Izvor – špilja Ričina u Buškome jezeru. Prvi tragovi paleolitika na području zapadne Hercegovine

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The Ričina spring cave in Buško Jezero. The first traces of the Palaeolithic in the western Herzegovina region

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Izvor – špilja Ričina nalazi se na širem području zaseoka Vrilo u blizini Tomislavgrada. Dio je većega kompleksa, točnije riječ je o tri špiljska ulaza međusobno povezana špiljskim kanalima koji su nastali korozivnim djelovanjem snažnoga podzemnog toka. Za vrijeme viših vodostaja akumulacijskoga jezera kompleks, ali i područje uokolo je potopljeno. Špiljski kompleks je već prije speleološki dokumentiran, a prilikom jednoga posjeta speleolozi su ispred špilje uočili ostatke kremenoga oruđa. Pronalazak je potaknuo arheološka istraživanja prilikom kojih je, ispred ulaza u pećinu, pronađeno mjesto izrade litičkih predmeta. Tanki kulturni sloj i prostorna dispozicija nalaza asocira na sekundarni položaj nalaza, ali geomorfološke karakteristike terena pokazuju da je, ipak, riječ o izvornoj zoni litičke obrade. Postojanje gotovo svih faza lanca operacija (nedostaje jedino faza prikupljanja sirovine) ukazuje kako se cjelokupni proces obrade odvijao na ovome mjestu. Iako kronološke analize za sada nisu moguće, tipološke i tehnološke karakteristike, uz pojavu obrađenih sječiva, grebala i pločica s hrptom, sasvim jasno ukazuju na epigravetijensku kulturu. Time nalazište na izvoru Ričine postaje prvo paleolitičko nalazište na prostoru zapadne Hercegovine.

Ključne riječi: Buško jezero, Buško blato, Izvor – špilja Ričina, epigravetijen, gornji paleolitik, Tomislavgrad

The Ričina spring cave is located in the wider region of the Vrilo hamlet in the vicinity of Tomislavgrad. It is a part of a larger complex, more precisely there are three cave entrances mutually connected with cave channels, created as a consequence of the corrosive activity of a strong underground stream. The complex and the surrounding region are flooded when there is a high water level in the reservoir. The cave complex has already been documented speleologically, and remains of stone tools were noticed by speleologists in one of their visits to the cave. This discovery incited archaeological research that resulted in the identification of a place in front of the cave where lithic objects were made. The thin cultural layer and spatial disposition of the finds imply their secondary position, but the geomorphological characteristics of the terrain indicate that it was the original zone of lithic production. The presence of almost all the phases of the operational sequence (only the collection of raw material is missing) indicates that the entire process of production happened at this spot. Though chronological analyses are unavailable for the time being, typological and technological characteristics, along with the presence of retouched blades, end scrapers and backed bladelets, clearly indicate the Epigravettian culture. It means that the site at the source of Ričina is the first Palaeolithic site in the western Herzegovina region.

Keywords: Buško jezero, Buško blato, Ričina spring cave, Epigravettian, Upper Palaeolithic, Tomislavgrad

UVOD

Unatoč svome arheološkom bogatstvu, za proučavanje razvoja paleolitika i mezolitika Hercegovina je gotovo *terra incognita*. Otkriće Badnja kod Stoca (Basler 1976; Whallon 1989; 1999; 2007) i Ružine pećine kod Gackog (Kujundžić

INTRODUCTION

Herzegovina is still virtually *terra incognita* despite its rich archaeological potential for the study of the Palaeolithic and Mesolithic development. The discoveries of Badanj near Stolac (Basler 1976; Whallon 1989; 1999; 2007) and Ru-

Vejzagić 1991) donekle je upotpunilo praznine, ali s obzirom na veličinu područja i njegovu važnost u povezivanju jadranske obale s kontinentom bilo je jasno da trenutni uzorak ne odražava realno stanje. Otkriće litičkih artefakata ispred Izvor – špilje Ričina u blizini Tomislavgrada potvrdilo je navedeno dajući tako impuls za daljnja istraživanja ovih prostora.

Hercegovina je u geomorfološkim, klimatološkim i topografskim osobinama, ali i u materijalnoj kulturi neraskidivo povezana s istočnom obalom Jadrana čineći njeno zaleđe i rubnu zonu jadranskoga bazena. Područje je okruženo Dinaridima koji su ne samo izrazita reljefna i prostorna granica, nego i orografska barijera koja, zajedno s Alpama, području osigurava povoljnije klimatske uvjete od prostora sjeverno od njega. Time je širi prostor Jadrana i u najhladnijim razdobljima pleistocena bio svojevrsni refugij, kako za biljni i životinjski svijet, tako vjerojatno i za paleolitičke zajednice (Surić 2006: 187; Miracle 1995; 2007). U tim razdobljima područje je izgledalo nešto drugačije, a njegova okosnica danas je potopljena dolina sjevernoga Jadrana (Shackelton et al. 1984; Miracle 1995; 2007; Mussi 2001; Surić 2006).

Stvaranje sjevernojadranske ravnice posljedica je snižavanja razine Jadranskoga mora za hladnih razdoblja, a svoj površinski maksimum dosegla je na vrhuncu posljednjega ledenog doba. Iako zbog seizmičke nestabilnosti i naplavnih depozita rijeke Po rekonstrukcija nije u potpunosti moguća, smatra se kako je tadašnju granicu mora predstavljao nagli pad na liniji od današnje Ankone (Mussi 2001: 222). Jadran je bio sveden na poluzatvoreni bazen unutar Jabučke kotline, dok je sjeverni dio jadranskoga bazena bila prostrana dolina rijeke Po i apeninskih rijeka, ali i dinaridskih vodotoka čija se paleokorita mogu pratiti na današnjem morskom dnu. O takvom kopnenom okolišu svjedoče i pleistocenski eolski nanosi na istočnojadranskim otocima i priobalju (Surić 2006: 187). Nizina je predstavljala travnato stanište s povremenim šumskim pokrivačem uz riječne tokove i u zaštićenim dolinama. Zaleđe je pak mozaik krških zona sa šumskim područjima grupiranim na visinskim zonama od 500 do 700 m.n.v. (Miracle 1995: 486). Prostrani krajolik natapan vodom rijeke PaleoPo predstavlja idealno područje, kako za biljne i životinjske vrste, tako i za epigravetijenske grupe (Shackelton et al. 1984: 312; Miracle 1995: 45; 2007; Whallon 1999: 338; Pilaar Birch, Miracle 2017; Boschian, Fusco 2007), iako postoje i suprotna mišljena (Mussi 2001: 311–312).

Završno oblikovanje prostora istočne obale Jadrana počinje prije 11.500 godina, prestankom ledenoga doba. Zatopljenje klime i postupno poplavljivanje sjeverne polovice Jadrana dovelo je prostor današnje obale i prostor trenutno poznatih nalazišta na nekadašnji rub teritorija paleolitičkih zajednica.

žina Pećina near Gacko (Kujundžić Vejzagić 1991) have filled some gaps, but considering the size and importance of the area in connecting the Adriatic coast with the inland regions, it is clear that the present sample does not reflect the actual situation. The discovery of lithic artefacts in front of the Ričina spring cave in the vicinity of Tomislavgrad has confirmed the aforementioned, providing the impetus for further research of this region.

Herzegovina is inseparably bound up with the eastern Adriatic coast with regard to geomorphological, climatological and topographical characteristics, but also regarding material culture. The area is flanked by the Dinarides as a distinct spatial and relief boundary but also as an orographic barrier that, together with the Alps, ensured more favourable climate conditions than in the area north of it. Even in the coldest periods of the Pleistocene, the wider Adriatic region was a sort of refuge for flora and fauna, but probably also for the Palaeolithic communities (Surić 2006: 187; Miracle 1995; 2007). In these periods, the region looked somewhat different, and its outline is the presently submerged northern Adriatic valley (Shackelton et al. 1984; Miracle 1995; 2007; Mussi 2001; Surić 2006).

The formation of the northern Adriatic plain was a consequence of the lowering of the Adriatic Sea level in the cold periods, and it reached its maximum size during the peak of the last glaciation. Although a complete reconstruction is impossible due to seismic instability and alluvial deposits of the Po river, the sudden fall along the line from present-day Ancona was probably the coastline at the time (Mussi 2001: 222). The Adriatic was reduced to a semi-closed basin in the Jabuka Pit (Jabučka kotlina) while the northern part of the Adriatic Basin was the spacious valley of the Po river, other Apennine rivers, and the watercourses of the Dinarides whose palaeobeds can be traced on the present-day seabed. This terrestrial environment is attested by the Pleistocene aeolian deposits on the eastern Adriatic islands and littoral (Surić 2006: 187). The plain was a grassy habitat with patches of woods along the rivers or in protected valleys. The hinterland was a mosaic of karst zones with woody areas grouped at the altitudes from 500 to 700 masl (Miracle 1995: 486). The spacious landscape abounding in water of the PaleoPo river was the ideal habitat for plants and animals, but also for the Epigravettian groups (Shackelton et al. 1984: 312; Miracle 1995: 45; 2007; Whallon 1999: 338; Pilaar Birch, Miracle 2017; Boschian, Fusco 2007), although not all authors agree (Mussi 2001: 311–312).

The final formation of the eastern Adriatic coast started 11,500 years ago, when the glaciation ended. Owing to the warming climate and the gradual flooding of the northern half of the Adriatic, the area of the present-day coast and the area of the currently known sites correspond to the former edge of the territory of the Palaeolithic communities.

Sl. 1 Položaj nalazišta u odnosu na druga epigravetijenska nalazišta na istočnoj obali Jadrana (izradio: D. Vujević)
Fig. 1 Position of the site in relation to the other Epigravettian sites on the eastern Adriatic coast (made by: D. Vujević)

NALAZIŠTE

Izvor – špilja Ričina nalazi se na istočnoj strani Buškoga jezera, kod zaseoka Vrilo u zapadnoj Hercegovini ispod prijevoja Privala koji dijeli Duvanjsko polje od jezera (sl. 1). Prostor je znatno niži od Duvanjskoga polja i nalazi se na 700–720 m.n.v. Prije potapanja Buško jezero je bilo tipično krško polje kroz koje je tekla rijeka Ričina koja je u zimskim vremenima plavila polje. Stoga se cijeli taj prostor zvao i Buško blato. Danas je to velika akumulacija izgrađena kao

SITE

The Ričina spring cave is situated on the eastern side of the lake called Buško Jezero, near the Vrilo hamlet in western Herzegovina, under the Privala pass that divides the plain of Duvanjsko Polje from the lake (Fig. 1). The area is at the altitude of 700–720 masl, much lower than Duvanjsko Polje. Prior to flooding, Buško Jezero was a typical karst field flooded by the Ričina river in the winter months as it flowed through the field. Therefore, the entire area was called Buš-

spremnik vode za hidroelektrane na Cetini (Radoš, Radoš 2013: 105–107).

Sama špilja je snažno uzlazno krško vrelo, odnosno završni dio podzemnoga toka rijeke Šujice i pridruženih joj rijeka s Duvanjskoga polja. Sastoji se od tri ulaza povezana podzemnim kanalima koji se protežu u pravcu jugozapada, a rezultat su intenzivnoga korozivnog djelovanja podzemnih voda (sl. 2–4). Prvi je ulaz spušten u odnosu na razinu polja 12 m. Širok je 10, a visok 3 m i okrenut je prema sjeverozapadu. Drugi ulaz, ispred kojega su i vršena arheološka istraživanja, od prvog udaljen je 95 m u pravcu jugozapada s otvorom okrenutim u pravcu zapada. Treći se ulaz nalazi na tektonski izraženom području špiljskoga sustava, gdje skreću vodeni kanali (Buntić, Šumanović 2013: 187–188).

ko Blato ("blato" meaning mud). Presently it is a large reservoir built as a water container for the hydro power plants on the Cetina river (Radoš, Radoš 2013: 105–107).

