., 109–125.

Krznarić Škrivanko, M. 1997, Prapovijesno naselje na Ervenici u Vinkovcima, Opuscula Archaeologica 21, 205-215.

Krznarić Škrivanko, M. 1999, Bakreno i rano brončano doba, in: Vinkovci u svijetu arheologije, Katalog izložbe, Vinkovci, 21-29.

Krznarić Škrivanko, M. 2002, Peta i šesta sezona sustavnog istraživanja gradine Sopot, Obavijesti Hrvatskog arheološkog društva 2/XXXIV, 36-45.

Krznarić Škrivanko, M. 2003a, Neki naseobinski pokazatelji na eponimnom lokalitetu sopotske kulture, Opuscula Archaeologica 27, 63-69.

Krznarić Škrivanko, M. 2003b, Sedma sezona sustavnog iskopavanja gradine Sopot (godina 2002), Obavijesti Hrvatskog arheološkog društva 1/XXXV, 37-46.

Krznarić Škrivanko, M. 2006a, Istraživanja na Sopotu, in: A. Tomaž (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 11-19.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE,
DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN
THE SAVA, DRAVA AND DANUBE

Krznarić Škrivanko, M. 2006b, Sopot, Hrvatski arheološki godišnjak 2/2005, 30-33.

Krznarić Škrivanko, M. 2007, Sopot, Hrvatski arheološki godišnjak 3/2006, 45-47.

Krznarić Škrivanko, M. 2008, Sopot, Hrvatski arheološki godišnjak 4/2007, 64-68.

Krznarić Škrivanko, M. 2009a, Sopot, Hrvatski arheološki godišnjak 5/2008, 89-92.

Krznarić Škrivanko, M. 2009b, Mlađe kameno doba ili neolitik, in: Biškupić, B. (ed.), Slavonija, Baranja i Srijem, vrela europske civilizacije, 1. svezak, Zagreb, 53-59.

Krznarić Škrivanko, M. 2011, Radiokarbonski datumi uzoraka sa Sopota, in: M. Dizdar (ed.), Panonski prapovijesni osviti: Zbornik radova posvećenih Korneliji Minichreiter uz 65. obljetnicu života, Zagreb, Institut za arheologiju, 209-226.

Krznarić Škrivanko, M. 2012, Nalazišta sopotske kulture na vinkovačkom području, Acta Musei Cibalensis 5, n.s. 3, 11-46.

Krznarić Škrivanko, M., Reed, K. 2006, The Late Neolithic site of Sopot, Vinkovci: results of the site stratigraphy, C14 dates, and the analysis of archaeo-botanical and osteological remains, The European Archaeologists 28, 3-4.

Kujundžić–Vejzagić, Z., Muller, J., Rassmann, K. & Schuler, T. 2004, Okolište – iskopavanje i geofizička prospekcija centralnobosanskog tel–naselja iz prve polovine petog milenija p.n.e., Godišnjak Centra za balkanološka ispitivanja 31, 13–32.

Kuzmin, Y. V. 2006, Chronology of the earliest pottery in East Asia: progress and pitfalls, Antiquity 80(308), 362–371.

Kuzmin, Y. V., Vetrov, V. M. 2007, The earliest Neolithic complex in Siberia: the Ust-Karenga 12 site and its significance for the Neolithisation process in Eurasia, Documenta Praehistorica XXXIV, 9–20.

Kužir, S., Babić, K., Kozarić, Z. 2005, Životinjske kosti iz Vele spile na otoku Korčuli, in: B. Čečuk, D. Radić (eds), Vela spila: višeslojno pretpovijesno nalazište, Vela Luka, otok Korčula, Centar za kulturu «Vela Luka», Vela Luka, 291-299.

Kyselý R. 2002, Osteological analysis of animals buried in Hostivice (Prague-West district): Funnel Beaker culture (TRB) and a comparison of animal remains from Hostivice with other contemporary finds from the Czech Republic and Central Europe, Památky archeologické 93, 29–87.

Lacan, M., Keyser, C., Ricaut, F.-X., Brucato, N., Duranthon, F., Guilaine, J., Crubézy, E., Ludes, B. 2011, Ancient DNA reveals male diffusion through the Neolithic Mediterranean route, Proceedings of the National Academy of Sciences of the USA 108(24), 9788– 9791.

Lazarovici, Gh. 1989, Das neolithische Heiligtum von Parta, in: S. Bokony (ed.), Neolithic of Southeastern Europe and its Near Eastern Connections, Varia Archaeologica Hungarica II, Budapest, Pytheas, 149–174.

Lazarovici, Gh. 1990, Uber neo– bis aneolitische Befestigungen aus Rumanien, Jahresschrift fur Mitteldeutsche Vorgeschichte 73, 93–117.

Lazarovici, Gh., Draşovean, Fl., Maxim, Z. 2001, Parta, Timisoara, Museum Banaticum Temesiense.

Lazarovici, Gh., Lazarovici, C.M. 2011, Architecture of the Early Neolithic in Romania, in: S. A. Luca, S.A. & Suciu, C. (eds.), Early Neolithic (Starčevo-Cris) Sites on the Territory of Romania, BAR International Series 2188, 19-36.

Laurie, E., Miracle, P. T., Poje, M. 2006, Terrestrial and Marine Molluscs from Pupićina Cave / Kopneni i morski mekušci iz Pupićine pećі, in: P. T. Miracle & S. Forenbaher (eds..), Prehistoric Herders of Northern Istria: The Archaeology of Pupićina Cave, Vol. 1 / Pretpovijesni stočari sjeverne Istre: Arheologija Pupićine peći, sv. 1, Monografije i katalozi 14, Arheološki muzej Istre, Pula, 417-427.

Leach, E. 1964, Response to Raoul Naroll's On Ethnic Classification, Current Anthropology 5(4), 299.

Leben, F. 1973, Opredelitev neolitske in eneolitske keramike iz jamskih najdišč jugovzhodnega alpskega prostora, Arheološki vestnik 24, Ljubljana, 145-160.

Leben, F. 1979, Progress and Achievements of thirty years of Research into Early Prehistory in Slovenia, Arheološki vestnik 30, Ljubljana, 29-39.

Lech, J. 1990, The organization of siliceous rocks supplies in the Danubian early farming communities (LBK): central European examples, in: Cahen, D., Otte, M. (eds.), Rubané et Cardial. Etudes et recherches archéologiques de l'Université de Liège 39, Liège, 51-59.

Legge, A. J., Moore, A. M. T. 2011, Clutching at straw: the Early Neolithic and the dispersal of Agriculture, in: A. Hadjikoumis, E. Robinson and S. Viner (eds.), The Dynamics of Neolithisation in Europe, Oxbow Books, Oxford, 1-196.

Leković, V., Padrov, J. 1992, Rasprostranjenost arheoloških nalazišta starčevačke kulture u Sremu, Zbornik radova Narodnog muzeja 14-1, 35-51.

Leleković, T. 2008, Ivandvor, Hrvatski arheološki godišnjak 4/2007, 12-15.

Lenneis, E. 2004, Architecture and Settlement Structure of the Early Linear Pottery Culture in East Central Europe, in: Lukes, A., Zvelebil, M (eds.), LBK Dialogues. Studies in the formation of the Linear Pottery Culture, BAR International Series 1304, Oxford, 151-157

Leonardi, M., Gerbault, P., Thomas, M. G., Burger, J. 2012, The evolution of lactase persistence in Europe. A synthesis of archaeological and genetic evidence, International Dairy Journal 22, 88–97.

Letica, Z. 1968, Starčevo and Koros culture at Vinča, Archaeologia Iugoslavica IX, 11–18.

Lichter, C. 1993, Untersuchungen zu den Bauten des sudosteuropaischen Neolitikums und Chalkolitikums, Internationale Archaologie 18, im Verlag M. L. Leidorf.

Liebert, A. 2012, The Milkybars are on me. Lactase persistence and its traces with DNA, in: F. Feulner, P. Gerbault, R. Gillis, H. Hollund, R. Howcroft, M. Leonardi, A. Liebert, M. Raghavan, M. Salque, O. Sverrisdóttir, M. Teasdale, N. van Doorn and C. Wright (eds.), May Contain Traces of Milk. Investigating the role of dairy farming and milk consumption in the European Neolithic, Lactose Persistence and Early Cultural History of Europe, LeCHE, The University of York, Heslington, 75–88

Lightfoot, E., Boneva, B., Miracle, P. T., Šlaus, M., O'Connell, T. C. 2011, Exploring the Mesolithic and neolithic transition in Croatia through isotopic investigations, Antiquity 85 (327), 73-86.

Linderholm, A. 2011, The Genetics of the Neolithic Transition: New Light on Differences Between Hunter-Gatherers and Farmers in Southern Sweden, in: R. Pinhasi, J. T. Stock (eds.), Human Bioarchaeology of the Transition to Agriculture, John Wiley & Sons,Chichester, 385–402.

Link, T. 2009, Das Ende der spätneolitischen Tellsiedlungen im Karpatenbecken – der Beginn einer mobileren Lebensweise?, Beiträge zur Ur- und Frühgeschichte Mitteleuropas 53, 95-101.

Luca, S. A., Suciu, C. I. 2008, Migrations and local evolution in the Early Neolithic of Transylvania. The typological-stylistic analysis and the radiocarbon data, in: S. A. Luca (ed.), Proceedings of the International Colloquium: The Carpathian Basin and its Role in the Neolithisation of the Balkan Peninsula, Acta Terrae Septemcastrensis VII, 39–56.

Luca, S. A., Suciu, C., Dumitrescu-Chioar 2011, Catalogue of the Early Neolithic settlements in Western part of Romania – Transylvania, Banat, Crisana, Maramures, Oltenia and Western Muntenia, in: S. A. Luca, C. Suciu (eds.), Early Neolithic (Starčevo-Cris) Sites on the Territory of Romania, BAR International Series 2188, 79-131.

Lukes, A. 2004, Social Perspectives on the Constitution of the Linear Pottery Culture (LBK), in: Lukes, A., Zvelebil, M (eds.), LBK Dialogues. Studies in the formation of the Linear Pottery Culture, BAR International Series 1304, Oxford, 17-37

de Lumley, H. 2010, La Grande Histoire des premiers hommes européens, Odile Jacob, Paris.

Lüning, J. 1982, Research into Bandkeramik settlement of the Aldenhovener Platte in the Rhineland, Analecta Praehistorica Leidensia 15, 7-30.

Lüning, J. 2000, Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum, Bonn, Habelt.

Lüning, J. 2007, Bandkeramiker und Vor-Bandkeramiker – Die Entstehung des Neolithikums in Mitteleuropa, in: C. Lichter (ed.), Vor 12 000 Jahren in Anatolien, Die ältesten Monumente der Menschheit, Badisches Landesmuseum Karlsruhe, Konrad Theiss Verlag, Stuttgart, 177–189.

Madas, D. 1988, Ceramic Vessels from the Divostin II House Floors, in: McPherron, A., & Srejović, D (eds.), Divostin and the Neolithic of Central Serbia, Kragujevac – Pittsburgh, 143–172.

