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STOČARSTVO I RITUAL NA GRADINI VRČEVO U BRONČANO I ŽELJEZNO DOBA

ANIMAL HUSBANDRY AND RITUAL AT VRČEVO HILLFORT IN THE BRONZE AND IRON AGES

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U radu su prikazani rezultati zooarheološke analize osteoloških ostataka domaćih i divljih životinja s gradine Vrčevo u Ravnim kotarima. Uzorci su prikupljeni prilikom arheoloških istraživanja 2012. godine, prilikom kojih je definirano više naseobinskih horizonata koji su potvrđeni nalazima podnica i vatrišta. Nalazi, kao i rezultati prvih radiokarbonskih analiza potvrdili su kontinuitet naselja od srednjega brončanog doba sve do kraja starijega i početka mlađega željeznog doba. Rezultati zooarheološke analize pokazali su da kroz oba razdoblja postoji kontinuitet u uzgoju stoke sitnog zuba (ovca i koza), dok je moguća promjena vidljiva u uzgoju goveda. Čini se da posebno mjesto u brončanodobnoj zajednici zauzima pas uz kojeg se veže ritualna praksa.

Key words:
zooarchaeology, Bronze Age, Iron Age, eastern Adriatic, hillfort settlement, animal husbandry, ritual

The paper presents the results of the zooarchaeological analysis of osteological remains of domestic and wild animals from Vrčevo hillfort in Ravni Kotari. The samples were collected in the 2012 archaeological excavations when several occupation layers were defined as evidenced by the finds of floors and hearths. The finds, as well as the results of the first radiocarbon analyses confirmed the continuity of the settlement from the Middle Bronze Age until the end of the Early Iron Age and the beginning of the Late Iron Age. The results of the zooarchaeological analysis indicated that both periods were characterized by continuity in sheep and goat breeding while possible change was evident in cattle breeding. It seems that dogs had special importance for the Bronze Age community as suggested by ritual practice.

UVOD

Lokalitet Vrčevo u središnjim Ravnim kotarima smjestio se na istoimenom brdu koje visinski dominira krajolikom. Riječ je o gradinskom naselju na 213 metara nadmorske visine s kojeg se pogled pruža sve do Dugog otoka, Velebita i Dinare, odnosno okolnih plodnih pašnjaka, polja i šuma (Sl. 1). Kao jedno od najvećih gradinskih naselja Liburnije Vrčevo obuhvaća površinu od oko 7 ha, no sa za sada nejasnim rasterom bedema.[1] Premda je struka prepoznala Vrčevo kao važan prapovijesni lokalitet, prema brojnim površinskim nalazima gradina je u literaturi tretirana isključivo kao željeznodobno naselje.[2] Tek su sustavna arheološka istraživanja provedena 2012. godine, u sklopu projekta *Naselja i groblja na istočnom*

INTRODUCTION

The site of Vrčevo in central part of Ravni Kotari is located on the homonymous hill, dominating the landscape. It is a hillfort settlement at 213 meters above sea level, providing a view of the island of Dugi Otok, mountains Velebit and Dinara, and surrounding fertile pastures, fields and woods (Fig. 1). As one of the biggest hillfort settlements of Liburnia, Vrčevo covers the area of 7 hectares, but the layout of the walls has not been fully defined as yet.[1] Although Vrčevo was recognized as an important prehistoric site, the hillfort was treated as an exclusively Iron Age site on the basis of numerous surface finds.[2] Only systematic archaeological excavation conducted in 2012 within the project *Settlements and graves*

Slika 1. *Prikaz položaja gradine Vrčevo sa širom okolicom* (http://www.google.com/earth)
Figure 1 *Position of Vrčevo hillfort with the wider surroundings* (http://www.google.com/earth)

[1] O interpretaciji pojedinih kamenih nasipa vidjeti M. ČELHAR, 2014b, 228.
[2] M. ČELHAR, 2014b, 226.

[1] On interpretation of certain stone embankments see M. ČELHAR, 2014b, 228.
[2] M. ČELHAR, 2014b, 226.

Jadranu u željezno doba, simbolički aspekti,[3] pokazala da je riječ o mnogo dugotrajnijoj okupaciji gradine. Tom prigodom otvorena je probna sonda dimenzija 7 x 3 m na jednoj od dugih terasa, na sjevernom dijelu gradine. U kulturnom sloju debljine 2,30 m definirano je više naseobinskih horizonata koji su potvrđeni nalazima podnica i vatrišta.[4] Nalazi, kao i rezultati prvih radiokarbonskih analiza potvrdili su kontinuitet naselja od srednjeg brončanog doba, kada je apsolutno kronološki datiran najniži sloj u sondi, pa sve do kraja starijeg i početka mlađeg željeznog doba. Time je Vrčevo postalo prvi lokalitet s potvrđenim kontinuitetom života iz tzv. protoliburnske u liburnsku fazu.[5]

MATERIJAL I METODE

Osteološki materijal domaćih i divljih životinja prezentiran u ovom radu izdvojen je iz intaktnih slojeva, odnosno cjelina kojima se mogla odrediti okvirna kronološka pripadnost.[6] Slojevi interpretirani kao nasipavanje i niveliranje terena nisu uključeni u analizu. Ukupno je analizirano 3308 uzoraka životinjskih kostiju i zuba od kojih je 2960 (89,5 %) bilo anatomski i/ili taksonomski odredivo.[7] Pritom su u odredivi postotak uključeni i fragmenti kralježaka, rebara, lubanja i dijafiza dugih kostiju smješteni u kategorije prema veličini životinje. Te kategorije uključuju životinje veličine zeca do malog mesojeda (zec, lisica) te životinje veličine malog (ovca/koza, pas), srednjeg (svinja) i velikog ungulata (govedo, obični jelen). U neodredive fragmente svrstani su ulomci elemenata koje nije bilo

[3] Riječ je o arheološkim istraživanjima u sklopu spomenutog projekta pod vodstvom dr. sc. Sineve Kukoč, koja su trajala tijekom ožujka i travnja 2012. godine.
[4] M. ČELHAR, 2014b, 229.
[5] M. ČELHAR, 2014a, 226.
[6] Među prikupljenim materijalom nisu utvrđeni ostatci ptica ili riba.
[7] Takson može biti podvrsta, vrsta, rod, porodica ili viša taksonomska kategorija (R. L. LYMAN, 1994, 100).

on the eastern Adriatic in the Iron Age, symbolic aspects,[3] revealed that the hillfort was occupied for much longer. On that occasion a trial trench with dimensions of 7x3 m was opened on one of the long terraces in the northern part of the hillfort. In the cultural layer 2.30 m thick, several occupation layers have been defined as evidenced by the finds of floors and hearths.[4] The finds, as well as the results of the first radiocarbon analyses confirmed the continuity of the settlement from the Middle Bronze Age which is the absolute chronological date of the lowest layer in the probe, until the end of the Early and beginning of the Late Iron Age. Thus Vrčevo became the first site with confirmed continuity of occupation from the so-called proto-Liburnian to the Liburnian phase.[5]

MATERIAL AND METHODS

Osteological material of domestic and wild animals presented in this paper was isolated from intact layers, that is units with determinable general chronological attribution.[6] Layers interpreted as filling and leveling of the terrain have not been included in the analysis. A total of 3308 specimens of animal bones and teeth were analyzed of which 2960 (89.5 %) were determinable anatomically and/or taxonomically.[7] The determinable percentage included fragments of vertebrae, ribs, skulls and diaphyses of long bones classified into categories in accordance with the animal size. These categories include animals of the rabbit to small carnivore (rabbit, fox) size and animals

[3] Archaeological excavation conducted in March and April 2012, within the mentioned project led by dr. sc. Sineva Kukoč.
[4] M. ČELHAR, 2014b, 229.
[5] M. ČELHAR, 2014a, 226.
[6] Remains of birds and fish were not found among the collected material.
[7] Taxon can be subspecies, species, genus, family or higher taxonomic category (R. L. LYMAN, 1994, 100).

