Arheologija i speleologija: iz tame podzemlja do svjetla spoznaje

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ARHEOLOGIJA
I SPELEOLOGIJA —
IZ TAME PODZEMLJA
DO SVJETLA SPOZNAJE

ARCHAEOLOGY
AND SPELEOLOGY —
FROM THE DARKNESS
OF THE UNDERGROUND
TO THE LIGHT OF KNOWLEDGE

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Istraživanje Male pećine (snimio K. P. Trimmis).
Excavation of Mala Pećina (photo by K. P. Trimmis).

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ARHEOLOGIJA I SPELEOLOGIJA — IZ TAME PODZEMLJA DO SVJETLA SPOZNAJE

ARCHAEOLOGY AND SPELEOLOGY — FROM THE DARKNESS OF THE UNDERGROUND TO THE LIGHT OF KNOWLEDGE

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arheološki muzej u zagrebu
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—

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TIHOMIRU PERCANU

29. 05. 1982. — 24. 06. 2020.

ARHEOLOGU
SPELEOLOGU
PRIJATELJU

—

TO TIHOMIR PERCAN

29/05/1982 — 24/06/2020

ARCHAEOLOGIST
SPELEOLOGIST
A FRIEND

ARHEOLOGIJA I SPELEOLOGIJA — IZ TAME PODZEMLJA DO SVJETLA SPOZNAJE

ARCHAEOLOGY AND SPELEOLOGY — FROM THE DARKNESS OF THE UNDERGROUND TO THE LIGHT OF KNOWLEDGE

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Izložba *Arheologija i speleologija: iz tame podzemlja do svjetla spoznaje* rezultat je prožimanja naših profesionalnih i privatnih interesa. Kad god je to moguće, svoje slobodno vrijeme pokušavamo provesti ispod zemlje. Za vrijeme tih boravaka, uživajući u ljepotama podzemnog svijeta, naša je pažnja često usmjerena na potragu za ponekad slabo vidljivim pokazateljima da je tamo netko kročio prije nas. No, krajnji nam je cilj ukazati na značaj špilja i jama, odnosno speleoloških objekata u proučavanju ljudske prošlosti. Na taj način, ne samo da možemo razviti svijest o važnosti špilja i ostataka u njima nego, nadamo se, i pomoći da devastacija, čak i ona koja nastane u dobroj namjeri iz pukog neznanja, bude svedena na najmanju moguću mjeru.

Arheologija – znanost koja se bavi ljudskom prošlošću – i speleologija – koja proučava različite fenomene podzemlja – na prvi se pogled čine različitim disciplinama. Ipak, speleološki su objekti važni za proučavanje prošlosti jer znanstvenicima koji proučavaju minule događaje (arheolozi, paleoantropolozi, paleontolozi, geolozi i mnogi drugi) pružaju mnoge važne podatke. Više je razloga za navedeno. Kao prvo, špilje su bile dijelom ljudskih života od davnih vremena, gotovo od samog početka našeg evolucijskog puta.[1]

Špiljama se koristilo kao kratkotrajnim ili dugotrajnim boravištima, lovnim stanicama, skloništima od opasnosti ili vremenskih nepogoda. U njih se zalazilo i istraživalo ih se iz nebrojeno mnogo razloga. U špiljama su naši prethodnici ponekad ukapali pripadnike svoje zajednice i obavljali nama danas skrivene rituale. U nekim špiljama, ponekad na vrlo teško dostupnim, skrivenim mjestima, ljudi kamenog doba oslikavali su zidove ili su urezivali mistične znakove i stvarali remek-djela koja i danas zaustavljaju dah. Špilje su bile mjesto života i mjesto smrti mi-

The exhibition titled *Archaeology and Speleology: From the Darkness of the Underground to the Light of Knowledge* came about from the meshing of our professional and private interests. Whenever possible, we try to spend our free time underground. During these stays, while enjoying the wonders of the underground world, our attention is often directed towards finding the often inconspicuous indicators that someone had been there before us. But our end goal is to point out the significance of caves in studying human history. In this way, we can not only increase awareness about the importance of caves and the finds that they contain, but also, hopefully, help reduce the devastation (even those instances of it stemming from a combination of good intentions and ignorance) to a minimum.