The cave itself is a strong ascending karst source, actually the final part of the underground segment of the Šuica river and its tributaries from Duvanjsko Polje. It consists of three entrances connected with underground channels spreading in the south-west direction, created as a consequence of the corrosive activity of underground waters (Figs. 2–4). The first entrance is 12 m lower than the field level. It is 10 m wide and 3 m high, facing north-west. The second entrance, where archaeological research was conducted, is at the distance of 95 m from the first one in the south-west direction, with the opening facing west. The third entrance is located in the tectonically distinct area of the cave system where the river channels bend (Buntić, Šumanović 2013: 187–188).

Sl. 2 Zračna snimka istočnoga dijela Buškog blata s označenim drugim ulazom u špiljski kompleks (foto: B. Šimunović)
Fig. 2 Aerial photograph of the eastern part of Buško Blato; the second entrance to the cave complex is marked (photo: B. Šimunović)

Arheološki potencijal izvor – špilje Ričina nije bio poznat u starijoj literaturi. Iako su na prostoru Buškoga jezera prije potapanja vršena između ostaloga i arheološka istraživanja kao i terenski pregled, ovaj lokalitet ostao je nezamijećen. Prvi arheološki materijal slučajno je pronađen ispred špilje 2010. godine prilikom speleološke i znanstveno-istraživačke ekspedicije Ponor Kovači – Izvor Ričine.[1] Ti pronalasci su

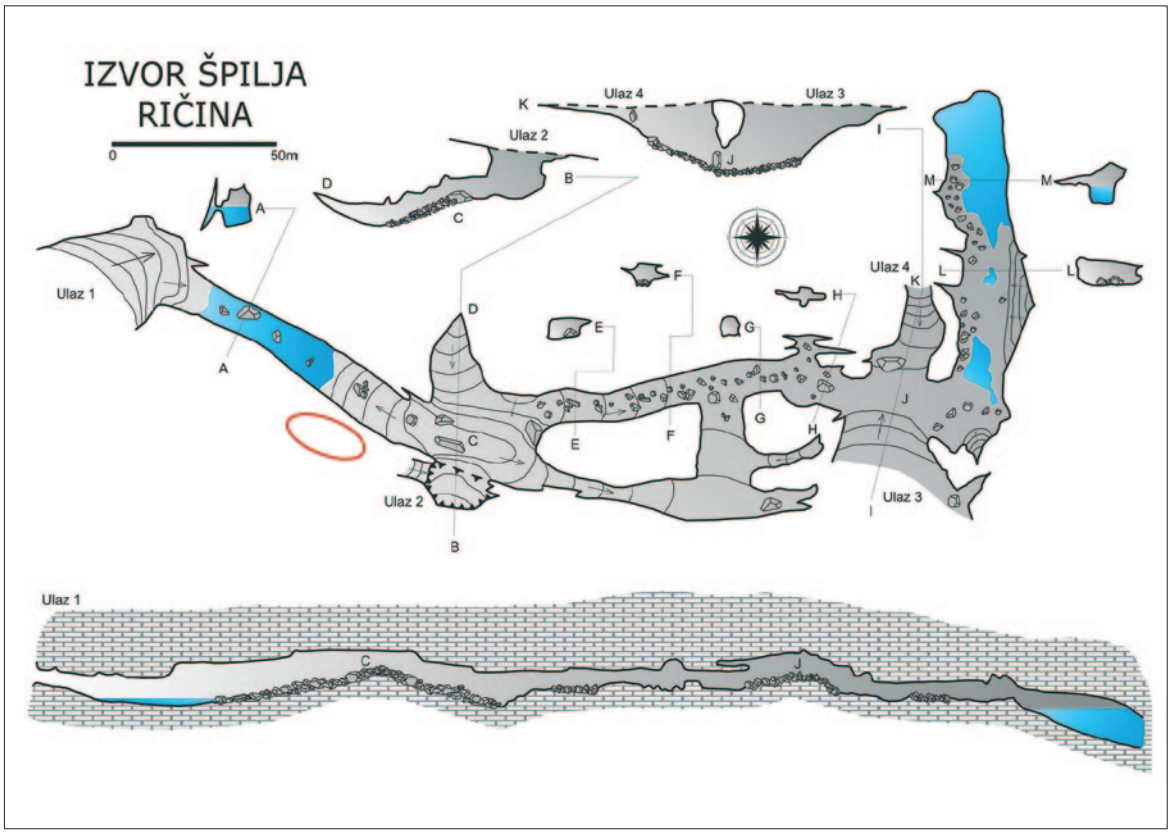
The archaeological potential of the Ričina spring cave has not been mentioned in earlier literature. Although the archaeological research and field survey were conducted in the area of Buško Jezero prior to flooding, this site went unnoticed. The first archaeological finds were discovered accidentally in 2010 in the speleological and scientific research expedition Ponor Kovači – Izvor Ričine.[1] These finds

1 Zahvaljujemo speleolozima SD Mijatovi dvori Tomislavgrad, studentima Sveučilišta u Mostaru i Ivici Ćurkoviću koji su doprinijeli pronalasku nalazišta

1 We would like to thank the speleologists from the Speleological Association Mijatovi Dvori Tomislavgrad, the students of the University of Mostar, and Ivica Ćurković, who contributed to the discovery of the site.

i bili povod da se 2015. godine organizira i detaljan arheološki pregled lokaliteta, pri čemu su pronađeni novi litički artefakti.

incited a detailed archaeological survey of the site in the same year when the new lithic artefacts were found (2015).



Sl. 3 Topografski snimak izvor – špilje Ričina s označenim područjem istraživanja (prema: Buntić, Šumanović 2013: 187)
Fig. 3 Topographic image of the Ričine spring cave; the research area is marked (after: Buntić, Šumanović 2013: 187)

Sl. 4 Središnji ulaz (ulaz 2) Izvor – špilje Ričina snimljen tijekom istraživanja (foto: D. Vujević)
Fig. 4 Central entrance (Entrance 2) of the Ričine spring cave during the excavations (photo: D. Vujević)

Površinski nalazi usmjerili su istraživanja na središnji ulaz špiljskoga kompleksa. Za probna iskopavanja odabran je izduženi plato koji vodi do ulaza u špilju (sl. 4), i to njegov krajnji, sjeverni rub, udaljen 30 m od ulaza (sl. 3). Plato je okružen matičnom stijenom, a segmenti iste proviruju na više mjesta i na samome platou (sl. 5). Prostor je većinom zaravnjen, s blagim udubljenjima na središnjem dijelu. Izdignuta stijena na rubovima spriječila je jača djelovanja vode i veću eroziju depozita. Površinu platoa čini niska trava, a depozit većinom crvenica. Na najnižim dijelovima površina je djelomično erodirala, pa su u zemlji, za razliku od travnatih površina uokolo, bili vidljivi sileksi.

The surface finds directed the research to the central part of the cave complex. The northern peripheral edge of the elongated plateau leading to the cave entrance (Fig. 4) was chosen for trial excavations, at the distance of 30 m from the entrance (Fig. 3). The plateau is surrounded by bedrock, with outcrops visible at several spots on the plateau (Fig. 5). The area is mostly flattened with shallow cavities in the central part. The rock was raised on the edges, preventing stronger hydrological activity and deposit erosion. The plateau surface consists of low grass, and the deposit mostly consists of terra rossa. In the lowest parts, the surface was partially eroded so that silices were visible in the soil as opposed to the surrounding grassy patches.

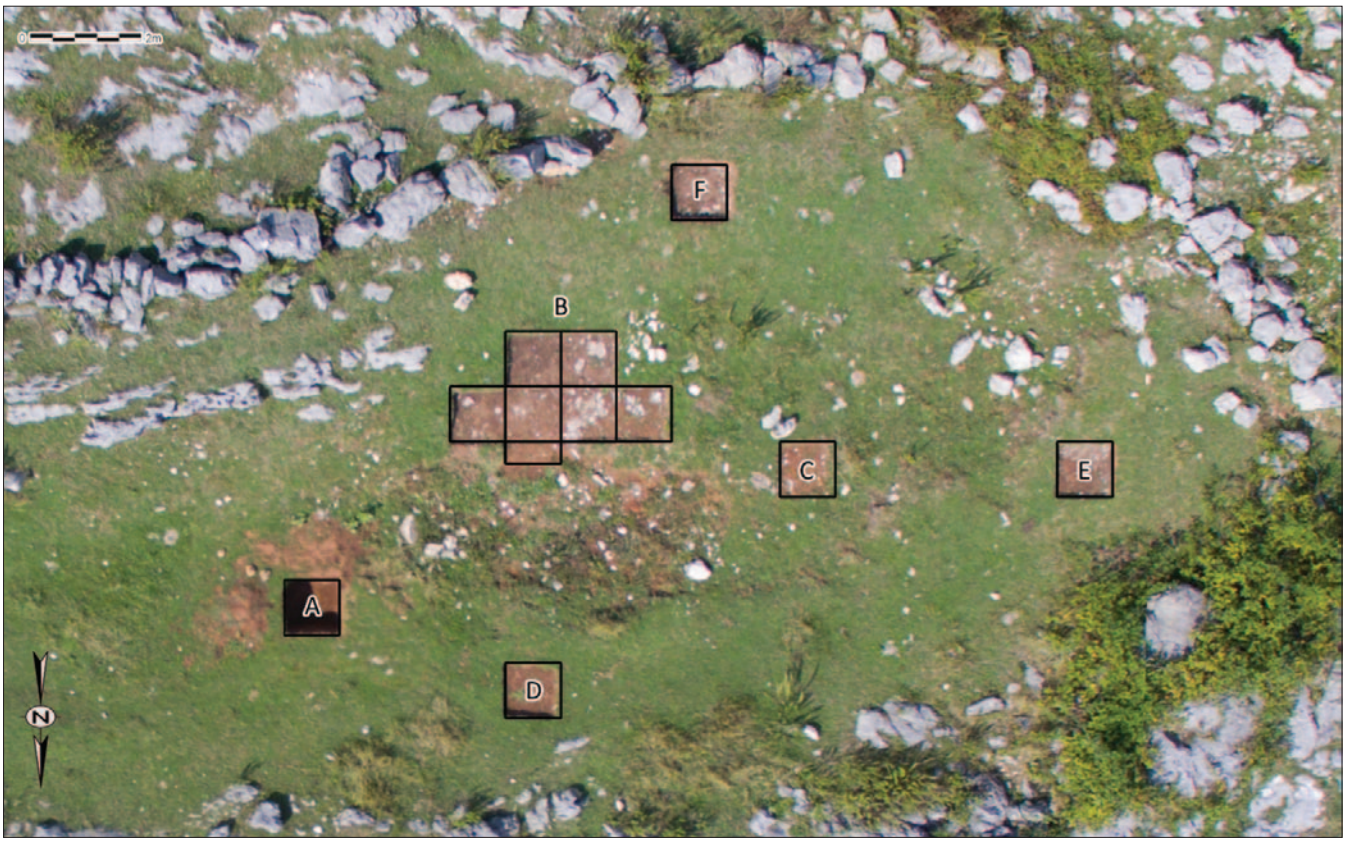
Sl. 5 Zračna snimka špilje i platoa ispred (foto: B. Šimunović)
Fig. 5 Aerial photograph of the cave and the front plateau (photo: B. Šimunović)

Istraženo je 6 sondi (označene kao Sonde A–F), svaka prvotne površine 1 m^2, raspoređenih tako da obuhvate što veću površinu, različite strane, ali i različite segmente platoa; vrh, kosine i dno (sl. 6). Zbog velike koncentracije nalaza, Sonda B je proširena i na kraju obuhvatila 7 m^2. Sav sediment je mokro prosijavan kroz sita veličine 3 mm što je omogućilo prikupljanje svih kategorija nalaza.