moguće odrediti anatomski ili ih svrstati u određenu kategoriju prema veličini životinje. Pri anatomsko-taksonomskoj analizi korištena je komparativna zbirka Odjela za arheologiju Sveučilišta u Zadru te relevantna literatura.[8] Dobni profili za domaće životinje izračunani su, gdje je to bilo moguće, prema očuvanim čeljustima sa zubima te prema fazi srastanja epifiza.[9] Korištenje modernih uzoraka izbijanja i trošenja zubi ili srastanja epifiza upotrebljava se za interpretaciju istih procesa na prapovijesnim uzorcima. Iako se ovaj model usporedbe ne može smatrati potpuno ispravnim, s obzirom na to da se često moderne vrste domaćih životinja uzgajaju s ciljem čim bržeg sazrijevanja, neki autori tvrde da se vrijeme izbijanja zubi ipak može uzeti kao pouzdani pokazatelj okvirne dobi životinje.[10] Srastanje epifiza rabi se samo za određivanje relativne dobi jedinke i vrlo je nepouzdan model određivanja dobi iz razloga što je nemoguće znati koje kosti pripadaju istoj jedinki. Tako npr. uzorci nesraslih kostiju koje za života jedinke srastaju relativno kasno mogu pripadati jedinki koja je uginula relativno mlada.[11] Jednom kada je završeno srastanje epifiza i prisutni su svi trajni zubi puno je teže odrediti je li riječ o mlađoj ili starijoj odrasloj jedinki. U tom slučaju jedna od metoda koja se upotrebljava jest određivanje istrošenosti zubi, pod pretpostavkom da se zubi troše od kada izađu te se nastavljaju trošiti tijekom čitavog života jedinke.[12] U ovom radu korištena je kombinacija svih navedenih metoda kako bi se korigirale eventualne pogreške u odredbi, a konačna dob jedinki iskazana je kao relativna vrijednost, modificirano po uzoru na odredbe Miracle i Pugsley.[13] U ovom slučaju dobne kategorije životinja uključuju fetalne/

[8] D. L. FRANCE, 2009; S. HILLSON, 2005; H. E. KÖNIG, H. G. LIEBICH, 2008; E. SCHMID, 1972; M. A. ZEDER, H. A. LAPHAM, 2010; M. A. ZEDER, S. E. PILAAR, 2010.
[9] G. BULL, S. PAYNE, 1982; A. GRANT, 1982; S. PAYNE, 1973; I. A. SILVER, 1969.
[10] A. MARCINIAK, 2014, 194.
[11] E. REITZ, E. WING, 2008, 194.
[12] E. REITZ, E. WING, 2008, 196.
[13] P. T. MIRACLE, L. PUGSLEY, 2006, 268.

of the size of small (sheep/goat, dog), medium (pig) or big ungulate (cattle, common deer). Fragments of elements that could not be determined anatomically or classified into a certain category on the basis of animal size were included into indeterminable fragments. In the anatomical and taxonomical analysis we used the reference collection of the Department of Archaeology of the University of Zadar as well as the relevant reference works.[8] Age profiles for domestic animals were calculated, when possible, on the basis of preserved jaw bones with teeth and stage of epiphyseal fusion.[9] Modern patterns of tooth eruption and wear or epiphyseal fusion are used for interpretation of the identical processes on prehistoric samples. Although this model of comparison has certain shortcomings, since modern species of domestic animals are often raised with the aim of fast growing, some authors claim that the time of tooth eruption can be considered as a reliable indicator of the approximate age of an animal.[10] Epiphyseal fusion is used only for determining the relative age of an individual and represents a very unreliable model of age determination because it is impossible to tell which bones belong to the same individual. For instance, samples of unfused bones that fuse relatively late in life, might belong to an individual that died relatively young.[11] Once epiphyseal fusion is completed and all permanent teeth are present, it is much more difficult to determine if it is a younger or older individual. In that case one of the methods used is tooth wear analysis, assuming that teeth are worn down from the moment of their eruption throughout lifetime of an individual.[12] Combination of all mentioned methods was used in this paper in order to correct possible

[8] D. L. FRANCE, 2009; S. HILLSON, 2005; H. E. KÖNIG, H. G. LIEBICH, 2008; E. SCHMID, 1972; M. A. ZEDER, H. A. LAPHAM, 2010; M. A. ZEDER, S. E. PILAAR, 2010.
[9] G. BULL, S. PAYNE, 1982; A. GRANT, 1982; S. PAYNE, 1973; I. A. SILVER, 1969.
[10] A. MARCINIAK, 2014, 194.
[11] E. REITZ, E. WING, 2008, 194.
[12] E. REITZ, E. WING, 2008, 196.

neonatalne, mlade, mlade do odrasle i odrasle jedinke.

Sljedeće kvantitativne analize korištene su za prikaz zastupljenosti pojedinih taksonomskih kategorija. Najmanji broj odredivih uzoraka, u daljnjem tekstu NISP (*Number of Identified Specimens*), izračunan je uzimajući u obzir svaku pojedinačnu kost ili zub, odnosno njihov fragment, uključujući zube unutar čeljusti koji su brojeni pojedinačno.[14] Korišten je za prikaz ukupnog broja odredivih uzoraka za pojedino razdoblje te za pojedine taksone. Najmanji broj jedinki, u daljnjem tekstu MNI (*Minimum Number of Individuals*), izračunan je na temelju najčešćeg elementa određenog taksona, ovisno o učestalosti elementa unutar kostura, strani tijela, starosti životinje te pripadnosti stratigrafskoj jedinici. Bitno je napomenuti da je MNI samo analitički produkt te kao takav ne predstavlja stvaran broj jedinki. Na nalazištu je moglo biti prisutno više jedinki od navedenog broja ili samo njihovi dijelovi.[15] Najmanji broj anatomskih elemenata, u daljnjem tekstu MNE (*Minimum Number of anatomical Elements*) odnosi se na izračun pojedinačnih cijelih kostiju ili zuba unutar kostura životinje.[16] Za izračun je u obzir uzeto preklapanje zajedničkih obilježja kosti, orijentacija elementa te starost i veličina životinje.

Uzorci su pregledani makroskopski, s pomoću lupe, kako bi se utvrdila eventualna prisutnost ureza, odnosno tragova ljudskog djelovanja. Vrlo slaba očuvanost cjelovitih kostiju (ukupno 2,7 % od kojih na duge kosti otpadaju samo tri uzorka), nažalost, nije pružila mogućnost sakupljanja dovoljne količine biometrijskih podataka koji bi omogućili odredbu veličine ili spola životinja.

[14] R. L. LYMAN, 1994, 100; P. T. MIRACLE, L. PUGSLEY, 2006, 261.
[15] E. REITZ, E. WING, 2008, 206.
[16] R. L. LYMAN, 1994, 100.

mistakes in determination, and the final age of an individual was expressed as a relative value, modified after Miracle and Pugsley.[13] In this case, age categories of the animals include fetal/neonatal, young, young to adult and adult individuals.

The following quantitative analyses were used to represent presence of certain taxonomic categories. Number of Identified Specimens (henceforth NISP) was calculated by taking into account every individual bone or tooth, that is their fragments, including the teeth in jaws that were counted individually.[14] It was used to represent a total number of determinable specimens for a certain period and for individual taxa. Minimum Number of Individuals (henceforth MNI) was calculated on the basis of the most common element of a certain taxon, depending on the presence of the element within skeleton, body side, animal age and attribution to stratigraphic unit. It is worth mentioning that MNI is just an analytical product and as such it does not represent actual number of individuals. Many more individuals could have been present at the site, or only their parts.[15] Minimum Number of anatomical Elements (henceforth MNE) refers to calculation of individual complete bones or teeth within animal skeleton.[16] Overlapping of landmark features, element orientation and animal size were taken into account in the calculation.