Archaeology, as a science that deals with the human past, and speleology, which studies various underground phenomena, at first glance seem to be very different disciplines. But speleological objects are important for studying the past, because they provide the scientists who study past events (besides archaeologists, this category also includes palaeoanthropologists, paleontologists, geologists, and many others) with invaluable data. There are many reasons for this. First of all, caves have been a part of human life since ancient times, almost since the very beginning of our evolutionary path.[1]

Caves were used as short-term or long-term dwellings, hunting outposts, and shelters from danger or extreme weather conditions. Humans entered and explored them for a myriad of reasons. In caves, our ancient forebears sometimes buried members of their communities and performed rituals that have been lost to time. In some caves, sometimes at hidden or hard-to-reach locations, Stone Age humans painted or carved

1 Shaar *et al.* 2021.

1 Shaar *et al.* 2021.

SLIKA. 1. Iskopavanje u Maloj Pećini (snimio K. P. Trimmis).

FIGURE. 1. Excavations at Mala pećina (photo by K.P. Trimmis).

nulih generacija. U njima se rađalo, živjelo i umiralo. Špiljskim dvoranama prije više tisućljeća odjekivao je smijeh i plač, pjevale su se pjesme, čuli su se zvuci danas nepoznatih i zauvijek izgubljenih instrumenata te se razgovaralo o mnogim, nama sasvim nepoznatim, temama. Svi su ti boravci ostavljali tragove i predmete – arheološke ostatke koji su ponekad jasno vidljivi svima, a ponekad njihov značaj mogu dokučiti samo znanstvenici koristeći se specijaliziranim analizama. Glavni razlog što su špilje, a dijelom i jame, toliko važan prozor u prošlost leži u činjenici da su, za razliku od otvorenih prostora, djelomično zaštićene od prirodnih djelovanja (atmosferilije, erozija i dr.), kao i ljudskih aktivnosti (poljoprivreda, izgradnja i dr.) koje često nepovratno uništavaju nalazišta na otvorenom. Zbog toga špiljski sedimenti u sebi kriju mnoge nalaze i tajne. Prvi će korak u otkriću arheoloških ostataka u špiljama i jamama, u većini slučajeva, učiniti upravo speleolog. Zato je važno ukazati na nužnost suradnje arheologa i speleologa te u školovanje novih generacija uključiti oba aspekta.[2]

mystical symbols onto the walls and created masterpieces that, even today, have the power to take our breath away. For past generations, caves were both a place of life and a place of death, where they were born, where they lived and died. Millennia ago, caverns echoed with laughter and crying, with singing and the sounds of instruments that have been lost to time, with conversation about numerous topics we know nothing about. All of these visits left certain traces and items behind, archaeological remains which are sometimes clearly visible to everyone, but whose significance can sometimes only be grasped by scientists, using specialized analyses. The main reasons why caves serve as such an important window into the past is the fact that, as opposed to open spaces, they are partially protected both from natural events (weather effects, erosion etc.) and from human activities (agriculture, construction etc.), which sometimes irreparably destroy open-air archaeological sites. That is why cave sediments can hide many finds and secrets. But the first step in discovering archaeological remains in caves is, in most cases, undertaken by speleologists. It is, therefore, important to raise awareness about the necessity of cooperation between archaeologists and speleologists, and in educating new generations to include both of these aspects.[2]

2 O ovom, ali i mnogim drugim aspektima istraživanja špilja i jama vidi u Rnjak 2019.

2 On this and many other aspects of exploring caves and pit caves, see Rnjak 2019.

Gotovo se svakodnevno objavljuju stručni i znanstveni radovi posvećeni analizama arheoloških i antropoloških nalaza iz speleoloških objekata s obiljem podataka. Stoga nam u okviru izložbe i kataloga nije bila namjera sažeti sve te spoznaje, već je naša vodilja bila, kao što smo napomenuli, ukazati na važnost špilja i jama kako za znanost tako i za mnoge druge djelatnosti. Čuvajući špilje i jame, čuvamo našu prošlost. Čuvajući prošlost, gradimo našu budućnost.

