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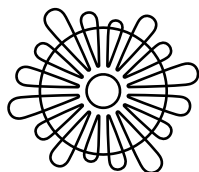
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SADRŽAJ / CONTENTS

JOSIPA BARAKA PERICA

O životu i djelu profesora emeritusa Brunislava Marijanovića
On the Life and Work of Professor Emeritus Brunislav Marijanović

11

ANA MARINOVIĆ

Bibliografija profesora emeritusa Brunislava Marijanovića
Bibliography of Professor Emeritus Brunislav Marijanović

25

LEO ARBUTINA, MARIO BODRUŽIĆ, DARIO VUJEVIĆ

Vela Pećina kod Kali na Ugljanu - novo nalazište kasnoga gornjeg paleolitika
na sjevernodalmatinskim otocima (Izvorni znanstveni članak)
*Vela Pećina Cave near Kali on Ugljan – a New Late Upper Palaeolithic
Site in the Northern Dalmatian Islands (Original scientific paper)*

35

KRISTINA HORVAT OŠTRIĆ, NICHOLAS TRIOZZI,

SARAH B. MCCLURE, KELLY REED, DORIS VIDAS

Rezultati probnoga arheološkog istraživanja neolitičkog
nalazišta Pod Jarugom (Prethodno priopćenje)
*Results of Archaeological Trial Excavations of the
Neolithic Site Pod jarugom (Preliminary report)*

77

TIHOMILA TEŽAK-GREGL

Kakve veze imaju Brezovljani s Butmirom? (Prethodno priopćenje)
What does Brezovljani have to do with Butmir? (Preliminary report)

123

MAJA KRZNARIĆ ŠKRIVANKO

Prostorna distribucija i unutarnja organizacija naselja sopotske
kulture na vinkovačkom području (Prethodno priopćenje)
*The Spatial Distribution and Internal Organisation of Sopot-Culture
Settlements in the Vinkovci Area (Preliminary report)*

141

DRAGANA RAJKOVIĆ, SELENA VITEZOVIĆ

Ukrasni predmeti od školjki s lokaliteta Osijek –
Hermanov vinograd (Izvorni znanstveni članak)
*Mollusc-Shell Decorative items from the Osijek –
Hermanov vinograd Site (Original scientific paper)*

229

JACQUELINE BALEN Lasinjska kultura u Bosni i Hercegovini - u svjetlu nalaza bočice iz Visokog Brda u Lupljanici kod Dervente (Stručni rad) <i>Lasinja Culture in Bosnia and Herzegovina – In the Light of a Miniature Bottle find from Visoko Brdo in Lupljanica near Derventa (Professional paper)</i>	255
MITJA GUŠTIN „Zajednica sa Skadarskog jezera” na prijelazu iz bakrenog u brončano doba (Izvorni znanstveni članak) <i>‘Lake Skadar Community’ at the Turn from the Copper to the Bronze Age (Original scientific paper)</i>	267
BIBA TERŽAN, ANA KRUH Srednjoeuropski elementi na srednjem Jadranu i njegovu zaleđu u rano brončano doba – rekapitulacija (Pregledni članak) <i>Central European Elements in the Central Adriatic and its Hinterland in the Early Bronze Age – A Recapitulation (Review paper)</i>	297
DOMAGOJ PERKIĆ, MARKO DIZDAR, HRVOJE POTREBICA, IVAN PAMIĆ Grob iz starijeg željeznog doba s groblja Nakovana – Zmijna (poluotok Pelješac) (Izvorni znanstveni članak) <i>An Early Iron grave at the Nakovana – Zmijna cemetery (Pelješac Peninsula) (Original scientific paper)</i>	329
MARTINA ČELHAR Fibule tipa Certosa Ic, Id i Ie u kontekstu novih nalaza iz Nadina (Izvorni znanstveni članak) <i>Ic-, Id- and Ie- type Certosa Fibulae in the Context of New Finds from Nadin (Original scientific paper)</i>	371
MATE PARICA Tragovi maslinarstva u prapovijesti istočnog Jadrana (Prethodno priopćenje) <i>Traces of Olive Cultivation in the Prehistoric Eastern Adriatic (Preliminary report)</i>	413

ANA MARINović

Novac gradova Arpija i Dirahija s istraživanja
na solinskoj Zaobilaznici (Stručni rad)
*Coins of the Cities of Arpi and Dyrrachion from Research
on the Solin-Zaobilaznica Site (Professional paper)*

431

DRAŽEN MARŠIĆ

Stubci s protomama Jupitra-Amona i Gorgone iz Zadra i problem
njihova arhitektonskog konteksta (Izvorni znanstveni članak)
*The Pillars with Protomes of Jupiter Ammon and Gorgon from Zadar
and their Architectural Context (Original scientific paper)*

445

FILOMENA SIROVICA, TATJANA TKALČEC, EVA BUĆA
Izvan izvornog konteksta: keramički nalazi iz groblja
oko crkve Uznesenja Blažene Djevice Marije u Gori
(Izvorni znanstveni članak)

*Outside of the Original Context: Ceramic Finds from
the Graveyard next to the Church of the Assumption of
the Blessed Virgin Mary in Gora (Original scientific paper)*

477

KARLA GUSAR, ANA KARADOLE

Prilog poznavanju kasnosrednjovjekovne i novovjekovne keramike
u Dalmaciji – nalazi sa zadarskog Muraja (Izvorni znanstveni članak)
*A Contribution to the Study of Late Medieval and Early Modern Pottery
in Dalmatia – Finds from Zadar's Muraj (Original scientific paper)*

529

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581



B. Marijanović

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The eighteenth volume of the journal *Archaeologia Adriatica* is dedicated to professor emeritus Brunislav Marijanović, as an expression of gratitude for everything he has done for the Department of Archaeology, University of Zadar and archaeology in general.

VELA PEĆINA KOD KALI NA UGLJANU –
NOVO NALAZIŠTE KASNOGA GORNJEG PALEOLITIKA
NA SJEVERNODALMATINSKIM OTOCIMA

VELA PEĆINA CAVE NEAR KALI ON UGLJAN –
A NEW LATE UPPER PALAEOLITHIC SITE IN THE
NORTHERN DALMATIAN ISLANDS

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U radu se iznose rezultati probnog iskopavanja Vele pećine kod Kali na otoku Ugljanu, s naglaskom na rezultate tehno-tipološke i petrografske analize litičkog skupa nalaza. Razmatra se značenje lokaliteta u mreži naseljavanja gornjopaleolitičkih lovaca sakupljača s obzirom na vremensko razdoblje potvrđeno radiokarbonskim datiranjem i geografski položaj lokaliteta na rubu danas potopljene Jadranske nizine.

KEY WORDS:

Vela Pećina, Ugljan,
Upper Palaeolithic,
Epigravettian, lithics

The paper presents the results of trial excavations at Vela Pećina cave near Kali on the island of Ugljan, and in particular the results of techno-typological and petrographic analyses of the lithic find assemblage. It considers the site's significance in the settlement grid of Upper Palaeolithic hunter-gatherers within the context of the time period confirmed by radiocarbon dating and the site's geographic location on the margins of the presently submerged Adriatic Plain.

UVOD

Razdoblje kasnoga gornjeg paleolitika na području sjeverne Dalmacije još uvijek je relativno slabo poznato. Dugo su vremena jedini nalazi pripisani ovom periodu bili površinski nalazi kamenih artefakata prikupljenih s nalazišta na otvorenome na području Molata (Ledenice, Zapuntelsko polje i Dražice)¹ i Dugog otoka (Krševanje polje, Veli rat, gradina Omišenjak kod Sali te Velo i Malo jezero kod Žmana).² Na svim nalazištima materijal je većinom pripisan širim vremenskim razdobljima od srednjeg paleolitika pa do neolitika, a gornjopaleolitički nalazi čine tek manji dio litičkog skupa. U novije vrijeme proveden je sustavni terenski pregled niza pozicija na širem području Velog rata, a rezultati analize prikupljenih kamenih artefakata pokazali su da se većina materijala može pripisati musterijenskoj kulturi odnosno srednjem paleolitiku, a tek manji dio gornjem paleolitiku i mezolitu koje je na ovom području teško razlikovati zbog sličnosti u tehnološkoj shemi.³

Prekretnicu u poznavanju ovog razdoblja označilo je otkriće pećine Vlakna na Dugom otoku. Kroz istraživanja koja se provode od 2004. godine Vlakno je otkrilo stratigrafsku sekvenciju s brojnim slojevima nastalim kontinuiranim ljudskim aktivnostima u vremenskom razdoblju od oko 19 550 do 8300 god. prije sadašnjosti.⁴ Do sada provedene analize litičkog skupa artefakata utvrdile su osnovne karakteristike i obrasce razvoja tehnologije izrade predmeta od lomljenog kamena od ranog do kasnog epigravetijena⁵ i prijelaza na mezolitik,⁶ a nalazi predmeta od umjetničkog značenja, nakita, pokopa te izrazito brojni nalazi životinjskih kostiju i ostataka malakofaune učinili su lokalitet jednom od polazišnih toča-

INTRODUCTION

The Late Upper Palaeolithic period in the area of northern Dalmatia is still relatively unknown. For a long time, the only finds dated to this period were surface finds of stone artefacts collected from open-air sites on the islands of Molat (Ledenice, Zapuntelsko Polje and Dražice)¹ and Dugi Otok (Krševanje Polje, Veli Rat, the Omišenjak hillfort near Sali, and Velo and Malo Jezero near Žman).² At all sites, the material was mostly dated to wider timespans, from the Middle Palaeolithic to the Neolithic, and Upper Palaeolithic finds form only a small part of the lithic assemblage. More recently, a systematic field survey on a number of positions in the wider area of Veli Rat was conducted, and the results of the analysis of the collected stone artefacts have shown that most of the materials can be attributed to the Mousterian culture or the Middle Palaeolithic, and only a small part to the Upper Palaeolithic and Mesolithic, which in this area are difficult to distinguish due to similarities in the techno-typological scheme.³

A turning point in the understanding of this period was the discovery of Vlakno cave on Dugi Otok. In campaigns that have been conducted since 2004, Vlakno has displayed a stratigraphic sequence with numerous layers formed by continuous human activities over a period of about 19,550 to 8,300 BP years before present.⁴ Analyses of the lithic assemblage display the basic characteristics and development patterns of a production technology of objects made of knapped stone from the Early to Late Epigravettian⁵ and the transition to the Mesolithic,⁶ while finds of objects of artistic importance, personal ornaments, burials and an extremely large set of finds of animal bones and remains of malacofau-

¹ BATOVIĆ 1973.

² BATOVIĆ 1973; 1988; 1992; 1993.

³ KRILE, VUJEVIĆ 2017: 24.

⁴ VUJEVIĆ, BODRUŽIĆ 2021: 5–6.

⁵ VUJEVIĆ et al. u tisku.

⁶ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014.

¹ BATOVIĆ 1973.

² BATOVIĆ 1973; 1988; 1992; 1993.

³ KRILE, VUJEVIĆ 2017: 24.

⁴ VUJEVIĆ, BODRUŽIĆ 2021: 5–6.

⁵ VUJEVIĆ et al. in print.

⁶ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014.

ka pri proučavanju kasnog gornjeg paleolitika odnosno epigravetijenske kulture na području istočne Jadranske obale.⁷

Istraživanje Vlakna potaknulo je širenje znanstveno-istraživačkih aktivnosti usmjerenih na otkrivanje novih lokaliteta na širem području. Tako je u sklopu projekata *Tranzicija i tradicija u špilji Vlakno: Model prijelaza paleolitika u mezolitik na području Sjeverne Dalmacije* (HRZZ UIP-2014-09-1545) i *Epigravetijenske zajednice sjeverne Dalmacije – EpiC* (HRZZ IP-2019-04-6115) proveden niz terenskih pregleda na sjevernodalmatinskim otocima (Dugi otok, Rava, Molat, Ugljan i Pašman). Napravljena su i probna iskopavanja niza nalazišta i na otocima zadarskog arhipelaga i u zadarskom zaleđu, a nalazi iz razdoblja kasnog paleolitika potvrđeni su u dijelu stratigrafije novootkrivenih lokaliteta kao što su Pećina na Zmorašnjem grebenu kod Silbe⁸ i Pećina u Ždrilu kod Rovanske.⁹ U isti kontekst možemo smjestiti i Velu pećinu na otoku Ugljanu.

NALAZIŠTE

Vela pećina smještena je na jugozapadnom dijelu otoka Ugljana, na području Općine Kali, između uvale Vele Lamjane na jugu i uvale Svitle na sjeveru. Ulaz u pećinu nalazi se u dnu izraženog vapnenačkog hrpta koji prati strmu jugozapadnu padinu brda Kobiljaka. Do pećine se može doći pješačkom stazom iz uvale Vele Lamjane koja vodi uz morsku obalu i koja u podnožju naglo skreće na zapad. Kamenom sipinom koja predstavlja ostatak masivnog suhozida zaraslog maslinika dolazi se direktno do ulaza otvorenog prema zapadu-jugozapadu. Pred ulazom se nalazi mala tera-

na made the site a starting point in the study of Late Upper Palaeolithic (Epigravettian) culture on the eastern Adriatic coast.⁷

The excavations at Vlakno encouraged the spread of research activities aimed at discovering new sites over a wider area. As part of the project *Transition and Tradition in Vlakno Cave: Modelling the Palaeolithic-Mesolithic Transition in Northern Dalmatia* (HRZZ UIP-2014-09-1545) and *Epigravettian Communities of Northern Dalmatia – EpiC* (HRZZ IP-2019-04-6115), a series of field surveys was carried out on several northern Dalmatian islands (Dugi Otok, Rava, Molat, Ugljan and Pašman). Trial excavations were conducted at a number of sites on the islands of the Zadar archipelago, as well as in the Zadar hinterland, and finds from the Late Palaeolithic were confirmed in the stratigraphy of newly discovered caves such as Pećina at Zmorašnji Greben off Silba⁸ and Pećina in Ždrilo near Rovanska.⁹ Vela Pećina cave on the island of Ugljan can also be placed in the same context.

SITE BACKGROUND

Vela Pećina is located in the southwestern part of the island of Ugljan, in the municipality of Kali, between the bays of Vela Lamjana in the south and Svitle in the north. The entrance to the cave is located at the bottom of an accentuated limestone ridge that follows the steep southwestern slope of the Kobiljak hill. The cave can be reached from Vela Lamjana Bay via a walking trail, which leads along the coast and turns sharply to the west at the foot of the hill. A trail of crushed stone – the remains of the massive drystone wall of an overgrown olive grove – leads directly to the entrance, overlooking the west/

⁷ VUJEVIĆ, PARICA 2011; VUJEVIĆ, BODRUŽIĆ 2014; CRISTIANI et al. 2018; CVITKUŠIĆ et al. 2018; BARBIR, VUKOSAVLJEVIĆ, VUJEVIĆ 2020; CVITKUŠIĆ, VUJEVIĆ 2021; RADOVIĆ, VUJEVIĆ 2021; CVITKUŠIĆ, RADOVIĆ, VUJEVIĆ 2018

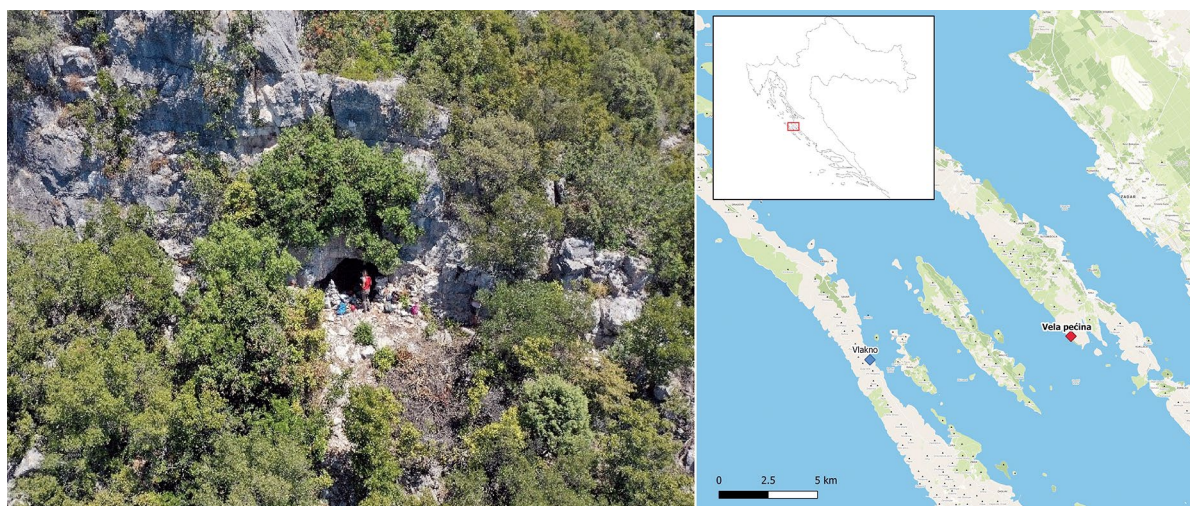
⁸ VUJEVIĆ, PARICA 2021.

⁹ BODRUŽIĆ, VUJEVIĆ 2023.

⁷ VUJEVIĆ, PARICA 2011; VUJEVIĆ, BODRUŽIĆ 2014; CRISTIANI et al. 2018; CVITKUŠIĆ et al. 2018; BARBIR, VUKOSAVLJEVIĆ, VUJEVIĆ 2020; CVITKUŠIĆ, VUJEVIĆ 2021; RADOVIĆ, VUJEVIĆ 2021; CVITKUŠIĆ, RADOVIĆ, VUJEVIĆ 2018

⁸ VUJEVIĆ, PARICA 2021.

⁹ BODRUŽIĆ, VUJEVIĆ 2023.



SLIKA 1. Zračna snimka ulaza u pećinu tijekom obilaska 2022. godine i smještaj lokaliteta na karti (snimio i doradio: M. Bodružić)

FIGURE 1 Aerial photo of the entrance to the cave during a survey in 2022 and the site's position on the map (photo and edited by M. Bodružić)

sa prekrivena urušenim kamenim blokovima. Ulaz ima oblik nepravilnog svoda visokog gotovo 2 metra i širokog 4,5 metara (sl. 1).