The samples were examined macroscopically, using a magnifying glass, to determine possible presence of cut marks, that is traces of human agency. Unfortunately, very poor preservation of complete bones (total of 2.7% of which only 3 samples refer to long bones) did not offer a possibility to collect a sufficient amount of biometric data to enable the determination of the size or sex of animals.

[13] P. T. MIRACLE, L. PUGSLEY, 2006, 268.
[14] R. L. LYMAN, 1994, 100; P. T. MIRACLE, L. PUGSLEY, 2006, 261.
[15] E. REITZ, E. WING, 2008, 206.
[16] R. L. LYMAN, 1994, 100.

REZULTATI ANALIZE

Prema trenutačnim podatcima dobivenima iz analize keramičkih nalaza te raspoloživim radiokarbonskim datumima osteološki materijal raspoređen je u dvije faze – brončanodobnu i željeznodobnu. Prema tome, izračunane su vrijednosti za ukupan broj odredivih uzoraka (NISP) te najmanji broj jedinki (MNI) za pojedino razdoblje (Tablica 1). 57 % ukupnog broja odredivih uzoraka otpada na 15 brončanodobnih slojeva povezanih s naseobinskim objektima, dok preostalih 43 % dolazi iz četiri željeznodobna sloja. Od tih četiriju slojeva tri su povezana s jednim objektom, dok posljednji, ujedno i najbogatiji, dolazi s prostora vanjskog dijela objekta, no nije jasno je li riječ o otpadu povezanom s kontekstom objekta. Tim slijedom ukupni materijal iz brončanodobnih slojeva uspoređivan je s materijalom iz željeznodobnih slojeva.

Za oba razdoblja na prvi pogled jasno je da među domaćim životinjama dominantan udio u uzorku (NISP) zauzimaju mali preživači, odnosno ovca (*Ovis aries*) i koza (*Capra hircus*). Međutim, promotrimo li detaljnije vrijednosti najmanjeg broja jedinki (MNI) za ovcu i kozu, vidljivo je da su vrijednosti za ovcu i govedo (*Bos taurus*) gotovo identične za brončanodobna razdoblja, dok je vrijednost za kozu četiri puta manja. Vrijednosti se za željeznodobne slojeve mijenjaju pa tako ovca čini duplo veći udio od koze, dok su vrijednosti za govedo identične onima za kozu. Među uzorcima ovce i koze u obama razdobljima dominantno mjesto zauzima ovca u broju odredivih uzoraka i u najmanjem broju jedinki, pa tako za brončanodobne slojeve ta vrijednost iznosi 81,8 % od ukupnog uzorka, a za željeznodobne slojeve 66,7 % u korist ovce. U daljnjem tekstu ovca i koza tretirat će se kao jedan takson – ovca/koza. Nadalje, u brončanodobnim slojevima prema broju jedinki brojčano slijede svinja (*Sus* sp.) i pas (*Canis familiaris*), dok se u željeznodobnim slojevima brojčano izdvaja još samo svinja. Za uzorke pripisane svinji, nažalost,

ANALYSIS RESULTS

On the basis of current data obtained from the analysis of pottery finds and available radiocarbon dates, osteological material was divided into two phases: Bronze Age and Iron Age. Accordingly values for the total number of identified specimens (NISP) and minimum number of individuals (MNI) were calculated for separate periods (Table 1). 57% of the total number of identified specimens refers to fifteen Bronze Age layers associated with dwelling structures, while the remaining 43% come from four Iron Age layers. Out of these four layers, three are related to one structure, while the last, at the same time also the richest, comes from the area of the southern side of the structure, but it is not clear if it is waste related to the structure context. In that order, the entire material from the Bronze Age layers was compared to the material from the Iron Age layers.

For both periods it is apparent at first sight that small ruminants, that is sheep (*Ovis aries*) and goat (*Capra hircus*) constitute the dominant part of the sample (NISP). However, if we pay more attention to values of the minimum number of individuals (MNI) for sheep and goat, it is evident that values for sheep and cattle (*Bos taurus*) are almost identical for the Bronze Age periods while the goat number is four times smaller. Values for the Iron Age layers change so that sheep is twice as numerous as goat, while cattle and goat values are identical. Sheep takes the dominant place in the samples of sheep and goat in both periods, both in NISP and MNI, so that this value is 81.8% of the total sample for the Bronze Age layers, and 66.7% for the Iron Age layers. Henceforth sheep and goat will be treated as one taxon – sheep/goat. In the Bronze Age layers, pig (*Sus* sp.) and dog (*Canis familiaris*) are following categories with regard to quantity, while only other species that could be counted in the Iron Age layers is pig. Unfortunately, it was impossible to determine if the pig spec-

Tablica 1. *Prikaz broja odredivih uzoraka (*NISP*) i minimalnog broja jedinki (*MNI*) prema taksonu, starosnoj dobi i veličini životinje, te razdoblju. Brojevi u zagradama nisu uključeni u ukupne zbrojeve stupaca, već predstavljaju samo ukupan zbroj za* Ovis + Capra. *Ukupan zbroj minimalnog broja jedinki (*MNI*) za ovcu i kozu (*Ovis + Capra*) u obzir uzima i kategorizaciju prema starosnoj dobi životinje zbog čega zbroj vrijednosti prividno ne odražava realnu vrijednost*

Table 1 *Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI) per taxon, age and size of the animal, and period. Numbers in parentheses are not included in the total sums of columns but they only represent the total sum for* Ovis + Capra. *The total sum of MNI for sheep and goat (*Ovis + Capra*) takes into account categorization according to age of the animal whereby the sum of values seemingly does not reflect real value*

	Razdoblje / *Period*							
	Brončano doba / *Bronze Age*				**Željezno doba / *Iron Age***			
Vrsta / *Species*	**NISP**	**%**	**MNI**	**%**	**NISP**	**%**	**MNI**	**%**
Ovis / *Capra*	(481)	-	(0)	-	(307)	-	(0)	-
Ovisaries	(74)	-	(18)	-	(101)	-	(14)	-
Capra hircus	(14)	-	(4)	-	(25)	-	(7)	-
Ovis + Capra	569	72,5	33	43,4	433	76,5	23	54,8
Bos taurus	125	15,9	19	25,0	85	15,0	7	16,7
Sus sp.	46	5,9	13	17,1	30	5,3	6	14,3
Equus sp.	-	-	-	-	1	0,2	1	2,4
Canis familiaris	42	5,3	9	11,8	1	0,2	1	2,4
Vulpes vulpes	-	-	-	-	1	0,2	1	2,4
Lepus sp.	3	0,4	2	2,6	3	0,5	1	2,4
Ukupno / *Total*	**785**	**100**	**76**	**100**	**566**	**100**	**42**	**100**
Kategorija prema veličini tijela / *Category according to body size*	785	46,5	-	-	566	44,5	-	-
zec / mali mesojed / *rabbit / small carnivore*	25	1,6	-	-	22	1,7	-	-
mali ungulat / *small ungulate*	622	36,8	-	-	421	33,1	-	-
srednji ugulat / *medium ungulate*	99	5,9	-	-	114	9,0	-	-
veliki ungulat / *large ungulate*	157	9,3	-	-	149	11,7	-	-
Ukupno odredivo / *Total identified*	**1688**	**100,0**	**-**	**-**	**1272**	**100,0**	**-**	**-**

nije bilo moguće utvrditi pripadnost domaćoj ili divljoj vrsti. Samo jedna kost zapešća ekvida u željeznodobnom sloju potvrđuje prisutnost možda manjeg konja ili magarca (*Equus* sp.). Od divljih životinja u brončanodobnim slojevima prisutne su samo dvije jedinke zeca (*Lepus* sp.) i možda jedan obični jelen (*Cervus elaphus*), no riječ je o loše očuvanoj papčanoj kosti (*phalanx distalis*) pa je moguće da je riječ o mladom govedu. Sigurno potvrđeni ostatci jelena prisutni su u željeznodobnim slojevima i to dvije jedinke, za kojima slijede zec i lisica s po jednim primjerkom.