Kulturni sloj s nalazima počinje ispod travnate površine na 5 cm dubine. Kod većine sondi riječ je o rahlijem subhumusnom sloju crvenkasto-smeđe zemlje (2.5YR 3/4 dark reddish brown) koja na otprilike 15 cm polagano prelazi u

Six probes have been excavated (marked as Probes A–F), each with the original surface of 1 m^2, distributed so as to encompass as big an area as possible, and different segments of the plateau: the top, the slopes, and the bottom (Fig. 6). Due to the big concentration of finds, Probe B was expanded to eventually encompass 7 m^2. Wet sieving was applied to the entire sediment through sieves with 3 mm openings so that all the categories of finds were collected.

The cultural layer with the finds starts beneath the grassy area at the depth of 5 cm. In most probes, it consists of loose sub-humus reddish-brown soil (2.5YR 3/4 dark



Sl. 6 Prostorni raspored sondi (foto: B. Šimunović)
Fig. 6 Spatial distribution of probes (photo: B. Šimunović)

čistu crvenicu (2.5YR 4/8 red). Jasnog prekida u sloju nema, no s ulaskom u crvenicu gotovo nestaju i nalazi. Jedino se u Sondi F, koja je obuhvatila zapadni vrh platoa, ispod površine javlja 5–10 cm debeo sloj rahle smeđe zemlje (2.5YR 3/2 brown) s velikom koncentracijom sitnoga vapnenca.

Litički nalazi dominiraju u svim sondama. Tek povremeni nalaz recentnoga materijala i grube keramike, bez jasnih obilježja koje bi je smjestili u kronološki i kulturni slijed, vjerojatno su posljedica djelovanja vode. Među nalazima nema ostataka faune. Bez obzira na povremene intruzije recentnoga materijala, velika količina litičkih nalaza s jasnim tipološkim i tehnološkim karakteristikama otklanja sumnje u prapovijesni karakter nalaza i samoga nalazišta.

U većini kvadrata istražen je samo subhumusni sloj radi dobivanja podataka o prostornim odnosima. Jedino su u Sondi A istraženi dublji dijelovi depozita tj. sloj crvenice radi uvida u stratigrafiju nalazišta. Nakon sterilnoga početka sloja crvenice, koji je uslijedio ispod litičkih nalaza, na 25 cm dubine ponovo se javljaju novi nalazi. Riječ je o malome broju nalaza koji se povremeno pronalaze sve do dubine od 60 cm. Za sada nije moguće utvrditi da li je riječ o zasebnoj fazi nalazišta ili je ovakav stratigrafski raspored posljedica postdepozicijskih faktora.

Horizontalna distrubucija litičkih nalaza pokazuje koncentraciju predmeta na središnjem, najnižem dijelu platoa, dok prema rubovima platoa količina drastično pada. Ova-

reddish brown) that gradually turns to pure terra rossa at approximately 15 cm (2.5YR 4/8 red). There is no clear break in the layer but there are virtually no finds once terra rossa begins. A thick layer of loose brown soil (2.5YR 3/2 brown) with a big concentration of small limestone was found only in Probe F, which encompassed the western part of the plateau, some 5–10 cm under the surface.

The lithic finds are dominant in all the probes. The occasional recent finds and coarse pottery without the diagnostic characteristics that might define them in terms of chronology and cultural attribution are a consequence of water activity. There are no faunal remains among the finds. Regardless of the sporadic intrusions of the recent material, the big amount of the lithic finds with clear typological and technological characteristics eliminates any possible doubt as to the prehistoric character of the finds and the site itself.

In most quadrats, only the sub-humus layer was excavated in order to obtain information on spatial relations. It was only in Probe A that deeper parts of the deposit (a layer of terra rossa) were explored in order to learn more about the site stratigraphy. After the sterile beginning of the terra rossa which was found under the lithic finds, new finds appeared at the depth of 25 cm. These scarce finds were occasionally found up to the depth of 60 cm. We cannot say yet if it was a special phase of the site or if this stratigraphic distribution was a consequence of post-depositional factors.

The horizontal distribution of the lithic finds shows a concentration of artefacts in the central, lowest part of the plateau, which decreases drastically towards the edges of

kav raspored mogao bi biti posljedica djelovanja vode, pri čemu je jezerska voda više deponirala nalaze u nižim dijelovima platoa, dok oni na kosinama platoa gotovo u potpunosti nestaju. Velika količina sitnoga kamenja u sloju Sonde F ide u prilog tumačenja da je voda djelomično utjecala na disperziju nalaza.

S druge strane, oblik platoa s izdignutim rubnim dijelovima zaštićenim matičnom stijenom, kao i izgled okoliša pokazuje kako je voda mogla utjecati na raspored nalaza samo unutar prostora platoa, nikako ne i na prijenos materijala s nekoga drugog mjesta. Time, iako se artefakti nalaze u sekundarnome položaju, ipak možemo govoriti o nalazištu koje nije znatnije poremećeno.

the plateau. This distribution might be a consequence of water activity, with lake water depositing more finds in the lower parts of the plateau and leaving almost no finds on the plateau slopes. The large amount of small rocks in the layer of Probe F supports the interpretation that the water at least partially affected the dispersion of finds.

On the other hand, the form of the plateau with its raised peripheral parts protected with bedrock, as well as the surrounding environment, indicate that the water may have affected the distribution of finds only within the plateau area and definitely not by transferring artefacts from some other place. Therefore, we can conclude that the site was not significantly disturbed even though the artefacts were in secondary positions.

Sl. 7 Pogled na nalazište (foto: D. Vujević)
Fig. 7 View of the site (photo: D. Vujević)

METODOLOGIJA

Litički skup prikupljen na nalazištu Izvor-špilja Ričina čini 1476 artefakta. Iz glavne analize izdvojeni su artefakti iz Sonde A i to iz donjih stratigrafskih razina jer su, iako bez jasnih prekida u stratigrafiji, od površinskih nalaza odvojeni sterilnim depozitom zemlje debljine 10 cm, pa se nisu mogli dovesti u sigurnu vezu s ostalim nalazima. Sukladno tome, obrađeni su zasebno. Za potrebe rada detaljno su obrađeni artefakti veći od 20 mm te artefakti manji od 20 mm pod

METHODOLOGY

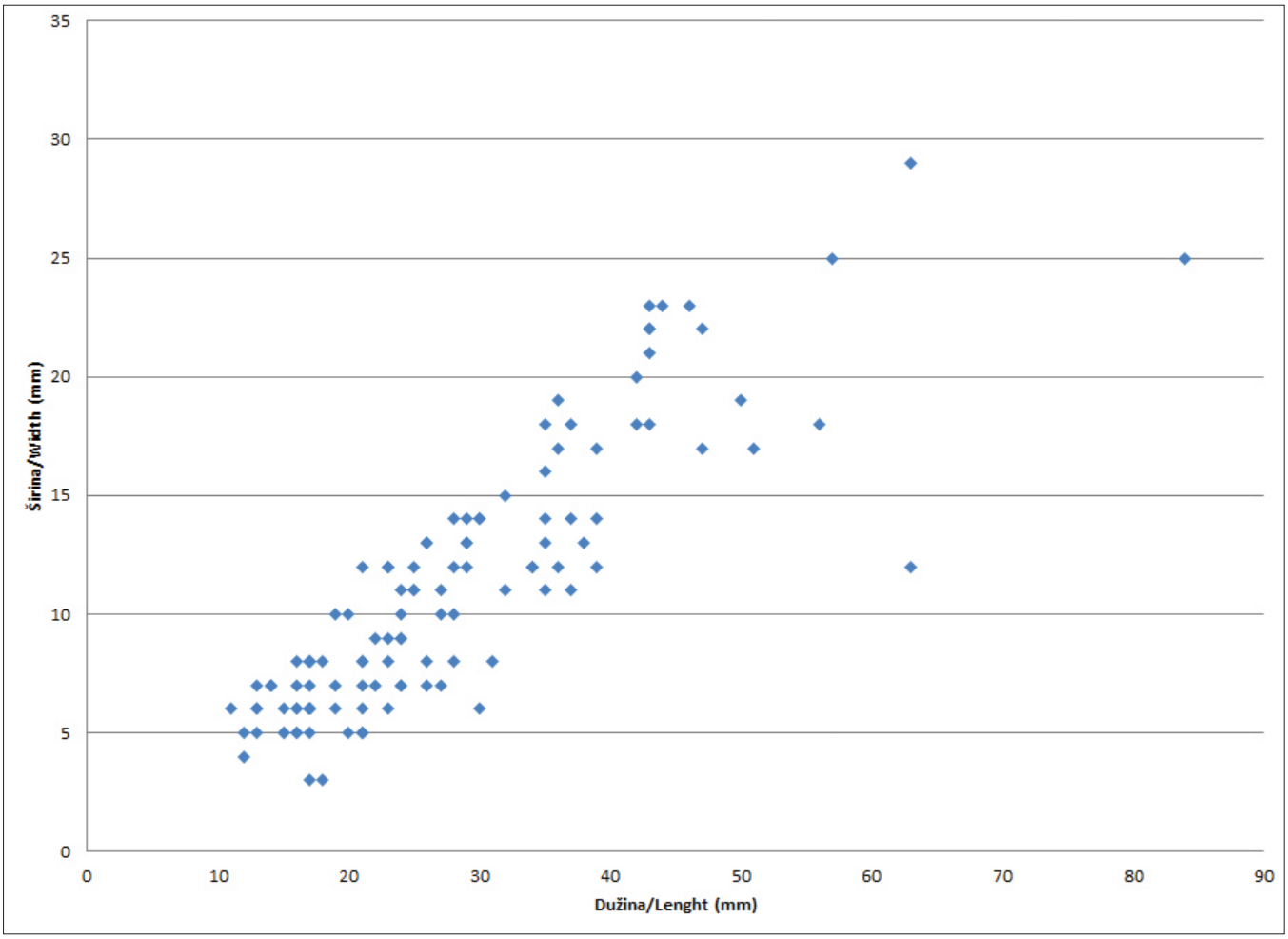
The lithic assemblage collected at the site of the Ričina spring cave consists of 1476 artefacts. The artefacts from the lower segments of Probe A have been excluded from the analysis as they were separated from the surface finds by a sterile soil deposit 10 cm thick, though without clear breaks in stratigraphy, so a clear association with other finds could not be established. Accordingly they were analysed separately. Artefacts bigger than 20 mm were analysed in

uvjetom da su obrađeni, kao i sve pločice i iveri dubila. Za razliku od navedenih, artefakti manji od 20 mm samo su prebrojeni i grupirani u tehnološke kategorije. Pri analizi korištena je danas već standardna terminologija I. Karavanića (1993; 1994; 2008) i metodologija modificirana prema N. Vukosavljević (2012) te N. Vukosavljević et al. (2011; 2014) radi lakše usporedbe s drugim lokalitetima na istočnoj jadranskoj obali.