Pećina ima jednostavan tlocrt u obliku jedinstvenog hodnika koji se u dužini od 35,8 metara proteže u pravcu istok-sjeveroistok, sa suženjem po sredini nastalim intenzivnim zasigavanjem kamenja i veće količine kalcita kojima je prekriveno dno i strop objekta (sl. 2/A). Prednji dio pećine ima nizak strop (do 1,2 metra visine) sve do mjesta gdje hodnik zaokreće prema sjeveroistoku kad se pred suženjem hodnik pećine širi, a u stropu otvara veći sifon kojem se ne vidi završetak. Na ovom proširenju vidljivi su tragovi recentnih boravaka u vidu otpada i ostataka vatrišta, dok su strop i zidovi prekriveni čađom. Da je pećina korištena u recentno vrijeme kao privremeno sklonište lokalnom stanovništvu, navodi i M. Malez u svojem izvješću 1955. godine, kada donosi opis Vele pećine, ali i obližnje Male pećine s tlocrtima i presjecima obaju objekata, iako bez podataka koji bi sugerirali mogući potencijal za arheološka istraživanja.¹⁰

Arheološka istraživanja Vele pećine započela su 2022. godine obilaskom pozicije tijekom terenskih pregleda speleoloških objekata na

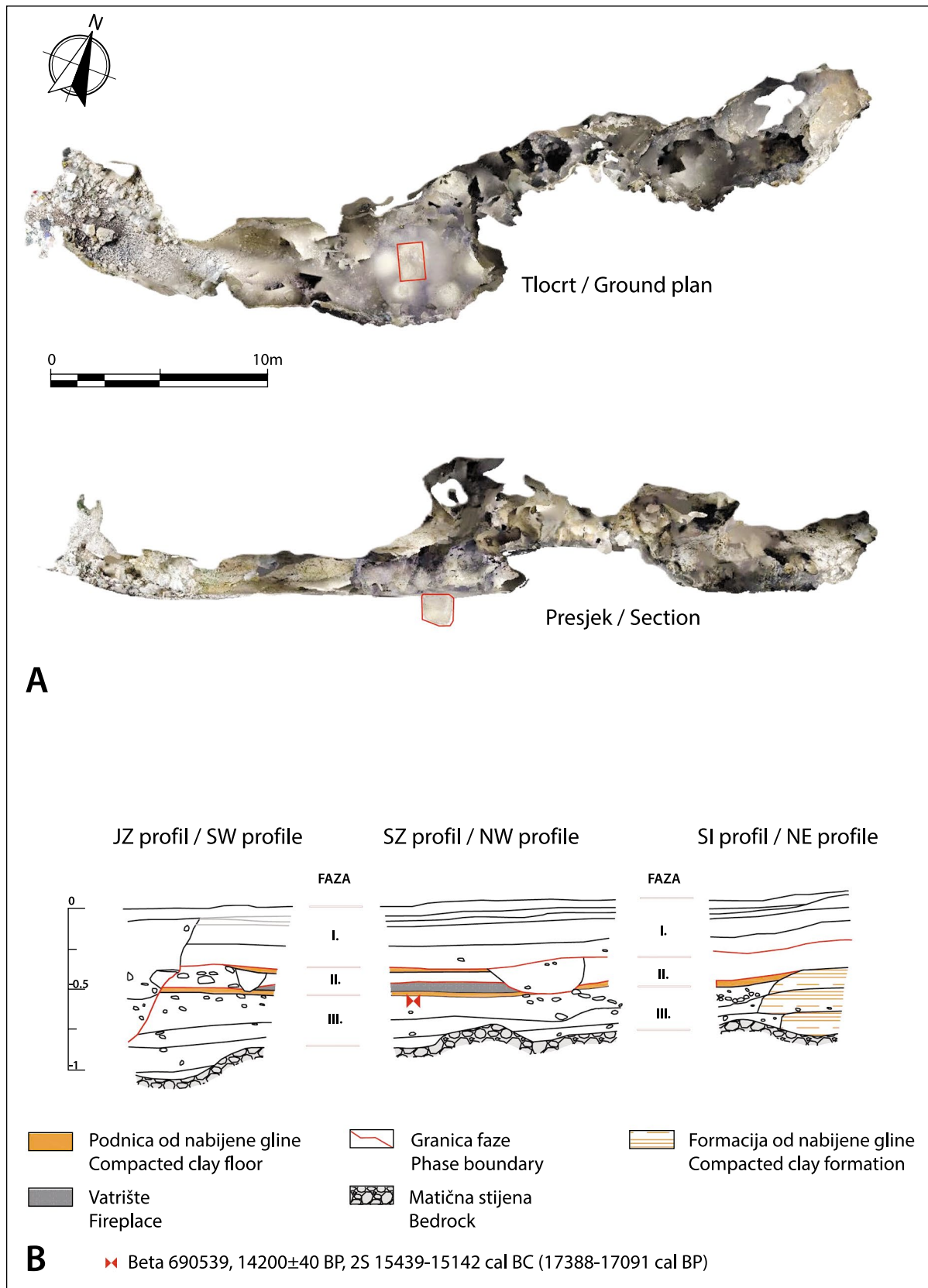
southwest. In front of the entrance is a small terrace covered with collapsed stone blocks. The entrance has the shape of an irregular vault, almost 2 metres high and 4.5 metres wide (Fig. 1).

The cave has a simple ground-plan in the form of a unique, 35.8-metre-long hallway stretching east/northeast, with a narrowing in the middle caused by intensive speleothem growth on the rocks and large amounts of calcite covering the structure's bottom and ceiling (Fig. 2/A). The ceiling in the front part of the cave is low (up to 1.2 metres) all the way to a spot where, in front of a narrowing, the hallway turns north-east and expands, while in the ceiling a larger siphon opens, the end of which is not visible. In the extended space, traces of more recent stays are visible: garbage, fire-site remains, and soot covering the ceiling and walls. In 1955, M. Malez reported that local population had used the cave as a temporary shelter in the near past, as he described Vela Pećina, but also nearby Mala Pećina, publishing the ground-plans and sections of both structures, although he didn't provide data that would suggest potential for archaeological excavations.¹⁰

Archaeological excavations at Vela Pećina began in 2022 with a survey of the site as part of field

¹⁰ MALEZ 1955: 74–77.

¹⁰ MALEZ 1955: 74–77.



SLIKA 2. A – Pozicija sonde na tlocrtu i presjeku pećine, B – crtež profila s pozicijom uzorka za radiokarbonsko datiranje (izradio: M. Bodružić)

FIGURE 2 A – Position of the trial trench on the cave's ground-plan and the cross-section, B – Sketch of the profile with the position of the specimen for radiocarbon dating (made by M. Bodružić)

Ugljanu i Pašmanu.¹¹ Tom prilikom, na samoju površini pećine i pri iskopu manje testne sonde do pojave arheoloških nalaza, pronađeno je nekoliko litičkih artefakata koje je na temelju morfoloških osobina bilo moguće pripisati epigravetijenskom kulturnom kompleksu (T. IV/4, 15).¹² Na tragu ovih nalaza, zbog stjecanja boljeg uvida u stratigrafiju i kronologiju nalazišta, kao i u potencijal pećine za daljnja istraživanja, tijekom 2023. godine provedena su probna iskopavanja.¹³

REZULTATI PROBNOG ISKOPAVANJA I STRATIGRAFIJA NALAZIŠTA

Za poziciju probne sonde odabran je prostor manjeg proširenja na kraju prednje dvorane, uz poziciju na kojoj su već spomenutim potpovršinskim pregledom 2022. godine pronađeni litički nalazi. Istražena je površina pravokutnog tlocrta, dimenzija 1 x 1,5 m, usmjerena dužom stranom približno u pravcu sjeverozapad-jugoistok te je dobila oznaku Sonda A.

Tijekom iskopavanja dokumentirane su ukupno 24 stratigrafske jedinice. Većinom je riječ o sukcesivno supraponiranim kulturnim slojevima, dok su u gornjem i srednjem dijelu stratigrafskog slijeda dokumentirane i tri jame s pripadajućim zapunama, dvije antropogenog te jedna biogenog postanka, pripisana životinjskoj jazbini. Matična stijena dosegnuta je na cijeloj površini probne sonde, na dubini od 1 do 1,2 m. Nakon iskopavanja, ukupni slijed podijeljen je, na osnovi strati-

surveys of speleological features on Ugljan and Pašman.¹¹ On that occasion, on the cave's surface and in a small trial trench that was dug until the appearance of archaeological finds, several lithic artefacts were collected, whose morphological characteristics suggest the Epigravettian cultural complex (Pl. IV/4, 15).¹² On the basis of these finds, to gain a better insight into the stratigraphy and chronology of the site as well as the cave's potential for further excavations, trial excavations were conducted in the course of 2023.¹³

RESULTS OF TRIAL EXCAVATIONS AND SITE STRATIGRAPHY

The trial trench was positioned in the hall with the extension at the end of the front hall, and on the spot where lithic finds had been recovered in 2022 subsurface surveys. A rectangular 1 x 1.5 m surface was set for excavation, with its longer side stretching in approximately a northwest-southeast direction, and designated as Trench A.

During the excavations, a total of 24 stratigraphic units were documented. Most of them were successively superimposed cultural layers, while in the upper and middle part of the stratigraphic sequence, three pits were documented with accompanying fills, of which two were of anthropogenic and one of biogenic origin, with the latter interpreted as an animal den. On the entire surface of the trial trench, the bedrock was reached, at a depth of 1 to 1.2 m. After the excavations, on the basis of

¹¹ Terenski pregled proveli su Martina Dubolnić Glavan, Mario Bodružić i Leo Arbutina.

¹² Točna pozicija Male pećine koja se prema Malezovu opisu nalazi nekoliko stotina metara prema sjeverozapadu nije utvrđena. Njezin je ulaz lociran pregledom padine brda iz broda, ali obilazak nije proveden zbog nepovoljnog, gusto obraslog terena.

¹³ U probnim istraživanjima su, osim autora rada, sudjelovali izv. prof. Mate Parica i studentica Sarah Stettler, kojima ovim putem zahvaljujemo na trudu.

¹¹ The field survey was conducted by Martina Dubolnić Glavan, Mario Bodružić and Leo Arbutina.

¹² The exact position of Mala Pećina, which according to Malez's description was situated several hundred metres to the northwest, has not been determined. Its entrance was located by examining the slope of the hill from a boat, but no surveys were carried out due to the unfavourable, densely overgrown terrain.

¹³ Apart from the author of this article, the research was conducted by associate professor Mate Parica and student Sarah Stettler, to whom we would like to thank for their efforts.

grafskih karakteristika slojeva i pokretnih arheoloških nalaza, u tri glavne kronostratigrafske faze (sl. 2/B).¹⁴

MLAĐA FAZA – RECENTNE AKTIVNOSTI

Najmlađu fazu na lokalitetu čine površinski slojevi do oko 30 cm relativne dubine i jedna veća recentna jama. Gornja zapuna ove jame, sačinjena od prahovite zemlje s mnogo organskog materijala (raspadnuto granje) i recentnog otpada, bila je vidljiva već nakon uklanjanja tankoga površinskog sloja. Naknadno je utvrđeno i postojanje donjeg sloja zapune sastavljenog od veće količine glinastog sloja, ali uz prisustvo otpada kao i nalaza djelomično petrificiranih primjeraka ljudskog izmeta. Veći dio jame nije obuhvaćen iskopavanjima, a u prostor sonde ulazilo je tek 30-ak cm uz jugoistočni profil. Ukop jame dosegnuo je dubinu od 70 cm pri čemu je presjekao većinu starijih kulturnih slojeva.

Na ostatku površine oko recentnog ukopa dokumentirani su rahli slojevi praškastog sedimenta s većom količinom pepela, ali nehomogenog sastava koji upućuje na njihov moguće recentni karakter. U njima je pronađen i jedini primjerak keramike prikupljen tijekom istraživanja – ulomak oboda posude jajolike forme koji se na osnovi tehnoloških svojstava može pripisati neolitičkom periodu. Nakon njihova uklanjanja dokumentirana je manja jama, također presječena recentnim ukopom, te ispod njezine razine još dva sloja. Ovi donji slojevi bili su kompaktnije konzistencije, sastavljeni većinom od glinastog

the stratigraphic characteristics of the layers and of archaeological small-finds, the overall sequence was divided into three main chronostratigraphic stages (Fig. 2/B).¹⁴

YOUNGER PHASE – RECENT ACTIVITIES

The most recent phase at the site consists of surface layers up to about 30 cm of relative depth, and a larger recent pit. The pit's upper fill, made of dusty earth with lots of organic material (decomposed branches) and recently discarded garbage, came to light immediately after the removal of the thin surface layer. Subsequently, the existence of a lower fill layer was determined, largely composed of clay, but also including garbage, as well as finds of partially petrified specimens of human excrement. The greater part of the pit was not included in the excavations, with only a section of 30 cm along the south-eastern profile being reached by the trial trench. The cut of the pit reached a depth of 70 cm, transecting most of the early cultural layers.

On the rest of the surface around the recent pit, loose layers of powdery sediment with a large amount of ashes were documented, but of non-homogeneous composition (possibly indicating their recent character). Recovered from these layers was the only specimen of pottery collected in the course of the excavations – a rim fragment of an egg-shaped vessel, which can – based on its techno-typological properties – be attributed to the Neolithic period. After the removal of these layers, a smaller pit was documented (also intersected by the recent

¹⁴ Tijekom ranijih obilazaka pećine na desnome bočnom zidu ulaznog hodnika, uočen je ostatak sloja s puževima, po sastavu sličan mezolitičkim slojevima iz Vlakna i Vele spile, a sadržavao je i jednu pločicu izrađenu na rožnjaku. Čini se mogućim da je pećina bila korištena i u razdoblju mezolitika, a da su ti slojevi uništeni kasnijim ljudskim boravcima i intervencijama, možda u svrhu produbljivanja ulaznog hodnika i unutrašnjosti objekta jer slični slojevi nisu uočeni unutar probne sonde.

¹⁴ In the earlier surveys of the cave, on the right side-wall of the entrance hallway, the remains of a layer with snails was identified, similar to Mesolithic layers from Vlakno and Vela Spila in terms of composition; it also contained a bladelet made of chert. Possibly the cave was also used in the Mesolithic period and the layers were destroyed by later human stays and interventions, perhaps for the purpose of deepening the entrance hallway and the structure's interior, given that no similar layers were observed in the trial trench.

depozita slično slojevima iz starijih faza, ali i dalje nehomogenog sastava koji je upućivao na moguće disturbacije u sloju. U jednom je od njih pronađena i veća količina petrificiranoga ljudskog izmeta, kakva je nađena i u zapuni već spomenute jame. Iako donji dio slojeva ove faze nije sadržavao nalaze recentnog otpada, zbog pojave petrificiranog izmeta i nehomogenog sastava sedimenta njihov nastanak potrebno je povezati s iskopima recentne jame odnosno prebacivanjem zemlje tijekom njezina ukapanja. Gornji dio slijeda ove faze vjerojatno je nastao ljudskim aktivnostima, dok je sama jama još uvijek bila u funkciji. Iako su litički artefakti i životinjske kosti i u ovoj fazi činili najbrojniju skupinu nalaza, pojava recentnog otpada u najgornjim slojevima (potplati cipela, organski otpad i slično) te indirektni pokazatelji o destruiranom karakteru donjeg dijela slijeda ove faze pokazuju da su pokretni nalazi u njih dospjeli sekundarno, prekopavanjem starijih kulturnih slojeva.

Recentne aktivnosti prema prikupljenom otpadu iz slojeva mogu se datirati u razdoblje 20. stoljeća što se poklapa s podacima da je pećina korištena kao sklonište u Drugome svjetskom ratu. Materijalni dokaz o korištenju pećine u tom periodu pronađen je pred samim ulazom u vidu jedne čahure za protuzrakoplovni top talijanske proizvodnje kojoj je gornji dio bio rastavljen vjerojatno zbog izvlačenja baruta.¹⁵

pit), and two more layers were identified below its level. These lower layers were more compact, composed mostly of clay deposits similar to layers from older stages, but still of non-homogeneous composition, suggesting possible disturbances of the layer. In one of them, a large amount of petrified human excrement (found also in the fill of the previously mentioned pit) was uncovered. Although the lower layers from this stage contained no recently discarded garbage, on the basis of the occurrence of petrified excrement and the non-homogeneous sediment composition their formation should be associated with the recent digging of a pit or the relocation of soil in the course of such digging. The upper layers from this stage were probably a result of human activities in the time when the pit was still in function. Although lithic artefacts and animal bones were the most numerous groups of finds from this stage, the occurrence of recently discarded garbage in the top layers (shoe soles, organic waste, etc.), along with indirect indicators of the destroyed character of the lower layers from this stage, indicate that mobile finds ended in them secondarily, by disturbance of older cultural layers.

Based on waste collected from the layers, recent activities can be dated to the 20th century, which concurs with the fact that the cave was used as a shelter during World War II. The use of the cave during that period was confirmed by a find of an anti-aircraft gun shell of Italian manufacture collected in front of the entrance; its upper part had been dismantled, probably to extract gunpowder.¹⁵

¹⁵ Tijekom oružanog ustanka stanovnika Iža protiv talijanskog okupatora, koji je započeo zbog rekvizicije maslinova ulja na otoku, ustanici su provalili u državno skladište te prebacili barkom oko 20 kvintala ulja u neimenovanu pećinu na Ugljanu, a ostatak uništili. Iako se u opisima događaja ne spominje izrijeком Vela pećina, to se čini vrlo vjerojatnim jer pećinu od Iža dijeli samo uski morski tjesnac i ostale su pećine na ovom dijelu otoka (Pećina u uvali Svitla i Mala pećina) znatno manje i nepogodnije za skrivanje. O samom ustanku vidi: SRHOJ 2019.

¹⁵ During an armed uprising of the inhabitants of the island of Iž against the Italians, which started in response to the requisitioning of olive oil on the island, the rebels broke into a state-owned warehouse and transferred about 20 quintals of oil to an unnamed cave on Ugljan and destroyed the rest. Although the description of the event does not mention Vela Pećina, it seems very likely that this was the site, since the cave is divided from Iž only by a narrow sea strait, and the other caves in this part of the island (Pećina in Svitla bay and Mala Pećina) are significantly smaller and less favourable as refuges. On the uprising itself see: SRHOJ 2019.

SREDNJA FAZA – POREMEĆENI GORNJOPALEOLITIČKI SLOJEVI

Središnju fazu na lokalitetu primarno čini nešto deblji i homogeniji sloj gline s manjom količinom primjesa od amorfnog kamenja koji je pri vrhu zasebno izdvojen kao sloj podnice zbog nabijene konzistencije. Ispod njega dokumentiran je nepravilni plitki negativ zapunjen zemljom sličnog sastava, ali jako rahle konzistencije koji je pripisan životinjskoj jazbini. U slojevima ove faze nisu pronađeni nikakvi drugi nalazi osim malobrojnih litičkih artefakata i životinjskih kostiju.

Iako za razliku od slojeva prethodne faze ovdje nisu primijećeni jači vertikalni poremećaji u slojevima, kao ni prisutnost recentnih nalaza ili nalaza iz mlađih arheoloških razdoblja, postojanje plitkog negativa životinjske jazbine i mogućnost manjih miješanja nalaza uvjetovali su njihovo zasebno izdvajanje.