Makkay, J., Starnini, E., Tulok, M. 1996, Description of the finds: the pottery, in: J. Makkay, E. Starnini, M. Tulok, Excavations at the Bicske-Galagonyás (part III). The Notenkopf and Sopot-Bicske cultural phases, Trieste, 36-142.

Malez, V. 2001, Fosilna avifauna Vele špilje na otoku Korčuli (Hrvatska), Izdanja Hrvatskog arheološkog društva 20, Zagreb, 119–124.

Malez, V. 2009, Nalazi ptičjih ostataka, in: B. Marijanović (ed.), Crno vrilo 2, Sveučilište u Zadru, Zadar, 67-76.

Malez-Bačić, V. 1980, Holocenska avifauna iz Markove spilje na otoku Hvaru, Larus 31-32, 163-183.

Marciniak, A. 2005, Placing animals in the Neolithic: social zooarchaeology of prehistoric farming communities, London, Institute of Archaeology Publications, University College, London.

Marciniak, A. 2011, The secondary products revolution: empirical evidence and its current zooarchaeological critique, Journal of World Prehistory 24, 117–130.

Marciniak, A. 2013, The society in the making: the house and the household in the Danubian Neolithic of the central European lowlands, in: Kerig, T., Zimmermann, A. (eds.), Economic archaeology: from structure to performance in European archaeology, Bonn, Habelt, 47–63

Marijan, B. 2006, Neolitičko naselje Dubovo-Košno kod Županje, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 43-51.

Marijan, B. 2007, Naseobinski elementi na neolitičkome lokalitetu Dubovo-Košno kod Županje, Archaeologia Adriatica I, 55-84.

Marijanović, B. 2009, Crno Vrilo 1, Zadar, Sveučilište u Zadru.

Markotić, V. 1984, The Vinca Culture, Calgary.

Marković, Z. 1984, Neka pitanja neolitika, eneolitika i brončanog doba našičkog kraja i Đakovštine, Izdanja Hrvatskog arheološkog društva 9/1981, Arheološka istraživanja u istočnoj Slavoniji i Baranji, 13-29.

Marković, Z. 1985a, Ražište tip sopotske kulture, Arheološki vestnik 36, 39-76.

Marković, Z. 1985b, Problem ranog eneolita u sjeverozapadnoj Hrvatskoj, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XVIII, 1-34.

Marković, Z. 1990, Problem geneze i razvoja eneolitičkih i ranobrončanodobnih kultura sjeverozapadne Hrvatske, Izdanja Hrvatskog arheološkog društva 14/1989, 39-50.

Marković, Z. 1993, Neolitička, eneolitička i ranobončanodobna naselja u sjevernoj Hrvatskoj, Izdanja Hrvatskog arheološkog društva 16/1991, 113-125.

Marković, Z. 1994, Sjeverna Hrvatska od neolita do brončanog doba, Koprivnica.

Marković, Z. 2012, Novija razmatranja o nekim aspektima sopotske kulture u sjevernoj Hrvatskoj, Prilozi instituta za arheologiju u Zagrebu 29/1, 57-69.

Marković, Z., Botić, K. 2007, Novi Perkovci-Krčavina, Hrvatski arheološki godišnjak 3/2006, 18-20.

Marković, Z., Botić, K. 2008, O neolitičkoj keramici iz Novih Perkovaca kod Đakova, Prilozi Instituta za arheologiju u Zagrebu 25, 15-32.

Mateiciucová, I. 2001, Silexindustrie in der ältesten Linearbandkeramih-Kultur in Mähren und Niederösterreich auf der Basus der Silexindustrie des Lokalmesolitikums, in: Kertész, R., Makkay J. (eds.), From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in the Damjanic Museum of Szolnok, September 22-27, 1996, Archaeolingua, Budapest, 283-299.

Mateiciucová, I. 2002, Silexartefakte aus der ältesten und älteren LBK, Fundstellen in Brunn am Gebirge in Niederösterreich (Vorbericht), Antaeus 25, 169-187.

Mateiciucová, I. 2008, Talking stones: the chipped stone industry in Lower Austria and Moravia and the beginnings of the Neolithic in central Europe (LTK), 5700–4900 BC, Brno, Masarykova univerzita.

Mašić, M. 2004, Meso puža u ljudskoj prehrani, Meso VI (3), 53-57.

McCracken, M. D. 1971, Lactase Deficiency: An Example of Dietary Evolution, Current Anthropology 12 (4/5), 479-517.

McDonald, J. D. 2005, World Haplogroups Maps, Online pdf. http://www.scs.uiuc.edu/~mcdonald/

Meadows, J. R. S., Li, K., Kantanen, J., Tapio, M., Sipos, W., Pardeshi, V., Gupta, V., Calvo, J. H., Whan, V., Norris, B., Kijas, J. W. 2005, Levels of Gene Flow Between Breeds of Domestic Sheep from Asia and Europe, Journal of Heredity 96 (5), 494-501.

Mellaart, J. 1967, Çatal Hüyük: a Neolithic town in Anatolia, London, Thames & Hudson.

Meskell, L., Joyce, R. 2003, Embodied Lives. London and New York: Routledge.

Menozzi, P., Piazza, A., Cavalli-Sforza, L. L. 1978, Synthetic maps of human gene frequencies in Europeans, Science 201, 786–792.

Miculinić, K., Mihaljević, M. 2003, Analiza faune prapovijesnog nalazišta Slavča - Nova Gradiška, Opuscula archaeologica 27, 71-80.

Mihaljević, M. 2006, Istraživanje nalazišta Slavča-Nova Gradiška. (Erforschung der Fundstelle Slavča-Nova Gradiška), in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 29-34.

Mihaljević, M. 2007a, Nova Kapela-Ravnjaš, Hrvatski arheološki godišnjak 3/2006, 72-73.

Mihaljević, M. 2007b, Nova Gradiška-Slavča, Hrvatski arheološki godišnjak 3/2006, 75-76.

Mihaljević, M. 2008a, Nova Kapela-Ravnjaš, Hrvatski arheološki godišnjak 4/2007, 94.

Mihaljević, M. 2008b, Nova Gradiška-Slavča, Hrvatski arheološki godišnjak 4/2007, 94-95.

Mihaljević, M. 2009, Nova Kapela-Ravnjaš, Hrvatski arheološki godišnjak 5/2008, 124-125.

Mihaljević, M. 2010a, Rosulje-Žabljak, Hrvatski arheološki godišnjak 6/2009, 113-114.

Mihaljević, M. 2010b, Vidovci-Glogovi, Hrvatski arheološki godišnjak 6/2009, 115-116.

Mihaljević, M. 2010c, Vidovci-Rosulje, Hrvatski arheološki godišnjak 6/2009, 116-117.

Mihaljević, M. 2013, Sopotska kultura u zapadnoj Slavoniji s posebnim osvrtom na nalazište Slavča - Nova Gradiška, nepublicirana doktorska disertacija, Filozofski fakultet u Zagrebu.

Milisauskas, S. 1978, European Prehistory, New York, San Fransico, London, Academic Pres.

Miloglav, I. 2011, Keramika, in: Senker, B. (ed.), Uvod u prapovijesnu arheologiju, Leykam international d.o.o., Zagreb, 115-134.

Milojčić, V. 1949, Chronologie der jüngeren Steinzeit Mittel- und Südosteuropas, Berlin.

Milojčić, V. 1959, Ergebnise der Deutschen Ausgrabungen in Thessalien (1953–1958), Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz 6, 1–56.

Milojčić, V. 1960, Präkeramisches Neolithikum auf der Balkanhalbinsel, Germania 38(3/4), 320–335.

Milojčić, V. 1962, Die präkeramische neolithische Siedlung von Argissa in Thessalien, in: V. Milojčić (ed.), Die deutschen Ausgrabungen auf der Argissa-Magula in Thessalien I. Beiträge zur Ur- und Frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes, Band 2, R. Habelt Verlag, Bonn, 1–25.

Milojčić-Von Zumbusch, J., Milojčić, V. 1971, Die Deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien I. Das frühe Neolithikum, Beiträge zur Ur- und Frühgeschichtlichen Archäologie des Mittlemeer-Kulturraumes 10,Rudolf Habelt Verlag GMBH, Bonn.

Minichreiter, K. 1977, Lokacija robne kuće „Zvijezda“, Vinkovci – prahistorijsko i antičko naselje, Arheološki pregled 19, 20-21.

Minichreiter, K. 1990, Prvi rezultati arheoloških istraživanja u Pepelanama godine 1985, Izdanja Hrvatskog arheološkog društva 14/1989, 19-38.

Minichreiter, K. 1992a, Peći u starčevačkom naselju kod Zadubravlja, Opuscula Archaeologica 16, 37–48.

Minichreiter, K. 1992b, Kultni predmeti starčevačke kulture u sjevernoj Hrvatskoj, Prilozi Instituta za arheologiju u Zagrebu 9, 7–23.

Minichreiter, K. 1992c, Starčevačka kultura u sjevernoj Hrvatskoj, Arheološki zavod Filozofskog fakulteta, Zagreb.

Minichreiter, K. 1993, Arhitektura starčevačkog naselja kod Zadubravlja, Izdanja Hrvatskog arheološkog društva 16, 97–111.

Minichreiter, K. 2000, Starčevačka kultura u svjetlu najnovijih otkrića u brodskoj Posavini, Histria Antiqua 6, 211–222.

Minichreiter, K. 2001, The architecture of Early and Middle Neolithic settlements of the Starčevo culture in Northern Croatia, Documenta Praehistorica XXVIII, 199–214.

Minichreiter, K. 2007, Slavonski Brod, Galovo, Deset godina arheoloških istraživanja, Zagreb, Institut za arheologiju u Zagrebu.

Minichreiter, K. 2010, Above-ground Structures in the Settlements of the Starčevo Culture, Prilozi Instituta za arheologiju u Zagrebu 27, 15-32.

Minichreiter, K. 2011, Slavonski Brod, Galovo, arheološka istraživanja 2010.g., Annales Instituti Archaeologici VII, 34-36.

Minichreiter, K., Krajcar Bronić, I. 2006, Novi radiokarbonski datumi rane starčevačke kulture u Hrvatskoj, Prilozi Instituta za arheologiju 23, 5-16.

Miracle, P. T., Pugsley, L. B. 2006, Vertebrate Faunal Remains at Pupićina Cave / Ostaci faune kralježnjaka iz Pupićine peći, in: Miracle, P. T., Forenbaher, S.(eds.), Prehistoric Herders of Northern Istria: The Archaeology of Pupićina Cave, Vol. 1 / Pretpovijesni stočari sjeverne Istre: Arheologija Pupićine peći, sv. 1, Monografije i katalozi 14, Arheološki muzej Istre, Pula, 259-399.

Miracle, P. T., Radović, S., Radić, D. (u pripremi), Chapter 9. Vertebrate Remains from Vela Spila: Pleistocene-Holocene Transition, Mesolithic, and Neolithic, in: Miracle, P.T., Radić, D. (eds.), Vela Spila, British Archaeological Reports, International Series, Archaeopress, Oxford.