U ovom katalogu, kao i na izložbi istog naziva, zahvaljujući našim prijateljima i kolegama, arheolozima i speleolozima, pokušat ćemo Vam približiti neke od razloga zbog kojih su se ljudi koristili špiljama ili ih posjećivali u prošlosti. Špiljama se, naravno, koristi i posjećuje ih se i danas, a posjećivat će se i u budućnosti. Iako je nemoguće navesti i analizirati sve načine i razloge korištenja špiljom te uzroke njezina posjećivanja u prošlosti, moguće je osvrnuti se na neke od njih. Poznati mit o špiljskim ljudima nije posve ispravan i ljudi su se relativno rijetko koristili špiljama kao dugotrajnim boravištima, iako i za to ima primjera. Dakle, špilje je nedvojbeno moguće promatrati i kao mjesta života.[3] Naime, moguće je odrediti svaki ljudski boravak koji je rezultirao arheološkom ostavštinom vezanom uz provođenje određenih aktivnosti vezanih uz svakodnevni život (ostatci obroka i vatrišta, tragovi izrade oruđa, boravak domaćih životinja, arhitektonske intervencije u kasnijim arheološkim razdobljima sve do današnjih dana). Ne treba zaboraviti i neke recentne ekonomske aktivnosti koje se odvijaju u špiljama – uzgajanje gljiva, različiti oblici turističke ponude, zdravstvene aktivnosti.[4]

Osim obitavališta, špilje su bile i mjesto smrti. Primjere sahranjivanja pokojnika u speleološkim objektima nalazimo još u vremenu neandertalaca,[5] a nastavljaju se i u kasnijim razdobljima.[6] Ponekad ljudski ostatci u špiljama svjedoče o neuspješnim pokušajima skrivanja od opasnosti, dok u drugim situacijama to nije slučaj, već se očituje uspješnost.[7] Nadalje, špilje su često smatrane svetim mjestima, liminalnim prostorom na razdjelnici materijalnog i duhovnog svijeta, u kojima su se odvijali različiti vjerski rituali.[8] U pojedenim su slučajevima špiljski zidovi predstavljali „platno“ na kojima su nastajala remek-djela špiljske umjetnosti.[9]

U ovom katalogu pokušali smo se osvrnuti ne samo na različite načine korištenja špiljama kroz primjere iz naše domovine nego smo nastojali ukazati i na važnost kvalitetne suradnje arheologa i speleologa. Upravo smo iz tog razloga okupili priloge koji arheološku baštinu, pronađenu u speleološkim objektima, promatraju iz različitih perspektiva, ali ne na manje vrijedan način.

Expert and scientific texts focused on analyzing archaeological and anthropological finds from speleological objects, containing huge amounts of data, are constantly being published. It was not, therefore, our intention to summarize all of these insights within the scope of this exhibition and catalogue. Our guiding thought was, as we have already mentioned, to raise awareness about the importance of caves, both for science and for many other human activities. By protecting caves, we protect our past. By protecting our past, we build our future.

In this catalogue, as well as in the eponymous exhibition, thanks to our friends and colleagues, archaeologists and speleologists, we will try to introduce you to some of the reasons for which people used and visited caves in the past. Caves are, of course, still being used and visited today, and will continue to be visited in the future. Although it is impossible to list and analyze all of the various ways of and reasons for using and visiting caves in the past, it is possible to explore some of them. The popular myth of cavemen is not entirely accurate: people used caves as long-term dwellings only relatively rarely (although there are some examples of such behavior); however, it is undoubtedly possible to view caves as living spaces as well.[3] More precisely, it is possible to define every instance of humans staying in a cave that resulted in an archaeological find connected to certain everyday activities (from the remains of meals and fire pits, through traces of manufacturing tools or keeping domestic animals, to architectural interventions in later archaeological periods, all the way to modern times). Let us also not forget certain recent economic activities undertaken in caves, from growing mushrooms, through various forms of tourism, to health and wellness activities.[4]