STARIJA FAZA – INTAKTNI GORNJOPALEOLITIČKI SLOJEVI

Fazu čini ukupno osam superponiranih kulturnih slojeva. Ovaj dio stratigrafske sekvencije na vrhu započinje slojem tamne zemlje i ugljena presječenim nepravilnim plitkim ukopom, vjerojatno nastalim djelovanjem životinja, a koji je pripisan prethodnoj fazi. Svi slojevi ove faze, osim najmlađega, bili su sastavljeni većinom od homogenoga glinastog matriksa pećinskog sedimenta, žućkasto-smeđe do crvenkastosmeđe boje, uz različite količine amorfnog kamenja, kalcita i ostalih primjesa. Tijekom iskopa slojevi su izdvajani prije svega na temelju razlika u konzistenciji te donekle boji sedimenta, dok je sastav upućivao na primarno prirodne procese sedimentacije. Antropogene aktivnosti u slojevima, osim u pojavi pokretnih nalaza koje su činili litički artefakti i životinjske kosti, evidentirane su samo povremenom pojavom manjih količina ugljena, bez većih koncentracija.

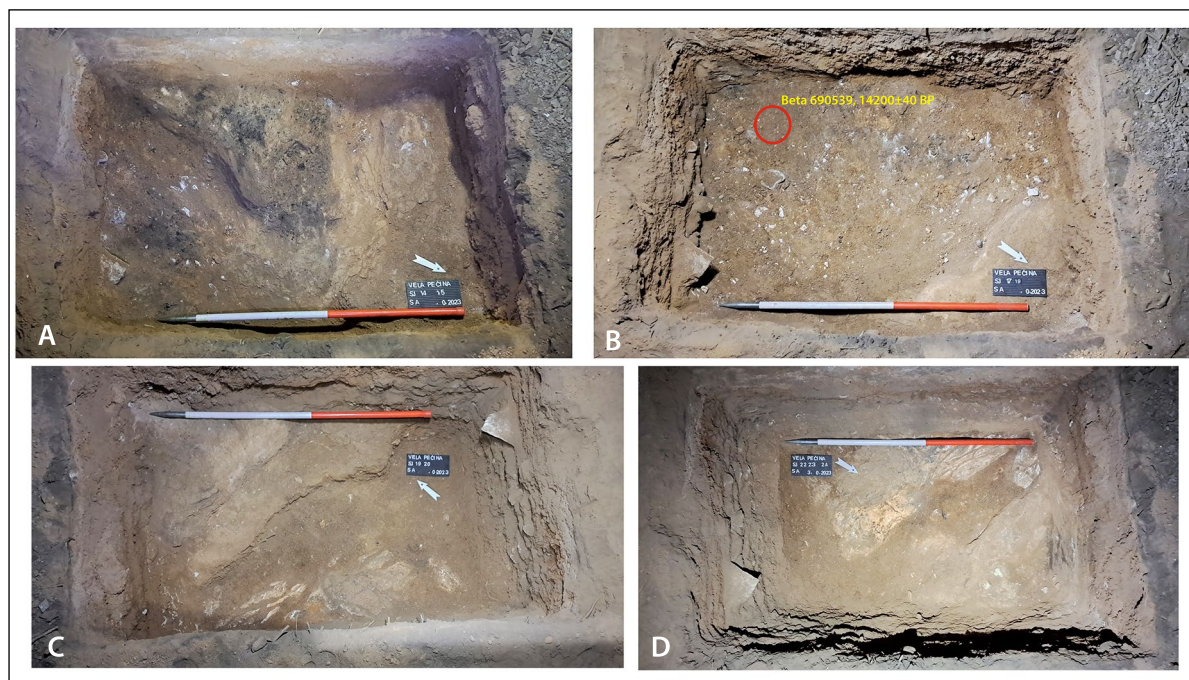
THE MIDDLE PHASE – DISTURBED UPPER PALAEOLITHIC LAYERS

The middle phase at the site primarily consists of a somewhat thicker and more homogeneous layer of clay with a smaller amount of inclusions of amorphous stone, trampled at the top and as a result interpreted as a floor layer. Documented below it is an irregular, shallow negative, filled with soil of similar composition, but of extremely loose consistency, interpreted as an animal den. With the exception of a few lithic artefacts and animal bones, no other finds were recovered from the layers of this stage.

Although, unlike in those from the previous stage, in the layers from this stage no significant vertical disturbances and no recent finds (or finds from younger archaeological periods) were observed, the fact that there was a shallow negative of an animal den and the possibility of minor mixing of the finds resulted in their separation.

THE INITIAL PHASE – INTACT UPPER PALAEOLITHIC LAYERS

This stage consists of eight superposed cultural layers. The top layer of this part of the stratigraphic sequence consists of dark earth and charcoal and is cut by an irregular shallow dig that was probably formed by animal activities that occurred during a later stage. All layers from this stage, except the newest one, consisted mostly of a homogeneous clay matrix of cave sediment of yellowish-brown to reddish-brown colour and with various amounts of amorphous stones, calcite and other inclusions. During the excavations, the layers were distinguished primarily on the basis of differences in consistency and partly by sediment colour, while the composition primarily suggested natural sedimentation processes. With the exception of small finds (lithic artefacts and animal bones), anthropogenic activities in the layers were documented only by the occasional occurrence of small quantities of charcoal, with not many traces of burning that



SLIKA 3. *Intaktni paleolitički slojevi: A – ostatak vatrišta presječen nepravilnim ukopom životinjske jazbine s ostatkom podnice; B – sloj ispod podnice s označenom pozicijom uzorka ugljena za datiranje (Beta 690539); C – formacije od stvrdnute gline u sjevernom kutu sonde; D – najstariji slojevi (donja formacija od stvrdnute gline i komplementarni sloj crvenice uz matičnu stijenu)* (snimio: M. Bodružić)

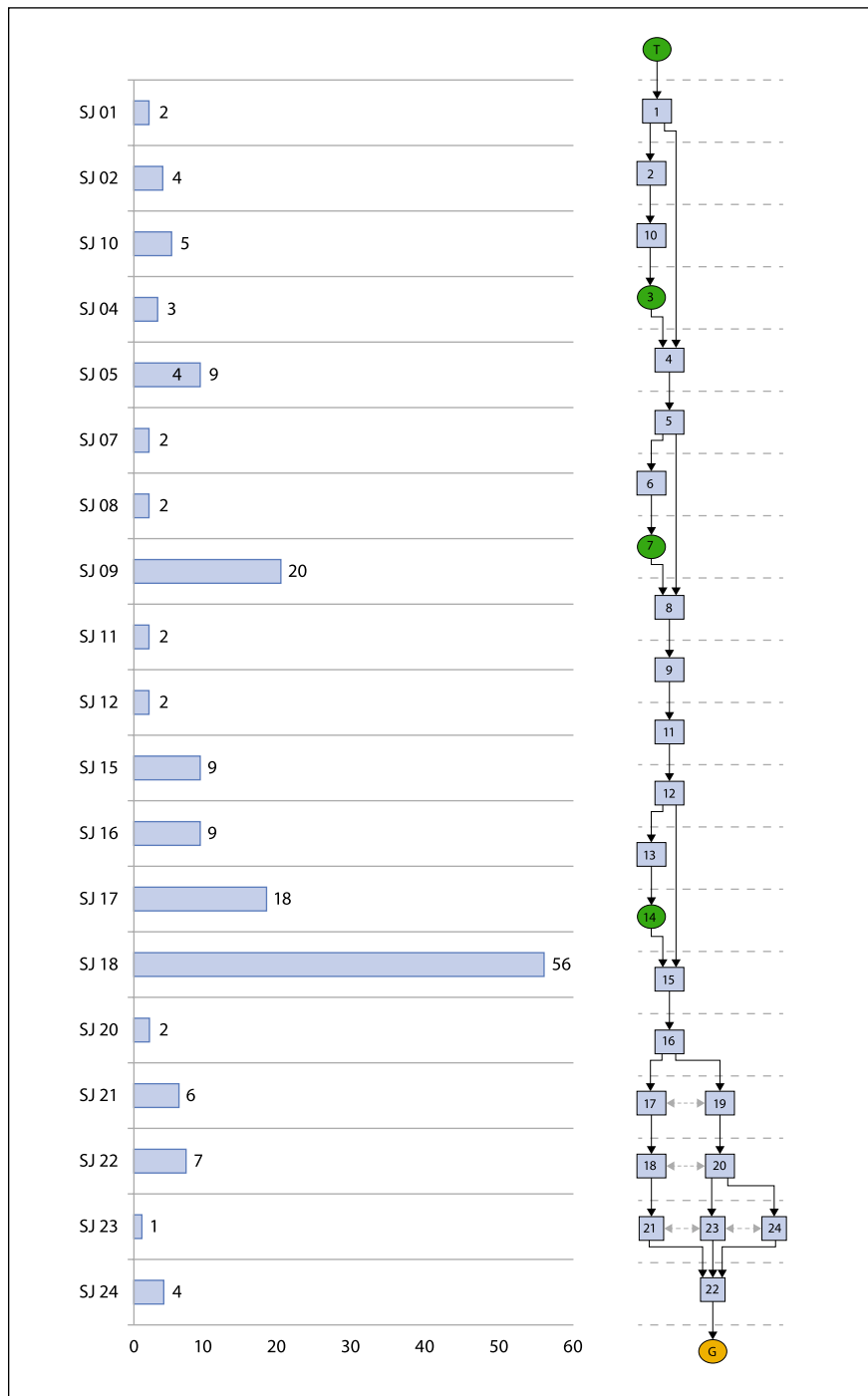
FIGURE 3 *Intact Palaeolithic layers: A – Remains of a fire site intersected by an irregular dig of an animal's den and the remains of a floor; B – The layer under the floor with marked position of a charcoal sample for dating (Beta 690539); C – Formations of hardened clay in the northern corner of the trial trench; D – The oldest layers (the lower formation of hardened clay and the complementary layer of red soil along the parent rock)* (photo by M. Bodružić)

tracija tragova gorenja koji bi sugerirali na ostatke vatrišta. Iznimku u tom smislu činio je jedino spomenuti najmlađi sloj, koji je po boji i sastavu uz veću količinu ugljena i pepela upućivao na postojanje vatrišta, a ležao je na tankom sloju čišće crvenkastosmeđe gline nabijene konzistencije koji vjerojatno predstavlja podnicu (sl. 3/A). Pri odabiru uzorka ugljena za radiokarbonsko datiranje, zbog činjenice da je životinjska jazbina presjekla ovaj sloj kao i dio podnice, prednost je dana uzorku ugljena iz sloja ispod podnice koji je dao datum 14200 ± 40 god. pr. sad. odnosno od 17388 do 17091 kalibriranih godina prije sadašnjosti (Beta 690539; sl. 2/B; 3/B).

Posebnost u ovoj fazi čine slojevi izrazito stvrdnute gline na sjevernom kutu sonde s manjom nakupinom pepela slične konzistencije, koji su vjerojatno formirani prirodnim procesima, poput zasigavanja njima komplementarnih kulturnih slojeva (sl. 3/C). U prilog tomu

would indicate the remains of fire sites. The only exception in this regard was the above-mentioned youngest layer, whose colour and composition with larger amounts of charcoal and ashes indicated the existence of a fireplace; in addition, it was positioned on a thin layer of more pure, reddish-brown trampled clay, which probably served as a flooring (Fig. 3/A). When selecting a charcoal sample for radiocarbon dating, due to the fact that the layer and a part of the flooring were cut by an animal den, preference was given to a charcoal sample from the layer below the flooring, which was dated to $14,200 \pm 40$ BP, or 17,388 to 17,091 cal. BP (Beta 690539; Fig. 2/B; 3/B).

A special feature of this phase are layers of particularly hardened clay in the northern corner of the test trench with a smaller pile of ashes of similar consistency, probably formed by natural processes, such as precipitation and speleothem growth on complementary cul-



SLIKA 4. Brojnost litičkih artefakata po stratigrafskom slijedu (izradio: M. Bodružić)

FIGURE 4 Numbers of lithic artefacts by stratigraphic sequence (made by M. Bodružić)

ide i položaj ovih formacija u sjevernom kutu, blizu stražnjeg prolaza koji vodi u drugi dio pećine, čija je površina prekrivena debelim slojem siga.

Matična stijena dosegnuta je na cijeloj površini sonde, na dubini 1 – 1,2 metra. Či-

tural layers (Fig. 3/C). This is supported by the topography of the cave formations in the northern corner, near the rear passage leading to the second part of the cave, whose surface is covered with a thick layer of speleothem.

The bedrock was reached along the entire

nio ju je blok rudistnog vapnenca od kojeg je formirana i sama pećina s tankim inkluzijama crvenice unutar pukotina i sinklinala usmjerenih približno u pravcu zapad-istok, s najvišim izdankom prema zapadu i blagim padom prema istoku odnosno stražnjem dijelu dvorane. Tanki sloj crvenice na kontaktu matične stijene i kulturnih slojeva i unutar njezinih pukotina također je sadržavao litičke artefakte te sitne ulomke životinjskih kostiju.

Probim arheološkim iskopavanjima utvrđeno je da najmlađa stratigrafska faza pokazuje jasne dokaze znatnijih poremećaja slojeva prozročenih recentnim ukopima. U njoj su osim litike i životinjskih kostiju zabilježeni i nalazi iz mlađih prapovijesnih perioda (ulomak neolitičke keramike). Srednja faza donekle se može smatrati poremećenom zbog pojave plitkoga nepravilnog kanala životinjske jazbine, iako se u osnovi može povezati s arheološkim kontekstom ispod, dok najstarija faza obuhvaća intaktne paleolitičke slojeve koji su sadržavali i najveću količinu litičkog materijala. U svim slojevima najbrojnije nalaze činili su litički artefakti i životinjske kosti uz postupan porast broja litičkih artefakata prema starijim slojevima, vrhunac u slojevima ispod ostataka vatrišta i podnice te ponovni pad brojnosti u slojevima neposredno iznad matične stijene (sl. 4). Malobrojni nalazi litike u mlađoj kronostratigrafskoj fazi mogu se pripisati dislociranosti nalaza zbog antropogenih aktivnosti i prekapanja slojeva.

LITIČKA ANALIZA

Litički skup, uz ostatke faune, najbrojnija je kategorija nalaza iz Vele pećine. Do sada su pronađena 173 artefakta čija ukupna masa iznosi 371,92 g. Manji dio litičkih predmeta pronađen je pri površinskom pregledu i iskopu testne sonde 2022. godine ($n = 12$), dok su ostali pronađeni pri iskopavanju probne sonde (sonda A). Upravo je taj skup predmet anali-

surface of the trial trench at a depth of 1–1.2 metres. It consisted of a block of rudist limestone (of which the entire cave is formed), with thin inclusions of red soil in the cracks and synclines, oriented approximately west-east, with the highest outcrop towards the west and a slight inclination towards the east (to the back part of the hall). The thin layer of red soil at the contact of the bedrock and the cultural layers, as well as inside the cracks, also contained lithic artefacts and tiny fragments of animal bones.

Archaeological trial excavations brought clear evidence of significant disturbances of layers in the youngest stratigraphic phase, caused by recent digging. In addition to lithic artefacts and animal bones, finds from the younger prehistoric periods (a fragment of Neolithic pottery) were recorded in this phase. The middle phase can be considered to some extent disturbed by the appearance of the shallow, irregular cut of an animal den, although it can be associated with the archaeological context beneath it, while the oldest phase includes intact Palaeolithic layers that contained the largest amount of lithic material. In all layers, the most numerous finds were lithic artefacts and animal bones. The number of lithic artefacts gradually increased towards older layers, while their largest number was in the layers below the remains of the fire site and the flooring, and it dropped again in the layers directly above the parent rock (Fig. 4). The small number of lithic finds in the youngest chronostratigraphic phase can be attributed to the dislocation of finds due to anthropogenic activities and such as digging.

LITHIC ANALYSIS

The lithic assemblage, along with the remains of fauna, is the most numerous category of finds from Vela Pećina. So far, 173 artefacts have been found with a total mass of 371.92 g. A smaller proportion of lithic artefacts ($n=12$) was found in the course of the surface survey and small test excavation in 2022, while the rest were found in the course of excavating trench A). This assem-

ze u radu. U sondi A sveukupno je pronađen 161 komad ukupne mase 332,09 g, a najviše ih potječe iz sloja crvenkaste gline smještenog neposredno ispod sloja datiranog metodom radioaktivnog ugljika ($n = 56$; sl. 4). U kategoriju formalnog oruđa uvršteno je 65 komada što čini 40 % od ukupnog broja. Iako su u stratigrafiji definirane različite faze, činjenica da su, izuzev najstarije, sve one posljedica naknadnih postdepozicijskih procesa koji su za rezultat imali poremećaj slojeva nastalih u vrijeme paleolitika i time doveli manju količinu paleolitičkih nalaza u kronološki mlađi kontekst, utjecala je na odluku da se litički skup analizira kao cjelina.

TEHNOLOŠKA ANALIZA

Tehnološka analiza litičkog skupa provedena je po principu lanca operacija, u neznatno modificiranom obliku prilagođenom materijalu iz pećine.¹⁶ Definirano je ukupno 17 tehnoloških kategorija, koje predstavljaju oblike karakteristične za različite stupnjeve obrade sirovinskog materijala i proizvodnju oruđa.¹⁷ Lomljevinu predstavlja grupu artefakata koju čine odbojci, sječiva i pločice, pri čemu sječiva i pločice imaju dužinu najmanje dvaput veću od širine.¹⁸ Pri određivanju granice između sječiva i pločica korišten je Tixierov model utemeljen na dijagramu raspršenosti odnosa širine i dužine cjelovito sačuvanih sječiva i pločica (sl. 5).¹⁹ Analiza je pokazala općenito pozitivnu korelaciju između širine i dužine; veća širina uvjetovala je veću dužinu lamelarnih

blage is the subject of analysis in the paper. In trial trench A, 161 pieces with a total mass of 332.09 g were found, the majority originating from a layer of reddish clay located just below the carbon-dated layer ($n=56$; fig. 4). Sixty-five pieces were categorised as formal tools, making up 40% of the total number. Although different stratigraphic stages had been defined, the fact that all stages except the oldest are a result of subsequent post-depositional processes – that led to the disturbance of the layers formed in the Palaeolithic period and thus transferred a smaller amount of Palaeolithic finds into a chronologically newer context – resulted in the decision to analyse the lithic assemblage as a whole.