Tehnološka analiza uključuje podjelu artefakata na lomljevinu, tehničke komade, jezgre i krhotine, kao i određivanje njihova položaja u tzv. *lancu operacija*. Lomljevinu čine odbojci, odbojčići (odbojci <20 mm), sječiva i pločice (Inizan et al. 1999). Iako postoji više pristupa (Tixier 1963; Marks 1968; Bar Josef 1981) i ne postoji standardna numerička granica koja bi dijelila sječiva od pločica (Inizan et al. 1999), dijagram dužine i širine za cjelovite artefakte iz lzvor – špilje Ričina (sl. 8) pokazuje svojevrsni hijatus nakon 40 mm dužine i 15 mm širine. Stoga je kao primarni kriterij za razlikovanje sječiva i pločica postavljena širina od 15 mm, uz maksimalnu dužinu pločica koja može iznositi 40 mm. Dimenzije navedenih jasno pokazuju da je korištenje laminarne tehnologije prvenstveno usmjereno na dobivanje pločica, dok su prava sječiva zastupljena u malome broju.

detail, and the ones smaller than 20 mm only if they were retouched, as well as all the bladelets and burin spalls. As opposed to the former, artefacts smaller than 20 mm were only counted and grouped in technological categories. We used the terminology of I. Karavanić (1993; 1994; 2008), which has become standard by now, and a methodology modified after N. Vukosavljević (2012) and N. Vukosavljević et al. (2011; 2014) in order to facilitate the comparison with the other sites on the eastern Adriatic coast.

The technological analysis includes classifying the artefacts into debitage, technical pieces, cores, and chunks, as well as determining their position in the *chaîne opératoire* (operational sequence). Debitage consists of flakes, small flakes (flakes <20 mm), blades and bladelets (Inizan et al. 1999). Although there are several approaches (Tixier 1963; Marks 1968; Bar Josef 1981) and there is no standard numerical border to divide blades from bladelets (Inizan et al. 1999), the length and width chart for the complete artefacts from the Ričina spring cave (Fig. 8) shows a certain hiatus after 40 mm in length and 15 mm in width. Therefore, the width of 15 mm was set as a primary criterion for distinguishing between blades and bladelets, with 40 mm as the maximal length of bladelets. The mentioned dimensions



Sl. 8 Dijagram dužine i širine svih cjelovito sačuvanih sječiva i pločica (izradio: D. Vujević)
Fig. 8 Length and width chart for all complete blades and bladelets (made by: D. Vujević)

Za sve kategorije lomljevine, osim za odbojčiće, određena je površina sačuvanosti okorine na dorzalnoj strani, na osnovu čega je lomljevina podijeljena u tri kategorije: 1) prvotni artefakti čija je dorzalna strana prekrivena s više od 50% okorine; 2) drugotni artefakti čija je dorzalna strana prekrivena s manje od 50% okorine; 3) artefakti bez okorine. Tamo gdje je to bilo moguće, kod cjelovite lomljevine ili sačuvanih proksimalnih dijelova, određen je tip plohka: okorinski, glatki, dvoplošni, višeplošni, linearni, točkasti i usnati (prema Débenath, Dibble 1994; Inizan et al. 1999).

U jezgre su svrstani svi komadi sirovine na kojima je vidljiv barem jedan negativ lomljenja. Na osnovi tehnike lomljenja podijeljene su na: jednoplatformne, dvoplatformne, višeplatformne i rotirajuće jezgre. Podjela je napravljena i na osnovi lomljevine koja se od njih proizvodila: na jezgre za odbojke, jezgre za sječiva, jezgre za pločice i miješane jezgre na kojima su vidljivi tragovi odbojaka i sječiva/pločica. Posljednja podjela napravljena je prema obliku same jezgre, pri čemu su jezgre svrstane u sljedeće kategorije: konične, prizmatične, globularne, jezgre na odbojku i amorfne.

Tipološka analiza obuhvatila je sve artefakte na kojima se vide tragovi obrade. Pri tom je izdvojeno 19 kategorija od kojih gotovo polovicu čine različiti podtipovi grebala i dubila (tab. 4). Ovakva podjela najvećim je dijelom utemeljena na tipologiji P. Y. Demarsa i P. Laurenta (1992) s korištenim nazivljem prilagođenim za hrvatski jezik od strane I. Karavanića (1993; 1994; 2008).

Tehnološka analiza

Tehnologija je ukupnost radnji i postupaka koji vode do ciljanoga proizvoda. Obuhvaća sve stupnjeve proizvodnje, od pribavljanja i korištenja sirovine, preko obrade do odbacivanja artefakata. Ona širi tipološki smisao objekta, pokazuje strategije izrade predmeta, ali ga stavlja u kontekst cjelokupnoga procesa nastanka finalne rukotvorine (Blaser et al. 2000: 367).

Izrada oruđa sastoji se od nekoliko koraka, a cijeli proces naziva se lanac operacija (*chaine operatoire*). Analize i eksperimentalna arheologija (Karavanić 2004) pokazuju da se redukcija sirovine odvija u četiri osnovna koraka ili u četiri faze proizvodnje: faza prikupljanja (nulta kategorija), faza prethodne obrade (prva kategorija), središnja faza proizvodnje (druga kategorija) i faza završnoga oblikovanja (treća kategorija). Nulta kategorija predstavlja prikupljanje sirovine i njezino testiranje. Prva kategorija označava početak obrade, pri čemu se prikupljena sirovina priprema za daljnji rad. To se najbolje postiže tvrdim čekićem da se odbiju odbojci koji na sebi sadrže okorinu. Sljedeća, druga kategorija karakterizirana je odbijanjem odbojaka s djelomično sačuvanom okorinom (tzv. drugotni odbojci) ili pak odbojaka bez tragova okorine, kako bi se postigao izgled oruđa ili kako bi se postigao izgled jezgre od koje će biti odbijani. Posljednja, treća faza sastoji se od dovršavanja artefakta sa skidanjem serije malih odbojaka dodatne obrade (Karavanić 2004).

show that the use of laminar technology was primarily directed at obtaining bladelets, while there are few genuine blades.

The relative amount of the dorsal cortex was measured for all the debitage categories except for small flakes, and it was a criterion for dividing debitage into three categories: 1) primary artefacts with the dorsal side covered with more than 50% of the cortex; 2) secondary artefacts with the dorsal side covered with less than 50% of the cortex; 3) artefacts without a cortex. Whenever possible, the butt type was determined for complete debitage pieces or preserved proximal parts: cortical, flat, dihedral, facetted, punctiform, and lipped (after Débenath, Dibble 1994; Inizan et al. 1999).

All the pieces of raw material with at least one removal negative were interpreted as cores. On the basis of flaking technique they were divided into: single-platform cores, cores with two striking platforms, cores with several striking platforms, and rotating cores. Another classification of cores was made on the basis of debitage: cores for flakes, cores for blades, cores for bladelets, and mixed cores bearing traces of both flakes and blades/bladelets. Finally, a classification was made on the basis of core shape, containing the following categories: conical, prismatic, globular, cores on flake, and amorphous cores.

The typological analysis included all the artefacts with visible retouch traces. Nineteen categories have been recognized, half of which consist of various subtypes of end scrapers and burins (Tab. 4). This classification is based on the typology of P. Y. Demars and P. Laurent (1992) for the most part using the terminology adjusted to the Croatian language by I. Karavanić (1993; 1994; 2008).

Technological analysis

Technology is the sum of the actions and procedures leading to a desired product. It encompasses all the production stages, from raw material procurement and use, through the manufacture of tools, to the final abandonment of the artefacts. It expands the typological meaning of the object, shows the strategies of production, and puts it into the context of the complete process of the formation of the final artefact (Blaser et al. 2000: 367).

Tool production consists of several steps, and the entire process is called operational sequence (*chaîne opératoire*). Analyses and experimental archaeology (Karavanić 2004) indicate that raw material reduction happened in four phases of production: the procurement phase (the zero category), the primary reduction phase (the first category), the secondary reduction phase (the second category), and the phase of the final shaping of tools (the third category). The zero categories refer to collecting raw material and testing its knapping characteristics. The first category marks the beginning of the shaping whereby the collected raw material is prepared for further reduction. The best results are achieved by the use of a hard hammer, in order to remove flakes with the cortex. The next, second category is characterized by knapping flakes with a partially preserved cortex ("secondary flakes") or flakes without any cortex, in order to shape a tool or a core for further reduction. The final, third

	A1	B0	B1	B2	B3	B4	B5	B6	C1	D1	E1	F1	Površina / surface	UKUPNO / TOTAL	UKUPNO % / TOTAL %
Prvotni odbojak / Primary flake	1	1	5	6	3		2	2				2	6	28	2
Drugotni odbojak / Secundary flake		3	8	7		2	7	7		1	1	2	3	41	3
Prvotno sječivo / Primary blade														0	0
Drugotno sječivo / Secundary blade			2	2		1		2						7	0,5
Prvotna pločica / Primary bladelet				2			1							3	0,2
Drugotna pločica / Secundary bladelet			2	1		1	3	1				1	3	12	0,8
Odbojak / Flake	1	12	32	22	7	10	21	15	1	1	2	11	34	169	12
Odbojčić / Flake <20 mm		58	168	76	12	34	102	88		10	8	89	95	740	53,1
Sječivo / Blade		2	6	9	1	3	8	4	2	2	1	1	6	45	3,2
Pločica / Bladelet		14	24	16	10	4	21	23		2	1	9	15	139	10
Jezgra za odbojke / Core for flakes			4					1			1		2	8	0,5
Jezgra za sječiva / Core for blades								1						1	0,1
Jezgra za pločice / Core for bladelets			1	2			1	3				1	2	10	0,6
Miješana jezgra / Mixed core			2				3	2					2	9	0,6
Ulomci jezgara / Core fragment		1	1	1						1	1		3	8	0,5
Krijestasta sječiva-pločice / Crested blades-bladelets		1										1	1	3	0,2
Dotjerujući odbojci jezgre / Core renewal flakes		2	1	1	2		4	1					2	13	0,9
Krhotine / Chunks	1	1	12	3		5	7	3				8	12	52	3,5
Okrhci / Chunks <20 mm	1	7	24	8	3	3	17	7		2		23	15	110	7,7
Iver dubila / Burin spall				1	1	2	2			1			1	8	0,6
UKUPNO / TOTAL	4	102	292	157	39	65	199	160	3	20	15	148	202	1406	100

Tab. 1 Tehnološke kategorije raspoređene po kvadrantima (izradio: D. Vujević)
Tab. 1 Technological categories by quadrats (made by: D. Vujević)

Litički skup obuhvaćen glavnom analizom uključuje 1406 artefakata (tab. 1). Tehnološkom analizom utvrđene su kategorije svih faza proizvodnje oruđa osim inicijalne faze pribavljanja sirovine. Na nalazištu nisu pronađeni noduli ili valutice, što potvrđuje kako nije riječ o mjestu ekstrakcije sirovine, ali prvotni odbojci pokazuju da je sirovina bila do-

phase consists of finishing the artefact by removing small flakes in the additional retouch (Karavanić 2004).

The lithic assemblage encompassed by the main analysis contains 1406 artefacts (Tab. 1). All the categories of tool production have been attested in the technological analysis except for the initial phase of raw material procu-

nošena na nalazište u izvornome obliku. Početna faza odbijanja okorinskoga sloja i formiranja jezgre zastupljena je prvotnim i drugotnim oblicima koji čine oko 6% litičkog inventara (N=91). Među njima prevladavaju odbojci (>75%), a sječiva i pločice javljaju se u manjem broju, s tim da nije pronađen niti jedan primjerak prvotnoga sječiva. Slična je situacija i u inventaru iz slijedeće faze lanca operacija. Odbojci i odbojčići ovdje čine preferirajući produkt cijepanja. Zastupljeni su s oko 65% (N=909), dok sječiva i pločice u ovom stratumu čine nešto manje od 13% materijala (N=184). Završna faza proizvodnje oruđa posvjedočena je specifičnim iverima dubila i sitnim odbojčićima (N=8; 0,6%) kao nusproduktima obradbe radnoga ruba formalnog oruđa. Njihovo postojanje upućuje da se cjelokupna izrada oruđa odvijala na ovome mjestu.