Najmanji broj anatomskih elemenata za ovcu/kozu izračunan je zasebno za svako razimens belonged to domestic or wild species. Only one equine carpal bone from the Iron Age layers testifies to the possible presence of smaller horse or donkey (*Equus* sp.). Out of wild animals, in the Bronze Age layers only two rabbits were recorded (*Lepus* sp.) and possibly one red deer (*Cervus elaphus*), but it is a poorly preserved coffin bone (*phalanx distalis*) so it could also be young cattle. Deer remains were confirmed with certainty in the Iron Age layers with two individuals, followed by rabbit and fox with one specimen each.

Minimum number of anatomical elements for sheep/goat was calculated separately for each period and presented in Table 2. Ana-

Tablica 2. *Prikaz najmanjeg broja anatomskih elemenata za ovcu/kozu prema razdoblju*
Table 2 *Minimum number of anatomical elements for sheep/goat per period*

Element / *Element*	Brončano doba / *Bronze Age*	Željezno doba / *Iron Age*
cranium	7	2
maxilla	3	2
mandibula	26	5
scapula	26	2
humerus	22	3
radius	39	10
ulna	7	6
os coxa	8	5
os femoris	13	1
tibia	29	4
astragalus	8	2
calcaneus	8	1
metapodia	44	15
phalanges	18	9

doblje i prikazan u Tablici 2. Anatomski elementi računani su kao cijele kosti pri čemu se u obzir uzimao prisutan udio pojedine kosti, orijentacija (lijeva ili desna strana), starost životinje te veličina kosti. Gornja i donja čeljust računane su kao dvije zasebne cjeline, lijeva i desna strana zajedno, s pripadajućim zubima, ako ih je bilo. Izolirani zubi nisu prikazani u tablici jer nije bilo moguće utvrditi pripadaju li pronađenim čeljustima ili su ispali za života životinje. Vrijednosti za željezno doba ne uključuju uzorke iz sloja koji se nalazio izvan stambenog objekta, dok su za brončano doba uključene vrijednosti iz svih slojeva pod pretpostavkom da su povezani sa stambenim objektima.

Rezultati analize dobnih profila za pojedine domaće vrste te njihova usporedba tijekom razdoblja prikazani su grafički (Sl. 2 i Sl. 3). Dobni profili iskazani su kao relativne vrijednosti izračunane prema srastanju epifiza te izbijanju i istrošenosti zuba.

Tragovi gorenja prisutni su na samo 2,7 % uzoraka, većinom na sitnim ulomcima kao posljedica naknadnog gorenja već fragmentirane kosti.

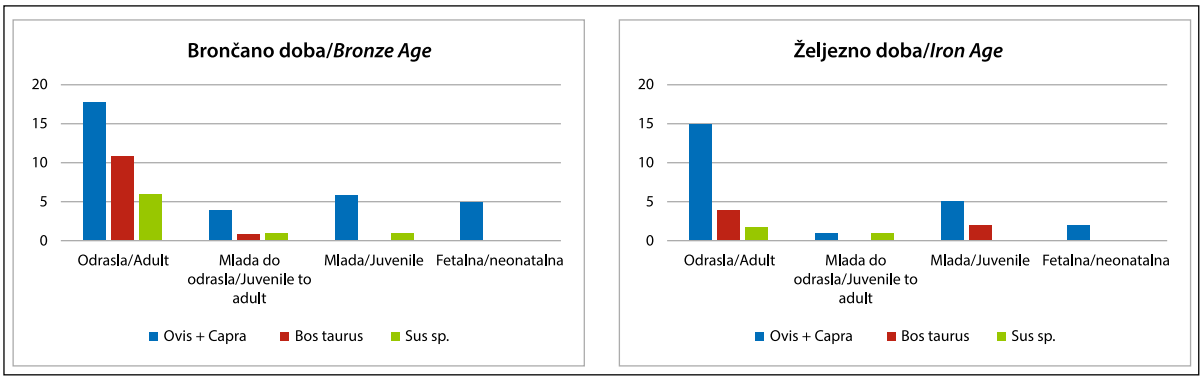
Makroskopskim pregledom tragovi ureza

tomical elements were counted as entire bones, taking account of extant portion of a certain bone, orientation (left or right side), animal age and bone size. Upper and lower jaw were counted as two separate units, left and right side together, with the belonging teeth, if there were any. Isolated teeth were not represented in the table since we could not determine if they belonged to recovered jaws or they fell out while the animal was still alive. Values for the Iron Age do not include samples from the layer that was located outside the dwelling structure, while values for all layers were included for the Bronze Age assuming they are related to dwelling structures.

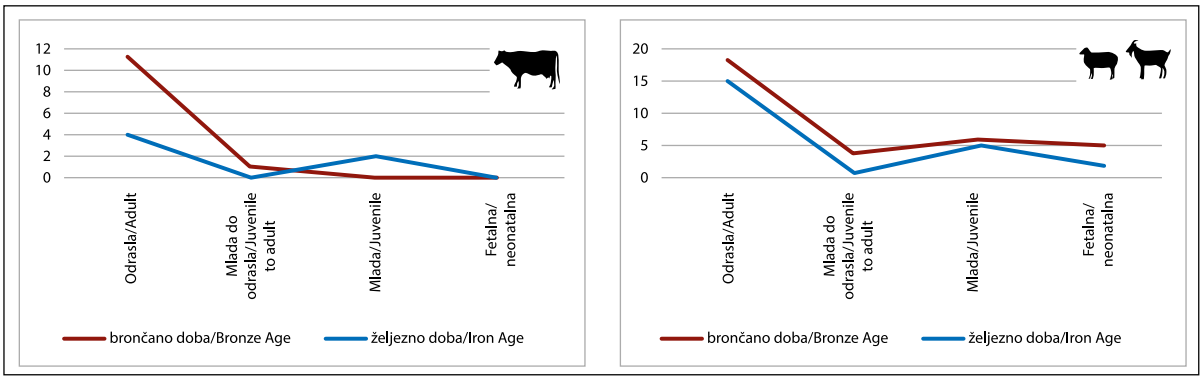
Results of the analysis of age profile for separate domestic species and their comparison through periods were given in graphical representations (Fig. 2 and Fig. 3). Age profiles were expressed as relative values calculated by epiphyseal fusion and teeth eruption and wear.

Traces of burning are present on only 2.7 % of samples, mostly on small fragments as a consequence of subsequent burning of already fragmented bone.

Macroscopic examination determined cut marks on only 4.6% of the total number of



Slika 2. *Broj jedinki prema vrsti i starosnoj dobi za pojedino razdoblje*
Figure 2 *Number of individuals per species and age for separate periods*



Slika 3. *Usporedba dobnih profila za govedo i ovcu/kozu prema razdobljima*
Figure 3 *Comparison of age profiles for cattle and sheep/goat for separate periods*

utvrđeni su na svega 4,6 % ukupnog broja uzoraka, od čega na divlje vrste otpada samo jedna nadlaktična kost lisice s tragovima sekundarnog mesarenja. Kod domaćih životinja vrlo malo tragova ureza (13,7 % od ukupnog uzorka s tragovima ureza) može se interpretirati kao posljedica deranja kože, dok većina upućuje na tragove komadanja trupla. Ukupan broj uzoraka s tragovima ureza podjednak je za oba razdoblja, no zanimljivo je da se makroskopskim pregledom ni u jednom slučaju sa sigurnošću nije moglo utvrditi korištenje teške metalne oštrice kojom se kost može rascijepiti.

RASPRAVA

Za oba razdoblja dobiveni podatci za ovcu/kozu, koji sugeriraju veći udio odraslih jedinki, (Sl. 3) na prvi pogled upućuju na primarni uzgoj životinja radi dobivanja vune. Međutim, od čitavog uzorka samo za četiri jedinke ovce

specimens, of which wild species are represented by only one humerus of fox with traces of secondary butchery. Few cut marks on domestic animals (13.7% of the total number with cut marks) can be interpreted as a consequence of skinning, while most suggest traces of dismembering the carcass. Total number of specimens with cut marks is roughly the same for both periods, but it is interesting that macroscopic examination did not reveal a single case of using heavy metal blade that can split the bone.