TECHNOLOGICAL ANALYSIS

The technological analysis of the lithic assemblage was carried out by applying a slightly modified form of the operation-chain principle, adapted to the material collected in the cave.¹⁶ A total of 17 technological categories were defined, which represent forms characteristic of various stages of raw material processing and tool production.¹⁷ Debitage is a group of artefacts made up of flakes, blades and bladelets, the length of blades and bladelets being at least twice the width.¹⁸ When determining the distinction between blades and bladelets, the Tixier model was used, based on the scatter plot of the width and length ratios of the completely preserved blades and bladelets (Fig. 5).¹⁹ The analysis showed a generally positive correlation between width and length; greater width caused greater length

¹⁶ Tehnološka analiza napravljena je prema KARAVANIĆ 1992; 1999; ANDREFSKY 2005; INIZAN et al. 1999.

¹⁷ Prvotni odbojak, drugotni odbojak, odbojak, odbojčić (odbojak < 20 mm), prvotno sječivo, drugotno sječivo, sječivo, prvotna pločica, drugotna pločica, pločica, krijestasta sječiva i pločice, ulomci sječiva ili pločice, ulomci jezgara, jezgra za pločice, miješana jezgra i krhotine.

¹⁸ KARAVANIĆ 1999: 31; INIZAN et al. 1999.

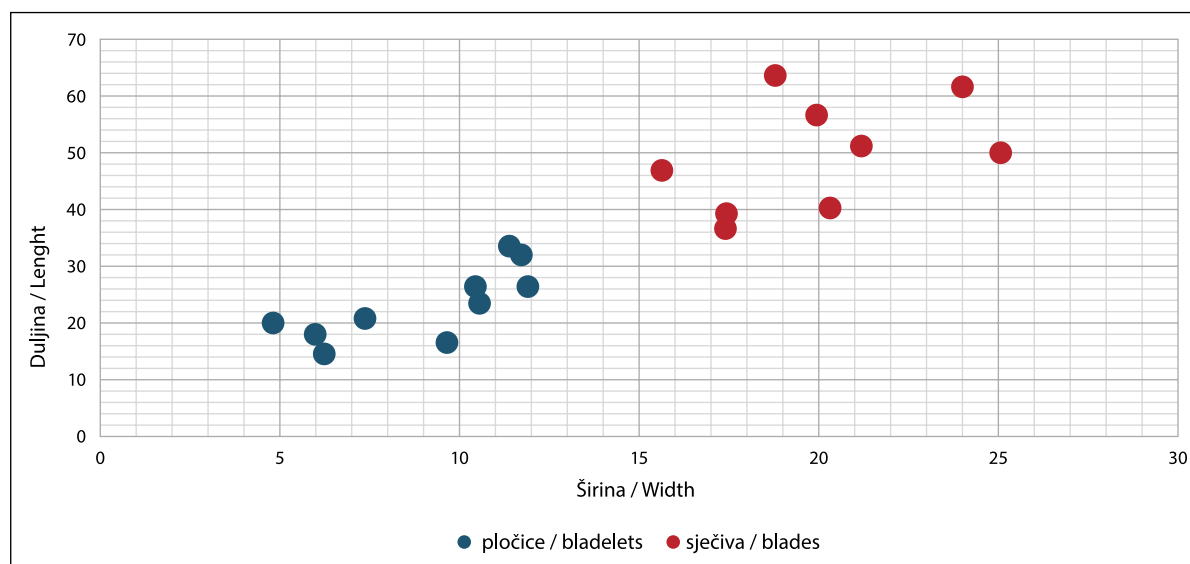
¹⁹ TIXIER 1963: 36–39. Zbog malog uzorka, u obzir su uzeti i komadi sa stepeničastim i izvrnutim distalnim krajem, iako ne predstavljaju ciljane proizvode, nego pogreške pri proizvodnji (vidi: VUKOSAVLJEVIĆ 2014: 11).

¹⁶ Technological analysis was made after KARAVANIĆ 1992; 1999; ANDREFSKY 2005; INIZAN et al. 1999.

¹⁷ Primary flake, secondary flake, flake, small flake (<20 mm), primary blade, secondary blade, blade, primary bladelet, secondary bladelet, bladelet, crested blades and bladelets, blade or bladelet fragments, core fragments, bladelet core, mixed core and chunks.

¹⁸ KARAVANIĆ 1999: 31; INIZAN et al. 1999.

¹⁹ TIXIER 1963: 36–39. Given the small sample size, pieces with stepped and reverse distal ends were also considered, although they do not represent the objective pieces, but rather production errors (s. VUKOSAVLJEVIĆ 2014: 11).



SLIKA 5. Dijagram raspršenosti cjelovito sačuvanih sječiva i pločica (izradili: L. Arbutina, M. Bodružić)
 FIGURE 5 Scatter plot of completely preserved blades and bladelets (made by L. Arbutina and M. Bodružić)

oblika i obrnuto, a bilo je moguće izdvojiti i dvije skupine nalaza: pločice sa širinom manjom od 12 i dužinom manjom od 34 mm, te sječiva sa širinom većom od 15 i dužinom većom od 37 mm.

U kategoriju sječiva i pločica svrstani su i ulomci istih ako ih je bilo moguće jasno odrediti kao takve, dok je cjelovitost opisana zasebno. Komadi koji pak nisu imali jasne odrednice koje bi ih svrstale u jednu ili drugu skupinu svrstani su u kategoriju *Neodredivo*. Navedene kategorije lomljavine dodatno su podijeljene i po zastupljenosti okorine na dorzalnoj strani. U prvotnu lomljevinu stavljeni su svi komadi s 50 % ili više okorinske površine na komadu, dok u drugotnu lomljevinu idu komadi s manje od 50 % prekrivene površine okorinom.

Unatoč malom broju jezgre su grupirane prema kategoriji lomljavine koja se izrađivala na njima. Kategorija *Jezgre za pločice* određena je prisustvom jednog ili više negativa koji svojim oblikom ne prelaze 12 mm širine, dok pod *Mješovite jezgre* spadaju one s negativima različitih oblika za odbojke, pločice i/ili sječiva. Izdvojena je i kategorija *Krijestasta sječiva i pločice* koje se usko vežu za pripremu jezgara pri izradi pločica ili sječiva.²⁰ Kategorija *Krhotine*

of lamellar shapes and vice versa. It was possible to single out two groups of finds: less than 12-mm-wide/34-mm-long bladelets, and more than 15-mm-wide/37-mm-long blades.

Blade and bladelet fragments were also categorised as blades and bladelets where their clear identification was possible, while their completeness was described separately. Pieces that had no clear determinants that would classify them as belonging to a specific category were classified as *Indeterminate*. These debitage categories were additionally divided according to the presence of cortex on the dorsal surface. All pieces with a 50% or greater surface covering of cortex were categorised as primary debitage, while those with less than 50% were categorised as secondary debitage.

Despite their small number, cores were grouped according to the debitage category made on them. The category termed *Bladelet cores* was determined by the presence of one or more negatives whose shapes do not exceed 12 mm of width, while those with negatives of different shapes for flakes, bladelets and/or blades were termed *Mixed cores*. There is also a category of *Crested blades and bladelets*, closely connected with the preparation of cores for making bladelets or blades.²⁰ The cat-

²⁰ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 12–13.

²⁰ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 12–13.

TABLICA 1. Učestalost tehnoloških kategorija (izradili: L. Arbutina, M. Bodružić)**TABLE 1** Frequency of technological categories (made by L. Arbutina and M. Bodružić)

Tehnološka kategorija / Technological type	Broj / Number	Postotak / Percentage
prvotni odbojci / primary flakes	1	0,6%
prvotna sječiva / primary blades	1	0,6%
prvotne pločice / primary bladelets	1	0,6%
drugotni odbojci / secondary flakes	14	8,7%
drugotna sječiva / secondary blades	5	3,1%
drugotne pločice / secondary bladelets	3	1,9%
odbojci / flakes	17	10,6%
odbojčići / flakes <20 mm	28	17,4%
sječiva / blades	8	5,0%
pločice / bladelets	52	32,3%
jezgra za pločice / core for bladelets	1	0,6%
miješane jezgre / mixed cores	2	1,2%
ulomci jezgara / core fragments	2	1,2%
krijestasta sječiva i pločice / crested blades-bladelets	4	2,5%
krhotine / chunks	6	3,7%
neodredivo / unidentified	16	9,9%
Ukupno / Total	161	100,0%

odnosi se na komade raznovrsnih oblika koji nemaju svoja dijagnostička obilježja, a vidno su nastali pri lomljenju.²¹

Tehnološkom analizom utvrđene su kategorije svih faza proizvodnje oruđa osim inicijalne faze, tj. faze pribavljanja sirovine (tab. 1). Početna faza lomljenja okorinskog sloja i formiranja jezgre zastupljena je prvotnim i drugotnim oblicima, a njihov udio u litičkom inventaru iznosi 15,5 %. Među njima prevladavaju odbojci (n = 15), a sječiva (n = 6) i pločice (n = 4) javljaju se usputno. Nađene su tri cjelovite jezgre te dva ulomka (T. V/1–3). Dvije su mješovitog tipa (T. V/1, 3), dok na posljednjoj dominiraju ožiljci pločica (T. V/2). Jezgra za pločice te jedna mješovita jezgra su prizmatičnog oblika, dok je treća amorfnog. U litičkom skupu zastupljena su i četiri komada krijestastih sječiva i pločica (T. III/24; T. IV/16–17).

Slična je situacija i u inventaru iz sljedeće faze lanca operacija. U litičkom skupu iz Vele pećine, gledajući tehnološke kategorije (tab.

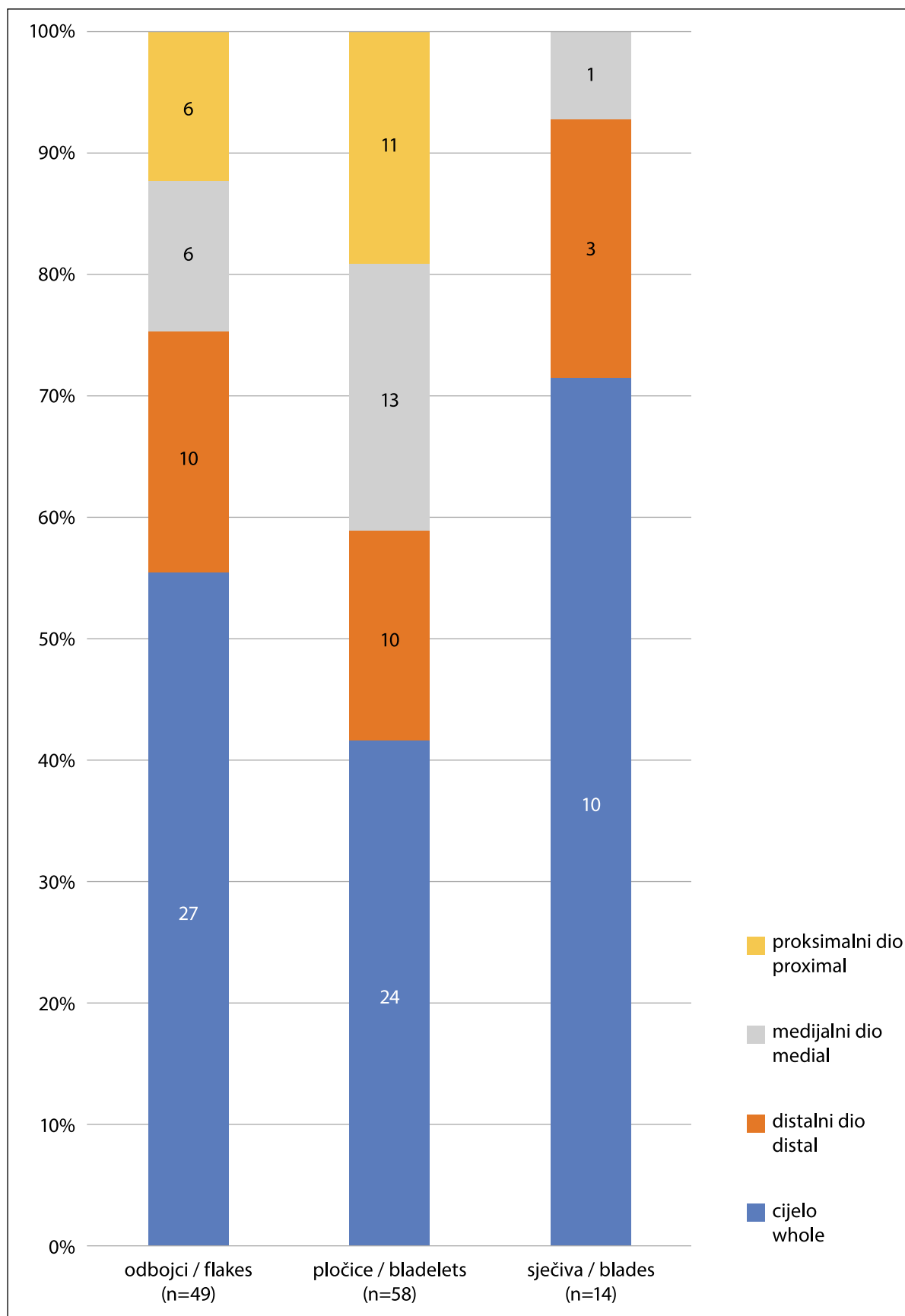
egory of *Chunks* refers to pieces of various shapes that have no diagnostic features, but were obviously formed by breaking.²¹

Based on a technological analysis, categories of all tool production stages except the initial (raw material acquisition) stage (Tab. 1) were established. The initial stage of breaking the cortex layer and forming the core is represented by primary and secondary forms. Their share in the lithic inventory is 15.5%. Among them, flakes (n=15) prevail, while blades (n=6) and bladelets (n=4) occur incidentally. Three complete cores and two fragments were found (Pl. V/1–3). Two are mixed types (Pl. V/1, 3), while on the third, bladelet scars prevail (Pl. V/2). The bladelet core and one mixed core are prismatic, while the other mixed one is amorphous. Four pieces of crested blades and a bladelet are also represented in the lithic assemblage (Pl. III/24; Pl. IV/16–17).

A similar situation was observed also in the inventory from the subsequent stage of the

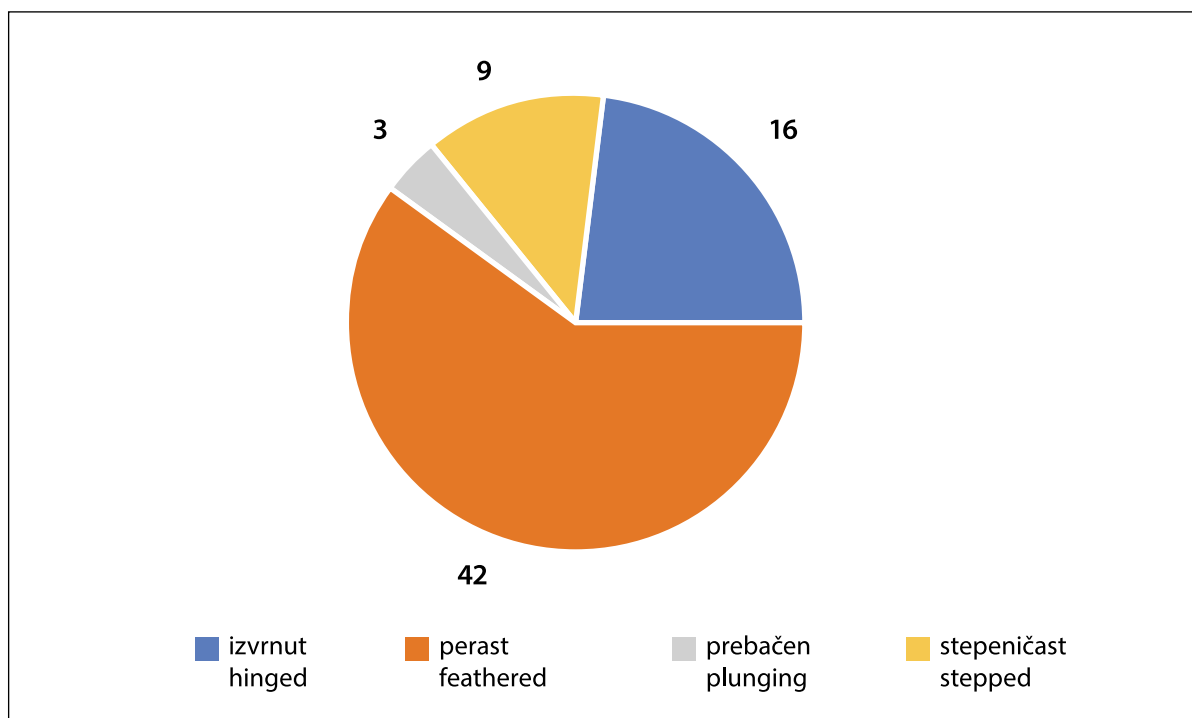
²¹ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 13.

²¹ VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 13.



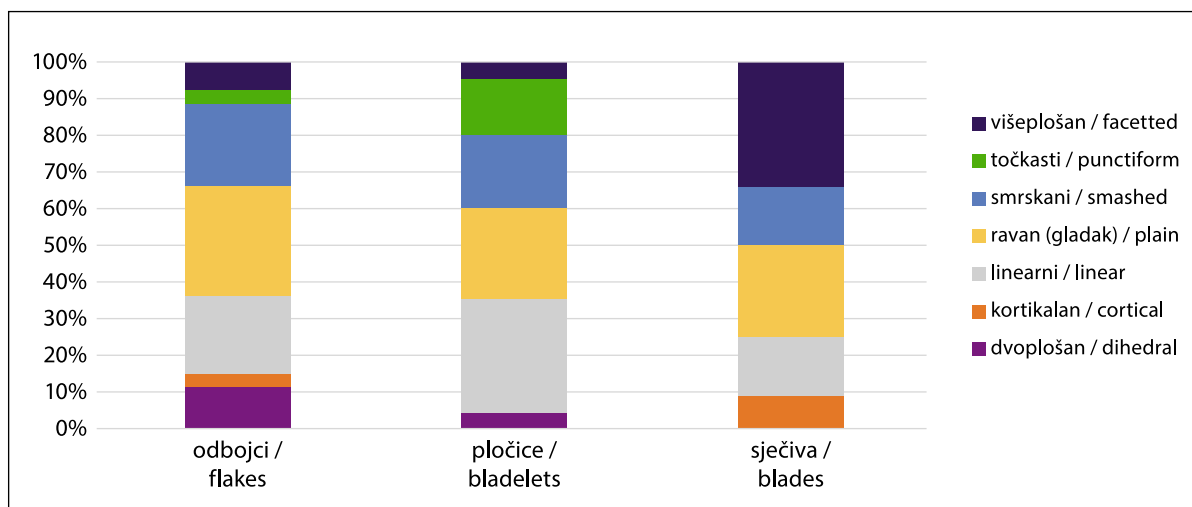
SLIKA 6. Stupanj sačuvanosti lomljenine (izradili: L. Arbutina, M. Bodružić)

FIGURE 6 Degree of debitage conservation (made by L. Arbutina and M. Bodružić)



SLIKA 7. Tip završetka na lomljevini (izradili: L. Arbutina, M. Bodružić)

FIGURE 7 Termination type in debitage (made by L. Arbutina and M. Bodružić)



SLIKA 8. Tip ploška na lomljevini (izradili: L. Arbutina, M. Bodružić)

FIGURE 8 Butt type in debitage (made by L. Arbutina and M. Bodružić)

1), brojnošću se najviše ističu pločice i sječiva ($n = 64$; 39,8 %) koje zatim slijede različite vrste odbojaka ($n = 45$; 28 %), s tim da više od polovice otpada na one manje od 20 mm. Ostale kategorije zastupljene su u jako malom broju.