Udio lomljevine među artefaktima iznosi gotovo 85% (N=1184), a među lomljevinom izražena je zastupljenost različitih vrsta odbojaka. Njihova učestalost u lomljevini (uključujući i one <20 mm) iznosi 82%, dok su pločice zastupljene s 10%, a sječiva s 4%. Ovakav omjer standardna je posljedica tehnoloških pristupa i ne mora pokazivati primarnu usmjerenost na produkciju odbojaka. Štoviše, ako je suditi prema obrađenim artefaktima, fokus izrađivača bio je više usmjeren na proizvodnju sječiva i pločica nego odbojaka. Naime, iako odbojci čine najčešći produkt lomljenja karakterizira ih niski stupanj iskorištavanja za oruđe (13%), s tim da bi iskorištenost bila i manja kada bi se iz tipološke analize izbacili različiti komadići s obradom. S druge strane, iskorištenost sječiva iznosi 34%, a iskorištenost pločica iznosi 21% (tab. 2).

rement. Nodules or pebbles have not been found at the site, confirming that this was not the place of raw material extraction, but primary flakes indicate that raw material was brought to the site in its original form. The initial phase of production – removing the cortex and core formation – has been represented by primary and secondary forms that account for about 6% of the lithic assemblage (N=91). Flakes are dominant in this category (>75%), while blades and bladelets appear in a small number, with no specimen of the original blade found. The situation is similar in inventory from the next phase of the operation. Flakes here make up the preferred splitting product. They were represented by about 65% (N = 909), while blades and bladelets in this stratum account for less than 13% of all finds (N=184). The final phase of tool production has been confirmed by specific burin spalls and small flakes (N=8; 0.6%) as the by-products of the retouch of the working edge of formal tools. Their presence indicates that the entire process of tool production happened at this place.

The share of debitage in artifacts is almost 85% (N=1184), and debitage is characterized by a number of various types of flakes. They account for 82% of the debitage (including the ones <20 mm) while bladelets make up 10%, and blades 4%. This ratio is a standard consequence of technological procedures and it need not indicate a primary intention of producing flakes. Moreover, judging from the analysed flakes, the makers were focused on the production of blades and bladelets rather than flakes. Namely, although flakes are the most frequent knapping product, they are characte-

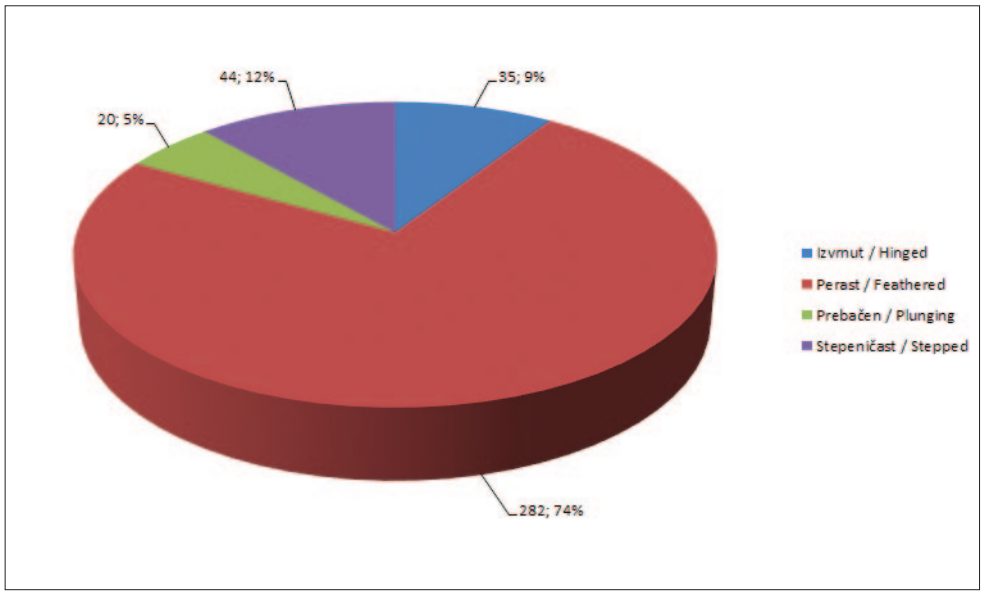
	Ukupno / Total		Obrađeno / Retouched		% iskorištenosti / of use
	N	%	N	%	
Odbojci / Flakes	238	17	29	34	13
Sječiva / Blades	52	4	18	20	34
Pločice / Bladelets	154	10	33	40	21
Dotjerujući odbojci jezgre/ Core renewal flakes	13	1			
Krijestasta sječiva-pločice/ Crested blades-bladelets	3	1			
Iver dubila / Burin spalls	8	1			
Odbojčići / Flakes <20 mm	740	53	5	5	1
Jezgre / Cores	36	2	1	1	3
Krhotine / Chunks	52	3			
Okrhci / Chunks <20 mm	110	8			
UKUPNO / TOTAL	1406	100	86	100	

Tab. 2 Iskorištenost artefakata (izradio: D. Vujević)
Tab. 2 Artifact use (made by: D. Vujević)

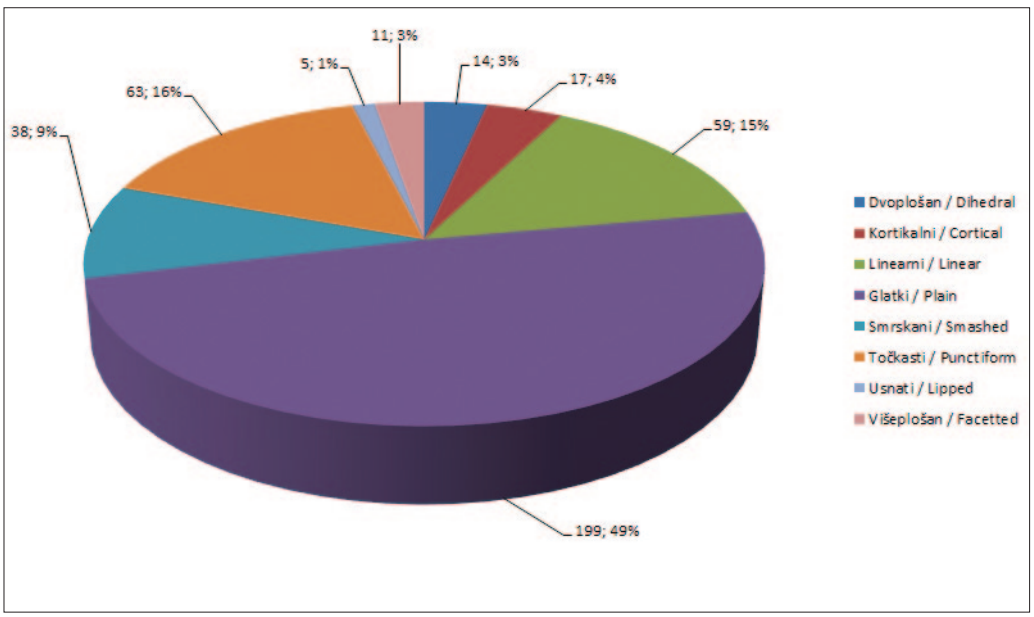
Perasti završetak distalnoga dijela dominira u sve tri kategorije lomljevine (>70%), s tim da nema primjetne razlike među kategorijama niti kod drugih završetaka (sl. 9). Među njima zabilježen je nešto viši broj komada koji imaju stepeničasti prekid distalnoga kraja, što može biti posljedica sirovine kao i odbijanja s malih jezgri, pri čemu prekid čini udarna ploha ili ožiljak na suprotnome kraju. Plohak je najčešće ravan (gladak), a u manjem broju prisutni su i drugi tipovi (sl. 10). Najrjeđe se javlja dvoplošni i višeplošni plohak koji bi upućivali na dotjerivanje udarne plohe fasetiranjem. Udarne plohe su izgleda većinom bile zaravnjene.

rized by a low percent of use in tool production (13%), and this percentage would have been even smaller if different retouched pieces were not counted in. On the other hand, the use of flakes is 34% for blades and 21% for bladelets (Tab. 2).

The feathered distal end is dominant in all three categories of debitage (>70%), but there is no significant difference among the categories with other kinds of termination (Fig. 9). Step termination was recorded more frequently, which can be a consequence of raw material characteristics or of knapping from small cores whereby the striking platform or scar on the opposite end represents the termination. The



Sl. 9 Vrste prekida (završetka) (izradio: D. Vujević)
Fig. 9 Termination types (made by: D. Vujević)



Sl. 10 Vrste plohka na lomljevini (izradio: D. Vujević)
Fig. 10 Butt types on debitage (made by: D. Vujević)

	Odbojci / Flakes		Sječiva / Blades		Pločice / Bladelets	
	N	%	N	%	N	%
Cjelovitost / Completness						
cijelo / whole	196	76	34	63	115	77
proksimalno / proximal	36	14	6	11	19	13
medijalno / medial	12	5	4	8	2	1
distalno / distal	13	5	10	18	13	9
UKUPNO / TOTAL	257	100	54	100	149	100

Tab. 3 Sačuvanost lomljevine (izradio: D. Vujević)
Tab. 3 Debitage preservation (made by: D. Vujević)

Jezgre spadaju u otpadni materijal, a većina pronađenih na arheološkome nalazištu trebale bi biti one na kojima se ne može proizvesti više kvalitetnih odbojaka ili koje ukazuju na kraj redukcijskoga slijeda ili sljedova. Postoje i one jezgre koje se nalaze u sredini redukcijskoga slijeda, bilo zbog toga što je rad na njima prekinut zbog pogrešaka u tehnologiji, sirovine ili jednostavno nije više bilo potrebe za proizvodnjom odbojaka (Bamuler 1987: 45). Pojedine mogu biti pretvorene u oruđe, pa se ne mogu promatrati samo kao tehnološka kategorija. U litičkome skupu nalazišta jezgre čine tek 2% nalaza (N=36), od čega je 8 ulomaka (T. 1: 28–29). Većinom je riječ o jezgrama za odbojke i pločice, kao i njihovim kombinacijama (miješana jezgra). Pronađena je tek jedna jezgra za sječiva. S obzirom na ipak veći broj pronađenih sječiva, kao i postojanje krijestastih sječiva nastalih prilikom pripreme jezgre za odbijanje sječiva, ovakva situacija mogla bi ukazivati na promjene u tehnologiji izrade. Jezgra se mogla prvo iskoristiti za izradu sječiva, a nakon što se iscrpe mogućnosti prelazi se na pločice i odbojke. Prosječna dužina jezgara iznosi 42,6 mm, s tim da je 90% jezgri manje od 5 cm. Dimenzije jezgri za pločice kreću se 25–47 mm, jezgri za odbojke od 28–93 mm, dok su miješane jezgre dimenzija 35–80 mm.[2] Ako pogledamo dimenzije lomljevine (dimenzije pločica kreću između 11–30 mm, a odbojaka 3–75 mm), možemo primijetiti kako su one u skladu s onima od jezgri što bi moglo ukazivati da sirovina nije bila znatno većih dimenzija. U prilog tome mogle bi ići jezgre kojima je obrađena samo jedna strana i koje su odbačene nakon nekoliko odbijanja kao i mala količina lomljevine s okorinom. Većina jezgri je amorfnoga oblika (N=16) s više platformi za odbijanje ili rotirajuća, no pronalaze se i prizmatične jezgre (N=9) s jednom ili dvije platforme, kao i jedna globularna.