Mlekuž, D. 2005, The ethnography of the Cyclops: Neolithic pastoralists in the eastern Adriatic, Documenta Praehistorica XXXII, 15-51.

Mlekuž, D. 2006, Meat or milk? Neolithic economies of Caput Adriae, in: Pessina, A. and Visentini, P. (eds.), Preistoria dell'Italia Settentrionale, Studi in ricordo di Bernadino Bagolini, Comune di Udine, Museo Friulano do storia naturale, Udine, 453-458.

Mlekuž, D., Budja, M., Payton, R., Bonsall, C. 2008, 'Mind the Gap': caves, radiocarbon sequences, and the Mesolithic-Neolithic transition in Europe – lessons from the Mala Triglavca rockshelter site, Geoarchaeology 23(3), 398–416.

Modderman, P.J.R. 1986, On the typology of the houseplans and their European setting, in: I. Pavlů, Rulf. J., Zápotocká, M. (eds.), Theses on the Neolithic site of Bylany, Pamatky Archeologicke 77, 383–394.

Modderman, P.J.R. 1988, The Linear Pottery culture: diversity in uniformity, Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek 38, 63–139.

Moore, A., Smith, J., Menđušić, M., Podrug, E. 2007a, Project «Early farming in Dalmatia»: Danilo Bitinj 2004-2005, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XL, 15-24.

Moore, A., Smith, J., Menđušić, M., Zaninović, J., Podrug, E. 2007b, Project «Early farming in Dalmatia»: Pokrovnik 2006, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XL, 25-34.

Morris, I. 1991, The archaeology of ancestors: The Saxe/Goldstein hypothesis revisited, Cambridge Archaeological Journal 1(2), 147–169.

Müller, J. 1991, Die ostadriatische Impresso-Kultur: Zeitliche Gliederung und kulturelle Einbindung, Germania 69(2), 311–358.

Müller, J. 1994, Das ostadriatische Frühneolithikum. Die Impresso-Kultur und die Neolithisierung des Adriaraumes,

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Prähistorische Archäologie in Südosteuropa 9, Wissenschaftsverlag Volker Spiess, Berlin.

Müller, J. 2012, Tells, Fire, and Copper as Social Technologies, in: Hofmann, R., Moetz, F.-K., Müller, J. Tells: Social and Environmental Space, Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th –18th March 2011)" in Kiel, Volume 3, 47-52. Verlag Dr. Rudolf Habelt GmbH, Bonn.

Müller, J., Hofmann, R., Muller-Schessel, N., Rassmann, K. 2011, Zur sozialen Organisation einer spatneolithischen Gesellschaft in Sudoseuropa (5200–4400 v. Chr.), Sozialarchaologischen Perspektiven, 81–106.

Müller, J., Hofmann, R., Muller-Schessel, N., Rassmann, K. 2010, The Socio Political Development of the Late Neolithic Settlement of Okoliste/Bosnia- Hercegowina: Devolution by Transhumance?, Landscapes and Human Development: The Contribution of European Archaeology. Proceedings of the International Workshop „Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes (1st – 4th April 2009, Kiel)" 181–191. Bonn, Rudolf Habelt.

Müller, J., Hofmann, R., Muller-Schessel, N., Rassmann, K. 2013, Neolithische Arbeitsteilung: Spezialisierung in einem Tell um 4900 v. Chr", in: Anders, A.,Kulcsár, G. (eds.), Moments in Time. Papers Presented to Pál Raczky on His 60th BirthdayPrehistoric Studies (Budapest 2013), 407-20.

Mušič, B., Krznarić Škrivanko, M., Medarič, I. 2011, Sopot - Geofizikalna raziskava 2010

Nagy, D., Tömöry, G., Csányi, B., Bogácsi-Szabó, E., Czibula, A., Priskin, K., Bede, O., Bartosiewicz, L., Stephen Downes, C., Raskó, I. 2011, Comparison of Lactase Persistence Polymorphism in Ancient and Present-Day Hungarian Populations, American Journal of Physical Anthropology 145, 262–269.

Narroll, R. 1962, Floor Area and Settlement Population, American Antiquity 27/4, 587–589.

Neugebauer-Maresch, C. 1995, Mittelneolithikum: Die Bemaltkeramik, in: Lenneis, E., Neugebauer-Maresch, C., Ruttkay, E. (eds), Jungsteinzeit im osten Österreichs, St. Pölten-Wien, Niederösterreichisches Presehaus, 57–107.

Neustupný, E. F. 1956, K relativní chronologii volutové keramiky, Archeologické rozhledy 8/3, 386-406.

Neustupný, E. 1968, Absolute chronology of the Neolithic and Eneolithic periods in central and south-eastern Europe, Slovenská archeológia 16, 19–60.

Neustupný, E. (ed.), 2008, Archeologie pravěkých Cech 4. Eneolit (Archaeology of prehistoric Bohemia Vol. 4.: Eneolithic) Prague: Archeologický ústav AV ČR.

Nieuwenhuyse, O. P., Akkermans, P. M. M. G., van der Plicht, J. 2010, Not so coarse, nor always plain – the earliest pottery of Syria, Antiquity 84(323), 71–85.

Nikolić, D. 2005, The development of pottery in the middle Neolithic and chronological systems of the Starčevo culture, Glasnik srpskog arheološkog društva 21, 45-70.

Nikolić, D., Vuković, J. 2008, Od prvih nalaza do metropole kasnog neolita, in: Nikolić, D. (ed.), Vinča – praistorijska metropola. Istraživanja 1908. – 2008., Beograd, 40-85.

Nikolov, V. 1987, Beiträge zu den Beziehungen zwischen Vorderasien und Südosteuropa aufgrund der frühneolithischen bemalten Keramik auf dem Zentral Balkan, Acta praehistorica et archaeologica 19, 7–18.

Nodilo, H. 2010, Donji Slatinik-Praulje, Hrvatski arheološki godišnjak 6/2009, 76-77.

Novembre, J., Stephens, M. 2008, Interpreting principal component analyses of spatial population genetic variation, Nature Genetics 40(5), 646–649.

Novembre, J., Ramachandran, S. 2011, Perspectives on Human Population Structure at the Cusp of the Sequencing Era, Annual Review of Genomics and Human Genetics 12, 245–274.

Novi list. 2012. Arheolozi u Slavoniji pronašli rogove jelena kapitalca stare 6500 godina. http://www.novilist.hr/Kultura/Ostalo/Arheolozi-u-Slavoniji-pronasli-rogove-jelena-kapitalca-stare-6500-godina (1.4.2013.).

Obelić, B., Krznarić Škrivanko, M., Marijan, B., Krajcar Bronić, I. 2004, Radiocarbon dating of Sopot culture sites (Late Neolithic) in eastern Croatia, Radiocarbon 46, 245–58.

O'Connor, T. 2000, The archaeology of animal bones, Sutton Publishing, Stroud.

Okroša Rožić, L. 2007, Brezovljan, Hrvatski arheološki godišnjak 3/2006, 117-118.

Okroša Rožić, L. 2008, Brezovljan, Hrvatski arheološki godišnjak 4/2007, 137-138.

Okroša Rožić, L. 2009, Brezovljani, Hrvatski arheološki godišnjak 5/2008, 183-184.

Okroša Rožić, L. 2010, Brezovljani, Hrvatski arheološki godišnjak 6/2009, 169-171.

Olivieri, A., Pala, M., Gandini, F., Kashani, B. H., Perego, U. A. and 7 authors. 2013, Mitogenomes from Two Uncommon Haplogroups Mark Late Glacial/Postglacial Expansions from the Near East and Neolithic Dispersals within Europe, PLoS One 8(7), e70492.

Oross, K., Bánffy, E. 2009, Three successive waves of Neolithisation: LBK development in Transdanubia, Documenta Praehistorica XXXVI, 175–189.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

O'Rourke, D. H. 2003, Anthropological genetics in the genomic era: A look back and ahead, American Anthropologist 105(1), 101–109.

Orton C., Tyers P., Vince A., 1993, Pottery in archaeology, Cambridge manuals in archaeology, Cambidge University Press.

Orton, D. 2012, Herding, Settlement, and Chronology in the Balkan Neolithic, European Journal of Archaeology 15 (1), 5–40.

O'Shea, J. 1996, Villagers of the Maros. A portrait of an Early Bronze Age society, New York, Kluwer/Plenum Press.

Osztás, A., Zalai-Gaál, I., Bánffy, E. 2012, Alsónyék-Bátaszék: a new chapter in the research of Lengyel culture, Documenta Praehistorica XXXIX, 377–396.

Özdoğan, M. 2007, Von Zentralanatolien nach Europa, in: C. Lichter (ed.), Vor 12.000 Jahren in Anatolien. Die ältesten Monumente der Menschheit, Badisches Landesmuseum Karlsruhe, Stuttgart, 150–160.

Özdoğan, M. 2009, Earliest Use of Pottery in Anatolia, in: D. Gheorghiu (ed.), Early Farmers, Late Foragers, and Ceramic Traditions: On the Beginning of Pottery in the Near East and Europe, Cambridge Scholars Publishing, Newcastle upon Tyne, 22–43.

Özdoğan, M. 2011, Archaeological Evidence on the Westward Expansion of Farming Communities from Eastern Anatolia to the Aegean and the Balkans, Current Anthropology 52(S4), S415–S430.

Pahič, S. 1976, Seliščne najdbe v zahodnih Slovenskih Goricah - Andrenci, Spodnji Duplek, Spodnji Porčič in Vumpah, Poročilo o raziskovanju paleolita, neolita in eneolita v Sloveniji V, Ljubljana, 29-85.

Palavestra, A. 2012, Vasić pre Vinče (1900. – 1908.), Etnoantropološki problemi, n.s, god. 7 sv. 3, 649-679.

Paluch, T. 2012, Catalogue of the Körös Culture Sites in Csongrád County, in: The Köros Culture in Eastern Hungary, BAR International Reports 2334, 297-322.

Panesar, P. S. 2011, Fermented Dairy Products: Starter Cultures and Potential Nutritional Benefits, Food and Nutrition Sciences 2, 47–51.

Pappa, M., Besios, M. 1999, The Makriyalos Project: Rescue Excavations at the Neolithic Site of Makriyalos, Pieria, Northern Greece, in: P. Halstead (ed.), Neolithic Society in Greece, Sheffield: Academic Press, 66–76.

Parker Pearson, M. 1982, Mortuary practices, society and ideology: An ethnoarchaeological study, in: Hodder, I.R. (ed.), Symbolic and structural archaeology, Cambridge: Cambridge University Press, 99–113.

Parker Pearson, M. 1999, The archaeology of death and burial, Stroud, Sutton.

Parkinson, W. 2006, Tribal boundaries: Stylistic variability and social boundary maintenance during the transition to the Copper Age on the Great Hungarian Plain, Journal of Anthropological Archaeology 25, 33–58.

Parkinson, W., Duffy, P.R. 2007, Fortifications and Enclosures in European Prehistory: A Cross-Cultural Perspective, Journal of Archaeological Research 15, 97–141.