Na razini cijeloga litičkog skupa dominiraju proizvodi lomljevine. Njihov udio u ukupnom broju iznosi 83,2 % ($n = 134$), uz gotovo po-

operation chain. In the lithic assemblage from Vela Pećina, looking at technological categories (Tab. 1), the most numerous are bladelets and blades ($n=64$; 39.8%), followed by different types of flakes ($n=45$; 28%), with more than half being less than 20 mm. Other categories are represented by very small numbers.

In the entire lithic assemblage, debitage artefacts prevail. Their share in the total num-

djednaku zastupljenost odbojaka i pločica, dok se sječiva javljaju u vrlo malom postotku (8,7 %). Suprotno tomu veći broj sječiva sačuvan je u cijelosti (71,4 %), kao i odbojci (55,1 %), dok je cjelovitost pločica manja: cjelovito (41,5 %), proksimalno (18,9 %), medijalno (22,4 %), te distalno (17,2 %) (sl. 6).

Tip završetka (sl. 7) kod lomljevine bilo je moguće odrediti na 68 komada. Većinom ona završava perastim završetkom ($n = 42$, 61,8 %), ali može se primijetiti visok udio izvrnutog završetka ($n = 16$; 23,5 %) koji se smatra neželjenim u proizvodnji.²² Zastupljenost tipova ploha (sl. 8) kod lomljevine je potpuno drukčija za svaku kategoriju. Tako je za odbojke najčešći gladak (29,6 %), za pločice linearni (32 %), dok je kod sječiva najveći udio više-plošnog tipa ploha (33,3 %).

Rezultati mjerenja cjelovito sačuvanih pločica i sječiva daju nam sljedeće podatke. Prosjek (aritmetička sredina) duljine pločica je 24,25 mm, širine 8,99 mm i debljine 3,38 mm. Izračunan je i medijan duljine (23,58 mm), širine (9,64 mm) i debljine (2,93 mm) cjelovitih pločica. Za cjelovita sječiva prosječna duljina iznosi 49,56 mm, širina 20,12 mm, a debljina 6,54 mm. Isto kao i za cjelovite pločice, za sječiva je izračunan i medijan duljine (49,49 mm), širine (20,08 mm) te debljine (6,67 mm).

TIPOLOŠKA ANALIZA

Ukupno 65 komada iz litičkog skupa obrađeno je tipološki i svrstano u formalno oruđe. Tipološka klasifikacija artefakata provedena je prema tipologiji koju su ustanovili Sonnevile-Bordes i Perrot prilagođenoj prema Sisku i Sheau²³ te Karavaniću.²⁴ Zbog relativno malog opsega litičkog skupa, a radi lakšeg čitanja dobivenih podataka i uspostavljanja uzoraka,

ber is 83.2% ($n=134$), with almost equal representation of flakes and bladelets, and a very small percentage of blades (8.7%). Contrary to this, a rather large number of blades were completely preserved (71.4%), as were flakes (55.1%), while bladelets were less well preserved: complete (41.5%), proximal (18.9%), medial (22.4%), and distal (17.2%) (Fig. 6).

Determining the termination type (Fig. 7) of debitage was possible in 68 pieces. Most pieces had feathered terminations ($n=42$, 61.8%), but a high share of hinge terminations ($n=16$, 23.5%), considered undesirable in production, is noticeable as well.²² The percentage of butt-type categories (Fig. 8) of debitage greatly varies. Thus, the most common butt type in flakes is flat (29.6%), in bladelets it is linear (32%), while most blades have a faceted butt (33.3%).

The results of measurements of completely preserved bladelets and blades are as follows. The average (arithmetic mean) bladelet length is 24.25 mm, width is 8.99 mm and thickness is 3.38 mm. The median length (23.58 mm), width (9.64 mm), and thickness (2.93 mm) of complete bladelets were also calculated. The average length of complete blades is 49.56 mm, width is 20.12 mm and thickness is 6.54 mm. As was the case with complete bladelets, the median length (49.49 mm), width (20.08 mm) and thickness (6.67 mm) of blades were also calculated.

TYOLOGICAL ANALYSIS

A total of 65 pieces from the lithic assemblage were processed typologically and classified as formal tools. Typological classification of artefacts was done according to typologies developed by Sonnevile-Bordes and Perrot, and adjusted according to Sisk and Shea,²³ and Karavanić.²⁴ Due to the relatively small total of artefacts contained in the lithic assemblage, for

²² VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 11–12.

²³ SISK, SHEA 2013.

²⁴ KARAVANIĆ 1992; 1999.

²² VUKOSAVLJEVIĆ, PERHOČ, ALTHERR 2014: 11–12.

²³ SISK, SHEA 2013.

²⁴ KARAVANIĆ 1992; 1999.

tipološke kategorije su pojednostavnjene.

Pod kategoriju *pločica s hrptom* spadaju sve pločice koje s barem jedne lateralne strane imaju više od 50 % strmo ujednačene obradbe (kut obrade u odnosu na ventralnu stranu mora biti veći od 45°) (T. I/5, T.II/1–2, T. III/2, 18, T. IV/4–8). Kategorija *pločice s obradom* obuhvaća pločice koje imaju obradbu, no ista nije toliko izražena i strma da bi to bila pločica s hrptom (T. I/11, T. II/4, 6–8, 10, 13, T. III/4, 11, 13, 23 T. IV/1–2, 9, 11). *Sječivo s obradom* jest kategorija u koju spadaju sva sječiva na kojima se vidi obradba (T. II/12, 18, 22, T. III/10, 19–20, T. IV/14, 17). *Šiljak* je svaki komad lomljevine koji se pri vrhu sužava i obradom tvori oštar kut (T. II/21), a pri analizi izdvojena su dva tipa: *Šiljak s usjekom* i *Gravetica* u koju su svrstani svi artefakti s hrptom koji se sužavaju prema vrhu. *Grebala* su svi komadi koji imaju dominantno obradbu na distalnom dijelu, a kao podtipovi za ovu kategoriju prepoznata su noktolika grebala te grebala na odbojku. Pod kategoriju *Udubak* svrstani su svi komadi koji imaju jedan izraženi konkavni negativ na kojemu se vidi obradba (T. I/4; II/11). *Strugala* obuhvaćaju litičke

easier reading of obtained data and establishing samples, typological categories were simplified.

The *Backed bladelet* category includes all bladelets that, at least on one lateral side, have > 50% of abrupt uniform retouch (the angle of the retouch must be > 45° to the ventral side) (Pl. I/5, Pl. II/1–2, Pl. III/2, 18, Pl. IV/4–8). The *Retouched bladelet* category includes bladelets with a retouch, which, however, is not as pronounced and abrupt as in backed bladelets (Pl. I/11, Pl. II/4, 6–8, 10, 13, Pl. III/4, 11, 13, 23, Pl. IV/1–2, 9, 11). The *Retouched blade* category includes all blades with visible retouching (Pl. II/12, 18, 22, Pl. III/10, 19–20, Pl. IV/14, 17). A *Point* is a debitage piece that narrows towards the peak and, as retouched, forms a sharp angle (Pl. II/21). In the course of the analysis, two types were detected, into which all backed artefacts that narrow toward the top were classified: a *Shouldered point* and a *Microgravette*. *Endscrapers* are pieces that have a dominant, mostly abrupt retouch on the distal side. Identified subtypes of this category are thumbnail endscrapers and endscrapers on a flake. Under the *Notch* category are pieces having a pronounced concave negative

TABLICA 2. Učestalost oruđa (izradili: L. Arbutina, M. Bodružić)
TABLE 2 Frequency of tools (made by L. Arbutina and M. Bodružić)

Tipološka kategorija / Type	Broj / Number	Postotak / Percentage
pločica s obradom / retouched bladelet	14	21,5%
pločica s hrptom / backed bladelet	12	18,5%
sječivo s obradom / retouched blade	8	12,3%
djelomično obrađeno sječivo / partially retouched blade	1	1,5%
komad s obradom / retouched piece	7	10,8%
komad s djelomičnom obradom / partially retouched piece	3	4,6%
komad sa sitnom rubnom obradom / piece with marginal retouch	5	7,7%
strugalo / sidescraper	3	4,6%
udubak / notch	3	4,6%
grebalo / endscraper	2	3,1%
zarubak / truncation	2	3,1%
šiljak / point	1	1,5%
šiljak s usjekom / shouldered point	1	1,5%
gravetica / microgravette	3	4,6%
Ukupno / Total	65	100,0%

komade na kojima su jedna ili dvije lateralne stranice obrađene (T. II/20; III/16). *Komadi s obradom* predstavljaju većinom odbojke s obradom na većem dijelu jednog ili dvaju rubova, dok komadi s djelomičnom obradom predstavljaju one kojima je manje od 50 % jednog ruba formalno obrađeno. Sječiva sličnih osobina izdvojena su u zasebne kategorije. *Komadi sa sitnom rubnom obradom* jesu svi artefakti koji imaju veći dio ruba prekriven sitnom rubnom obradbom, koja je mogla nastati i uporabom.

Litički skup sveukupno broji 65 nalaza koji se mogu tipološki odrediti, što je 40 % od ukupnog broja nalaza iz sonde A. (tab. 2). Među njima najveći broj pripada pločicama s obradom (n = 14; 21,5 %), pločicama s hrptom (n = 12; 18,5 %) i sječivima s obradom (n = 8; 12,3 %). Nakon toga slijede različiti obrađeni i djelomično obrađeni komadi (oko 20 % ako ubrojimo i sječiva) koji predstavljaju općenite kategorije, pridodane osnovnoj tipologiji zbog nemogućnosti uklapanju u neku od morfološki specifičnih kategorija, a obično se povezuju s oportunističkim iskorištavanjem lomljevine za uporabu u *ad hoc* situaciji. Ostale zabilježene kategorije predstavljaju različiti šiljci i gravetice (7,6 %), strugala (4,6 %), udubci (4,6 %) te grebala i zarubci (po 3,1 %).

Najviše tipološko određenih komada izrađeno je na pločicama, čak 52,38 % (n = 33). Ostalo oruđe izrađivano je na odbojcima (n = 14; 22,2 %) i sječivima (n = 10; 15,9 %). Ostatak tipološko određenih komada (n = 6) predstavljaju različiti ulomci oruđa.

Obradba na tipološko određenim komadima je po tipu većinom sitna (41,3 %) te suusporedna (41,3 %). Ljuskaste obradbe ima nešto manje (12,7 %) te u mnogo manjem broju javljaju se stepeničasta (3,1 %) i usporedna obradba (1,6 %).

Najbrojniju skupinu nalaza predstavljaju vrhovi projektila među kojima dominiraju pločice s hrptom. Zabilježene su i tri gravetice, veći šiljak napravljen na krijesastom sječivu te ulomak oruđa s usjekom koji vjerojatno pred-

with visible retouch (Pl. I/4; II/11). *Sidescrapers* include lithic pieces with retouched one or two lateral sides (Pl. II/20; III/16). *Pieces with retouch* are mostly flakes with continuous retouch on one edge or on two edges, while pieces with partial retouch have < 50% of one edge formally retouched. Blades with similar characteristics were classified into separate categories. *Pieces with marginal retouch* are artefacts in which a major part of the edge was marginally retouched, possibly also as a result of their use.

The lithic assemblage has 65 finds that can be typologically categorised, which is 40% of the total number of finds from trial trench A. (Tab. 2). Among them, the majority were retouched bladelets (n=14; 21.5%), backed bladelets (n=12; 18.5%), and retouched blades (n=8; 12.3%). These were followed by various retouched and partially retouched pieces (approximately 20% if we also include blades), which represent general categories that were added to the basic typology as they did not fit into one of the morphologically specific categories. These are usually associated with opportunistic debitage use in *ad hoc* situations. Other recorded categories are represented by various points and microgravettes (7.6%), sidescrapers (4.6%), notches (4.6%), and endscrapers and truncations (3.1% each).

The majority of the typologically classified pieces – as much as 52.38% (n=33) – was made on bladelets. Other tools were made on flakes (n=14; 22.2%) and blades (n=10; 15.9%). The rest of the typologically classified pieces (n=6) are various tool fragments.

The retouch type on the typologically classified pieces is mostly marginal (41.3%) and sub-parallel (41.3%). There is a slightly smaller percentage of scalar retouch (12.7%), and a much smaller share of stepped (3.1%) and parallel (1.6%) retouch.

The most numerous group of finds are projectile points, among which backed bladelets prevail. Also registered are three microgravettes, a larger point made on a crested blade, and a frag-

stavlja proksimalni dio šiljka s usjekom.

Prosječna duljina cjelovitih pločica s hrptom iznosi 22,78 mm, širina 6,91 mm te debljina 3,28 mm. Prosječne dimenzije cjelovitih pločica s obradom su 24,83 mm duljine, 10,93 mm širine te 3,96 mm debljine. Za sječiva s obradom na isti način određene su prosječne dimenzije oruđa koje iznose 47,51 mm duljine, 19,48 mm širine te 6,24 mm debljine.

LANAC OPERACIJA

U analiziranom skupu prisutne su sve faze lanca operacija osim početne faze nabave sirovina i izrade odnosno dorade oruđa. Generalno, može se reći da je organizacija proizvodnje bila usmjerena prema dobivanju lamelarnih oblika, uz snažnu dominaciju pločica u odnosu na sječiva, no za rekonstrukciju proizvodnog procesa koji se odvijao na lokalitetu potrebno je najprije uzeti u obzir i sirovinski sastav skupa.²⁵

Preliminarnom petrografskom analizom provedenom u sklopu projekta, za sad je određeno litološko podrijetlo 110 od ukupno 161 artefakta.²⁶ Više od polovine skupa čine gornjokredski rožnjaci tipa Veli rat, čiji su primarni izdanci dobro poznati i dokumentirani na krajnjemu sjeverozapadnom dijelu Dugog otoka (tab. 3). Od ostalih sirovinskih skupina nešto znatnije su zastupljeni rožnjaci tipa *Scaglia Rossa* i *Scaglia Variegata* koji potječu s udaljenijih područja talijanske regije Marche, dok se ostale sirovinske grupe javljaju rijetko (< 10 % udjela), i to najčešće u obliku lomljevine.

Za proizvodnju na gornjokredskim rožnjacima tipa Veli rat iskorištavani su manji oblutci s ostatcima nodulne okorine koja na nekim primjercima ima i tragove crvenice. Najduža linearna veličina jezgre za pločice iznosila

ment of a tool with a notch that probably represents the proximal part of a shouldered point.

The average length of complete backed bladelets is 22.78 mm, width 6.91 mm and thickness 3.28 mm. On average, complete retouched bladelets are 24.83 mm long, 10.93 mm wide and 3.96 mm thick. Retouched blades are, on average, 47.51 mm long, 19.48 mm wide and 6.24 mm thick.

THE OPERATIONAL SEQUENCE

In the analysed assemblage all stages of the operational sequence are represented, except the initial stage – sourcing raw materials and tool making. In general, it can be said that the production was aimed at obtaining lamellar forms; bladelets strongly prevailed in relation to blades, but for the reconstruction of the production process that took place at the site it is necessary to first take into account the raw material composition of the assemblage.²⁵

A preliminary petrographic analysis carried out as part of the project has been able to identify the lithological origin of 110 out of 161 artefacts.²⁶ More than a half of the assemblage is made of Upper Cretaceous cherts of the Veli Rat type, whose primary spurs are well known and documented in the northwesternmost part of Dugi Otok (Tab. 3). Among other raw material groups, *Scaglia Rossa* and *Scaglia Variegata* chert types originating from more distant regions of the Italian Marche region have a somewhat more significant share, while other raw material groups occur rarely (< 10% of the share), usually in the form of debitage.

Where raw material was sourced from upper Cretaceous cherts of the Veli Rat type, smaller pebbles with remains of nodular cortex, on some specimens with traces of red soil, were used. The longest linear core size for bladelets was

²⁵ SORESSI, GENESTE 2011: 338.

²⁶ Ovim putem zahvaljujemo Zlatku Perhoću i Ani Jagić na preliminarnim rezultatima sirovinske analize.

²⁵ SORESSI, GENESTE 2011: 338.

²⁶ We would like to thank Zlatko Perhoč and Ana Jagić for the preliminary results of the raw-material analysis.

TABLICA 3. Tehnološke kategorije prema osnovnim sirovinским skupinama (izradili: L. Arbutina, M. Bodružić)
TABLE 3 Technological categories according to basic raw material groups (made by L. Arbutina and M. Bodružić)

Sirovina /Raw material	rožnjak tip Scaglia Variegata Alpina; Južne Alpe / chert, Scaglia Variegata Alpina type; Southern Alps	rožnjak tip Maiolica Gargano: Apulija / chert, Maiolica Gargano type: Apulia	rožnjak tip Biancone (Maiolica); Južne Alpe / chert, Biancone (Maiolica) type; Southern Alps	devitrificirani tuf; Lika / devitrified tuff; Lika	radiolarit; BIH: ofioliti Centralnih Dinarida, bosanski fliš, fluvialni sedimenti / radiolarite; Bosnia and Herzegovina: ophiolites from central Dinarides, Bosnian flysch, fluvial sediments
prvotni odbojci / primary flakes					
prvotna sječiva /primary blades					
prvotne pločice /primary bladelets					
drugotni odbojci / secondary flakes					
drugotna sječiva / secondary blades	1				
drugotne pločice / secondary bladelets					
odbojci / flakes				1	2
odbojčići / flakes <20mm				1	
sječiva / blades					2
pločice / bladelets		1		3	1
jezgra za pločice /core for bladelets					
miješane jezgre / mixed cores					
ulomci jezgara / core fragments					
krijestasta sječiva i pločice / crested blades-bladelets					1
krhotine / chunks					
neodredivo / unidentified			1		
Ukupno / Total	1	1	1	5	6

je 43,6 mm, a najduži primjerak lomljavine (drugotno sječivo) 61 mm, s tim da mu je cijela lateralna strana prekrivena okorinom, što upućuje na zaključak da ni prikupljeni oblutci nisu mogli biti mnogo veći. Pri uklanjanju okorine i formiranju jezgre lomljeni su većinom odbojci, a rjeđe sječiva i pločice. Cjelovito sačuvani lamelarni komadi pokazuju izraženu pozitivnu korelaciju između širine i dužine, dok se komadi na drugim sirovinama češće javljaju kao iznimke, što može upućivati na razlike u proizvodnoj shemi na drugim sirovinama (sl. 9).