S obzirom na već spomenuti primarni interes izrađivača na proizvodnju sječiva/pločica i oruđa na njima, u skupinu jezgri možda možemo uključiti višestruka i diedrična dubila kao i kobiličasto grebalo koji ne moraju predstavljati gotova oruđa, nego su mogli služiti kao jezgre za pločice. Slični primjeri postoje i na drugim nalazištima (Almeida 2001; Olszewski 2007; Bataille 2012). Iako rijetke, zakrivljene i

2 Pri mjerenju jezgri uzimana je najveća duljina, dok su ostale dimenzije dobivene mjerenjem pod pravim kutom u odnosu na duljinu.

butt is usually plain, and other types are not as numerous (Fig. 10). Dihedral and facetted butts that might indicate that striking platform was improved by facetting are the rarest. It seems that striking platforms were flattened for the most part.

Cores belong to waste, and most of the examples recovered from an archaeological site should be exhausted examples that can no longer be used for knapping quality flakes or the ones indicating the end of the reduction sequence or sequences. There are also cores in the middle of the reduction sequence, resulting from either technological accidents, poor raw material quality, or simply a lack of the need for further production of flakes (Bamuler 1987: 45). Some cores may have been used as tools so they cannot be interpreted only as a technological category. In the lithic assemblage of the site, cores make up only 2% of finds (N=36), eight of which are fragments (Pl. 1: 28–29). These are mostly cores for flakes and bladelets, or their combinations (mixed cores). Only one core for blades was found. Considering the big number of blades, and the presence of crested blades resulting from core preparation for blade removal, this situation might indicate changes in flaking technology. The core might have been used for blade production first, and once all the possibilities were exhausted, for making bladelets and flakes. The average length of cores is 42.6 mm, with over 90% of cores being smaller than 5 cm. The dimensions range from 25–47 mm for the cores for bladelets to 28–93 mm for the cores for flakes and 35–80 mm for mixed cores.[2] The debitage dimensions (11–30 mm for bladelets, 3–75 mm for flakes) correspond to the core dimensions, which may suggest that the dimensions of raw material were not much bigger. This is supported by the cores on which only one side was worked and which were discarded after few removals, as well as the small amount of debitage with a cortex. Most cores are amorphous (N=16) with several platforms for removals, or rotating, but there are also prismatic cores (N=9) with one or two platforms, as well as one globular example.

Having in mind the mentioned primary interest of the makers to produce blades/bladelets and tools on them, we might include multiple and dihedral burins as well as a keeled end scraper, which might not be finished tools but cores for bladelets. Similar examples have been recorded at other sites (Almeida 2001; Olszewski 2007; Bataille 2012). Though

2 Maximum length was measured for cores, and other dimensions were obtained by measuring at the right angle to the length.

tordirane pločice kao i pločice s hrptom izrađene na tankim iverima možda bi mogle ukazivati na ovakvu produkciju.

curved, twisted and backed bladelets made on thin spalls appear only rarely, they might indicate such production.

	A1	B0	B1	B2	B3	B4	B5	B6	C1	D1	E1	F1	Površina / Surface	UKUPNO / TOTAL	UKUPNO % / TOTAL %
Grebalo na odbojku / Endscraper on flake		1	1				3						1	6	9,3
Grebalo – dvostruko / Double endscraper				1										1	1,1
Grebalo – noktoliko / Thumbnail endscraper		1				1					1	1		4	4,6
Grebalo – kobilično / Carinated endscraper				1										1	1,1
Grebalo – njuškoliko / Snoutshaped endscraper			1											1	1,1
Dubilo / Burin	1	1	4	5									2	13	15
Dubilo – diedrično / Dihedral burin					1			3			1			5	5,8
Dubilo – poprečno s bočnim zarupkom / Transverse burin on lateral truncation			1											1	1,1
Dubilo – višestruko / Multiple burin				2										2	2,2
Sječivo s obradbom / Retouched blade			1					1	1				1	4	4,6
Pločica s hrptom / Backed bladelet		3	4	2	1	1	4	7		1			2	25	29
Zarubak / Truncation								1						1	1,1
Strugalo / Sidescraper			2		1		2						1	6	6,9
Sječivo sa sitnom rubnom obradom / Marginally retouched blade				2				1			1		1	5	5,8
Komad sa sitnom rubnom obradom / Marginally retouched flake				2								1		3	2,2
Odbojak s obradom / Retouched piece							1	2			1	2		6	6,9
Nazubak / Denticulate								1						1	1,1
Zakrivljeni šiljak / Arched backed point								1						1	1,1
UKUPNO / TOTAL	1	6	14	15	3	2	10	17	1	1	4	4	8	86	100

Tab. 4 Tipološke kategorije raspoređene po kvadratima (izradio: D. Vujević)
Tab. 4 Typological categories by quadrats (made by: D. Vujević)

Tipološka analiza

Pronađeno je 86 artefakata koji se mogu uvrstiti u kategoriju oruđa, a sve kategorije lomljevine su slično zastupljene (35 odbojaka i odbojčića naspram 33 pločice i 18 sječiva). S druge strane, s obzirom da je riječ o sličnom tehnološkom pristupu, ako bismo spojili pločice i sječiva u istu skupinu,

Typological analysis:

There were 86 artefacts that belong to the category of tools, and all the debitage categories have a similar share (35 flakes and small flakes to 33 bladelets and 18 blades). On the other hand, since the technological procedure was similar, if we put bladelets and blades in the same group, they

onda je naglasak pri izradi oruđa ipak stavljen na njih.

Oruđe čine transformacijski tipovi i projektili. Najbrojnije tipološke skupine čine različite vrste dubila (N=21; 24%) (T. 1: 25–27) i pločice s hrptom (N=25; 29%) (T. 1: 1–12). S nešto manjom zastupljenošću slijede ih različite vrste grebala (N=13; 16%) (T. 1: 13–17). Među njima su najbrojnija noktolika grebala i grebala na odbojku. Za spomenuti je i zakrivljeni šiljak napravljen na pločici. Svojim oblikom, zašiljenošću i obradom na oba bočna ruba sasvim je jasno kako je namjena ovakvoga predmeta da posluži kao vrh projektila. Učestalost ostalih tipova prikazana je u tab. 4. Dubila i grebala su najbrojniji tip oruđa na odbojcima, dok su pločice s hrptom najbrojniji tip izrađen na pločicama. Veličina oruđa ne prelazi 75 mm, a većina (90%) je manja od 5 cm; 12% (N=11) predmeta manje je od 15 mm, a većinom je riječ o pločicama s hrptom ili noktolikim grebalima. Uz strmu obradu jednoga bočnog ruba, 4 pločice imaju sitnu obradu i na suprotnom rubu, dok je kod jedne pločice s hrptom suprotni rub obrađen na ventralnoj strani.

Litički skup nižih stratigrafskih razina Sonde A

Iz već spomenutih razloga iz glavne analize izdvojeni su artefakti iz Sonde A i to iz donjih stratigrafskih razina. Riječ je o manjem broju nalaza (N=70) koji niti da su uvršteni u glavnu analizu ne bi utjecali na rezultate. Polovicu litičkoga skupa čine odbojci i odbojčići (N=39), uz 4 sječiva (uključujući i jedno krijestasto) i 5 pločica. Ulomci jezgara (N=5) svjedoče prvenstveno o proizvodnji odbojaka i pločica. Kao i tehnološki, tako je i tipološki skup izrazito mali. Tek 7 obrađenih artefakta, od kojih se veličinom ističe tek sječivo s obradom na dva ruba. Većinu ostalih nalaza čine različiti oblici dubila (N=4) i pločica s hrptom. Jedine razlike u odnosu na glavni litički skup odnose se na češću upotrebu lošije sirovine s primjesama koja je, sudeći prema sačuvanim jezgrama, očito bila većih dimenzija što je dovelo i do većih prosječnih dimenzija artefakata čija dužina, uz iznimku odbojčića, većinom prelazi 30 mm. Dimenzije jezgri kreću se od 42 do 130 mm. Ova promjena u odnosu na glavni litički skup mogla bi ukazivati na drugu, kronološki odvojenu fazu proizvodnje, ali s obzirom da je na ovoj razini istražen tek jedan kvadrant, dobiveni podaci mogu biti i čista slučajnost povezana s postdepozicijskim faktorima. Do istraživanja koje će obuhvatiti veću površinu ne mogu se donositi konkretniji zaključci.

Sirovina[3]

Preliminarnom analizom litičkih artefakata ustanovljena su tri materijalna tipa: rožnjaci iz eocenskih foraminiferskih vapnenaca, rožnjaci iz gornjokrednih vapnenaca i radiolariti, najvjerojatnije porijeklom iz lokalnih i regionalnih bosanskohercegovačkih izdanaka. Najbliži poznati izvori rožnjaka iz gornjokredskih vapenaca su dalmatinski izdanci na Vilaji, na otoku Čiovu i južnim padinama Opora kao i iz

3 Preliminarnu analizu litičke sirovine napravio je Zlatko Perhoč kojem ovim putem zahvaljujemo. Određenje tipa sirovine nalaza iz Ričine kao i mogućih izdanaka temeljeno je na sustavnim terenskim istraživanjima kamene sirovine u Dalmaciji i regijama susjednih zemalja, kao i mikrofacijalnih istraživanja litičkih skupova nalaza s prapovijesnih nalazišta u tim regijama (Perhoč 2009a; 2009b; Perhoč, Altherr 2011).

constitute the primary category in the tool making process.

Transformation types and projectiles belong to weapons. The most numerous typological groups are burins (N=21; 24%) (Pl. 1: 25–27) and backed bladelets (N=25; 29%) (Pl. 1: 1–12). Various types of end scrapers are the following category (N=13; 16%) (Pl. 1: 13–17). Thumbnail end scrapers and end scrapers on flakes are the most numerous categories among them. The curved point made on the bladelet needs to be mentioned. It is clear that this object was meant to be used as a projectile point due to its form, pointed tip and retouch on both lateral edges. The frequency of these types is illustrated in Tab. 4. Burins and end scrapers are the dominant types of tools on flakes, while backed bladelets are the prevalent type of tools made on bladelets. The size of tools is not over 75 mm, and most specimens (90%) are smaller than 5 cm. Twelve percent (N=11) of objects are smaller than 15 mm, and these are mostly backed bladelets or thumbnail end scrapers. In addition to the steep retouch of one lateral edge, 4 bladelets have a marginal retouch on the opposite edge as well, while the opposite edge of one backed bladelet was retouched on the ventral side.

Lithic assemblage of the lower stratigraphic levels in Probe A

The artefacts from the lower stratigraphic levels of Probe A have not been included in the analysis due to the aforementioned reasons. It is a small number of finds (N=70) that would not have affected the analysis results even if they were included in the study. Half of the lithic assemblage consists of flakes and small flakes (N=39), alongside 4 blades (including a crested example) and 5 bladelets. The core fragments (N=5) testify primarily to the production of flakes and bladelets. The typological range is exceptionally small, just like the technological one. There are only 7 retouched artefacts. A blade retouched on both edges is the biggest example. Most other finds are various burin forms (N=4) and backed bladelets. The only differences in relation to the main lithic assemblage refer to a more frequent use of poor quality raw material with inclusions, which was evidently rather large judging from the preserved cores, leading to bigger average dimensions of the artefacts, whose length, with the exception of small flakes, mostly exceeds 30 mm. The dimensions of the cores vary from 42 to 130 mm. This change in relation to the main lithic assemblage might indicate another, chronologically separate phase of production, but since only one quadrat was excavated at this level, the obtained information might be pure coincidence associated with post-depositional factors. More specific conclusions cannot be made before a larger area is excavated.