Besides being a place of life, caves were also a place of death. There are examples of the dead being buried in speleological objects from as early as the times of the Neandertals,[5] and this continued in later periods as well.[6] Human remains in caves sometimes speak of unsuccessful attempts at hiding from danger, while in other cases caves served this purpose successfully.[7] Furthermore, caves were often considered to be holy places, a liminal space between the material and the spiritual realms, and various religious rituals were performed in them.[8] In certain instances, cave walls served as canvases for creating cave art masterpieces.[9]

In this catalogue, we tried to examine the various ways in which caves were used, through examples from our homeland, but also to point out the importance of high-quality cooperation between archaeologists and speleologists. It is for this reason

3 Stoddart, Malone 2012.
4 Cigna 2016.
5 Pettitt 2002.
6 Moyes 2012.
7 Raguž 2019; Tobias 2013.
8 Moyes 2012.
9 Clottes 2012; Simek *et al.* 2012; Tomkins 2012; Montello, Moyes 2012; Ruiz-Redondo *et al.* 2020.

3 Stoddart, Malone 2012.
4 Cigna 2016.
5 Pettitt 2002.
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7 Raguž 2019; Tobias 2013.
8 Moyes 2012.
9 Clottes 2012; Simek *et al.* 2012; Tomkins 2012; Montello, Moyes 2012; Ruiz-Redondo *et al.* 2020.

Važnost hrvatskih speleologa u mnogim otkrićima arheoloških nalaza i lokaliteta u špiljama i jamama predstavljen je u tekstovima N. Šuice i H. Cvitanovića iz karlovačkog speleološkog kluba „Ursus spelaeus“, M. Garašića iz Društva za istraživanje i snimanje krških fenomena Zagreb i Odbora za krš Hrvatske Akademije znanosti i umjetnosti, kao i kroz pregled sudjelovanja članova HPD „Željezničar“ u arheološkim otkrićima iz pera V. Božića, B. Jalžića i V. Butorac.

Nadalje, primjere korištenja špiljama kao obitavalištima, odnosno u kontekstu različitih svakodnevnih aktivnosti (kraći ili duži boravci, torovi za stoku i dr.) možemo pronaći u radovima I. Karavanića, I. Drnića i K. P. Trimmisa, K. Geromette i G. Boschiania, D. Vujevića, I. Jankovića i D. Komše. Most između profanog i svetog moguće je pronaći u poglavljima o ukopima u špiljama i jamama koji se spominju u tekstovima D. Perkića, I. Jankovića i M. Novaka, ali i u drugim tekstovima kataloga, što ukazuje na složenost valorizacije korištenja speleološkim objektima u različitim vremenima i uvjetima. Pod odrednicom *sveti* ili *kultni* treba tražiti pokazatelje drevnih rituala u špiljama, za što nam primjere navode S. Forenbaher, D. Perkić i drugi. Poseban primjer umjetničkog izričaja u vidu špiljskog slikarstva iz razdoblja paleolitika (teško je sa sigurnošću tvrditi radi li se o sakralnom ili profanom) nalazimo u tekstu I. Jankovića i D. Komše. Da su u špiljama pronađene i druge vrste umjetničkih predmeta iz razdoblja paleolitika, u svojem nam tekstu predstavlja D. Vujević. Na kraju, iako su ova izložba i pripadajući joj katalog prvenstveno posvećeni prošlosti, izuzetno je važno promišljati o budućnosti i potencijalu korištenja špiljama, o čemu govori tekst D. Paara.