Jezgra za pločice pokazuje odlike jednosmjernog lomljenja pločica u glavnoj fazi re-

43.6 mm, while the longest debitage specimen (a secondary blade) was 61 mm, its entire lateral side being covered with cortex, suggesting that the collected pebbles could not have been much larger. The reduction process that involved removing the cortex and forming the core most often resulted in flakes, and less often in blades and bladelets. Completely preserved lamellar pieces demonstrate an obvious positive correlation between width and length. Pieces knapped from other raw materials are rather exceptions, possibly suggesting different production schemes when using other raw materials (Fig. 9).

The bladelet core displays the characteristics of unidirectional knapping of the bladelets in

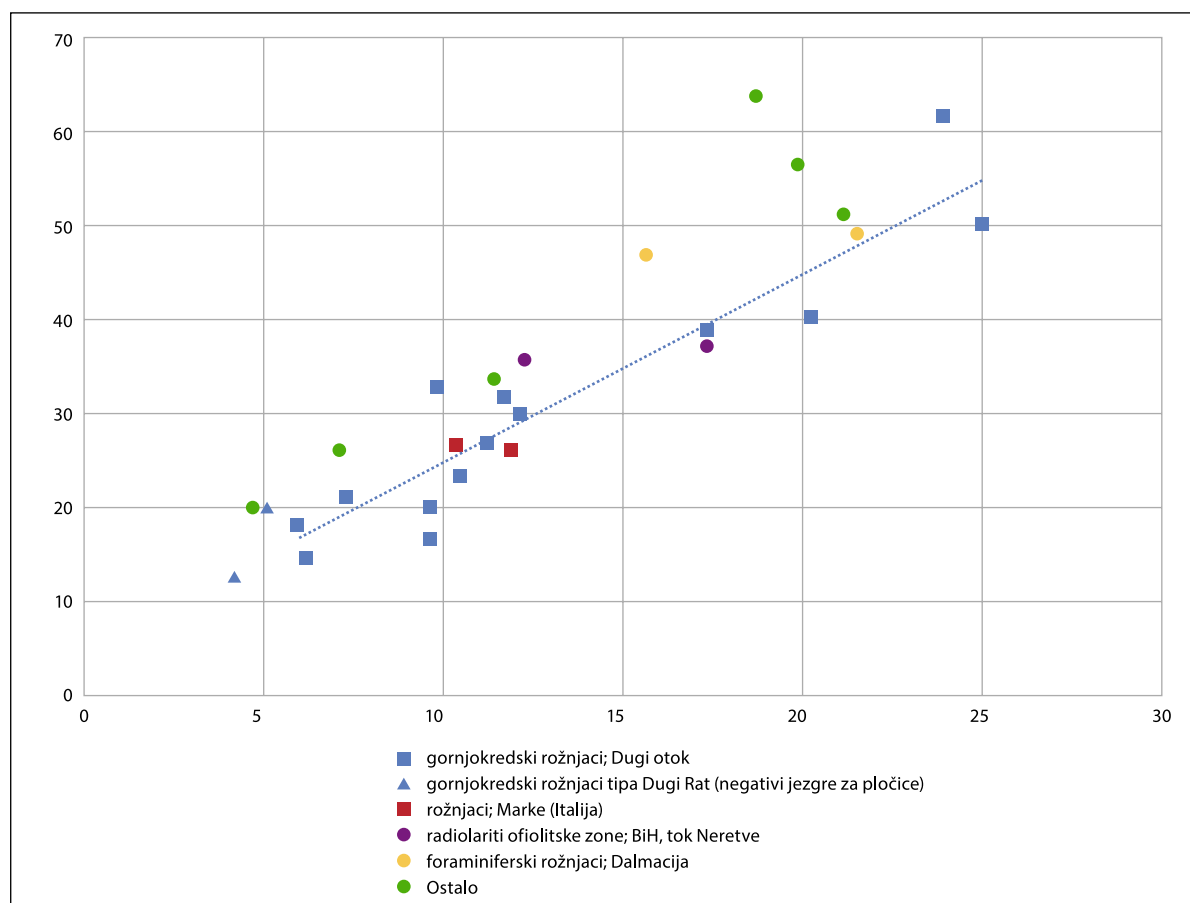
radiolaritne valutice Prominskih naslaga; Dalmacija, Ravni kotari / radiolarite pebbles of the Prom- ina Beds; Dalmatia, Ravni kotari	foraminiferski rožnjaci; Dalmacija / foraminiferal cherts; Dalmatia	rožnjaci tip Scaglia Roassa i Scaglia Variegata; talijanska regija Marke / chert, Scaglia Roassa and Scaglia Variegata; Italy, Marche	neodredivo / unidentified	Dalmacija: Veli rat, Dugi otok / Dalmatia, Veli rat, Dugi otok	Ukupno / Total
				1	1
		1			1
				1	1
1	1	2	2	8	14
	2			2	5
	1			2	3
		3	1	9	16
1		1	1	8	12
			3	3	8
3	2	7	6	23	46
				1	1
			1	1	2
	1		1		2
1		1		1	4
	1		3	1	5
1		2	5	3	12
7	8	17	23	64	133

dukcije, s negativima pločica koji prevladavaju na sačuvanoj površini. Negativi su organizirani paralelno po dužini oblutka, a suprotno lice pokriveno je okorinom i vjerojatno korišteno kao hvatište. Posljednji pokušaj lomljenja izveden je iz suprotnog smjera te je završio pucanjem jezgre i nastankom dubljega nepravilnog negativa s izvrnutim završetkom. Manji negativi na dnu bloka koso položeni na os komada predstavljaju starije negative nastale početnim lomljenjem u svrhu skidanja okorine i formiranja platforme.

Završna faza proizvodnje oruđa nije sa sigurnošću potvrđena u ukupnom inventaru. Nedostaju karakteristični oblici poput sitnih

the main reduction stage, with bladelet negatives prevailing on the preserved surface. Negatives are organised in parallels alongside the pebble lengths, and the opposite face covered with cortex and probably used as a handle. The last reduction attempt was made from the opposite direction, resulting in breaking the core and the formation of a deeper irregular negative with a hinged termination. Smaller negatives at the bottom of the block, placed diagonally on the axis of a piece, are older negatives, created as a result of initial reduction aimed at removing the cortex and forming a platform.

The final stage of tool formation has not been confirmed with certainty in the overall



SLIKA 9. Dijagram raspršenosti cjelovitih lamelarnih oblika s obzirom na sirovinu s označenom crtom trenda za gornjokredske rožnjake s Dugog otoka (izradio: M. Bodružić)

FIGURE 9 Scatter plot of complete lamellar forms according to raw materials, with marked trend line for Upper Cretaceous cherts from Dugi Otok (made by M. Bodružić)

odbojaka koji bi se mogli pripisati završnoj fazi izrade ili naknadne obrade radnog ruba alata, što donekle može biti objašnjeno i postupkom prosijavanja iskopanog materijala.²⁷ Nedostaju i iveri dubila, što ne iznenađuje s obzirom na to da nisu zabilježena ni sama dubila.

ZAKLJUČNA RAZMATRANJA

Litički skup Vele pećine mali je brojem, pogotovo ako bismo ga razdvojili u stratigrafske kontekste, no unatoč tomu određeni se uzorci mogu uspostaviti. Kada sagledamo

inventory. No characteristic forms have been unearthed, such as small flakes that could be attributed to the retouch formation or subsequent retouching of the working edge of the tools. This can, to a certain extent, also be due to the sieving process applied on site.²⁷ Burin flakes are also missing, which is not surprising, given that no burins have been recorded either.

CONCLUDING REMARKS

The Vela Pećina lithic assemblage is small in terms of numbers, in particular after the stratigraphic contexts have been separated; neverthe-

²⁷ Tijekom iskopavanja nije provedeno mokro prosijavanje, a materijal je izdvajan nakon prosijavanja sedimenta kroz sito širine oka 5 mm.

²⁷ No wet sieving was conducted in the course of the excavations; the material was extracted after sieving the sediment through a 5-mesh (5-mm openings).

litički skup iz Vele pećine kao cjelinu, primjećuje se visoka zastupljenost lamelarne lomljevine, pločica i sječiva (58,65 %), uz dominaciju prvih. Osim što su spomenuti artefakti prisutni u najvećem broju, oni su i najviše iskorištavani za izradu oruđa. Zastupljenost ne ovisi o sirovinskoj osnovi, jer su pločice i sječiva najbrojnija kategorija na svim vrstama sirovine.

Izrazito mala količina prvotnih komada pokazuje da je sirovina za izradu većinom dolazila očišćena i pripremljena. Zanimljivo je da ni kod ove kategorije nema primjetnih razlika u odnosu na podrijetlo sirovine. Mali broj jezgri ili tragova njihove pripreme, uz visok postotak oruđa i iskorištenosti lomljevine ide u prilog interpretaciji da je tek manji dio predmeta izrađivan ili dorađivan u samoj pećini, a da je većina predmeta donesena kao pripremljena lomljevina ili gotovo oruđe. Pa ipak, visok udio izvrnutog završetka (23,5 %) koji se smatra neželjenim u proizvodnji,²⁸ nešto je što izlazi iz takve interpretacije i pokazuje *in situ* izradu u samoj pećini. Uz to, drugotna lomljevina i krijestaste pločice i sječiva sugeriraju da je dio sirovine očito donošen u pećinu u obliku jezgre.

Fragmentiranost je visoka, a posebno to vrijedi za pločice gdje je svega 41,5 % sačuvano u cijelosti. Jedan od uzroka mogli bi biti već spomenuti postdepozicijski procesi koji su utjecali i na stratigrafski raspored litičkog skupa, no u tom slučaju iznenađuje što kategorije odbojaka i sječiva bilježe upola manju brojnost lomova. Očekivali bismo da će sve kategorije imati slične postotke, pogotovo sječiva koja su zbog svoje veličine podložnija različitim oštećenjima. Možda bismo razlog tomu mogli potražiti u većem intenzitetu korištenja pločica i oruđa na njima. Preferiranje određenih tipova podrazumijevalo bi i češće trošenje i njihovu zamjenu. Pa ipak, kada se u obzir uzme samo cjelovitost formalnog oruđa, tri kategorije lomljevine

less, certain patterns can be identified. Looking at the Vela Pećina lithic assemblage as a whole, a high percentage of lamellar debitage – bladelets and blades (58.65%) – is evident, the former being prevalent. These artefacts are not only predominant, but were also the most used for formal tools. Their frequency is not interconnected with sourcing raw material, since bladelets and blades are the most numerous category in all raw material types.

A particularly small amount of primary pieces indicates that the raw material mostly came cleaned of cortex and prepared. It is interesting that this category also demonstrates no evident differences as to the origin of raw materials. A small number of cores or of traces of their preparation, along with a high percentage of tools and of utilisation of debitage, supports an interpretation according to which only a small proportion of the artefacts were made or retouched in the cave itself: most objects were brought there as prepared debitage or ready-made tools. However, the high share of hinge terminations (23.5%), usually considered undesirable in production,²⁸ rather speaks against such an interpretation, suggesting *in situ* production in the cave. In addition, secondary debitage and crested bladelets and blades indicate that a part of the raw material was obviously brought into the cave in the form of core.

Fragmentation is high, which is especially true of bladelets, of which only 41.5% have been completely preserved. A possible cause for this might be the above-mentioned post-depositional processes that also had an impact on the stratigraphic arrangement of the lithic assemblage; however, in that case, it does come as a surprise that the categories of flakes and blades display half the number of fractures. It is to be expected that all categories should have similar percentages, in particular the blades, which are more susceptible to various damages, due to their size. A possible reason for this might be the more frequent use of bladelets and tools made on them. Preferenc-

²⁸ WHITTAKER 1995.

²⁸ WHITTAKER 1995.

(pločice, sječiva i odbojci) bilježe jednaku fragmentiranost, otprilike 50 %. Posebno se ističe činjenica da su gotovo sve pločice s hrptom i gravetice očuvane u cijelosti, a upravo bi pločice s hrptom, kao najčešća kategorija oruđa, po početnoj premisi trebale biti najviše trošene i oštećene. Poklapa se to s analizama litičkog skupa iz pećine Vlakna koje su također pokazale da fragmentiranost oruđa ne možemo povezati samo s intenzitetom aktivnosti koje su provođene u pećini, kao niti s iskorištavanjem litičke sirovine, a slično pokazuju i analize iz Vele spile.²⁹ Očito postoje i drugi faktori utjecaja koje bi trebalo uzeti u obzir.

Smještaj pećine, kao i njezine male dimenzije koje je čine pogodnom za boravak tek manjeg broja ljudi, ne uklapa se u ideju staništa i već na prvu ne odaje stambeni karakter mjesta.³⁰ Primjetna je i visoka zastupljenost kategorije projektila što naglašava lovačku komponentu, tj. lovni karakter litičkog skupa. Prema Zilhão,³¹ viši omjer projektila (u koje je uvrstio pločice s hrptom, šiljke, pločice s obradom i geometrijske mikrolite) naspram transformacijskih tipova oruđa (grebala, strugala, svrdla, dubila, sječiva s obradom, udupci i nazupci) odlika je specijaliziranih logističkih lokaliteta. Sve zajedno otvara mogućnost interpretacije Vele pećine kao mjesta kratkotrajnog boravka paleolitičkih zajednica radi obavljanja specijalističkih radnji vjerojatno povezanih s lovnim aktivnostima. Nažalost, nalazi faune pronađeni su u malom broju i u trenutku pisanja rada nisu bili u potpunosti analizirani. Preliminarne analize pak materijala iz intaktnih slojeva koji pripadaju starijoj fazi pokazuju prisutnost kozoroga, divokoza, pragoveda, konja i divljih svinja, s time da posljednje čine najbrojniju skupinu nalaza. Na prvi pogled zanimljiva je prisutnost taksona koji su

es for certain types would also imply their more frequent wear and replacement. Nevertheless, if only the completeness of formal tools is considered, the three debitage categories (bladelets, blades and flakes) record the same fragmentation percentage: approximately 50%. Of particular note is the fact that almost all backed bladelets and microgravettes have been completely preserved, which is contrary to the initial premise that the backed bladelets in particular, as the most common category of tools, should be the most worn and damaged. This is consistent with the analysis of the lithic assemblage from Vlakno cave, which also showed that the fragmentation of the tools cannot be associated solely with the intensity of the activities carried out in the cave, or with the exploitation of the lithic raw material. The results of the analysis of the material from Vela Spila are similar.²⁹ Obviously other impacting factors should also be taken into account.

The location and small size of the cave, making it suitable for occupation by only a small number of people, do not conform with the idea of a habitation and the most cursory glance confirms that the place does not offer much residential character.³⁰ Also noticeable is a high share of the projectile category, pointing to a hunting component: the hunting character of the lithic assemblage. According to Zilhão,³¹ a higher share of projectiles (including backed bladelets, points, retouched bladelets and geometric microliths) compared to transformation tools (endscrapers, sidescrapers, drills, burins, retouched blades, notches and denticulates) is a characteristic of specialised logistic sites. All together it opens up the possibility of interpreting Vela Pećina as a place of short-term residence of Palaeolithic communities for the purpose of carrying out specialist activities probably related to hunting. Unfortunately, the number of fauna finds is small; and at the time of writing this paper, they have not been fully analysed. Preliminary analy-

²⁹ VUKOSAVLJEVIĆ 2012: 122, 254–255.

³⁰ Vidi: BINFORD 1980; SINCLAIR 1999.

³¹ ZILHÃO 1997: 237–240.

²⁹ VUKOSAVLJEVIĆ 2012: 122, 254–255.

³⁰ See BINFORD 1980; SINCLAIR 1999.

³¹ ZILHÃO 1997: 237–240.

povezani s dvjema različitim vrstama okoliša, što može upućivati na postojanje više faza korištenja pećine od onih koje su izražene u stratigrafiji.³²

Radiokarbonsko datiranje smješta Velu pećinu na sam početak kasne faze epigravetijena koja prema Ruizu-Redonu i suradnicima počinje između 17,5 i 17,2 tis. kal. god. pr. sad.³³ Prijelaz iz rane u kasnu fazu epigravetijena na širem jadranskom području poklapa se s početnim fazama Greenland interstadijala GI-1.³⁴

Rezultati apsolutnog datiranja kojima raspolazemo za sloj Vele pećine pružaju mogućnost usporedbe s drugim nalazištima na prostoru istočne obale Jadrana. Nažalost, tek nekoliko nalazišta ima slojeve iz ovog vremena. Najbliža paralela može se povući s nalazištem Vlakno na Dugom otoku, sa slojevima ispod NYT tefre, ponajprije sa stratumima 8-10. Najstariji datirani sloj Stratum 8 iznosi 13640 ± 40 god. pr. sad. Stratum 9 dao je datum 13880 ± 40 god. pr. sad., dok je najviši sloj posljednje istraženog Stratum 10 dao datum 14430 ± 40 god. pr. sad. Nažalost, kada je u pitanju litika, trenutačno raspolazemo samo podacima iz probne sonde. Prije svega se to odnosi na Stratum 9 koji je u probnoj sondi bio izražen tek kao gotovo sterilan sloj zemlje i sitnog kršja debljine 60 centimetara sa svega nekoliko pronađenih artefakata, dok je u sustavnim istraživanjima dao mnogo kompleksniju depozicijsku strukturu i daleko veći broj nalaza.

Unutar tehnoloških kategorija kod stratum 8 i 10 dominantno su najzastupljeniji odbojci. Za Stratum 9 teško je govoriti s obzirom na to da je u probnoj sondi otkriveno tek pet artefakata. Pločice su u obama stratumima brojne, a ako se usporede stratumi 8 i 10, primjećuje se veća zastupljenost sječiva kako idemo prema starijim slojevima.

ses of intact layers of the older stage demonstrate the presence of ibex, chamois, aurochs, horse and wild boar, with the latter forming the most numerous group of finds. At first glance, the presence of taxa that are related to two different types of environment is interesting, which may indicate the existence of more stages of use of the cave than expressed in the stratigraphy.³²

Radiocarbon dating places Vela Pećina at the beginning of the Late Epigravettian, which according to Ruiz-Redondo and associates commenced between 17,500 and 17,200 cal BP.³³ The transition from Early to Late Epigravettian in the wider Adriatic area coincides with initial phases of Greenland stadial GI-1.³⁴

The absolute dating results available for the Vela Pećina layer enable a comparison with other sites on the eastern Adriatic coast. Unfortunately, only a few sites have layers from this period. The nearest parallel can be drawn with the Vlakno site on Dugi Otok, with layers below the NYT tephra, primarily with Strata 8–10. The oldest dated layer of Stratum 8 is from $13,640 \pm 40$ BP. Stratum 9 yielded the date $13,880 \pm 40$ BP, and the highest layer of the last excavated Stratum 10 $14,430 \pm 40$ BP. Unfortunately, when it comes to lithics, we currently only have data from the trial trench. This primarily refers to Stratum 9, which in the trial trench was present merely as a nearly sterile layer of earth and some small breccia pieces, 60 centimetres thick, represented by only a few uncovered artefacts, while systematic excavations suggested a much more complex deposition structure and a far greater number of finds.