Parzinger, H. 1984, Die Stellung der uferrandsiedlungen bei Ljubljana in äneolithischen und frühbronzezeitlichen kultursystem der mittleren Donauländer, Arheološki vestnik 35, Ljubljana, 13-63.

Pásztor, E., Barna, J. P., Roslund, C. 2008, The orientation of rondels of the Neolithic Lengyel culture in central Europe, Antiquity 82, 910–24.

Pavlů, I. 1989, Early Neolithic white painted pottery in SE Europe, in: Bökönyi, S., (ed.), Neolithic of Southeastern Europe and its Neareastern connestions, International conference 1987 Szolnok-Szeged, Varia Archaeologica Hungarica 2, Budapest, 217-222.

Pavúk, J. 1976, Über die Kontakte zwischen Balkan und Mitteleuropa in Neolithikum, Godišnjak Centra za balkanološka ispitivanja Akademije nauka i umjetnosti Bosne i Hercegovine XIII, 33-43.

Pavúk, J. 1980, Ältere Linearkeramik in der Slowakei, Slovenská archeólogia 28, Nitra, 7-87

Pavúk, J. 1991, Lengyel-culture fortified settlements in Slovakia, Antiquity 65, 348–57.

Pavúk, J. 1993, Beitrag zur Definition der Protostarcevo-Kultur, Anatolica 19, 231-242.

Pavúk, J. 1994, Štúrovo: ein Siedlungsplatz der Kultur mit Linearkeramik und der Želiezovce-Gruppe, Nitra: Archäologisches Institut der Slowakischen Akademie der Wisenschaften.

Pavúk, J. 2003, Hausgrundrise der Lengyel-Kultur in der Slowakei, in: Eckert, J., Eisenhauer, in: Zimmermann, A. (ed.), Archaologische Perspektiven. Analysen und interpretationen im Wandel. Festschrift für Jens Lüning zum 65. Geburtstag, 455–69, Rahden, Marie Leidof.

Payne, S. 1973, Kill-off patterns in sheep and goats: The mandibles from Aşvan Kale, Anatolian Studies 23, 281-303.

Perić, S. 1999, Višeslojna neolitska naselja i problem kulturne stratigrafije neolita na teritoriji Srbije, Starinar 49, 11-33.

Perić, S. 2001, Der Kulturelle Charakter und die Chronologie der Starčevo – Elemente in Neolithikum der Westlichen Balkanregionen, Starinar 51, 9-43.

Perlès, C. 2001, The early Neolithic in Greece. The first farming communities in Europe, Cambridge World Archaeology, Cambridge University Press, Cambridge.

Petrasch, J. 1990, Uberlegungen zur Funktion neolitischer Erdwerke anhand mittelneolitischer Grabenanlagen aus Sudostbayern, Jahreschif fur Mitteldeutsche Vorgeschichte 73, 369–387.

Petrasch, J. 2004, Von Menschen und Hunden: Befunde aus Kreisgrabenanlagen der Oberlauterbacher Gruppe und der Lengyel Kultur und deren Interpretationen, in: Hänsel B. (ed.), Zwischen Karpaten und Ägäi - Neolithikum und ältere Bronzezeit. Gedenkschrift für Vera Němejcová Pavúková. Studeníková E., Rahden, Verlag Marie Leidorf, 295–308.

Pétrequin, P., Errera, M.,Casen, S., Gauthier, D., Hovorka, L., Klasen, L., Sheridan, A. 2011, From Mont Viso to Slovakia: the two axeheads of Alpine jade from Golianovo, Acta Archaeologica Academiae Scientiarum Hungaricae 62, 243–268.

Petrović, J. 1987, Zemunica u naselju starčevačke kulture na Golokutu, Rad vojvođanskih muzeja 30, 13–27.

Petru, S., Budja, M. 2003, Review of Slovenian Prehistory, in: Gramenos, D. W. (eds.), Recent research in the Prehistory of the Balkans. Publications of the Archaeological Institute of Northern Greece, Nr- 3, Thessaloniki, 177-204.

Piggott, S. 1965, Ancient Europe from the Beginnings of Agriculture to Classical Antiquity, Edinburgh University Press, Edinburgh.

Piezonka, H. 2012, Stone Age hunter-gatherer ceramics of North-Eastern Europe: new insights into the dispersal of an essential innovation, Documenta Praehistorica XXXIX, 32–51.

Pilaar Birch, S. E. (u pripremi), Neolithic subsistence at Vela Špilja on the island of Lošinj, Croatia, in: Lorentz, K., Goude, G. (ed.), Proceedings of the International Congress on Archaeological Sciences in the Eastern Mediterranean and the Near East, The Cyprus institute.

Pinhasi, R., Thomas, M. G., Hofreiter, M., Mathias, M., Currat, M., Burger J. 2012, The genetic history of Europeans, Trends in Genetics 28(10), 496–505.

Plantinga, T. S., Alonso, S., Izagirre, N., Hervella, M., Fregel, R., van der Meer J. W. M., Netea, M. G., de la Rúa C. 2012, Low prevalence of lactase persistence in Neolithic South-West Europe, European Journal of Human Genetics 20, 778–782.

Plucienik, M. 2008, Hunter-gatherer to farmer?, in: Jones, A. (ed.), Prehistoric Europe: Theory and Practice, Blackwell, Oxford, 16-34.

Podborský, V. 1988, Těšetice-Kyjovice 4: rondel osady lidu s moravskou malovanou kermikou, Brno, Ústav archeologie a muzeologie, Filozofická fakulta Masarykovy univerzity.

Podrug, E. 2010, Čista Mala- Velištak: The first three excavation campaigns at a Hvar culture site, Diadora 24, 7-25.

Popova, T. 2010, Plant Environment of Man between 6000 and 2000 B.C. in Bulgaria, Oxford, British Archaeological Reports, International Series 2064.

Porčić, M. 2010, Arheologija vinčanskih kuća: teorijsko-metodološki okviri proučavanja demografije i društvene strukture (neobjavljena doktorska disertacija, Sveučilište u Beogradu / unpublished doctoral thesis, University of Belgrade), Beograd, 2010.

Porčić, M. 2011, An exercise in archaeological demography: estimating the population size of Late Neolithic settlements in the Central Balkans, Documenta Praehistorica XXXVIII, 323–332.

Porčić, M. 2011, Obrasci bračnog prebivanja kasnoneolitskih zajednica vinčanske kulture, Etnoantropološki problemi 6 (2), 497–512.

Porčić, M., Stefanović, S. 2009, Physical activity and social status in Early Bronze Age society:The Mokrin necropolis, Journal of Anthropological Archaeology 28, 259–273.

Preuß, J. (ed.), 1998, Das Neolithikum in Mitteleuropa, Beier &Beran, Archäologische Fachliteratur, Weissbach.

Pyzel, J. 2013, Change and continuity in the Danubian longhouses of lowland Poland, in: Hofmann, D., Smyth, J. (eds), Tracking the Neolithic house in Europe: sedentism, architecture and practice, New York, Springer, 183–196.

Quinn, P., Day, P., Kilikoglou, V., Faber, E., Katsarou-Tzeveleki, S., Sampson, A. 2010, Keeping an eye on your pots: the provenance of Neolithic ceramics from the Cave of the Cyclops, Youra, Greece, Journal of Archaeological Science 37(2010), 1042–1052.

Raczky, P. 1974, A Lengeli kultúra legkésőbi Szakaszának leletei a Dunátlúlon. (Funde der spätesten Phase der Lengyel-kultur in Westungarn), Archaeologiai Értesitő 101/2, 185-210.

Raczky, P. 2002, Evidence of contacts between the Lengyel and the Tisza-Herpály cultures at the Late Neolithic site of Polgár-Csőszhalom (relationship between Central European and Balkan ritual practice and sacral thought in the Upper Tisza region), Budapest Régiségei 36, 79–92.

Raczky, P. 2006, House Structure under Change on the Great Hungarian Plain in Earlier Phases of the Neolithic, in: Tasić, N., Grozdanov, C. (eds.), Homage to Milutin Garašanin, Serbian Academy of Sciences and Arts; Macedonian Academy of Sciences and Arts, Belgrade, 379-398.

Raczky, P., Anders, A. 2006, Social Dimensions of the Late Neolithic settlement of Polgár-Csőszhalom (eastern Hungary), Acta Archaeologica Academiae Scientiarum Hungaricae 57, 17–33.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Raczky, P., Anders, A. 2010, Activity loci and data for spatial division at a Late Neolithic site-complex (Polgár-Csőszhalom: a case study), in:. Hansen, S. (ed.), Leben auf dem Tell als soziale Praxis. Beiträge des Internationalen Symposiums in Berlin vom 26.–27. Februar 2007, Kolloquien zur Vor- und Frühgeschichte 14. Bonn, Habelt 2010, 143–163.

Radivojević, M., Rehren, Th., Pernicka, E., Šljivar, D., Brauns, M., Borić, D. 2010, On the Origins of Extractive Metallurgy: New Evidence from Europe, Journal of Archaeological Science 37, 2775-2787.

Radovanović, I. 1996, The Iron Gates Mesolithic, Ann Arbor, MI: International Monographs in Prehistory, Archaeological Series 11.

Radovanović, I., Voytek, B. 1997, Hunters, fishers or farmers: Sedentism, subsistence and social complexity in the Djerdap Mesolithic, Analecta Praehistorica Leidensia 29, 19–31.

Radović, S. 2009, Analiza ostataka faune sisavaca s nalazišta Crno vrilo, in: Marijanović, B. (ed.), Crno vrilo 2, Sveučilište u Zadru, Zadar, 47-60.

Radović, S. 2011, Ekonomija prvih stočara na istočnom Jadranu: značenje lova i stočarstva u prehrani neolitičkih ljudi, neobjavljena doktorska disertacija, Sveučilište u Zagrebu, Zagreb.

Radović, S., Forenbaher, S., Brajković, D., Mauch Lenardić, J., Malez, V., Miracle, P. T. 2008, Use of caves in the mountains: a view from the sheepfold, Studies of the Institute of Geography UJK 17, 33-50.

Radović, S., Spry-Marqués, V. P., Oros Sršen, A., Brajković, D., Radić, D., Miracle, P. T. 2013, Vertebrate Remains from the Pleistocene-Holocene transition to the Bronze Age at Vela Cave, Preliminary Results. 3. znanstveni INQUA skup „Geologija kvartara u Hrvatskoj“ s međunarodnim sudjelovanjem / 3rd scientific INQUA meeting „Quaternary geology in Croatia“ with international participation, Zagreb, Hrvatska, 21.-23. ožujka. Knjiga sažetaka / Book of Abstracts, 48-49, Zagreb.

Rainsford, C. 2010, Fishing Practices and Transitions in the Mesolithic and Neolithic of Adriatic Croatia: Insights from the fish remains from the site of Vela Spila, Korčula, Unpublished Master Thesis.

Rajković, D. 2011, Kamene glačane alatke s nalazišta Čepin-Ovčara/Tursko groblje, Osječki zbornik XXX, 14-57.