Raw material[3]

The preliminary analysis of the lithic artefacts resulted in the recognition of three types of raw material: cherts from Eocene foraminifera limestone, cherts from Upper Cretaceous limestone, and radiolarites, most probably from local and regional outcrops in Bosnia and Herzegovina. The

3 The preliminary analysis of raw material has been made by Zlatko Perhoč, whom we thank. The determining of the raw material type for the finds from Ričina and the possible outcrops was based on systematic field surveys of stone raw material in Dalmatia and the regions of neighbouring countries as well as microfacial research of lithic assemblages from the prehistoric sites in these regions (Perhoč 2009a; 2009b; Perhoč, Altherr 2011).

srednjoeocenskih vapnenaca na južnim padinama Opora, Kozjaka, Mosora, Biokova, zatim na splitskome poluotoku Marjan (Perhoč 2009a; Vukosavljević et al. 2011), iako to ne znači da navedeni rožnjaci nisu mogli poteći i iz nekoga, za sada nepoznatoga izvora bližeg samoj pećini. Sačuvana pak valutična okorina na artefaktima od radiolarita ukazuje na fluvijalni tip izdanka i navodi da bi izvor sirovine mogao biti šljunak jednoga od manjih ili većih vodotoka u Bosni (rijeke Una, Bosna, Vrbas, Sana, Ukrina, Usora, Papratnica) ili u Neretvi (Perhoč, neobjavljena istraživanja). U te rijeke, kao i u njihove pritoke te manje potoke, radiolariti dospijevaju iz melangea ofiolitskoga kompleksa u centralnoj ofiolitnoj zoni unutrašnjih Dinarida (Perhoč, Altherr 2011). U litičkome skupu nalazišta izvor-pećina Ričine zabilježeni su gotovo svi varijeteti boja radiolarita koji se pojavljuju u Bosni i Hercegovini. Najčešći je ipak crvenkastosmeđi varijetet kojega ima u svim izvorima radiolarita, dok je zeleni (izrazito zelene do zelenkastocrne boje) u šljunku Neretve rijedak i raspucan, a u šljunku Bosne i Vrbasa čest i odlične kvalitete.

RASPRAVA

Iako do istraživanja same špilje i mogućega otkrića kulturnoga sloja u njoj nije moguće napraviti precizne kronološke analize koje bi cjelokupni litički skup kronološki i kulturološki odredile, prema tehnološkim i tipološkim odlikama materijala nalazište možemo okvirno smjestiti u vrijeme gornjega paleolitika. Sudeći pak prema dominaciji grebala, dubila i pločica s hrptom među kulturnim inventarom, kao i tehnološkom pristupu koji ima fokus na odbijanju pločica, moguće je i uže kronološko opredjeljenje i smještanje nalazišta u vrijeme epigravetijenske kulture. Značajke litičke industrije epigravetijena su zapažen udio pločica s hrptom i kratkih grebala te pojava geometrijskih formi potkraj razdoblja (Karavanić 1999: 2) što, izuzevši nedostatak geometrijskih formi koji se i na drugim nalazištima javljaju u jako malom broju, odgovara kulturnom inventaru nalazišta na izvoru Ričine.

Epigravetijenski kulturni kompleks razvija se od sredine posljednjega stadijala würma pa sve do kraja kasnoga glacijala, dok se u nekim krajevima Europe nastavlja i u rani holocen. Okvirno se može apsolutno kronološki smjestiti između 20.000 i 10.000 uncal BP (Karavanić 1999). Epigravetijen je najbolje istražen na Apeninskome poluotoku gdje je njegov razvoj podijeljen u tri faze, iako je ta podjela većinom utemeljena na tipološkim karakteristikama litičkoga inventara (Bietti 1990: 147; Mussi 2001). Na istočnoj obali Jadrana javlja se otprilike u vrijeme posljednjega glacijalnog maksimuma, a prethodi mu kultura orinjasijena. Početni, rani epigravetijen zabilježen je tek u Šandalji II (Karavanić 1999: 57), Veloj Spili (Čečuk, Radić 2005: 32) i Vlaknu (Vujević 2016: 26).

Veći je broj nalazišta sa slojevima iz kasnije faze epigravetijena (sl. 1). Najpoznatija je Šandalja II gdje je, na osnovi analiza I. Karavanić dokazao dvije vremenski različite faze epigravetijena istočnoga Jadrana koje se razaznaju prema tipološkim i tehnološkim karakteristikama (Karavanić 1999). P. T. Miracle i D. Brajković (Miracle, Brajković 2013; Karavanić et al. 2013: 18) iznijeli su pak najnovije rezultate apsolutno-

nearest chert sources from Upper Cretaceous limestone are the Dalmatian outcrops on Vilaja, on the island of Čiovo and southern slopes of Opor, and the Middle Eocene limestone on the southern slopes of Opor, Kozjak, Mosor, Biokovo, and on the peninsula of Marjan in Split (Perhoč 2009a; Vukosavljević et al. 2011), though this does not mean that the mentioned cherts could not have originated from some as yet unknown source closer to the cave. The preserved pebble rind on the radiolarite artefacts indicates a fluvial type of outcrop and the possibility that the source of raw material might have been the gravel from some of the watercourses in Bosnia (the rivers Una, Bosna, Vrbas, Sana, Ukrina, Usora, Papratnica) or the Neretva (Perhoč, unpublished research). The radiolarites in these rivers and their tributaries and smaller streams originate from the melange of the ophiolitic complex in the central ophiolitic zone of the inner Dinarides (Perhoč, Altherr 2011). Almost all the varieties of radiolarite colours occurring in Bosnia and Herzegovina have been recorded in the lithic assemblage of the Ričine spring cave. The brown-red variety is the most frequent as it appears in all the radiolarite sources, while the green (bright green to greenish-black) variety is rare and cracked in the Neretva gravel, but frequent and of excellent quality in the gravels of the Bosna and the Vrbas.

DISCUSSION

Although it is not possible to make a precise chronological analysis that would determine the entire lithic assemblage in terms of chronology and cultural attribution before the cave and the possible cultural layer in it are excavated, the site can be broadly dated to the Upper Palaeolithic. Judging from the prevalence of end scrapers, burins and backed bladelets, and the technological approach focused on bladelet production, we can make the chronological framework more precise and date the site to the period of the Epigravettian culture. The characteristics of the Epigravettian lithic industry are a considerable share of backed bladelets and short end scrapers, and the occurrence of geometric forms by the end of the period (Karavanić 1999: 2), which corresponds to the cultural inventory of the site at the Ričine source, except for the lack of geometric forms that are rare at other sites too.

The Epigravettian cultural complex developed from the middle of the last stadial of Würm until the end of the Late Glacial, while in some parts of Europe it continued in the Early Holocene. In terms of absolute chronology it can be broadly dated to the period between 20.000 and 10.000 uncal BP (Karavanić, 1999). The Epigravettian is best known on the Apennine peninsula, where its development has been divided into three phases, though this division is mostly based on the typological characteristics of the lithic inventory (Bietti 1990: 147; Mussi 2001). On the eastern Adriatic coast it occurred approximately at the time of the Last Glacial Maximum, and it was preceded by the Aurignacian culture. The initial, early Epigravettian has been recorded only in Šandalja II (Karavanić 1999: 57), Vela Spila (Čečuk, Radić 2005: 32) and Vlakno (Vujević 2016: 26).

There is a higher number of sites with layers from the later phase of the Epigravettian (Fig. 1). Šandalja II is the best known example, where I. Karavanić has assumed two chronologically separate phases of the Epigravettian on the eastern Adriatic that can be recognized on the basis of typo-

ga datiranja prema kojima bi cijeli kompleks C kronološki pripadao kasnome epigravetijenu. U Istri još Pupićina peć odgovara drugome stupnju epigravetijena, a Vešanska peć sadrži industriju epigravetijena datiranu u vrijeme između 13.400 i 11.230 cal BC (Komšo, Pellegati 2007: 30–35). Slična je situacija i s Nugljanskom peći. Veća grupacija epigravetijenskih nalazišta nalazi se na kvarnerskim otocima. Na otoku Rabu nalazi se nalazište Lopar. Radi se o lokalitetu na otvorenome, smještenom na poluotoku s izvorom pitke vode. Prisutnost gravetica, pločica s hrptom, azilijenskih šiljaka i kružnih segmenata ukazuje na kasnu fazu epigravetijena (Malez 1979: 241). Vela jama kod Osorčice na Lošinju također sadrži nalaze koji se mogu pripisati epigravetijenu (Malez 1979: 264). Na prostoru Dalmacije treba spomenuti debele naslage bogate materijalom iz Vele spile na otoku Korčuli (Čečuk, Radić 2005; Radić et al. 2008), kao i pećinu Zemunicu koja se na temelju ^{14}C datuma može sa sigurnošću smjestiti u kasni epigravetijen (Vukosavljević 2012: 277). Nalaze epigravetijena dala je i špilja Kopačina na sjeverozapadnoj strani otoka Brača. Na temelju litičke industrije i apsolutnih datuma, cjelokupni stratigrafski slijed iz Kopačine N. Vukosavljević je kronološki odredio kao kasnoglacijalni, a kulturno kao epigravetijenski (Vukosavljević et al. 2011). Među epigravetijenskim nalazištima se u posljednje vrijeme ističe pećina Vlakno na Dugom otoku sa stratigrafijom koja se može pratiti bez vidljivih hijatusa kroz kasni gornji paleolitik i rani mezolitik (Vujević, Parica 2009; Vujević, Bodružić 2014; Vukosavljević et al. 2014; Vujević 2016). U samoj Hercegovini poznat je tek jedan lokalitet s nalazima koji se sa sigurnošću mogu smjestiti u ovo vrijeme. Riječ je o nalazištu Badanj u dolini rijeke Bregave kod Stoca. Epigravetijenski slojevi Badnja podijeljeni su u dvije faze (Whallon 1989: 9) Na širem području treba spomenuti i nalazište Crvena stijena u Crnoj Gori. Riječ je o nalazištu s najdebljim kulturnim slojem i najbogatijom stratigrafskom raščlanjenošću na Balkanskome poluotoku. U bogato uslojenoj stratigrafiji, slojevi IX i VIII sadrže nalaze kulture epigravetijena (Mihailović 2009: 27).

Na općoj tipološkoj i tehnološkoj razini nalazište Izvor – špilja Ričina pokazuje sličnosti s većinom navedenih nalazišta. Potpunih preklapanja nema, jer svako od njih ima svoje posebnosti. U svim slojevima B kompleksa Šandalje II odbojci su najbrojnija tehnološka kategorija, ali su česta sječiva i pločice (Janković et al. 2012: 114). U Veloj spili na Korčuli najbrojnija kategorija nalaza su grebala, ali među nalazima ima i geometrijskih mikrolita (Čečuk, Radić 2005). S druge strane, mikrodubila i pločice s hrptom su vrlo rijetke. Slična je situacija u Badnju kod Stoca (Whallon 1989) i Crvenoj stijeni (Mihailović 2009) s ipak nešto većom količinom pločica s hrptom. Tipološka analiza epigravetijenskoga materijala iz Vlakna pokazuje dominaciju pločica s hrptom kao i ostaloga oruđa izrađenoga na pločicama, s povećanjem prema starijim slojevima epigravetijena. U svim se epigravetijenskim slojevima javljaju i manji zakrivljeni šiljci (Vujević, Bodružić u tisku). Većina navedenih odlika može se primijetiti i u litičkome skupu nalazišta na izvoru Ričine.