Predominantly the most represented technological categories in Strata 8 and 10 are flakes. It is difficult to discuss Stratum 9 given that only five artefacts were unearthed in the trial trench. There are many bladelets in both strata, and a comparison of Strata 8 and 10 suggests a higher representation of the blades in the older layers. The operation chain is characterised by

³² Zahvaljujemo Siniši Radoviću na preliminarnim podacima o fauni.

³³ RUIZ-REDONDO et al. 2022: 8.

³⁴ RASMUSSEN et al. 2014.

³² We would like to thank Siniša Radović for the preliminary data on fauna.

³³ RUIZ-REDONDO et al. 2022: 8.

³⁴ RASMUSSEN et al. 2014.

Lanac operacija karakterizira identičan trend u zastupljenosti pojedinih kategorija određene faze proizvodnje uz svega nekoliko sitnih razlika, što daje naslutiti da su u obama stratumima korištene iste tehnologije izrade artefakata. Najzastupljenije su kategorije povezane s drugom fazom proizvodnje. Od jezgri su pronađeni samo ulomci najvjerojatnije iskorištenih i odbačenih jezgara. Ostale faze lanca operacija bilježe slabu zastupljenost, a početna, kao i kod Vele pećine, u potpunosti nedostaje. U tipološkim kategorijama navedenih stratumu iz Vlakna, visok udio u skupu imaju pločice s hrptom, komadi s obradom i šiljci što je slično skupu Vele pećine. Unutar Stratum 8 pločice s hrptom su najzastupljenije, u odnosu na stariji Stratum 10 gdje su podjednako zastupljene kao i sječiva s obradom ili šiljci. Kod kategorija projektila u mlađem stratumu najzastupljenije su gravetice, u odnosu na starije slojeve gdje one uopće nisu zabilježene. Za prisutnost ulomka oruđa s usjekom u vidu proksimalnog dijela šiljka pronađenog u Veloj pećini ne treba nužno nuditi poveznicu sa Stratumom 10 iz Vlakna kao ni s ranim epigravetijenom općenito. Sličan ulomak u Vlaknu je pronađen i u mlađim slojevima (Stratum 5).³⁵ Osim toga, sustavnim pregledom objavljenih primjeraka šiljaka s usjekom na istočnoj obali Jadrana, N. Vukosavljević i I. Karavanić dokazali su da njihova pojava ne može služiti kao *fossil directeur* ranog epigravetijena na ovom području.³⁶ Grebala i svrdla kod Stratum 8 bilježe znatnu zastupljenost u odnosu na stariji gdje je njihova zastupljenost znatno slabija, a dubila su u oba slučaja slabo zastupljena. I stariji i mlađi stratum karakterizira prisutnost zarubljenog alata, no kod Stratum 8 to su isključivo pločice u odnosu na Stratum 10 gdje su to većinom sječiva. Kod mlađeg stratumu najviše tipoloških kategorija formirano

an identical trend in the representation of certain production stage categories with only a few slight differences, suggesting that in both strata the same artefact production technology was used. The most frequent are categories related to the second production stage. Only fragments of (most likely) used and discarded cores were found. Other stages of the operation chain are poorly represented, while the initial, as is the case with Vela Pećina, is completely missing. Among typological categories of the mentioned strata of the assemblage from Vlakno is a high proportion of backed bladelets, retouched pieces, and points, similar to the Vela Pećina assemblage. Within Stratum 8, most frequent are backed bladelets, compared to the older Stratum 10, where they are retouched blades and points. The most common projectiles in the newer stratum are microgravettes, which were not recorded in the older layers, in which only specimens of flat and curved backed points were recovered. The presence of a shouldered tool fragment in the form of the proximal part of a point uncovered in Vela Pećina should not necessarily suggest a link to Stratum 10 from Vlakno, or to the Early Epigravettian in general. In Vlakno, a similar fragment was found also in the newer layers (Stratum 5).³⁵ In addition, in a systematic review of published samples of shouldered points on the eastern Adriatic coast, N. Vukosavljević and I. Karavanić proved that their presence cannot serve as a type fossil (*fossil directeur*) of the Early Epigravettian in the area.³⁶ In Stratum 8, a significant number of endscrapers and drills was recorded compared to the older layers, in which their percentage is significantly lower, while burins are poorly represented in both newer and older layers. Typical for both older and newer strata is the presence of truncated tools, but in Stratum 8 these are exclusively bladelets, whereas in Stratum 10 they are mostly blades. In the newer strata, most typological categories were

³⁵ Sloj u kojem je pronađen primjerak iz Vlakna radiokarbonskom metodom je datiran u razdoblje od 12410 do 12070 god. pr. sad. (Beta-416303).

³⁶ VUKOSAVLJEVIĆ, KARAVANIĆ 2017.

³⁵ The layer that yielded the specimen from Vlakno was radiocarbon dated to the period from 12,410 to 12,070 BP (Beta-416303).

³⁶ VUKOSAVLJEVIĆ, KARAVANIĆ 2017.

je na pločicama, dok je kod starijeg fokus obrade ipak stavljen na sječiva.

Drugi lokalitet s kojim se, barem na kronološkoj razini, Vela pećina može usporediti jest Vela spila na otoku Korčuli, i to s horizontima LUP-D i LUP-C. Oba horizonta u litičkom skupu imaju izraženu lovačku komponentu kroz dominaciju pločica s hrptom. Iako, kada se u obzir uzmu drugi nalazi iz LUP-D horizonta, više se ističe stambena nego logistička komponenta.³⁷ Horizont LUP-D dao je datum 14100 ± 100 god. pr. sad.³⁸ Odbojci u ovom horizontu čine najčešći oblik lomljevine (68,61 %). Blizu 70 % njih je cjelovito, a perasti završetak daleko je najučestaliji. Kao i kod Vele pećine, nije zabilježena prvotna lomljevina. Jezgre za odbojke su najučestalije, a one za pločice čine četvrtinu nalaza. Oruđa čine manje od 10 % nalaza, a polovica ih je izrađena na pločicama.³⁹ Pločice s hrptom najbrojnija su kategorija s oko 50 % učestalosti, u što spadaju i zašiljeni komadi. Njih slijede grebala, i to ona na odbojku.⁴⁰

Stariji pak horizont, LUP-C dao je datum 14500 ± 100 god. pr. sad.⁴¹ Kao u prethodnom, i u ovom horizontu odbojci čine najčešći oblik lomljevine (52,17 %), uz visoku zastupljenost pločica (34,78 %). Blizu 70 % svih odbojaka je cjelovito, a cjelovitost ostalih kategorija je niža. Perasti završetak je daleko najučestaliji. Nije zabilježena prvotna lomljevina. Jezgre za pločice su najučestalije.⁴² Oruđa čine 16 % nalaza, a gotovo 50 % ih je izrađeno na pločicama. Među njima dominiraju pločice s hrptom s oko 53 % učestalosti, u što spadaju i zašiljeni komadi. Brojem ih slijede komadi s obradom i grebala.⁴³

Iako vremenski bliža horizontu LUP-D nego nešto starijem LUP-C, Vela pećina po-

formed on bladelets, while in the older strata the retouch was mainly focused on blades.

Another site comparable with Vela Pećina, at least on a chronological level, is Vela Spila on the island of Korčula, in particular its LUP-D and LUP-C horizons. The lithic assemblages of both horizons have a pronounced hunting component with backed bladelets prevailing. Admittedly, the other LUP-D horizon finds rather suggest a housing rather than a logistical component.³⁷ The LUP-D horizon yielded the date of $14,100 \pm 100$ BP.³⁸ Flakes in this horizon represent the most common debitage form (68.61%). Close to 70% of the flakes are complete, with the feathered terminations being by far the most frequent. As in Vela Pećina, no primary debitage has been recorded. Flake cores are most frequent, while bladelet cores make up one quarter of the finds. Tools make up less than 10% of the finds, with a half of them made on bladelets.³⁹ Backed bladelets are the most numerous category, with about 50%, which includes also pointed pieces. They are followed by endscrapers, retouched on flakes.⁴⁰

However, the older LUP-C horizon yielded the date of $14,500 \pm 100$ BP.⁴¹ Similarly as in the previous horizon, the most common form of debitage are flakes (52.17%), with a high percentage of bladelets (34.78%). Close to 70% of all flakes are complete, while the completeness of other categories is lower. The feathered termination is by far the most frequent. No primary debitage was recorded. Bladelet cores are the most frequent.⁴² Tools make up 16% of the finds, and almost 50% of them are made on bladelets. Among them, backed bladelets prevail with approximately 53%, including pointed pieces. They are followed by retouched pieces and endscrapers.⁴³

Although closer to the LUP-D horizon than to

³⁷ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 153.

³⁸ FARBSTEIN et al. 2012.

³⁹ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 104.

⁴⁰ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 105–106.

⁴¹ FARBSTEIN et al. 2012.

⁴² VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 99–100.

⁴³ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 105–106.

³⁷ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 153.

³⁸ FARBSTEIN et al. 2012.

³⁹ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 104.

⁴⁰ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 105–106.

⁴¹ FARBSTEIN et al. 2012.

⁴² VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 99–100.

⁴³ VUKOSAVLJEVIĆ, PERHOČ, RADIĆ 2022: 105–106.

kazuje nešto više sličnosti upravo s njim. Pa ipak, bez obzira na izraženu lovnu komponentu, na prvi pogled razlike u zastupljenosti oruđa u litičkom skupu i iskorištavanju lomljenine, uz prisutnost većeg broja grebala, mogle bi upućivati na različit karakter dvaju lokaliteta, tj. različitu ulogu Vele pećine i Vele spile u sustavima naseljavanja istočnojadranskog prostora.

Sloj 100 pećine Zala datiran je u 14100 ± 60 god. pr. sad.⁴⁴ Nažalost, u trenutku pisanja rada nisu objavljeni podatci samo za taj sloj pa usporedbu možemo napraviti s cjelokupnim inventarom. Litički skup iz kasnoga gornjeg paleolitika pećine Zala broji 496 komada, a najveći broj otpada na različitu lomljeninu. Odbojci dominiraju, iako pločice i sječiva čine gotovo četvrtinu litičkog skupa, s tim da su daleko zastupljenije pločice (21,1 %). Pronađene su jezgre od kojih su najbrojnije one za pločice. Uz njih i druge kategorije nalaza pokazuju da se dio izrade odvijao u pećini.⁴⁵ U kategoriju formalnog oruđa ulazi manje od 10 % nalaza. Pronađeno je svega 30 komada među kojima su najbrojnije pločice s hrptom, a slijede ih komadi s obradom i grebala. Više od polovice oruđa izrađeno je na pločicama i sječivima.⁴⁶

Na istočnoj obali Jadrana još Badanj u Pokriveniku ima sličan datum kao sloj iz Vele pećine; $14,440 \pm 50$ god. pr. sad. i prisutnost epigravetijenske komponente u litičkom skupu.⁴⁷ No problem s nalazima iz Pokrivenika, prije svega graveticama kao gotovo sigurnim pokazateljem epigravetijena, jest što one potječu iz konteksta poremećenog kasnijim, neolitičkim aktivnostima. Većina ih je pronađena u istraživanjima Grge Novaka i Vladimira Mirosavljevića, a naknadno su, na osnovi tipoloških karakteristika, interpretirani kao gornjopaleolitički.⁴⁸ Tek su istraži-

the somewhat older LUP-C horizon, Vela Pećina displays somewhat more similarities with the latter. Nevertheless, regardless of the pronounced hunting component, a first glance suggests differences in the share of tools in the lithic assemblage and the exploitation of the debitage, with the presence of a larger number of endscrapers, and maybe different characters for the two sites, indicating different roles of Vela Pećina in comparison to Vela Spila in the settlement systems of the eastern Adriatic area.

Layer 100 of Zala cave was dated to $14,100 \pm 60$ BP.⁴⁴ Unfortunately, at the time of writing this paper no data has been published separately for the mentioned layer; therefore, it is possible to make a comparison only with the entire inventory. The lithic assemblage from the Late Upper Palaeolithic of Zala cave has 496 pieces, with debitage having the largest share. Flakes prevail, although bladelets and blades make up almost one quarter of the lithic assemblage, with bladelets being far more represented (21.1%). Cores were uncovered, of which the most numerous were bladelet cores. In addition, other find categories also indicate that part of the production took place in the cave.⁴⁵ The formal tool category makes up less than 10% of the finds. Only 30 pieces were found, among which the most numerous are backed bladelets, followed by retouched pieces and endscrapers. More than a half of the tools were made on bladelets and blades.⁴⁶

Another site on the eastern Adriatic coast – Badanj in Pokrivenik – has a similar date to the layer from Vela Pećina: $14,440 \pm 50$ BP, and the Epigravettian component present in its lithic assemblage.⁴⁷ Yet, the problem with the finds from Pokrivenik, primarily the microgravettes as an almost certain indicator of the Epigravettian, is that they originate from a context disturbed by later, Neolithic activities. Most of them were found in the course of excavations conducted by Grga Novak and Vladimir Mirosavljević and

⁴⁴ ŠOŠIĆ KLINDŽIĆ et al. 2015.

⁴⁵ VUKOSAVLJEVIĆ, PERHOČ, KARAVANIĆ 2015: 95–96.

⁴⁶ VUKOSAVLJEVIĆ, PERHOČ, KARAVANIĆ 2015: 96.

⁴⁷ FORENBAHER 2002.

⁴⁸ NOVAK 1949; MIROSAVLJEVIĆ 1952; PETRIĆ 1978.

⁴⁴ ŠOŠIĆ KLINDŽIĆ et al. 2015.

⁴⁵ VUKOSAVLJEVIĆ, PERHOČ, KARAVANIĆ 2015: 95–96.

⁴⁶ VUKOSAVLJEVIĆ, PERHOČ, KARAVANIĆ 2015: 96.

⁴⁷ FORENBAHER 2002.

vanja Staše Forenbahera donijela kronološke analize koje su potvrdile da su epigravetijenski slojevi u pećini zaista postojali, ali su zbog postdepozicijskih faktora poremećeni ili u kombinaciji s geomorfologijom pećine dospjeli u sekundarni položaj.⁴⁹

Datumom Vela pećina korespondira i s rezultatima analiza uzoraka ugljena iz Romualdove pećine (Beta-465338 13970 ± 50 god. pr. sad. i OxA-36127 14250 ± 80 god. pr. sad.) uzetih iz sloja 2 sonde ispod paleolitičkih prikaza,⁵⁰ no zbog činjenice da navedeni rezultati nemaju uporište u slojevima s kulturnim nalazima, datiranim u ranije periode,⁵¹ ne možemo napraviti direktnu usporedbu dvaju nalazišta.

Posljednji lokalitet za usporedbu na kronološkoj razini jest pećina Blazi u krškoj regiji Mat u Albaniji. Istraživanja pokazuju da je tijekom kasnog epigravetijena pećina služila kao specijalizirano mjesto za lov na kozoroge.⁵² Sloj 2 iz sonde 5 dao je datum 14440 ± 50 god. pr. sad.⁵³ Malobrojnim litičkim skupom navedenog sloja (n = 182) dominira lomljevina. Jezgre i komadi koji nastaju pri pripremi ili stvaranju platforme su pronađeni, ali u manjem broju. Među lomljevnom sječiva su najbrojnija kategorija. No ako se uzme u obzir da su u litičkoj analizi zasebno izdvojene pločice (širina manja od 10 mm) i mikrosječiva (širina manja od 7 mm), što je u slučaju Vele pećine stavljeno u istu kategoriju pločica, onda možemo reći da kod obiju pećina prevladaju laminarni proizvodi manjih dimenzija. Također, sječiva i mikrosječiva su najčešće kategorije koje su iskorištavane za izradu oruđa, i to za proizvodnju oruđa s hrptom. Među njima prisutni su različiti šiljci i gravetice. U ostatku inventara pojavljuju se različite vrste grebala (među kojima su najbrojnija grebala na sječivima), iako oni

were subsequently interpreted as Upper Palaeolithic, on the basis of typological characteristics.⁴⁸ Only later, with the excavations by Stašo Forenbaher, did chronological analyses become available, which confirmed that Epigravettian layers in the cave had indeed existed, but that, due to post-deposition factors, they were disturbed or they ended up in secondary positions due to a combination with the cave's geomorphology.⁴⁹

The date of Vela Pećina corresponds with the results of the analysis of charcoal samples from Romualdova Pećina (Beta-465338 13,970±50 BP and OxA-36127 14,250±80 BP) taken from Layer 2 of the trial trench dug at the foot of the rock with Palaeolithic paintings.⁵⁰ However, due to the fact that the results have no basis in layers with cultural finds dated to earlier periods,⁵¹ it is not possible to make a direct comparison of the two sites.

The last site comparative at a chronological level is Blazi cave in the karst region of Mat in Albania. Research suggests that in the course of the Late Epigravettian the cave served as a place specialised for ibex hunting.⁵² Layer 2 from Trial Trench 5 yielded the date of 14,440±50 BP.⁵³ The scanty lithic assemblage from this layer (n=182) is dominated by debitage. Cores and pieces that are a byproduct of preparation or platform creation have been recovered, but in a rather small number. The most numerous category of debitage are blades. However, given that in the lithic analysis bladelets (width < 10 mm) were distinguished from microblades (width < 7 mm), while in the case of Vela Pećina both were placed in the same bladelet category, it can be said that in both caves laminar products of smaller dimensions prevail. Also, blades and microblades are the most common categories that were used to make tools, specifically to produce backed tools. Among them are various points and mi-

⁴⁹ FORENBAHER 2002: 364.

⁵⁰ RUIZ-REDONDO et al. 2019: 305–309.

⁵¹ JANKOVIĆ et al. 2017.

⁵² HAUCK et al. 2017: 9.

⁵³ HAUCK et al. 2017.

⁴⁸ NOVAK 1949; MIROSAVLJEVIĆ 1952; PETRIĆ 1978.

⁴⁹ FORENBAHER 2002: 364.

⁵⁰ RUIZ-REDONDO et al. 2019: 305–309.

⁵¹ JANKOVIĆ et al. 2017.

⁵² HAUCK et al. 2017: 9.

⁵³ HAUCK et al. 2017.

čine manje od 15 % nalaza u sloju 2. Skup karakterizira jako mali postotak dubila i izostanak geometrijskih mikrolita.