DISCUSSION

The data obtained for sheep/goat for both periods, suggesting bigger ratio of adult individuals (Fig. 3), indicate primary breeding for wool production. However, out of the total sample, age could be determined with certainty between 4 and 6 years for only four

mogla se sa sigurnošću utvrditi dob između četiri i šest godina što se ne uklapa u potpunosti u Payneov model proizvodnje vune.[17] Ipak, i sam Payne spominje mogućnost klanja mlađih odraslih jedinka u trenutku kada kvaliteta vune počinje opadati, a i sam udio ovce naspram koze u obama razdobljima promatranog lokaliteta govori u prilog tezi mogućeg uzgoja radi vune.[18] Proizvodnja vune ne isključuje mješovito gospodarenje pa relativno visoki udio jedinki mlađih od godinu dana može upućivati i na kombinirani primarni i sekundarni uzgoj radi mesa i mlijeka.[19] U prilog tezi uzgoja, odnosno obrade i upotrebe vune upućuje i više primjeraka keramičkih pršljenova i koštanih igala pronađenih na lokalitetu.[20] Vrlo mlade jedinke neonatalne dobi zabilježene u obama razdobljima mogu biti pokazatelj prirodnog neonatalnog mortaliteta među stadom, no ne treba odbaciti mogućnost klanja janjadi (ili jaradi) radi dobivanja sirila za proizvodnju sira. Proizvodnja sira na ovim prostorima poznata je još iz razdoblja ranog neolitika.[21] Najkvalitetnije sirilo dobiva se iz sirišta (*abomasum*) preživača, a takvo prirodno sirilo životinjskog porijekla u upotrebi je i danas u tradicionalnoj proizvodnji sira (npr. „Paški sir", mišni sir). Kod janjadi, enzim kimozin izlučuje se u središnjem dijelu sirišta, a počinje se lučiti od 1. dana do 3. tjedna života životinje. Lučenje enzima proporcionalno je broju sisanja što znači da se kimozin najbolje proizvodi u sirištu isključivo sisajućih jedinki.[22] Za usporedbu, kod teladi se visoki postotak enzima zadržava i do šest mjeseci starosti ako se tele prehranjuje na ispaši i sisa majčino mlijeko.[23] Osim navedenoga, dobni profili za ovcu/kozu pokazuju da je stado bilo prisutno u blizini naselja tijekom cijele godine.[24]

Broj elemenata utvrđenih za ovcu/kozu u

[17] S. PAYNE, 1973, 284.
[18] S. PAYNE, 1973, 281.
[19] S. PAYNE, 1973, 281.
[20] M. ČELHAR, 2014b, 231.
[21] S. B. McCLURE et al., 2018.
[22] F. OŠTARIĆ et al., 2015, 1.
[23] A. ANDRÉN, 2011, 575.
[24] H. J. GREENFIELD, E. R. ARNOLD, 2014, 344.

individual sheep which does not correspond to Payne's model of wool production.[17] However, Payne himself mentions the possibility of slaughtering younger adult sheep when wool quality starts to deteriorate, and the ratio of sheep in comparison to goat in both periods at the observed site supports the thesis of possible breeding for wool production[18] which does not exclude mixed management model. Relatively high share of individuals younger than a year can suggest combined primary and secondary breeding for meat and milk.[19] The thesis of breeding for wool is additionally supported by several examples of ceramic spindle whorls and bone pins recovered from the site.[20] Very young individuals of neonatal age recorded in both periods can be an indicator of natural neonatal mortality in the flock, but we should not exclude the possibility of slaughtering lambs (or goatlings) in order to get rennet for producing cheese. Cheese production in this region has been known from the Early Neolithic.[21] The highest quality rennet is obtained from the abomasum of ruminants, and such natural rennet of animal origin is still used in the traditional cheese production (e.g. traditional types of cheese, "*paški*", "*mišni*"). In lambs, enzyme chymosin is produced in the central part of the abomasum, production starting from the first day to the third week of the animal's life. Enzyme secretion is proportionate to the number of suckling bouts meaning that chymosin is produced only in abomasums of suckling sheep.[22] As a comparison, high percentage of enzymes is retained in calves until the 6th month of age if a calf is fed on pasture and suckles mother's milk.[23] Furthermore, age profiles for sheep/goat indicate that the flock was near the settlement all year

[17] S. PAYNE, 1973, 284.
[18] S. PAYNE, 1973, 281.
[19] S. PAYNE, 1973, 281.
[20] M. ČELHAR, 2014b, 231.
[21] S. B. McCLURE et al., 2018.
[22] F. OŠTARIĆ et al., 2015, 1.
[23] A. ANDRÉN, 2011, 575.

Slika 4. *Mandibula psa s tragovima ureza* (foto: M. Grgurić)
Figure 4 *Mandible of a dog with cut marks* (photo by M. Grgurić)

željeznodobnim slojevima pokazuje uglavnom ujednačen omjer (Tablica 2), osim u slučaju palčane (*radius*) i bedrene kosti (*os femoris*) gdje su vrijednosti za palčanu kost, u odnosu na ostale elemente udvostručene, a bedrena je kost pronađena samo jedna. U brončanodobnim slojevima u nerazmjeru s ostalim elementima su kosti zdjelice (*ossa coxae*), lakatne (*ulna*), petne (*calcaneus*) i gležanjske (*astragalus, talus*) kosti te članci prstiju (*phalanges*), no ovdje treba podsjetiti da je riječ o ostatcima iz više naseobinskih horizonata. Vrijednosti za kosti lubanje izrazito su male, no one se mogu pripisati visokom stupnju fragmentiranosti. Ipak, nužno je istaknuti izraziti nerazmjer u brojevima palčanih i lakatnih kostiju u brončano doba koji bi se mogao objasniti odvajanjem lakatne kosti za izradu specijaliziranog oruđa.[25] Međutim,

[25] Palčana i lakatna kost anatomski se nalaze usporedno jedna uz drugu pa se pri odvajanju udova očekuje njihova povezanost, odnosno barem podjednaki broj u konačnoj analizi arheološkog materijala ako on dolazi iz konteksta gdje se to očekuje, kao npr. iz zatvorenog objekta kakav je slučaj ovdje.

round.[24]

The number of elements determined for sheep/goat in the Iron Age layers mostly shows uniform ratio (Table 2), except in case of radius and femur (*os femoris*) where values for radius are twice as high in relation to the other elements, and there was only one femur. In the Bronze Age layers the following bones are in disproportion to the other elements: bones of pelvis (*ossa coxae*), elbow (*ulna*), heel (*calcaneus*), ankle (*astragalus, talus*) and finger bones (*phalanges*), but we need to keep in mind that these are the remains from several occupation layers. Values for skull bones are exceptionally small, but they can be ascribed to high level of fragmentation. However, it is necessary to emphasize disproportion in the numbers of radii and ulnae in the Bronze Age that could be explained by separating ulna for making specialized tools.[25] However, pre-

[24] H. J. GREENFIELD, E. R. ARNOLD, 2014, 344.
[25] Radius and ulna are parallel bones, one next to the other, so their connection is expected when extremities are separated, that is at least more or less equal number in the final analysis of the archaeological material if it comes from a

preliminarna analiza koštanih alatki s lokaliteta nije potvrdila tu tezu.[26] Uočljiva je i potpuna odsutnost sitnih kostiju distalnih dijelova nogu (*ossa carpi*, ossa *tarsi*), no vrlo je moguće da je u ovom slučaju riječ o propustu pri prikupljanju materijala s obzirom na to da je riječ o vrlo sitnim kostima koje neiskusno oko može zamijeniti sa sitnim kamenom kojeg na ovom lokalitetu ima u izobilju.[27] Još jedno od objašnjenja nerazmjera u broju koštanih elemenata može se tražiti u prostornoj distribuciji pojedinih elemenata, odnosno prostornom rasporedu naselja gdje se aktivnosti primarnog, sekundarnog i tercijarnog mesarenja odvijaju na različitim mjestima, no takva razmatranja morat će pričekati nastavak istraživanja i sakupljanje većeg broja koštanih uzoraka s drugih pozicija na lokalitetu.[28]