Ni priređenom izložbom ni katalogom koji listate nikako nije iscrpljena sva složenost korištenja speleološkim objektima u prošlosti. Ipak, nadamo se da smo na razumljiv način uspjeli zagrepsti ispod površine i time barem djelomično približiti značaj špilja i jama za znanost, kao i za mnoge druge djelatnosti. Nadamo se da ćete se odlučiti i sami posjetiti neke od špiljskih nalazišta koji su opremljeni za turističke posjete i istinski uživati u njima. Neki će od vas možda otići i korak dalje te završiti neku od speleoloških škola. Ako se odlučite na taj korak, zapamtite da i sami možete odigrati važnu ulogu i otkriti neke nove spoznaje o minulim vremenima.

U realizaciji ove izložbe pomogli su nam mnogi prijatelji i kolege, na čemu smo im iskreno zahvalni. Kao prvo, izložbe, a pogotovo kataloga koji je pred vama, ne bi bilo da se brojni stručnjaci kojima smo se obratili u promišljanju ove tematike nisu nesebično odlučili pomoći nam i podijeliti svoja znanja, iskustva i rezultate svojeg rada. Uistinu smo uživali i saznali mnogo toga čitajući njihova poglavlja u procesu nastajanja. Nadalje, osim autora i koautora pojedinih priloga, ovaj projekt ne bi bilo moguće izvesti bez pomoći mnogih pojedinaca i institucija. Zahvaljujemo speleološkim društvima, odsjecima i pojedincima iz Speleološkog kluba „Ursus spelaeus“ iz Karlovca, SO HPD „Željezničar“, SO PDS „Velebit“ „Društvu za istraživanje i snimanje krških fenomena Zagreb“ iz Zagreba te Speleološkoj udruzi “Kraševski zviri” iz Ivanca na ustupanju materijala iz njihovih zbirki i arhiva. Također, zahvaljujemo i Arheološkom muzeju Dubrovačkih muzeja na ustupljenoj građi iz Viline pećine i Nakovane koja je predstavljena na izložbi. Igor Krajcar iz AMZ-a snimio je nove fotografije materijala iz Bezdanjače i zbirke SO HPD „Željezničar“, a grafičku pripremu kataloga i materijala za izložbu odradio je Srećko Škrinjarić iz AMZ-a. Tehničku realizaciju postava izveli su Slađana Latinović, Vedran Mesarić i Robert Vazdar iz AMZ-a. Izložba i katalog financirani su sredstvima Gradskog ureda za kulturu Grada Zagreba, Ministarstva kulture i medija RH. Na potpori u realizaciji projekta zahvaljujemo ravnatelju AMZ-a Sanjinu Miheliću.

that we collected texts that examine the archaeological heritage discovered in speleological objects from various perspectives, all of them equally valuable. The importance of Croatian speleologists in numerous discoveries of archaeological sites and finds in caves is examined in texts by N. Šuica and H. Cvitanović from the Speleological Club “Ursus spelaeus” from Karlovac, M. Garašić from the Society for the Research, Surveying and Filming of Karst Phenomena Zagreb and the Committee for Karst at the Croatian Academy of Sciences and Arts, as well as through the overview of the participation of the members of the Croatian Mountaineering Club “Željezničar” in archaeological discoveries penned by V. Božić, B. Jalžić and V. Butorac.

Furthermore, examples of caves being used as dwellings, or in the context of various everyday activities (shorter or longer stays, pens for livestock etc.), can be found in the texts by I. Karavanić, I. Drnić and K. P. Trimmis, K. Gerometta and G. Boschian, D. Vujević, I. Janković and D. Komšo. The border between the profane and the sacred can be found in the chapters on cave burials mentioned in the texts by D. Perkić, I. Janković and M. Novak, but also in other texts in this catalogue, which points to the complexity of evaluating the use of speleological objects in various times and conditions, while the category of the sacred and cult-related includes the remains of ancient rituals conducted in caves, with examples provided by S. Forenbaher, D. Perkić and others. One special example of artistic expression in the form of Paleolithic cave art (it is difficult to ascertain with certainty whether the art was sacred or profane in nature) can be found in the text by I. Janković and D. Komšo, while D. Vujević introduces us to other types of artistic items from the Paleolithic that have been discovered in caves. Finally, although the exhibition and this catalogue are mainly focused on the past, it is also immensely important to think about the future and the potential of using caves, a topic covered in D. Paar’s text.