Rataj, J. 1956, Jáma s volutovou keramikou v Ratboři na Kolínsku, Archeologické rozhledy 8/3, 321-325.

Rapp, G. 2009, Archaeomineralogy, Springerlink.

Reed, K., (in prep), Over a thousand years of farming at Sopot (Vinkovci): the archaeobotanical remains, Vjesnik Arheološkog Muzeja u Zagrebu.

Reed, K. 2006, Early Farming in Dalmatia: Preliminary Archaeobotanical Report on the Middle Neolithic site of Danilo, Unpublished MSc dissertation, Institute of Archaeology, UCL.

Reed, K., 2012, Farmers in Transition: the archaeobotanical analysis of the Carpathian Basin from the Late Neolithic to the Late Bronze Age (5000-900 BC), Unpublished PhD thesis, School of Archaeology and Ancient History, University of Leicester.

Reed, K., Colledge, S., Moore, A.M.T., (in prep), The Early Farming in Dalmatia project: archaeobotanical investigations at Danilo Bitinj and Pokrovnik, Vegetation History and Archaeobotany.

Regenye, J. 2002, Transdanubian Linear Pottery Culture in Balatonalmádi – Vörösberény, Antaeus 25, 221-236.

Regenye, J. 2007, A Starčevo.kultúra települése a Tihanyi-félszigeten, Ősrégészeti levelek 8-9 (2006-2007), 5-15.

Reingruber, A. 2011a, Early Neolithic settlement patterns and exchange networks in the Aegean, Documenta Praehistorica XXXVIII, 291–305.

Reingruber, A. 2011b, Rethinking the ‘Preceramic Period’ in Greece 50 Years after its Definition, in: R. Krauß (ed.), Beginnings – New Research in the Appearance of the Neolithic between Northwest Anatolia and the Carpathian Basin, Papers of the International Workshop 8th–9th April 2009, Istanbul. orschungscluster 1. Von der Sesshaftigkeit zur komplexen Gesellschaft: Siedlung, Wirtschaft, Umwelt, Verlag Marie Leidorf GmbH. Rahden/Westf, 127–137.

Reingruber, A., Nahsen, S., Toderaş, M. 2011, The Fast Formation of a Tell: Pietrele Near the Lower Danube, in: Boyadziev, Y., Terzijska-Ignatova, S. (eds.), The Golden Fifth Millenium – Thrace and Its Neighbour Areas in the Chalcolithic, Proceedings of the International Symposium in Pazardzhik, Yundola, 26.-30.10.2009., 117-130.

Reitz, E. J., Wing, E. S. 1999, Zooarchaeology, Cambridge University Press, Cambridge.

Renfrew, C. 2000, Towards a Population Prehistory of Europe, in: C. Renfrew, K. Boyle (eds.), Archaeogenetics: DNA and the Population Prehistory of Europe, McDonald Institute for Archaeology, Cambridge, 3–12.

Renfrew, C., Forster, P.,Hurles, M. 2000, The past within us, Nature Genetics 26, 253–254.

Rice, P. M. 1987, Pottery Analysis: A source book, The University of Chicago Press.

Rice, P. M. 1999, On the origins of pottery, Journal of Archaeological Method and Theory 6 (1), 1-54.

Richards, M. 2003, The Neolithic invasion of Europe, Annual Review of Anthropology 32, 135–162.

Rodden, R. J. 1965, An Early Neolithic village in Greece, Scientific American 212(4), 82–92.

Rosenberg, M. 2007, Hallan Cemi, in: Die ältesten Monumente der Menschheit, Karlsruhe, 54 - 56.

Rosenstock, E. 2005, Höyük, Toumba and Mogila: a settlement form in Anatolia and the Balkans and its ecological determination 6500–5500 BC, in: Lichter, C. (ed.), How did farming reach Europe? BYZAS 2, 221–237.

Rosenstock, E. 2012, Environmental Factors in Tell Formation: An Archaeometric Attempt, in: R. Hofmann, F.-K. Moetz, Müller, J. Tells: Social and Environmental Space, Proceedings of the International Workshop "Socio-Environmental Dynamics over the Last 12,000 Years: The Creation of Landscapes II (14th –18th March 2011) in Kiel, Volume 3, 2012, 33-46. Verlag Dr. Rudolf Habelt GmbH, Bonn.

Rotsi, S. and 19 authors 2007, A counter-clockwise northern route of the Y-chromosome haplogroup N from Southeast Asia towards Europe, European Journal of Human Genetics 15, 204–211.

Rowley-Conwy, P., Gourichon, L., Helmer, D., Vigne, J.-D. 2013, Early Domestic Animals in Italy, Istria, the Tyrrhenian Islands and Southern France, in: S. Colledge, J. Conolly, K. Dobney, K. Manning, S. Shennan (eds.), The Origins and Spread Of Domestic Animals in Southwest Asia and Europe, Left Coast Press, Inc. Walnut Creek, 161–194.

Russel, N. 1993, Hunting, herding and feasting: Human use of animals in Neolithic Southeast Europe, unpublished doctoral dissertation, University of California, Berkeley.

Ruttkay, E. 1985, Das Neolithikum in Niederösterreich, Forschungsberichte zur Ur- und Frügeschichte Österreich 12, Wien.

Ruttkay, E. 1992, Beiträge zur Idolplastik der Lengyel-Kultur, in: A. Lippert, K. Spindler (eds), Festschrift zum 50-jährigen Bestehen des Institutes für und Frühgeschichte der Leopold Franzens Universität Innsbruck, 511–522. Bonn, Rudolf Habelt.

Ryder, M. L. 1992, Wool fibres in cloth remains throw light on fleece evolution, Circaea 9, 7-9.

Rye, O. S., 1988, Pottery Technology: Principles and Reconstruction, Manuals on Archeology 4, Washington, Taraxacum.

Sagadin, M. 2005, Nekatere neolitske najdbe z vzhodne Gorenjske, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 29-35.

Salque, M., Bogucki, P. I., Pyzel J., Sobkowiak-Tabaka I., Grygiel, R., Szmyt, M., Evershed, R. P. 2013, Earliest evidence for cheese making in the sixth millennium BC in northern Europe, Nature 493(7433), 522–525.

Sampietro, M. L., Lao, O., Caramelli, D., Lari, M., Pou, R., Martí, M., Bertranpetit, J., Lalueza-Fox C. 2007, Palaeogenetic evidence supports a dual model of Neolith spreading into Europe, Proceedings of the Royal Society, Biology 274, 2161–2167.

Saxe, A.A. 1970, Social Dimensions of Mortuary Practices, Ph.D. Thesis, University of Michigan.

Scarre, C. (ed.), 2005, The Human Past: World Prehistory & the Development of Human Societies. Thames & Hudson. London.

Schachermeyer, F. 1976, Die Ägäische Frühzeit I. Die Vormykenischen Periode des griechischen festlandes und der Kykladen, Österreichiche Akademia der Wissenschaften, Philosophisch-historische Klasse, Sitzungsberichte 303, Band, Wien.

Schier, W. 1996, The Relative and Absolute Chronology of Vinča: New Evidence from the Type Site, in: F. Draşovean (ed.), The Vinča Culture, its Role and Cultural Connections, Timisoara, The Museum of Banat, 141–162.

Schier, W. 2005, Die Maske von Uivar, in: Masken, Menschen, Rituale, Schier, W. (ed.), Würtzburg.

Schier, W. 2008, Uivar: a late Neolithic–early Eneolithic fortified tell site in western Romania, in: Bailey, D., Whittle, A., Hofmann, D. Living Well Together? Settlement and materiality in the Neolithic of South–East and Central Europe, 54-67, Oxbow books, Oxford.

Schier, W. 2009, Extensive slash-and-burn cultivation and the spread of the Neolithic subsistence strategy in Central Europe and South Scandinavia at the end of the fifth millennium B.C., Prahistorische Zeitschrift 84(1), 15-43.

Schier, W. 2010, Ein Ritual vor 6800 Jahren: Die Maske von Uivar (Rumänien) und ihr Kontext, in: Meller, H. (ed.), Masken der Vorzeit, Proceedings of an International Conference 20.-22. Nov. 2009, Halle, 85 – 95.

Schier, W., Draşovean, F. 2004, Vorbericht uber die rumanisch–deutschen Prospektionen und Ausgrabungen in der befestigten Tellsiedlung von Uivar, jud. Timis, Rumanien (1998–2002), Praehistorische Zeitschrift 79 (2), 145–230.

Schiffer, M. B., Skibo, J. M. 1987, Theory and experiment in the study of technological change, Current Anthropology 28, 595-622.

Schmandt-Besserat, D. 1977, The Earliest Uses of Clay in Syria, Expedition, Vol. 19, No. 13, 38-42.

Schmidt, R. R. 1945, Die Burg Vučedol, Zagreb.

Schubert, H. 1999, Die bemalte Keramik des Frühneolithikums in Südosteuropa, Italien und Westanatolien, Internationale Archäologie 47, Radhen, Marie Leidorf.

Schubert, H. 2005, Everyone's black box – Where does the European ornamentation come from?, in: C. Lichter (ed.), How Did Farming Reach Europe? Anatolian-European Relations from the Second Half of the 7th through the First Half of the 6th Millennium cal BC, Proceedings of the International Workshop Istanbul, 20–22 May 2004. BYZAS 2, Veröffentlichungen des Deutschen Archäologischen Instituts Istanbul, Istanbul, Yayinlari, 239–254.

Schwartz, C. 1988, The Neolithic Animal Husbandry of Smilčić and Nin, in: Chapman, J., Bintliff, J., Gaffney, V., Slapšak, B. (eds.), Recent Developments in Yugoslav Archaeology, British Archaeological Reports, International Series, Archaeopress, Oxford, 45-75.

Schwartz, C. 1996, The faunal remains, in: Chapman, J., Shiel, R., Batović, Š. (eds..), The Changing Face of Dalmatia, Leicester University Press, The Society of Antiquaries of London, 186-187.

Sekelj-Ivančan, T., Balen, J. 2006, Prapovijesno naselje Virovitica – Brekinja, Annales Instituti Archaeologici 2, 67-72.

Séfériadès, M.L. 2010, Spondylus and long-distance trade in prehistoric Europe, in: Anthony, D.W., Chi, J.Y. (eds), The lost world of Old Europe: the Danube valley, 5000–3500 BC, 178–90, New York/Princeton, Institute for the Study of the Old World/Princeton University Press.

Seremetakis, N. C. 1991, The Last Word: Women, Death and Divination in Inner Mani, Chicago and London, The University of Chicago Press.

Shanks, M., Tilley, C. 1982, Ideology, symbolic power and ritual communication: a reinterpretation of Neolithic mortuary practices, in: Hodder, I. (ed.), Symbolic and structural archaeology, Cambridge. Cambridge University Press, 129–154.

Sherratt, A. 1980, Water, soil and seasonality in early cereal cultivation. World Archaeology 2, 313-330.

Sherratt, A. G. 1981, Plough and pastoralism: aspects of the secondary products revolution, in: Hodder, I., Isac, G., Hammond, N. (eds), Patterns of the past, Cambridge, Cambridge University Press, 261–305.