Dok dobni profili za ovcu/kozu pokazuju da nema većih razlika u gospodarenju s prelaskom iz brončanog u željezno doba, rezultati za govedo upućuju na određene promjene (Sl. 2). Podatci za brončano doba pokazuju da je većina goveda zaklana u odrasloj dobi što može upućivati na primarno iskorištavanje starijih jedinki, kao izvora mesa, ili upotrebu goveda za vuču, oranje ili sl. Izbjegavanje klanja mladih jedinki uglavnom upućuje na tendenciju prema povećanju reproduktivnosti i dugotrajnoj stabilnosti stada.[29] U željezno doba vidljiv je pomak prema klanju mlađih jedinki goveda što može upućivati na promjenu u ekonomiji, odnosno klanje teladi nakon prestanka sisanja, no zaključak se temelji na svega dvama uzorcima juvenilnih jedinki. Ovakve promjene mogu se interpretirati kao prelazak na iskorištavanje goveda radi mlijeka u kojem se slučaju

liminary analysis of bone tools from the site failed to corroborate this thesis.[26] One can also notice complete absence of tiny bones of the distal parts of legs (*ossa carpi*, *ossa tarsi*), but this could be explained by oversight while collecting finds since these are tiny bones that can be mistaken for small stones, numerous at this site.[27] Another explanation of disproportion in the number of bone elements could be spatial distribution of certain elements, that is spatial distribution of the settlement where activities of the primary, secondary and tertiary butchery happened in different places, but such considerations will have to wait until the excavation is resumed and bigger number of bone samples from other positions at the site are collected.[28]

While age profile for sheep/goat indicate that there were no big differences in the management model at the transition from the Bronze to Iron Age, results for the cattle suggest certain changes (Fig. 2). Data for the Bronze Age indicate that most cattle were slaughtered in adult age which may indicate primary exploitation of older individuals, as a source of meat, or use of cattle for traction, ploughing etc. Avoiding slaughtering young individuals mostly points to a tendency to increase reproduction and long-term stability of the herd.[29] In the Iron Age there is a shift in slaughtering younger individuals of cattle which might suggest a change in economy, that is slaughtering calves after they stop suckling, but the conclusion is based on only two samples of juvenile individuals. Such changes can be interpreted as a shift to exploitation of cattle for milk when a calf is slaughtered to use full potential of a milk-

[26] Na podatcima o koštanim alatkama s lokaliteta Vrčevo zahvaljujem Seleni Vitezović.

[27] Utvrđeno osobnim uvidom na lokalitetu.

[28] Grubo komadanje trupla životinje na mjestima zglobova i hvatišta glavnih mišića radi dobivanja velikih komada mesa. Primarno mesarenje podrazumijeva klanje životinje te puštanje krvi i skidanje kože, dok tercijarno mesarenje uključuje obradu većih komada mesa u manje porcije podobne za pripremu hrane (K. SEETAH, 2006, 2).

[29] H. J. GREENFIELD, 2005, 22.

context such as closed structure as in this case.

[26] I would like to thank Selena Vitezović for the information about bone tools from the site of Vrčevo.

[27] Determined by personal autopsy of the site.

[28] Rough dismembering of the animal carcass at joints and main muscle attachments in order to get big pieces of meat. Primary butchery implies slaughtering the animal, bloodletting and skinning, while tertiary butchery includes processing of big pieces of meat into smaller portions suitable for food preparation (K. SEETAH, 2006, 2).

[29] H. J. GREENFIELD, 2005, 22.

tele ubija kako bi se iskoristio puni potencijal krave muzare. Međutim, bez obzira na to što u ovom slučaju na temelju malog broja uzoraka ne možemo pouzdano utvrditi promjenu u ekonomskom iskorištavanju goveda, nije naodmet napomenuti da je izučavanje primitivnih vrsta goveda pokazalo da krava prestaje davati mlijeko nakon što tele prestane sisati pa se mlijeko dijeli između teleta i čovjeka što rezultira relativno malom količinom raspoloživog mlijeka. Osim toga, kod primitivnih vrsta kalorična je vrijednost kravljeg mlijeka mala i varijabilna. Nije poznato kada su točno biološke odlike krave promijenjene, tako da se laktacija nastavlja i nakon što tele prestane sisati.[30]

Broj jedinki svinje duplo je veći u brončanodobnim slojevima i pokriva sve dobne skupine, za razliku od željeznodobnih slojeva gdje nalazimo samo odrasle jedinke, no, kao što je već naglašeno, nije poznato je li riječ o domaćim ili divljim primjercima pa daljnja diskusija nije moguća.

Jedna kost zapešća ekvida u željeznodobnom sloju potvrđuje prisutnost manjeg konja ili magarca (*Equus* sp.).

S obzirom na to da su podatci o doživljenoj dobi za sve domaće vrste vrlo skromni, a uzevši u obzir i mali sveukupni uzorak, sve navedene zaključke treba uzeti s oprezom do budućih istraživanja.

Rezultati analize tragova ureza pokazali su da su na kostima istraženog dijela gradine prisutni uobičajeni tragovi aktivnosti primarnog, sekundarnog i tercijarnog mesarenja, no s nejasnim prostornim rasporedom odvijanja određenih aktivnosti, a čini se i bez upotrebe težeg metalnog oruđa. Za usporedbu, na gradini Rat na Braču pojedini uzorci životinjskih kostiju iz željeznodobnih slojeva pokazuju moguće tragove cijepanja s pomoću upravo takve vrste oruđa.[31] Je li riječ o već spomenutoj prostornoj distribuciji nalaza i specifičnom uzorku koje je u ovom slučaju nemoguće provjeriti ili

ing cow. However, although in this case on the basis of small number of specimens we cannot state with certainty that change in economic exploitation of cattle happened, it is worth mentioning that the study of primitive cattle breeds showed that a cow would stop giving milk as soon as a calf stopped suckling so that milk was divided between a calf and a man resulting in small amount of milk. Furthermore, in primitive breeds caloric value of cow milk is small and variable. We do not know when exactly the biological characteristics of cows were modified so that lactation continued after calves stopped suckling.[30]

An equine carpal bone in the Iron Age layer testifies to presence of a smaller horse or donkey (*Equus* sp).

The number of pig specimens is twice as high in the Bronze Age layers, covering all age groups, as opposed to the Iron Age layers where we find only adult individuals, but as already emphasized, we do not know if these were domestic or wild specimens preventing any further discussion.

Since the data about the age at death for all domestic species are very modest, and having in mind small overall sample, all mentioned conclusions should be taken with caution pending future research.

Cut mark analysis has shown that common traces of primary, secondary and tertiary butchery were present on the bones from the excavated part of the hillfort. Spatial distribution of certain activities remains unclear though. It seems that heavy metal tools were not used. As a comparison, on Rat hillfort on the island of Brač certain samples of animal bones from the Iron Age layers exhibit possible traces of splitting using exactly such type of tool.[31] For now it is impossible to determine if it is previously mentioned spatial distribution of finds and specific sample that cannot be verified in this case, or a local butchery tra-

[30] H. J. GREENFIELD, 2005, 15.
[31] J. S. GAASTRA et al., 2014, 15.

[30] H. J. GREENFIELD, 2005, 15.
[31] J. S. GAASTRA et al., 2014, 15.

o lokalnoj tradiciji mesarenja koja ne uključuje teško metalno oruđe, za sada je nemoguće utvrditi. Tragovi deranja kože tipično se nalaze na donjim krajevima ekstremiteta i na lubanji, a u ovom slučaju potvrđeni su u podjednakom broju (po sedam jedinki za svaku vrstu) u obama razdobljima, na kostima ovce/koze i goveda te na jednom primjerku svinje.[32] Ovakav tip tragova, pribrojimo li i ostale koštane elemente s tragovima ureza, jasan je pokazatelj primarnog i sekundarnog mesarenja domaćih životinja koji se odvijao na prostoru ovog lokaliteta.