Neither the exhibition nor the catalogue you are reading fully exhaust the complexity of past usage of caves. Nevertheless, we hope that we have at least managed to scratch the surface in an interesting way, and thereby at least partially illuminate the importance of caves for science and many other activities. We hope that you will decide to visit some of the cave sites that are equipped for tourists yourselves, and that you will truly enjoy them. Some of you might even go a step further and decide to enroll in a speleology training course. If you do, remember that you yourselves can play a vital role in unearthing some new insight about times long past.

In organizing this exhibition, we have had the help of many friends and colleagues, for which we are immensely grateful. First of all, neither the exhibition nor the catalogue you are reading would exist if the many experts we turned to in examining this topic did not selflessly decide to help us by sharing their knowledge, experience and results. We have truly enjoyed reading their chapters throughout the writing process, and have learned much in doing so. Furthermore, aside from the authors and co-authors of the texts themselves, this project would not have been possible without the help of numerous individuals and institutions. First of all, we would like to express our gratitude to the speleological societies, sections and individuals from the Speleological Club “Ursus spelaeus” from Karlovac, the speleological sections of the Croatian mountaineering clubs “Željezničar” and “Velebit”, the Society for the Research, Surveying and Filming of Karst Phenomena Zagreb, and the Speleological association “Kraševski zviri” from Ivanec for the loaned materials from their collections and archives. Furthermore, thank you to the Archaeological Museum of Dubrovnik Museums for loaning us the materials from Vilina Pećina and Nakovana to be displayed at the exhibition. Igor Krajcar from the Archaeological Museum in Zagreb took new photographs of the materials from Bezdanjača and the collection of the Speleological Section of the Croatian Mountaineering Club “Željezničar”, while Srećko Škrinjarić from AMZ took care of the graphic design for the catalogue and exhibition. The technical aspects of setting up the exhibits were handled by Slađana Latinović, Vedran Mesarić and Robert Vazdar from AMZ. The exhibition and this catalogue were financed by funds from the City Office for Culture of the City of Zagreb and the Ministry of Culture and Media of the Republic of Croatia. We would also like to thank Sanjin Mihelić, the director of the Archaeological Museum in Zagreb, for his support in realizing this project.

SLIKA. 2. Laboratorijska obrada nalaza (snimio I. Janković).

FIGURE. 2. Lab work (photo by I. Janković).