Lanac operacija zabilježen na nalazištu Izvor – špilja Ričina čini se jednostavan. Jezgre su pripremane odbijanjem prvotnih odbojaka čime se dobivaju glatke udarne plohe.

logical and technological characteristics (Karavanić 1999). P. T. Miracle and D. Brajković (Miracle, Brajković 2013; Karavanić et al. 2013: 18) have published the most recent results of absolute dating according to which the entire complex C would belong to the Late Epigravettian. In Istria, another site that corresponds to the second phase of the Epigravettian is Pupičina Peć, and Vešanska Peć contains the Epigravettian industry dated between 13.400 and 11.230 cal BC (Komšo, Pellegati 2007: 30–35). There is a similar situation at Nugljanska Peć. A large group of Epigravettian sites is situated on the Kvarner islands. The site of Lopar is situated on the island of Rab. It is an open-air site, situated on a peninsula with a fresh water source. The presence of microgravettes, backed bladelets, Azilian points, and circular segments indicates the late phase of the Epigravettian (Malez 1979: 241). Vela Jama near Osorčica on Lošinj also contains finds that can be ascribed to the Epigravettian (Malez 1979: 264). In Dalmatia, we need to mention the thick and rich deposits from Vela Spila on the island of Korčula (Čečuk, Radić 2005; Radić et al. 2008), as well as the Zemunica cave that can definitely be dated to the Late Epigravettian on the basis of ^{14}C dates (Vukosavljević 2012: 277). Epigravettian finds were recovered from the Kopačina cave on the north-western side of the island of Brač. On the basis of lithic industry and absolute dates, N. Vukosavljević determined the entire stratigraphic sequence from Kopačina as late glacial in terms of chronology and Epigravettian in terms of culture attribution (Vukosavljević et al. 2011). Recently, the Vlakno cave on the island of Dugi Otok has stood out among the Epigravettian sites as its stratigraphy covers the Upper Palaeolithic and Early Mesolithic without visible breaks (Vujević, Parica 2009; Vujević, Bodružić 2014; Vukosavljević et al. 2014; Vujević 2016). There is only one known site in Herzegovina that can be associated with this period with certainty. It is the site of Badanj in the valley of the Bregava river near Stolac. The Epigravettian layers of Badanj have been divided into two phases (Whallon 1989: 9). We should mention the site of Crvena Stijena in Crna Gora as the site with the thickest cultural layer and the richest stratigraphic division on the Balkan Peninsula. Layers IX and VIII of the rich stratigraphy contain Epigravettian finds (Mihailović 2009: 27).

On the general typological and technological level, the site of the Ričina spring cave exhibits similarities with most of the mentioned sites. There are no absolute correspondences since each site has its own particularities. In the layers of the B complex of Šandalja II, flakes are the most numerous categories, but blades and bladelets are also quite numerous (Janković et al. 2012: 114). End scrapers are the most abundant category of finds in Vela Spila on the island of Korčula, but there are also geometric microliths among the finds (Čečuk, Radić 2005). On the other hand, microburins and backed bladelets are very rare. The situation is similar in Badanj near Stolac (Whallon 1989) and Crvena Stijena (Mihailović 2009), with a somewhat larger quantity of backed bladelets. The typological analysis of the Epigravettian finds from Vlakno indicates the domination of backed bladelets and other tools made on bladelets, increasing towards the older layers of the Epigravettian. Small curved points appear in all Epigravettian layers (Vujević, Bodružić forthcoming). Most of the mentioned characteristics can be noticed in the lithic assemblage from the Ričine site.

The operational sequence recorded at the site of the

Potvrdu za to možemo naći u izrazito maloj prisutnosti odbojaka s dvoplošnim ili višeplošnim plohkom, kao i u sačuvanim jezgrama, dotjerujućim odbojcima od jezgre i okrušcima. Prisutnost prvotnih odbojaka na nalazištu kao i jezgre sa sačuvanom okorinom pokazuje kako se ovaj dio procesa obavljao na nalazištu te da sirovina nije pripremana na mjestu gdje je prikupljena.

Daljnje odbijanje drugotnih odbojaka, pločica ili sječiva usmjerilo je tehnološki pristup i preferirajući oblik lomljevine, iako se ne može izdvojiti niti jedan specifični način lomljenja. Pa ipak, izgleda da je fokus izrade više bio usmjeren na izradu pločica i sječiva, nego na same odbojke. Veliki broj sačuvanih jezgri za pločice i miješanih jezgri te iskorištenost lomljevine za proizvodnju oruđa ide tome u prilog, kao i rano odbacivanje jezgri za pločice nakon svega nekoliko odbijanja.

Miješane jezgre, nepostojanje prvotnih sječiva i pločica, uz relativno veću zastupljenost istih bez okorine u lomljevini, mogu ukazivati na promjenu tehnologije tijekom proizvodnje. Dominantno ravni (glatki) plohak na odbojcima i sačuvane ravne udarne plohe na jezgrama mogle bi isto tako ukazivati na korištenje jezgri za sječiva i pločice za kasniju proizvodnju odbojaka. Suprotno tome, s obzirom na postojanje jezgri na odbojku, možemo pretpostaviti i da su deblji odbojci kasnije mogli biti iskorišteni kao jezgre za male pločice.

ZAKLJUČAK

Nalazišta na otvorenome su skup nusprodukata proizvodnih procesa i prostornih odnosa ljudskih aktivnosti na specifičnim lokacijama, kao i prirodnih procesa koji su zaštitili ili poremetili antropogene tragove. Svi navedeni faktori odvijaju se u kronološkim ciklusima (Bailey 2007; Vaquero 2008; Hovers et al. 2014: 217). Zbog izloženosti vanjskim utjecajima depoziti su podložni miješanju i poremećajima. Često zbog navedenoga miješanja kao i tankoga depozita, u stratigrafiji ovakvih nalazišta gotovo je nemoguće izdvojiti manje kronološke odsjeke, iako zbog karaktera mjesta postoji velika mogućnost da depozit ne sadrži samo jednu epizodu aktivnosti nego pokazuje višestruke aktivnosti koje su se dogodile kroz duži kronološki odsjek. Nalazišta na otvorenome uglavnom su relativno kratkotrajna mjesta za specijalizirane aktivnosti. Vidljivost proteklih aktivnosti mogla je dovesti do replikacije organizacije prostora, no te kratke faze nije moguće kronološki ni stratigrafski razlučiti, pa je o nalazištima na otvorenome često moguće govoriti samo na općoj razini.

Slično je i s nalazištem Izvor – špilja Ričina. Prikupljeni, isključivo litički materijal, u kojem su zastupljene sve faze proizvodnoga procesa od pripreme sirovine do proizvodnje oruđa, uz nedostatak bilo kakvoga drugog kulturnog materijala, ne ostavlja drugu mogućnost tumačenja osim da je riječ o zoni izrade litičkih artefakata. S obzirom na blizinu špilje, malo je vjerojatno da je riječ o zasebnom, specijaliziranom staništu. Prije će nalazište odražavati aktivnosti vezane uz stanište.

No činjenica je da većina nalaza potječe iz subhumusnoga sloja. Rijetki recentni nalazi u sloju svjedoče kako je

Ričina spring cave seems simple. The cores were prepared by removing primary flakes, which resulted in striking platforms. This is confirmed by the exceptionally scarce flakes with dihedral or facetted butt as well as the complete cores, core renewal flakes, and core tablets. The presence at the site of primary flakes, as well as cores with the preserved cortex, indicates that this process took place at the site and that raw material was not prepared at the position where it was collected.

Further removals of secondary flakes, bladelets and blades directed the technological procedure and the preferred debitage type, although a specific manner of knapping cannot be singled out. However, it seems that the production focus was on blades and bladelets rather than flakes. The high number of the preserved cores for bladelets and mixed cores, and the use of debitage in tool production, support this thesis together with the early discard of cores for bladelets after only a few removals.

Mixed cores, the lack of primary blades, and the somewhat higher number of bladelets without a cortex in the debitage, can indicate a change in technology during production. The dominantly plain butt on the flakes, and the preserved flat striking platforms on the cores, might also indicate the use of cores for blades and bladelets for the later production of flakes. As opposed to this, we can assume that thicker flakes were subsequently used as cores for small bladelets having in mind the presence of cores on flakes.

CONCLUSION

Open-air sites are a combination of the by-products of production processes and the spatial relations of human activities on specific locations, as well as of the natural processes that have protected or disturbed anthropogenous traces. All the mentioned factors happen in chronological cycles (Bailey 2007; Vaquero 2008; Hovers et al. 2014: 217). Deposits can easily be mixed or disturbed owing to the exposure to external influences. Due to the mentioned mixing and thin deposit, it is often almost impossible to define smaller chronological segments in the stratigraphy of such sites, although there is a strong possibility, owing to the character of the site, that the deposit contains more than one episode of activity happening over a longer period. Open-air sites are mostly relatively short-term places for specialized activities. The visibility of past activities might have led to the replication of space organization, but these short phases cannot be discerned either chronologically or stratigraphically, so open-air sites can often be discussed only generally.

The site of the Ričina spring cave has a similar situation. The collected lithic finds that represent all the phases of the production process, from raw material preparation to tool production, alongside the lack of any other archaeological finds, leave no other possibility of interpretation but that it was a zone of production of lithic artefacts. Considering the vicinity of the cave, it is unlikely that it was a separate, specialized habitat. It is more likely that the site reflects the activities related to the habitat.

However, it is a fact that most finds originate from the sub-humus layer. The rare recent finds in the layer testify to the fact that there was mixing, probably due to water activity. Therefore it is impossible to discern if there were one or several phases of activity. Only the excavations of Probe A,

došlo do miješanja, vjerojatno pod utjecajem vode. Stoga je nemoguće razaznati da li je riječ o jednoj ili više faza aktivnosti. Tek iskopavanja u Sondi A, koja su za razliku od ostalih kvadranata uključivala i dublje dijelove depozita, pri čemu su otkriveni novi nalazi odvojeni od prethodnih depozitom crvenice debelim 10 cm, otvaraju mogućnost postojanja više faza. No s obzirom da su ti dijelovi depozita istraženi tek na maloj površini, do iskopavanja ostalih kvadranata neće biti moguće donositi bilo kakve konkretne zaključke.

Prostorni odnosi platoa i špilje, njezina relativna blizina, pogodan izgled kao i činjenica da se u nižim dijelovima pećine kroz cijelu godinu nalazi izvor pitke vode, čini pećinu ili barem predpećinski prostor pogodnim mjestom za boravak paleolitičkih skupina. Nažalost, zbog akumulacijskoga jezera, čija voda veći dio godine prekriva samu špilju, u njoj su nastale debele naslage nanosa pijeska. Zbog toga, kao i činjenice da je u trenutku istraživanja špilja bila zapunjena vodom, nismo bili u mogućnosti istražiti samu pećinu i otkriti da li u njoj postoje kulturni slojevi. To je ostavljeno za neka daljnja istraživanja.

that included deeper segments of the deposit as opposed to other quadrats, opened up the possibility of the presence of several phases. New finds were unearthed in Probe A, separated from the previous ones by a layer of terra rossa that is 10 cm thick. Since these parts of the deposit have been explored on a small surface, no specific conclusions can be made before the rest of the quadrats are excavated.

The spatial relations of the plateau and the cave, its relative proximity, favourable characteristics, and the fact that a source of drinking water is located in the lower parts of the cave throughout the year, made the cave or at least the area in front of it a place suitable for the habitation of the Palaeolithic groups. Unfortunately, thick deposits of sand were formed in the cave owing to reservoir water covering the cave most of the year. Therefore, and due to the fact that the cave was filled with water at the time of the excavations, we could not explore the cave itself and verify if there were any cultural layers in it. This has been left to some future research.

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T. 1

T. 1 1–12 pločice s hrptom; 13–17 grebala; 18–23 sječiva s obradom; 24 strugalo; 25–27 dubila; 28–29 jezgre (crtež: D. Vujević)
Pl. I 1–12 backed bladelets; 13–17 end scrapers; 18–23 retouched blades; 24 side scraper; 25–27 burins; 28–29 cores (drawing: D. Vujević)