Posebno mjesto među koštanim nalazima s Vrčeva zauzimaju ostatci psa. Ukupno 43 uzorka (NISP), od čega ih 42 otpada na brončanodobne slojeve, predstavljaju deset jedinki. Čak 37 uzoraka odnosi se na kosti glave i zube, od čega se izdvaja osam ulomaka donjih čeljusti (*mandibula*). Na šest uzoraka kostiju pasa pronađeni su tragovi ureza, a uključuju po jednu nadlaktičnu kost, kost zdjelice, kralježak i tri ulomka donjih čeljusti (Sl. 4). Spomenuti uzorci pripadaju ostatcima pet jedinki, od kojih je jedna, sudeći prema veličini, vjerojatno bila štene. Riječ je o ulomku donje čeljusti bez zubi, porozne površine i manjih dimenzija u odnosu na ostale pronađene čeljusti. Tragovi na prvom vratnom kralješku (*atlas*) upućuju na dekapitaciju, a veliki udio kostiju glave može upućivati na ostavljanje glava pasa unutar objekata u kojima se boravilo, dok su tijela nošena na drugo mjesto. Jedna od donjih čeljusti tragove ureza ima s lingvalne, tj. unutarnje strane što sugerira da je tom psu izvađen jezik.[33] Ovakav obrazac prema kojem se biraju većinom odrasle jedinke, odrubljuje glava i ostavlja u određenom kontekstu naselja bez ostatka trupla upućuje na ritualni karakter. Ako izuzmemo mogućnost da su psi konzumirani radi nestašice drugog izvora mesa, što je malo vjerojatno jer ostatke pasa nalazimo od najranijih do najmlađih brončanodobnih slojeva, dakle tijekom više generacija nasedition that does not include heavy metal tools. Traces of skinning are usually found on lower ends of the extremities and on the skull, and in this case they were recorded in equal numbers (seven individuals for every species) in both periods, on the bone of sheep/goat and cattle and on one example of a pig.[32] This type of traces, if we count in other bone elements with cut marks, is a clear indicator of primary and secondary butchery of domestic animals that happened in the area of this site.

Dog remains take a special place among bone finds from Vrčevo. A total of 43 specimens (NISP), 42 of which from the Bronze Age layers, represent ten individuals. As many as 37 samples refer to head bones and teeth, of which 8 fragments of lower jaws (*mandibula*). Cut marks were found on 6 dog bone samples, including humerus, pelvis bone, vertebra and three fragments of lower jaws (Fig. 4). Mentioned samples belong to the remains of five individuals, one of which was probably a puppy, judging from the size. It is a fragment of a teethless lower jaw, with porous surface and smaller dimensions in comparison to other recovered jaws. Traces on the first cervical vertebra (*atlas*) suggest decapitation, and big share of head bones may indicate that the dog heads were left in the dwelling structures while bodies were taken elsewhere. One of the jaws has cut marks on the inner (lingual) side suggesting that this dog's tongue was ripped out.[33] A pattern in which mostly adult individuals are selected, heads are cut off and left without the rest of the body in a certain settlement context suggests ritual practice. If we exclude the possibility that dogs were eaten in lack of other meat sources which is highly unlikely since dog remains are found from the earliest to the latest Bronze Age layers, meaning through several generations of occupation of this hillfort segment, then we can assume that a certain ritual was taking place. Ritual sacri-

[32] K. SEETAH, 2018, 153.
[33] L. BINFORD, 1981, 109.

[32] K. SEETAH, 2018, 153.
[33] L. BINFORD, 1981, 109.

ljavanja ovog dijela gradine, tada je moguće pretpostaviti ritual. Ritualno žrtvovanje psa, kao htoničkog elementa, nije neuobičajeno na prostoru Italije i Grčke u brončano doba, no u ovom slučaju pas se ne konzumira i odlaže se cjelovit.[34] Zanimljivu tezu o procesu inicijalizacije mladića u ratne skupine konzumiranjem mesa psa ili vuka donose Anthony i Brown koji su analizirali ostatke pasa iz brončanodobnog naselja Krasnosamarskoe Srubnaya kulture u Rusiji. Oni tvrde da je riječ o indoeuropskoj tradiciji koja se može potvrditi komparativnom indoeuropskom mitologijom pri čemu sudionici rituala konzumacijom psa (ili vuka) ulaze u liminalno stanje tipično za obred prijelaza, u ovom slučaju u čovjeka-psa (vuka).[35] U željeznodobnim slojevima pronađen je samo jedan očnjak psa. Ostatci pasa u brončano doba istočnog Jadrana nisu rijetkost. Kosti pasa pronađene su u slojevima srednjeg i kasnog brončanog doba Vele peći u Veloj dragi u Istri, a jedna nadlaktična kost s tragovima mesarenja upućuje na komadanje trupla.[36] Kosti pasa spominju se i među nalazima faune u Monkodonji, kao mogući izvor hrane, no u ovom slučaju nije izričito naglašeno jesu li prisutni tragovi ureza.[37] Zanimljivo je da su kosti pasa na gradini Rat na Braču pronađene u svim slojevima od ranog brončanog do željeznog doba, ali nedostaju među nalazima iz srednjeg brončanog doba.[38] S obzirom na vrlo mali broj pronađenih lovnih životinja među nalazima s Vrčeva, u ovom slučaju vjerojatno je riječ o pastirskim psima, odnosno psima čuvarima, a ne psima koji su se upotrebljavali kao ispomoć u lovu.

Ostatke jelena iz željeznodobnih slojeva čine samo ulomci gornje i donje čeljusti, parožak te kosti zapešća i prstiju, odnosno ostatci glave i

fice of dog as a chthonic element is not uncommon in the territories of Italy and Greece in the Bronze Age, but in this case dogs were not consumed and their whole bodies were buried.[34] Anthony and Brown who analyzed dog remains from the Bronze Age settlement Krasnosamarskoe of the Srubnaya culture in Russia offered an interesting thesis about the male initiation process into war groups by eating dog or wolf meat. They claim that it was Indoeuropean tradition that can be corroborated by comparative Indoeuropean mythology whereby participants of the ritual consume a dog (or a wolf) to enter a liminal state typical of the rite of passage, in this case transition into a man-dog (wolf).[35] In the Iron Age layers only one dog canine was found. Dog remains dating to the Bronze Age are not rare on the eastern Adriatic coast. Dog bones were found in the Middle and Late Bronze Age layers in Vela Peć in Vela Draga in Istria, and one humerus with butchery marks suggests carcass dismembering.[36] Dog bones are also mentioned among faunal finds from Monkodonja, as a possible source of food, but in this case it has not been explicated if cut marks were noticed.[37] It is interesting that dog bones on Rat hillfort on the island of Brač were found in all layers from the Early Bronze Age to the Iron Age, but they are lacking among the Middle Bronze Age finds.[38] Considering a small number of game animals among the Vrčevo finds, in this case they were probably shepherd dogs, that is watchdogs, and not dogs used for hunting.

Deer remains from the Iron Age layers consist of fragments of upper and lower jaw, antler point and wrist and finger bones, that is the remains of head and distal parts of extremi-

34 D. W. ANTHONY, D. R. BROWN, 2017, 146.
35 D. W. ANTHONY, D. R. BROWN, 2017, 146.
36 S. RADOVIĆ et al., 2008, 39. Naknadnom neobjavljenom revizijom nalaza dovedena je u pitanje točna taksonomska odredba spomenutog ulomka nadlaktične kosti pa ovaj ulomak treba ostaviti kao upitan.
37 B. TOŠKAN, K. F. ACHINO, 2020, 516.
38 J. S. GAASTRA et al., 2014, 16.