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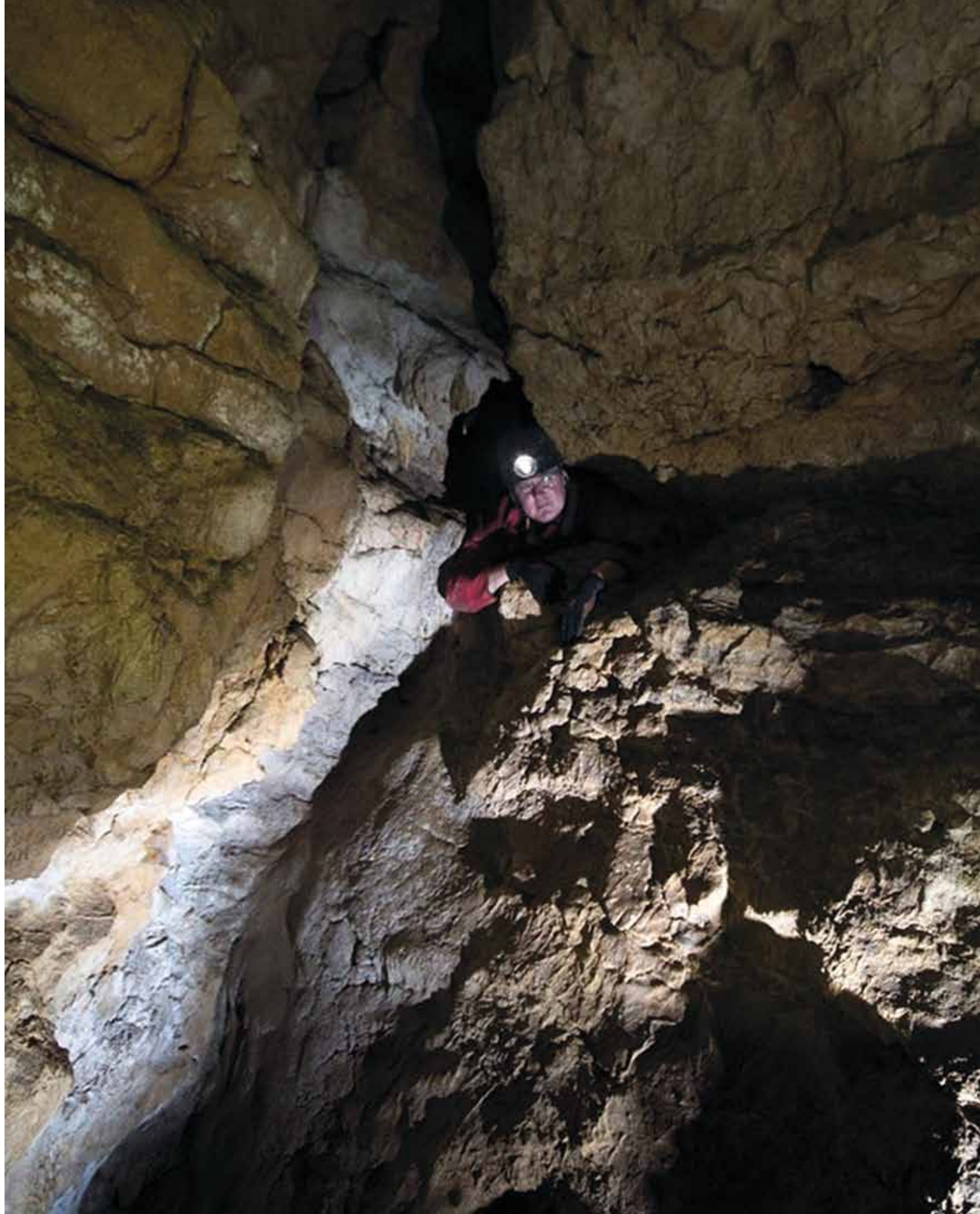