Sinopoli, C. M. 1991, Approaches to Archaeological Ceramics, Plenum Press, New York & London.

Skelac, G. 1997, Prapovijesno nalazište Slavča, Opuscula archaeologica 21, 217-233.

Soares, P., Achilli, A., Semino, O., Davies, W., Macaulay, V., Bandelt, H.-J., Torroni, A., Richards M. B. 2010, The Archaeogenetics of Europe, Current Biology 20(4), R174–R183.

Sofaer, J. 2006, The Material Body, Cambridge, Cambridge University Press.

Sofaer Derevenski, J. 1997a, Engendering children, engendering archaeology, in Moore, J., Scott, E. (eds.), Invisible People and Processes. Writing Gender and Childhood into European Archaeology, London, Leicester University Press, 192–202.

Sofaer Derevenski, J. 1997b, Age and gender at the site of Tiszapolgár-Basatanya, Hungary, Antiquity 71, 875–889.

Sokač-Štimac, D. 1977a, Zarilac - Grabaračke livade, Sl. Požega, Arheološki pregled 19, 38-39.

Sokač-Štimac, D. 1977b, Noviji arheološki nalazi u Požeškoj kotlini, in: Strbašić, M. (ed.), Požega 1227.-1977., 95-98, Požega.

Sokač-Štimac, D. 1984, Arheološka iskapanja u Požeškoj kotlini, in: Čalić, D., Berber, Đ. (ed.), Četvrti znanstveni sabor Slavonije i Baranje, Osijek, Jugoslavenska akademija znanosti i umjetnosti Zagreb, Zavod za znanstveni rad Osijek, 116-137.

Soudský, B. 1955, Výzkum neolitického sidliště v Postoloprtech, Arheologické rozhledy 7, 5–11.

Spasić, M. 2012, Cattle to settle – bull to rule: on bovine iconography among Late Neolithic Vinča culture communities, Documenta Praehistorica XXXIX, Ljubljana, 295–308.

Spataro, M. 2009, Cultural Diversities: The Early Neolithic in the Adriatic Region and Central Balkans. A Pottery Perspective, in: D. Gheorghiu (ed.), Early Farmers, Late Foragers,and Ceramic Traditions: On the Beginning of Pottery in the Near East and Europe, Cambridge Scholars Publishing, Cambridge, 63–86.

Spataro, M. 2011, A comparison of chemical and petrographic analyses of Neolithic pottery from South-eastern Europe, Journal of Archaeological Science 38, 255–269.

Sraka, M. 2012, 14C Calendar chronologies and cultural sequences in 5th millennium BC in Slovenia and neighbouring regions, Documenta Praehistorica XXXIX, Ljubljana, 349-376.

Srejović, D. 1969, Lepenski vir, Beograd.

Srejović, D. 1971, Die Lepenski Vir-Kultur und der Beginn der Jungsteinzeit an der mittleren Donau. Die Anfänge des Neolithikum von Orient bis Nordeuropa II, Fundamenta A-3, Köln.

Srejović, D. 1994, Kulture mlađeg kamenog doba na tlu Srbije, in: Istorija srpskog naroda I, Beograd.

Stadler, P., Ruttkay, E. 2007, Absolute Chronology of Moravian-Eastern-Austrian Group (MOG) of Painted Pottery (Lengyel-Culture) based on new Radiocarbon Dates from Austria, in: Kozłowski, J. K., Raczky, P. (eds.), The Lengyel, Polgár and related Cultures in the Middle/Late Neolithic in Central Europe. The Polish Academy of Arts and Sciences, Kraków, Eötvös Loránd University, Institute of Archaeological Sciences, Budapest, Krakow, 117-146.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE,
DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN
THE SAVA, DRAVA AND DANUBE

Stadler, P., Kotova, N. 2010, Early Neolithics Settlement From Brunn Wolfholz in Lower Austria and the problem of the origin of (Western) Lbk, in: Kozłowski J., Raczky P. (eds.), Neolithization of the Carpathian Basin: northernmost distribution of the Starčevo/Körös Culture, Kraków, 307-330.

Stalio, B. 1968, Naselje i stan neolitskog perioda, in: Trifunović, L. (ed.), Neolit centralnog Balkana, Narodni muzej Beograd, 77-106.

Stalio, B. 1973, Četvrti nalaz bakarnog i kamenog oruđa sa Pločnika kod Prokuplja, Zbornik Narodnog muzeja, Vol. VII., 157 – 162.

Stanković, S. 1992, Kultna mesta i predmeti u starijem neolitu centralnog Balkana, neobjavljena doktorska disertacija, Filozofski fakultet u Beogradu.

Stevanović, M. 1997, The age of clay: the social dynamics of house destruction, Journal of Anthropological Archaeology 16(4), 334-395.

Stefanović, S. 2008, Late Neolithic Boys at the Gomolava Cemetery (Serbia), in: Bacvarov, K. (ed.), Babies Reborn: Infant/Child Burials in Pre– and Protohistory, Proceedings of the XV World Congress of the International Union for Prehistoric and Protohistoric Sciences, BAR IS 1832, Archaeopress, Oxford, 95–99.

Stefanović S., Borić, D. 2008, New-born infant burials underneath house floors at Lepenski Vir: in pursuit of contextual meanings, in: C. Bonsall, V. Boroneant, I. Radovanović (eds.), The Iron Gates in Prehistory. New perspectives, BAR IS 1893, Archaeopress, Oxford, 131–170.

Stojić, M., Cerović, M. 2011, Šabac. Kulturna stratigrafija praistorijskih lokaliteta u Podrinju, Arheološka građa Srbije, Beograd i Šabac, Arheološki institut i Narodni muzej.

Stratton, S., Borić, D. 2012, Gendered bodies and objects in a mortuary domain: Comparative analysis of Durankulak cemetery, in: Kogălniceanu, R., Curcă, R.-G., Gligor, M., Stratton, S. (eds.), Homines, Funera, Astra: Proceedings of the International Symposium on Funerary Anthropology, BAR Int. Ser. 2410, 73–81, Oxford, Archaeopress.

Sziklósi, Zs. 2004, Prestige goods in the Neolithic of the Carpathian Basin: Material manifestations of social differentiation, Acta Archaeologica Academiae Scientiarum Hungaricae 55, 1–62.

Sziklósi, Zs. 2007, Age and gender differences in late Neolithic mortuary practices: a case study from eastern Hungary, in: Kozłowski, J.K., Raczky, P. (eds), The Lengyel, Polgár and related cultures in the Middle/Late Neolithic in central Europe, Kraków, Polska Akademia Umiejętności, 185–198.

Sziklósi, Zs. 2010, A társadalmi egyenlőtlenség nyomai a késő neolitikumban a Kárpát-medence keleti felén (Traces of social inequality during the Late Neolithic in the Eastern Carpathian Basin), Unpublished PhD Dissertation, Budapest, Eötvös Loránd University.

Sziklósi, Zs. 2013, Traces of Social Inequality and Ritual in the Late Neolithic of the Great Hungarian Plain, in: Anders, A., Kulcsar, B. (eds.), Moments in Time, 2013, Budapest, Eotvos Lorand University, 421-436.

Šavel, I. 1992, Bukovnica - rezultati terenskih raziskav v letih 1987 – 1988, Poročilo o raziskovanju paleolitika, neolitika in eneolitika v Sloveniji X, Ljubljana, 57-85.

Šavel, I. 1994, Prazgodovinske naselbine v Pomurju, Murska Sobota.

Šavel, I. 2006, Prekmurje v mlajši kameni dobi, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 89-94.

Šimić, J. 1995, Umjetnost pretpovijesti istočne Slavonije i Baranje, Osijek, Muzej Slavonije.

Šimić, J. 1999, Osijek-Filipovica (Hermanov vinograd), zaštitno iskopavanje neolitičkog naselja, Obavijesti Hrvatskog arheološkog društva 1/1999, 30-33.

Šimić, J. 2004, Kneževi Vinogradi - Osnovna škola. Zaštitno istraživanje neolitičkog lokaliteta. Obavijesti Hrvatskog arheološkog društva 2/2004, 74-79.

Šimić, J. 2005, Čepin-Ovčara/Tursko groblje, Hrvatski arheološki godišnjak 1/2004, 7-8.

Šimić, J. 2006a, Čepin-Ovčara/Tursko groblje, Hrvatski arheološki godišnjak 2/2005, 9-10.

Šimić, J. 2006b, Sopotska nalazišta na osječkom području, in Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 39-42.

Šimić, J. 2007a, Belišće-Staro Valpovo, Hrvatski arheološki godišnjak 3/2006, 9-11.

Šimić, J. 2007b, Čepin-Ovčara/Tursko groblje, Hrvatski arheološki godišnjak 3/2006, 13-14.

Šimić J. 2008a, Hermanov vinograd. Arheološko nalazište mlađeg kamenog doba u Osijeku, Osijek, Arheološki muzej Osijek.

Šimić, J. 2008b, Osijek-Filipovica (Hermanov vinograd) Hrvatski arheološki godišnjak 4/2007, 19-20.

Šimić, J. 2012, Šetnje slavonskom i baranjskom prapoviješću, Sveučilište Josipa Juraja Štrosmajera u Osijeku, Osijek.

Šiška, S. 1989, Kultúra s východnou lineárnou keramikou na Slovensku, Slovenská Akadémia Vied, Bratislava.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE,
DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN
THE SAVA, DRAVA AND DANUBE

Šljivar, D. 2006, The earliest copper metallurgy in the Balkans, Metalurgija-Journal of Metallurgy 12, 93-104.

Šošić Klindžić, R. 2010, Proizvodnja cijepanih kamenih artefakata ranih poljodjelskih zajednica na prostoru istočne Hrvatske, neobjavljena doktorska disertacija, Filozofski fakultet u Zagrebu.

Šošić, R., Karavanić, I. 2004, Cijepani litički materijal s prapovijesnog nalazišta Slavča, Nova Gradiška, Vjesnik Arheološkog muzeja u Zagrebu, 3.s., XXXVII, 17-41.

Šošić Klindžić, R., Radović, S., Težak-Gregl, T., Ahern, J., Šlaus, M., Vukosavljević, N., Karavanić, I. (u pripremi), Stone Age levels of prehistoric site Cave Zemunica, Bisko (Croatia). Eurasian Prehistory, Krakow – Harvard.

Tainter, J.A. 1978, Mortuary Practices and the Study of Prehistoric Social Systems, in: Schiffer, M. (ed.), Advances in Archaeological Method and Theory vol. 1. New York, Academic Press, 105–141.

Tasić, N.N. 1997, Hronologija starčevačke kulture, neobjavljena doktorska disertacija, Univerzitet u Beogradu, Beograd.

Tasić, N.N. 2000, Salt use in the Early and Middle Neolithic of the Balkan Peninsula, in: Nikolova, L (ed.), Technology, style and society: Contributions to the innovations between the Alps and the Black Sea in prehistory (BAR International Series, 854). Oxford 2000, 35-40.