34 D. W. ANTHONY, D. R. BROWN, 2017, 146.
35 D. W. ANTHONY, D. R. BROWN, 2017, 146.
36 S. RADOVIĆ et al., 2008, 39. Correct taxonomic determination of the mentioned fragment of humerus was questioned after a subsequent, unpublished revision of the finds so this fragment should be regarded accordingly.
37 B. TOŠKAN, K. F. ACHINO, 2020, 516.
38 J. S. GAASTRA et al., 2014, 16.

distalnih dijelova ekstremiteta što može upućivati na ostatke primarnog mesarenja pri čemu je životinja zaklana i oderana, a nakon toga je dio trupla namijenjen konzumaciji odnesen na drugo mjesto. Nažalost, ne postoje tragovi ureza koji bi potvrdili tu pretpostavku. Jedina kost divlje životinje s tragovima mesarenja je nadlaktična kost lisice s urezima na proksimalnom dijelu koja sugerira da je životinja komadana.

Fragmenti kostiju s jasnim tragovima gorenja u ovom slučaju otkrivaju samo da su pojedine kosti u nekom trenutku u prošlosti bile izložene djelovanju vatre te ne pružaju mogućnost rasprave o termičkoj obradi hrane.[39]

Među analiziranim materijalom nisu pronađene kosti ptica ili glodavaca, a za vrijeme istraživanja pronađena je samo jedna kost ribe.[40] Nedostatak sitnih kostiju, kao što su i već spomenute sitne kosti distalnih dijelova nogu ovce/koze mogu se objasniti neprosijavanjem iskopane zemlje. Međutim, na pojedinim kostima primijećeni su tragovi griženja distalnih krajeva od mesojeda (vjerojatno psa), no ni na jednoj kosti nisu utvrđeni tragovi zuba glodavaca. Moguće je da u ovom dijelu lokaliteta nije skladištena veća količina hrane koja bi ih privlačila, već su se glodavci zadržavali na drugom mjestu, no to i dalje ne pojašnjava nedostatak ptica ili većeg broja ribljih kostiju.

ZAKLJUČAK

Analiza osteoloških ostataka sisavaca s lokaliteta Vrčevo pokazala je da je u ovom gradinskom naselju i u brončano i u željezno doba ekonomski najisplativija životinja bila ovca. Rezultati upućuju na mješovito gospodarenje s naglaskom na proizvodnju vune, uz korištenje mesa i moguću proizvodnju mliječnih proizvoda. Dok dobni profili za ovcu i/ili kozu pokazuju da nema većih razlika u gospodarenju s prelaskom iz brončanog u željezno

[39] M. C. STINER et al., 1995, 234.
[40] M. ČELHAR, 2014b, 233.

ties which may indicate remains of primary butchery when an animal was slaughtered and skinned, and then part of the carcass intended for consumption was taken elsewhere. Unfortunately there are no cut marks that may confirm this hypothesis. The only bone of a wild animal with butchery marks is humerus of a fox with cut marks on the proximal part suggesting that the animal was dismembered.

Bone fragments with clear traces of burning in this case reveal only that certain bones were exposed to fire at some point in the past and do not offer a possibility of discussion of thermal processing of food.[39]

Bones of birds or rodents have not been found in the analyzed material, and there was only one fish bone.[40] Since excavated soil was not sieved, this might explain lack of tiny bones, as the already mentioned small bones of distal parts of legs of sheep/goat. However, certain bones bear marks of carnivore (probably dog) bites on distal parts, but traces of rodent teeth were not dicovered on any of the bones. It is possible that larger amount of food that might attract them was not stored in this part of the site, but this still does not explain the lack of birds or bigger amount of fish bones.

CONCLUSION

Analysis of osteological remains of the mammals from the site of Vrčevo has shown that sheep was the most cost-effective animal in this hillfort site in the Bronze and Iron Ages. The results indicate mixed management model focused on wool production, with the use of meat and possible production of dairy products. While age profile for sheep/goat indicates that there were no major differences in management at the transition from the Bronze to the Iron Age, the results for cattle might suggest certain changes that are reflected in higher percentage

[39] M. C. STINER et al. 1995, 234.
[40] M. ČELHAR, 2014b, 233.

doba, rezultati za govedo mogli bi upućivati na određene promjene koje se očituju u većem postotku smrtnosti vrlo mladih jedinki u željezno doba, ukoliko statistički uzorak prihvatimo kao relevantan. Izbjegavanje klanja mladih jedinki uglavnom upućuje na tendenciju prema povećanju reproduktivnosti i dugotrajnoj stabilnosti stada, a rezultati za brončano doba mogu se interpretirati kao iskorištavanje goveda, kao fizički snažne životinje, za nošenje ili vuču. U željezno doba moguće je da govedo postaje i izvor mlijeka. Jedna pronađena kost ekvida ne pruža prostor za daljnje interpretacije, no nije isključeno da je nova životinja koja se iskorištava za fizičke poslove ili transport u željezno doba magarac ili konj. Svinja je činila dio ishrane stanovnika Vrčeva u obama razdobljima, no premali uzorak elemenata koji bi pomogli u diferencijaciji između domaćih i divljih primjeraka onemogućio je donošenje daljnjih zaključaka. Ostatci psa u bronča-nodobnim slojevima, s naglaskom na relativno veliki broj pronađenih ulomaka donjih čeljusti u odnosu na ostale kosti i tragove ureza na čeljustima i prvom vratnom kralješku, upućuju na ritualni karakter nalaza. Moguće je da je pas ponajprije služio kao ispomoć pri izvođenju stoke na ispašu te kao čuvar od grabežljivaca, no čini se da je njegova uloga proširena u sferu rituala. Ta uloga definitivno nestaje s prelaskom u željezno doba. Dobni profili za ovcu/kozu upućuju na stalnu prisutnost stada u blizini naselja što znači da su pašnjaci u okolici gradine bili dostatni za ispašu stoke. Lov na divlje životinje u brončano doba vrlo je rijedak i ograničen na zeca, dok se u željezno doba širi i na veće primjerke, poput lisice i jelena.

Nužno je naglasiti da je svaki pokušaj interpretacije ovdje predstavljenih arheoloških ostataka izveden na vrlo malom uzorku jedne mikrolokacije na gradini. Za odgovore na pitanja o ekonomiji zajednica koje su ovdje živjele nužna su daljnja istraživanja koja će dati veći broj uzoraka, a posljedično i kontekst specifičnih društvenih okolnosti unutar kojih su se odvijale aktivnosti na gradini.

of mortality of very young individuals in the Iron Age, if we acknowledge the relevance of the statistical sample. Avoiding slaughtering young individuals mostly points to a tendency to increase reproduction and long-term stability of the herd, and the results for the Bronze Age can be interpreted as exploitation of cattle as strong animals for carrying or towing. It is also possible that cattle became source of milk in the Iron Age. Only one equine bone prevents further interpretations, but it is possible that the new animal used as a beast of burden in the Iron Age was a donkey or a horse. Pig was a part of diet of the residents of Vrčevo in both periods, but too small sample of elements that might aid differention between domestic and wild specimens prevented making any further conclusions. Ritual character of the dog remains from the Bronze Age layers is suggested by relatively great number of recovered fragments of lower jaw in relation to other bones, cut marks on jaws and the first cervical vertebra. It is possible that dog was used to help putting livestock out to pasture or as a guardian animal against predators, but it seems his role grew to the ritual sphere. This role is definitely lost with the beginning of the Iron Age. Age profile for sheep/goat suggests constant presence of the flock near the settelement meaning that the nearby pastures were sufficient for feeding livestock. Wild animals were rarely hunted in the Bronze Age, with the exception of rabbits, while in the Iron Age bigger animals, such as foxes or deers, were hunted as well.

It is necessary to emphasize that every attempt of interpretation of the presented archaeological material was carried out on a very small sample from one microlocation on the hillfort. To answer the questions about the economy of communities that lived here, further research is necessary in order to obtain bigger number of specimens, and consequentially the context of specific social circumstances that were a framework of activities on the hillfort.

Translation: Marija Kostić

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