Zbog sličnosti u pojedinim kategorijama, trenutačno od svih navedenih nalazišta litički skup iz pećine Blazi najviše odgovara nalazima iz Vele pećine na otoku Ugljanu. Iako zbog udaljenosti nije moguće uspostavljati druge paralele, odgovor za tu sličnost možda leži u karakteru mjesta i ulozi tih dviju pećina u sistemima naseljavanja kao kratkotrajnih, lovnih stanica. U budućnosti će se daleko bolje paralele moći povući s obližnjim nalazištem Vlakno na Dugom otoku, no za to treba pričekati dovršetak analize litičkog skupa sa sustavnih iskopavanja, prije svega onog iz Stratuma 9.

crogravettes. The remaining inventory includes various types of endscrapers (among which the most numerous are those on blades), although they make up less than 15% of the finds in Layer 2. The assemblage is characterised by a very small percentage of burins and the absence of geometric microliths.

Due to the similarities between individual categories, currently the closest match for the finds from the Vela Pećina on the island of Ugljan is the lithic assemblage from Blazi cave. Although it is not possible, due to the distance between the two sites, to establish other parallels, the similarities might be due to the character of the locations and the roles of the two caves in the settlement systems as short-term hunting stations. In the future, it will be possible to draw far better parallels with the nearby Vlakno site on Dugi Otok, but for this, it will be necessary to wait for the analysis of the lithic assemblage from systematic excavations, in particular from Stratum 9.

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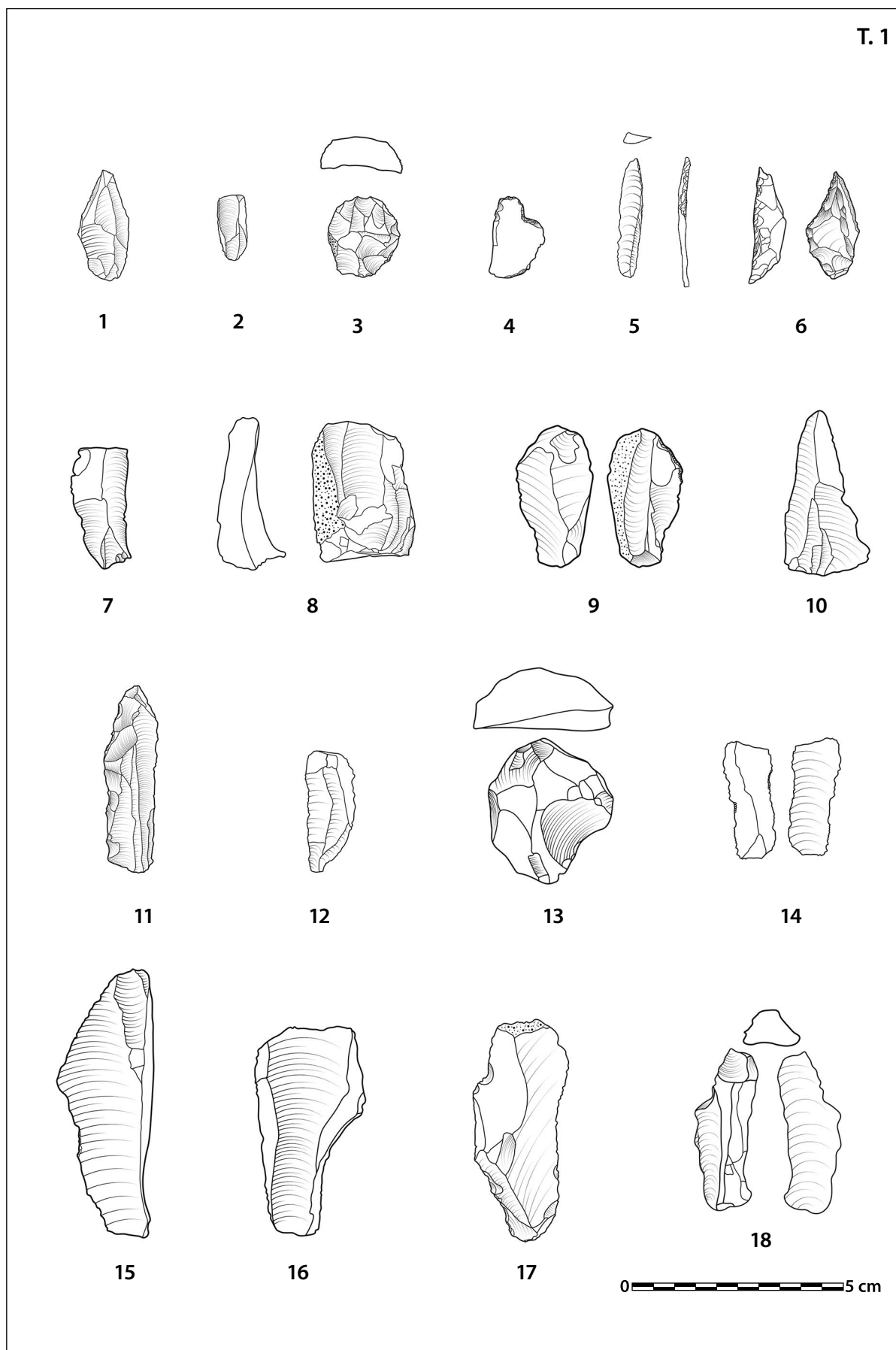
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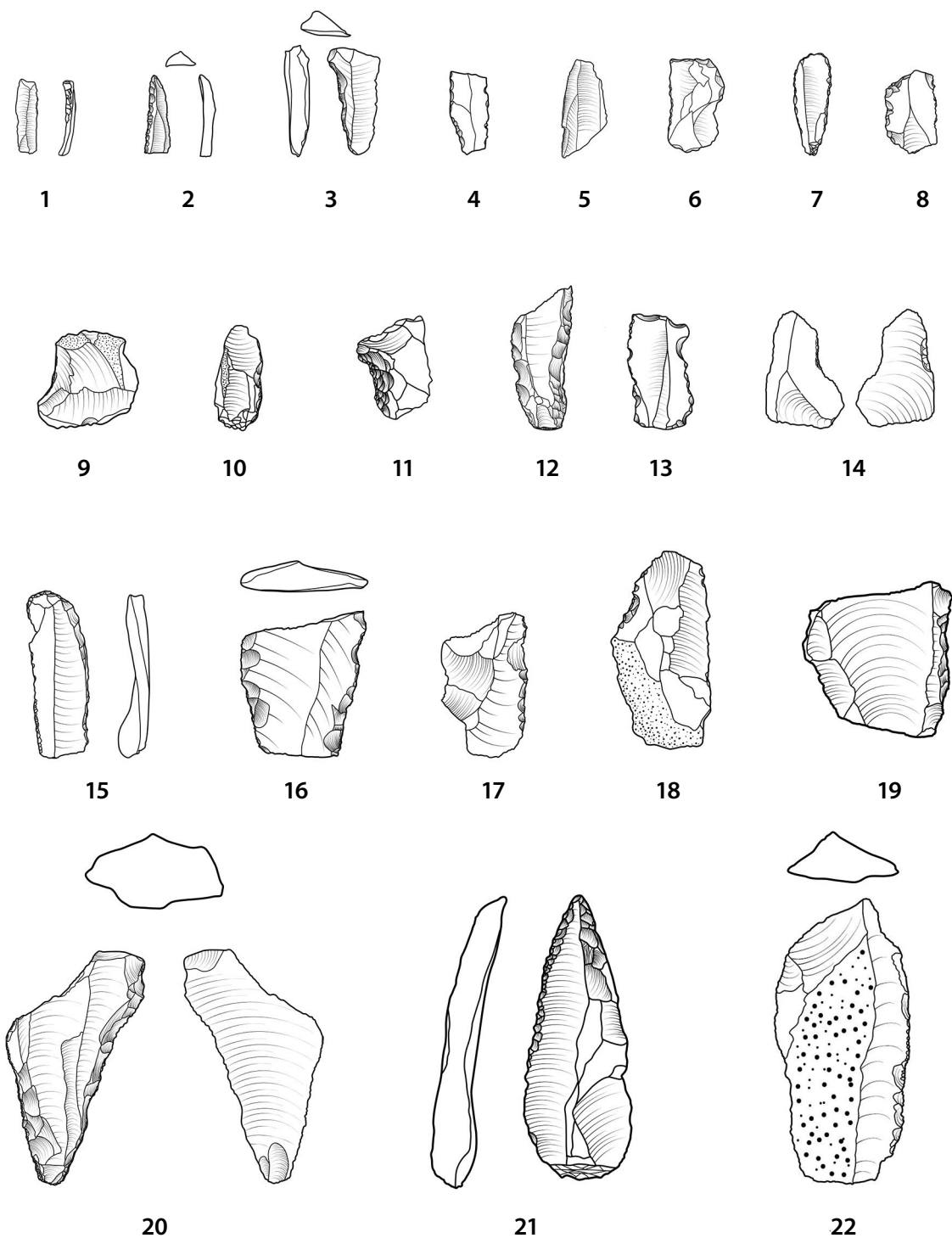
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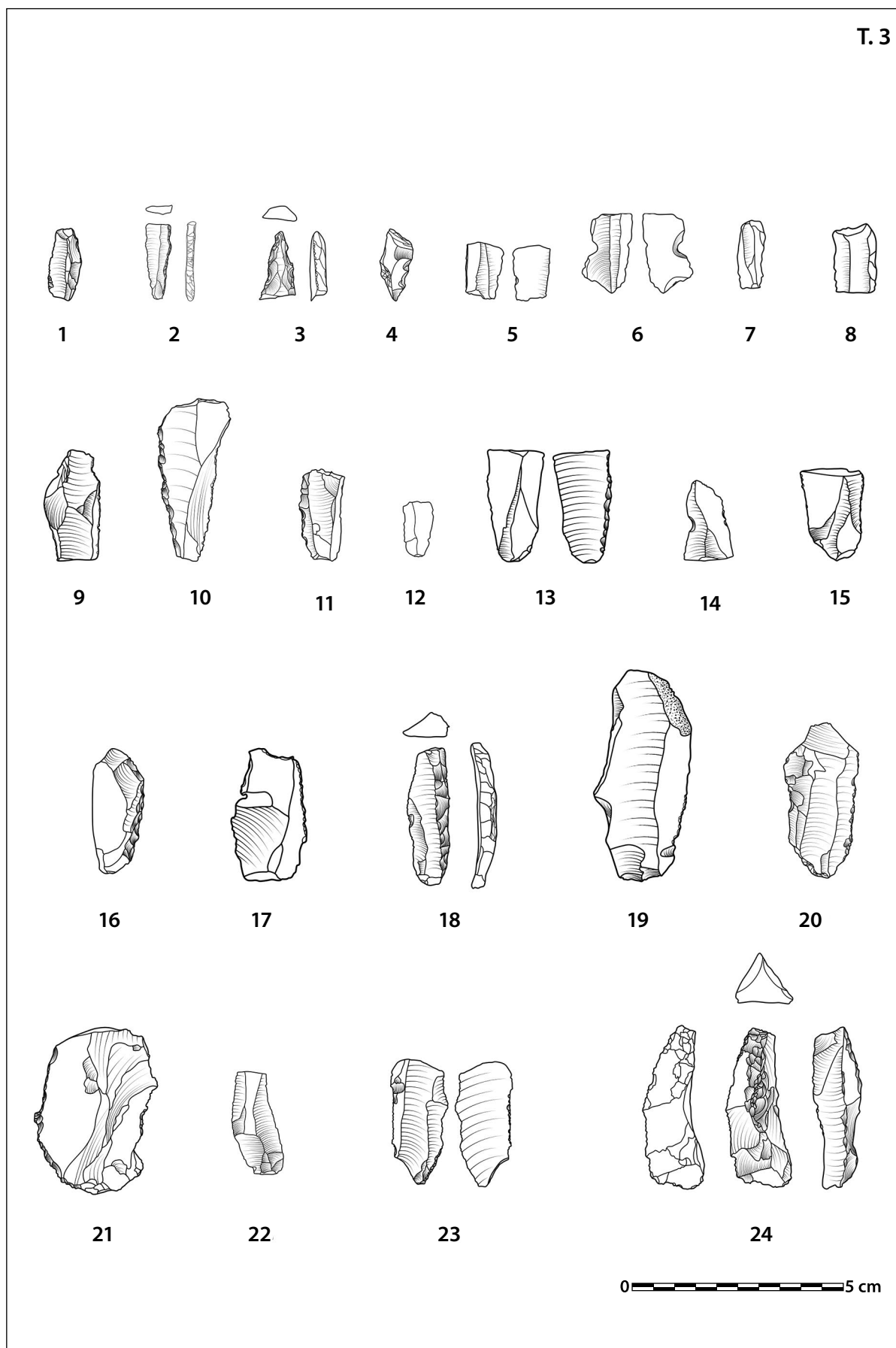


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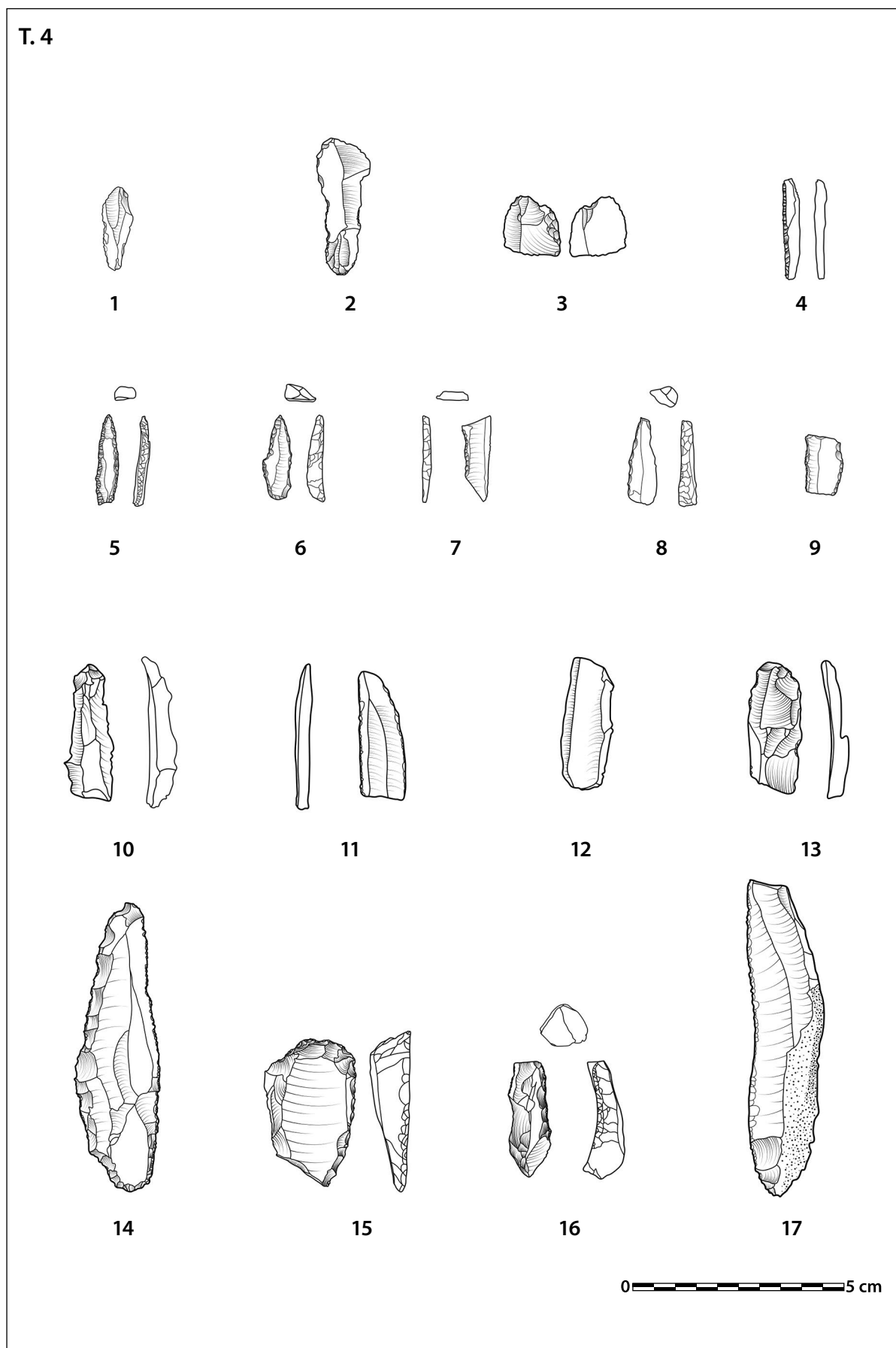


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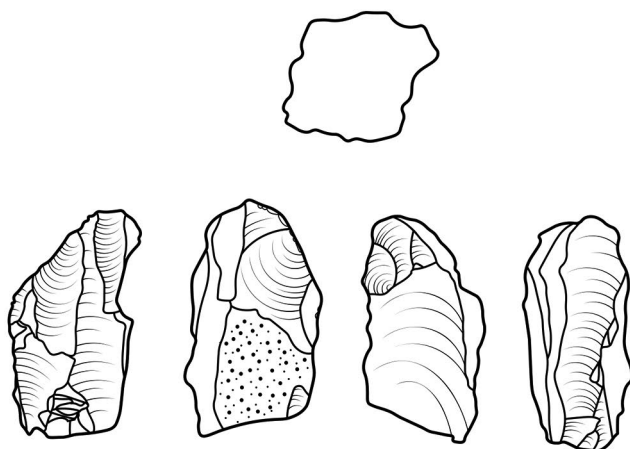
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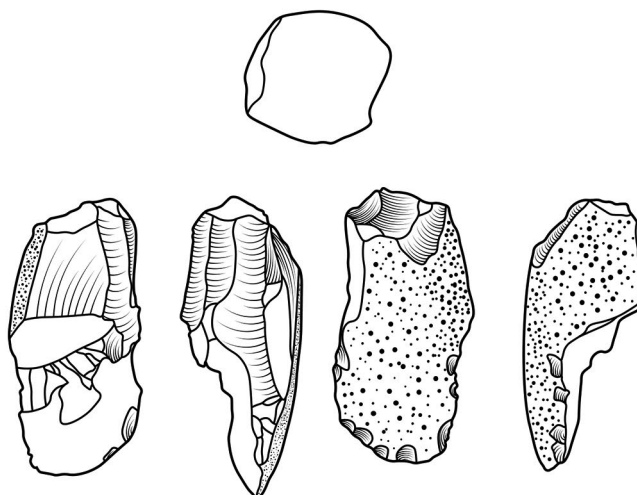
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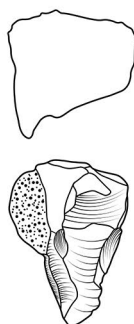
T. 5



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