Tasić, N.N. 2007, Neolit u senci - još jedan osvrt na starčevačka naselja u Bosni, Godišnjak 36, Centar za balkanološka ispitivanja Bosne i Hercegovine, 5-16.

Tasić, N. 2008, Nemi svedoci jednog vremena, in: Nikolić, D. (ed.), Vinča – praistorijska metropola, Istraživanja 1908. – 2008, 140 – 163, Beograd.

Težak-Gregl, T. 1991, Naselje korenovske kulture u Kaniškoj Ivi, Opuscula archaeologica 15, Zagreb, 1-23.

Težak Gregl, T. 1993a, Kultura linearnotrakaste keramike u središnjoj Hrvatskoj, Zagreb, Disertacije i monografije 2.

Težak-Gregl, T. 1993b, Prapovijesno nalazište Ozalj-Stari grad, Opuscula archaeologica 17, 165-183.

Težak-Gregl, T. 1995, Prilog poznavanju neolitičkih naselja i naseobinskih objekata u središnjoj Hrvatskoj, Opuscula archaeologica 19, 11-15.

Težak-Gregl, T. 1998, Eneolitik, in: Dimitrijević S., Težak-Gregl T., Majnarić-Pandžić N. Prapovijest, Zagreb, Naprijed, 111–150.

Težak-Gregl, T. 2001a, Glačane kamene rukotvorine neolitičkog i eneolitičkog razdoblja u Hrvatskoj, Opuscula archaeologica 25, 7-27.

Težak-Gregl, T. 2001b, Veze između kontinentalne i primorske Hrvatske tijekom neo/eneolitika, Opuscula archaeologica 25, 27-38.

Težak-Gregl, T. 2001c, The Lengyel culture in Croatia, in: Regenye, J. (ed.), Sites and stones: Lengyel Culture in Western Hungary and beyond. A review of current Research. Megyei Múzeumi Igazga Tóság, Veszprém, 27-35.

Težak-Gregl, T. 2003, Prilog poznavanju obrednih predmeta u neolitiku sjeverne Hrvatske, Opuscula archaeologica 27, 43–48.

Težak-Gregl, T. 2005a, Najstariji tragovi naseljavanja na moslavačkom području, Zbornik Moslavine VII-VIII, 2004-2005, 13-26.

Težak-Gregl, T 2005b, Ozalj-Stari grad, neolitička naseobina, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 155-162.

Težak-Gregl, T., Burić, M. 2011, Kapelica-Solarevac, nalazište starčevačke i korenovske kulture, in: Dizdar, M. (ed.), Panonski prapovijesni osviti, Zbornik radova posvećenih Korneliji Minichreiter uz 65. obljetnicu života, Institut za arheologiju, Zagreb, 191-209.

Taniguchi, Y. 2009, Beginning of pottery technology in Japan: the dating and function of incipient Jomon Pottery, in: International Symposium on the Emergence of Pottery in West Asia. The Search for the Origin of Pyrotechnology, Presentattion Summaries, Department of Archaeology University of Tsukuba, Tsukuba, 38–43.

Theocharis, D. 1967, I augi tis Thessalikis proistorias, Volos.(in Greek)

Theocharis, R. D. 1973, Neolithic Greece, National Bank of Greece, Athens.

Thieme, H. 1997, Lower Palaeolithic hunting spears from Germany, Nature 398, 807-810.

Thissen, L. 2000, Early Village Communities in Anatolia and the Balkans, 6500-5000 calBC, Studies in chronology and culture contact, Unpublished PhD Thessis, Universitet Leiden, Leiden.

Thissen, L. 2005a, Coming to grips with the Aegean in Prehistory: an outline of the temporal framework 10,000–5500 calBC, in: C. Lichter (ed.), How Did Farming Reach Europe? Anatolian-European Relations from the Second Half of the 7th through the First Half of the 6th Millennium calBC (Byzas 2), Yayinlari, Istanbul, 29–40.

Thissen, L. 2005b, The Role of Pottery in agropastoralist communities in early Neolithic southern Romania, in: Bailey, D.W., Whittle, A., Cummings, V. (eds.), (Un)settling the Neolithic, Oxford, Oxbow Books, 71-78.

Thissen, L. 2009, First ceramic assemblages in the Danube catchment, SE Europe – a synthesis of the radiocarbon evidence, Buletinul muzeului Judetean Teleorman, Seria Arheologie 1, 9–30.

Thissen, L., Özba, H., Türkekul Bıyık, A., Gerritsen, F., Özbal R. 2010, The land of milk? Approaching dietary preferences of Late Neolithic communities in NW Anatolia, Leiden Journal of Pottery Studies 26, 157–172.

Thomas, M. G., Kivisild, T., Chikhi, L., Burger J. 2013, Europe and western Asia: genetics and population history, in: I. Ness, P. Bellwood (eds.), The Encyclopedia of Global Human Migration, Volume 1. Prehistory, Blackwell Publishing Ltd./ John Wiley and Sons Ltd, Chicester, 146–156.

Tichý, R. 1960, Nejstarší Volutové Keramice na Moravě, Památky Archaeologické 51, 415-441.

Tiefengraber, G. 2006, Zum Forschungsstand des Neolithikums in der Steiermark, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 81-87.

Tishkoff S. A. and 18 authors. 2007, Convergent adaptation of human lactase persistence in Africa and Europe, Nature Genetics 39, 31–40.

Tomanič-Jevremov, M., Tomaž, A., Kavur, B. 2006, Neolitske in bakrenodobne najdbe s Ptujskega gradu, in: Tomaž, A. (ed.), Od Sopota do Lengyela: prispevki o kamenodobnih in bakrenodobnih kulturah med Savo in Donavo, Annales Mediterranea, Koper, 175-194.

Todorova, H., Vajsov, I. 1993, Novo-kamennata epoha v Blgarija, Izdatelstvo Nauka i Izkustvo, Sofija.

Todorović, J. 1968, Dobanovci – Ciglana, Zemuničko naselje starčevačke kulture, Arheološki pregled 10, 9–11.

Tomkins, P., Day, P. M., Kilikoglou, V. 2004, Knossos and the early Neolithic landscape of the Herakleion Basin, in: G. Cadogan, E. Hatzaki, A. Vasilakis (eds.), Knossos: Palace, City, State, Proceedings of the Conference in Herakleion organised by the British School at Athens and the 23rd Ephoreia of Prehistoric and Classical Antiquities of Herakleion, in November 2000, for the Centenary of Sir Arthur Evans's Excavations at Knossos, British School at Athens Studies 12, British School at Athens, London, 51–59.

Tomaž, A. 2005, Čatež-Sredno polje. Analiza neolitske keramike iz objektov 055 in 093, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 113-128.

Tomaž, A. 2010, Neolitska keramika iz najdišča Čatež-Sredno polje, prispevek k poznavanju neolitskega obdobja v osrednji Sloveniji, Doktorska disertacija, Koper.

Tomaž, A. 2011, The Neolithic in continental Slovenia according to the radiocarbon chronology, where can it be placed? Gortania, Geologia, paleontologia, paletnologia, vol. 32, 71-86.

Tomaž, A., Velušček, A. 2005, Resnikov prekop na Ljubljanskem barju 1962 in 2002, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 65-79.

Tompa, F. v. 1940, Neolitische Kulturen in der Draugegend, Vjesnik Hrvatskog arheološkog društva, n.s. sveske XVIII, XIX, XX, XXI (1937-1940), 7-9.

Torrence, R. 1986, Production and Exchange of Stone Tools, Prehistoric Obsidian in the Aegean, Cambridge University Press, Cambridge.

Torroni, A., Achilli, A., Macaulay, V., Richards, M., Bandelt, H. J. 2006, Harvesting the fruit of the human mtDNA tree, Trends in Genetics 22, 339–345.

Trampota, F. 2012, The distribution of artefacts between south Moravia (CZ) and other regions during the Lengyel period, in: Gleser, R., Becker, V. (eds), Mitteleuropa im 5. Jahrtausend vor Christus: Beiträge zur Internationalen Konferenz in Münster, Berlin, Lit-Verlag, 445–458.

Trbojević Vukičević, T., Babić, K. 1999, Analiza animalnih ostataka iskopanih godine 1997. iz arheološkog iskopišta lokacije Ciglana-Slavonski brod, Obavijesti hrvatskog arheološkog društva 3/1999, 63-70.

Trbojević Vukičević, T., Babić, K. 2007, Prehrana stanovnika naselja, in: K. Minichreiter, Slavonski Brod, Galovo, deset godina arheoloških istraživanja, Institut za arheologiju, Zagreb, 188-189.

Trbuhović, U., Vasiljević, M. 1983, Najstarije zemljoradničke kulture u Podrinju, Narodni muzej, Šabac.

Tringham, R. 1971, Hunters, fishers and farmers of eastern Europe, 6000–3000 BC, London, Hutchinson.

Tripković, B. 2001, Uloga opsidijana u neolitu. Utilitarni predmeti ili sredstvo prestiža?, Glasnik srpskog arheološkog društva 17, 21-42.

Tripković, B. 2007, Domaćinstvo i prostor u kasnom neolitu: vinčansko naselje na Banjici, Beograd, Srpsko arheološko društvo.

Tripković, B. 2009, Kontinuiteti kuća i domaćinstava na središnjem Balkanu od 5300. do 4600. g. pr. n. e., Opuscula archaeologica 33, 7-28.

Tripković, B. 2010, Food Storage and Symbolism in the Central Balkans (Vinča Period), Documenta Praehistorica XXXVIII, 159-172.

Tripković, B. 2013, Kućne i naseobinske istorije u kasnom neolitu centralnog Balkana, Beograd, Filozofski fakultet.

Tripković, B., Milić, M. 2009, The Origin and Exchange of Obsidian from Vinča-Belo Brdo, Starinar 58, 71–86.

Tsetlin, Y. B. 2008, The Center of the Russian Plain inthe Neolithic Age, Russian Academy of Sciences, Institut of Archaeology, Tula.

Turk, P., Svetličič, V. 2005, Neolitska naselbina v Dragomlju, in: Guštin, M. (ed.), Prvi poljedelci, Savska skupina lengyelske kulture, Annales Mediterranea, Koper, 65-79.

Ucko, P. J. 1969, Ethnography and archaeological interpretation of funerary remains, World Archaeology 1, 262–280.

Valamoti, S. M. 2004, Plants and People in Late Neolithic and Early Bronze Age Northern Greece, Oxford, British Archaeological Reports, International Series 1258.

Valamoti, S. M. 2007, Grape-pressings from northern Greece: the earliest wine in the Aegean?, Antiquity 81(311), 54-61.

Van Andel, H. T., Runnels, N.C. 1995, The earliest farmers in Europe, Antiquity 69(264), 481–500.

Van der Veen, M., Jones, G. 2006, A re-analysis of agricultural production and consumption: Implications for understanding the British Iron Age, Vegetation History and Archaeobotany 15(3), 217-228.

Van der Veen, M., 2005, Gardens and fields: the intensity and scale of food production, World Archaeology 37(2), 157-163.

Van der Veen, M., 2007, Formation processes of desiccated and carbonized plant remains – the identification of routine practice, Journal of Archaeological Science 34(6), 968-990.

Vandiver, P. B., Soffer, O., Klima, B., Svoboda, I. 1989, The origin of ceramic technology at Dolni Vestonice, Chechoslovakia, Science 246, 1002-8.

Vanhaeren, M., d'Errico, F. 2005, Grave goods from the Saint-Germain-la-Rivière burial, Evidence for social inequality in the Upper Palaeolithic, Journal of Anthropological Archaeology 24, 117–134.

Vasić, M. 1906, Prilozi ka rešavanju trojanskih problema, Glas Kraljevske Akademije LXX, drugi razred, br. 43, 163 – 289.

Vasić, M.M. 1932, Prehistoriska Vinča II, Beograd, Državna Štamparija Kraljevine Jugoslavije.

Vasil'ev, S. A. 2001, The Final Paleolithic in Northern Asia: Lithic Assemblage Diversity and Explanatory Models, Arctic Anthropology 38(2), 3–30.

Velde B., Druc I., 1999, Archaeological Ceramic Materials, Springer.

Velušček, A. 1999, Neolithic and Eneolithic Investigations in Slovenia, Arheološki vestnik 50, Ljubljana, 59-79.

Velušček, A. 2006, Resnikov prekop – sondiranje, arheološke najdbe, kulturna opredelitev in časovna uvrstitev, in: Velušček, A. (ed.), Resnikov prekop, najstarejša koliščarska naselbina na Ljubljanskem barju, Opera Instituti Archaeologici Sloveniae 10, Ljubljana, 2006, 19-85.

Verpoorte, A. 2001, Places of Art, Traces of Fire. Archaeological Studies Leiden University 8. Dolní Věstonice Studies 6, University of Leiden & Academy of Sciences of the Czech Republic, Leiden/Brno.

Vigne, J.-D. 2008, Zooarchaeological aspects of the Neolithic diet transition in the Near East and Europe, and their putative relationships with the Neolithic demographic transition, in: Bocquet-Appel, J.-P., Bar-Yosef, O. (eds.), The Neolithic Demographic Transition and its Consequences, Springer, New York, 179-205.

Vigne, J., Helmer, D. 2007, Was milk a »secondary product« in the Old World Neolithisation process? Its role in the domestication of cattle, sheep and goats, Anthropozoologica 42 (2), 9-40.

Villa, P. 1983, Terra Amata and the Middle Pleistocene archaeological record of southern France, University of California Press, Berkeley.

Viskalin, A. V. 2006, On dating of the Early Neolithic pottery of Elshanka type, Tverskoy archaeological collection of scientific articles Issue 6. Vol. 1, Tver 260–265. (in Russian)

Vlachos, D., 2003, Who did it? Perspectives on the beginning of the Neolithic in Greece, Documenta Praehistorica XXX, 131-137.

Voytek, B. 2000, The Organization of Technology an the Study of Stone Tools: Cases from Mediterranean Basin, Societa Preistoria Protoistoria Friuli- Venezia Giulia, Trieste, Quaderno 8. Trieste, 269-277.

Voytek, B., Tringham, R., 1989, Rethinking the Mesolithic: the Case of South-East Europe, in: C. Bonsall (ed.), The Mesolithic in Europe, Edinburgh, John Donald Publishers Ltd, 492–499.

Vrdoljak, S., Mihaljević, M. 1999, Istraživanje nalazišta Slavča (Nova Gradiška) 1998, Obavijesti Hrvatskog arheološkog društva 1/XXXV, 34-48.

Vrkić, Š. 2010, Donji Slatinik-Gaji, Hrvatski arheološki godišnjak 6/2009, 75-76.

Vujčić-Karlo, S. 2009, Nalazi mekušaca (Mollusca), in: Marijanović, B. (ed.), Crno vrilo 2, Sveučilište u Zadru, Zadar, 77-87.

Vujević, D. 2009, Predmeti od kosti i roga, in: B. Marijanović (ed.), Crno vrilo 2, Sveučilište u Zadru, Zadar, 89-124.

Vybornov, A., Kulkova, M., Goslar, T., Possnert, G. 2013, Chronological Problems with the Neolithization of Povolzhye, Documenta Praehistorica XL, 13–20.

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE, DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN THE SAVA, DRAVA AND DANUBE

Weller, O., Dumitroaia, G. 2005, The earliest salt production in the world: an early Neolithic exploitation in Poiana Slatinei-Lunca, Romania, Antiquity 79 (306).

Whitelaw, T.M. 1991, Ethnoarchaeology of recent rural settlement and land use in Northwest Keos, in: Landscapearchaeology as long term history: Northern Keos in the Cycladic Islands from earliest settlement untilmodern times, Los Angeles, Institute of Archaeology, University of California, 403–454.

Whittle, A. 1985, Neolithic Europe: a survey, Cambridge, Cambridge University Press.

Whittle, A. 1996, Europe in the Neolithic: the creation of new worlds, Cambridge, Cambridge University Press.

Whittle, A. 1998, Fish, faces and fingers: presences and symbolic identities in the Mesolithic-Neolithic transition in the Carpathian basin, Documenta Praehistorica XXV, 133-151.

Whittle, A., Bartosiewicz, L., Borić, D., Pettit, P., Richards, M. 2002, In the beginning: new radiocarbon dates for the early Neolithic in Northern Serbia and South-East Hungary, Antaeus 25, 63-117.

Wu, X., Zhang, C., Goldberg, P., Cohen, D., Pan,Y., Arpin, T., Bar-Yosef, O. 2012, Early Pottery at 20,000 Years Ago in Xianrendong Cave, China, Science 336, 1696-1700.

Zaitseva, G., Skripkin, V., Kovaliukh, N., Possnert, G., Dolukhanov, P., Vybornov, A. 2009, Radiocarbon Dating of Neolithic Pottery, Radiocarbon 51(2), 795–801.

Zakh, V. A. 2006, Periodization of the Neolithic in the Tobol-Ishim Forest Zone, Archaeology Ethnology and Anthropology of Eurasia 1(25), 70–83.

Zalai-Gaál, I. 1986, Sozialarchäologische Forschungsmöglichkeiten aufgrund der spätneolithischen Gräbergruppen in Südwestlichem Ungarn, A Béri Balogh ÁdámMúzeum Évkönyve 13, 139–154.

Zalai-Gaál I. 1994, Betrachtungen uber die kultische Bedeutung des Hundes im mitteleuropaischen Neolithikum, Acta Archaeologica Academiae Scientiarum Hungaricae 46, 33–59.

Zalai-Gaál, I. 2007, Zengővárkony-Svodín-Friebritz: zu den chronologischen Beziehungen zwischen den territorialen Gruppen der Lengyel-Kultur aufgrund der Gräberfeldanalyse, in: J. K. Kozłowski, P. Raczky (eds.), The Lengyel, Polgár and related Cultures in the Middle/Late Neolithic in Central Europe, 147–184, Kraków, Polska Akademia Umiejętności.

Zalai-Gaál, I. 2009, Zur Herkunft des Schädelkults im Neolithikum des Karpatenbeckens, Budapest, Archaeolingua.

Zalai-Gaál I., Gál E., Köhler K., Osztás A. 2009, Eberhauerschmuck und Schweinekiefer Beigaben in den neolithischen und kupferzeitlichen Bestattungssitten des Karpatenbeckens, Acta Archaeologica Academiae Scientiarum Hungaricae 60, 303–355.

Zalai-Gaál I., Gál E., Köhler K., Osztás A. 2011, „Ins Jenseits Begleitend“: Hundemitbestattungen der Lengyel-Kultur von Alsónyék-Bátaszék, Acta Archaeologica Academiae Scientiarum Hungaricae 62, 29–74.

Zalai-Gaál, I., Osztás, A., Köhler, K. 2012, Totenbrett oder Totenhütte? Zur struktur der Gräber der Lengyel-Kulture mit Pfostenstellung in Südtransdanubien, Acta Archaeologica Academiae Scientiarum Hungaricae 63, 69–116.

Zapotocka, M. 1986, Die Brandgräber von Vikletice – Ein Beitrag zum chronologischen Verhältnis von Stichund Rheinbandkeramik, Archeologicke Rozhledy 38, 263–649.

Zaretskaya, N. E., Kostyliova, E. L. 2008, Radiocarbon chronology of the initial period of the Upper Volga Early Neolithic Culture (on the basis of finds from Sakhtysh-2a site), Rossijskaia Arheologija 1, 5-14.

Zilhão, J. 1993, The Spread of Agro-Pastoral Economies across Mediterranean Europe: A View from the Far West, Journal of Mediterranean Archaeology 6(1), 5–63.

Zlatunić, R. 2002, Arheološka interpretacija i rekonstrukcija načina života u neolitičkom razdoblju Istre, Histria archaeologica 33, 5-141.

Zlatunić, R., 2005, Nastanak gline, tehnologija i mineralogija keramike, Histria Archaeologica 36, 61-114.

Zohary, D., 1996, The mode of domestication of the founder crops of Southwest Asian agriculture, in: D. Harris (ed.), The Origins and Spread of Agriculture and Pastoralism in Eurasia, London: UCL Press, pp. 142-158.

Zvelebil, M. 2001, The agricultural transitions and the origins of Neolithic Society in Europa, Documenta Praehistorica XXVIII, 1–26.

Zvelebil, M. 2004a, Who were we 6000 years ago? In search of prehistoric identities, in: M. Jones (ed.), Traces of ancestry: studies in honour of Colin Renfrew, McDonald Institute Monographs, McDonald Institute for Archaeological Research, Oakville, Cambridge, UK, 41–60.

Zvelebil, M. 2004b, Conclusion: The many Origins of the LBK, in: Lukes, A., Zvelebil, M (eds.), LBK Dialogues. Studies in the formation of the Linear Pottery Culture, BAR International Series 1304, Oxford, 183-205.

Zvelebil, M., Lillie, M. 2000, Transition to agriculture in eastern Europe, in: D. T. Price (ed.), Europe's first farmers, Cambridge University Press, Cambridge, 57–92.

Žid, J. 2000, Zvířecí pohřby v neolitu a v eneolitu Střední Evropě. Ročníková seminární práce katedry pro pravěk a ranou dobu dějinou. Prag, Filozofická fakulta Univerzity Karlovy.

Žorž, A. 2008, Najdišče Spodnje Škovce pri Dolskem pri Ljubljani. Poročilo, Zavod za varstvo kulturne dediščine Slovenije (http://www.zvkds.si/media/new_discovery/najdisce-spodnje-sko spodnje_skovce_tekst.pdf; 2.6.2009, 13.30).

DAROVI ZEMLJE
NEOLITIK IZMEĐU SAVE,
DRAVE I DUNAVA

GIFTS OF THE EARTH
THE NEOLITHIC BETWEEN
THE SAVA, DRAVA AND DANUBE


626

PONOSNI SPONZOR AMZ

SPLITSKA BANKA

SOCIETE GENERALE GROUP

SPONZOR AMZ

triglav