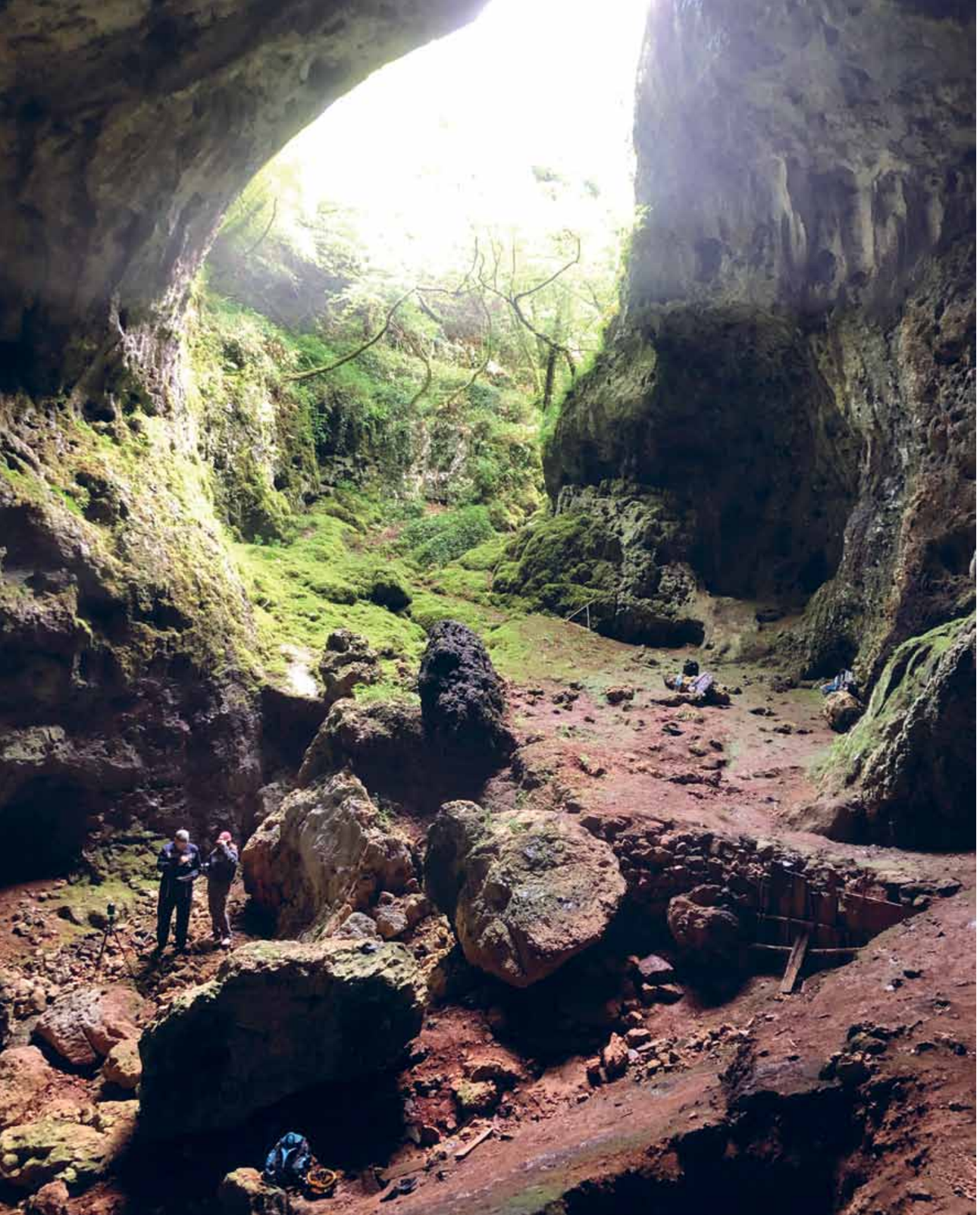

SPELEOLOŠKI OBJEKTI KAO ARHEOLOŠKA NALAZIŠTA

—

CAVES AS ARCHAEOLOGICAL SITES

STANIŠTA NEANDERTALACA

NEANDERTAL HABITATION

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Premda su neandertalci uglavnom živjeli na otvorenom, često su se koristili špiljama i pripećcima (abrijima) kao prirodnim skloništima. Izuzetno je velika koncentracija nalazišta u jugozapadnoj Francuskoj (područje Dordogne), gdje su bili pogodniji životni uvjeti (okoliš, izvori sirovina), u usporedbi s mnogim drugim mjestima, a time i broj populacije veći. Među srednjopaleolitičkim nalazištima, špilje i pripećci uglavnom su brojniji od nalazišta na otvorenom, vjerojatno zato što ih je kao paleolitičke lokalitete lakše otkriti i pokusno sondirati, a i zbog toga što su arheološki slojevi i nalazi u njima obično dobro zaštićeni. Ti slojevi sadrže tragove materijalne kulture i faune koji govore o životu i djelatnosti tadašnjih lovaca i nomada koji su često mijenjali staništa vraćajući se na mjesta na kojima su već bili. Lovcima skupljačima bilo je važno smjestiti se na dobrom položaju kako bi mogli nadzirati okolni prostor, po mogućnosti blizu vode, te odabrati svijetlu špilju pogodnu za loženje vatre.

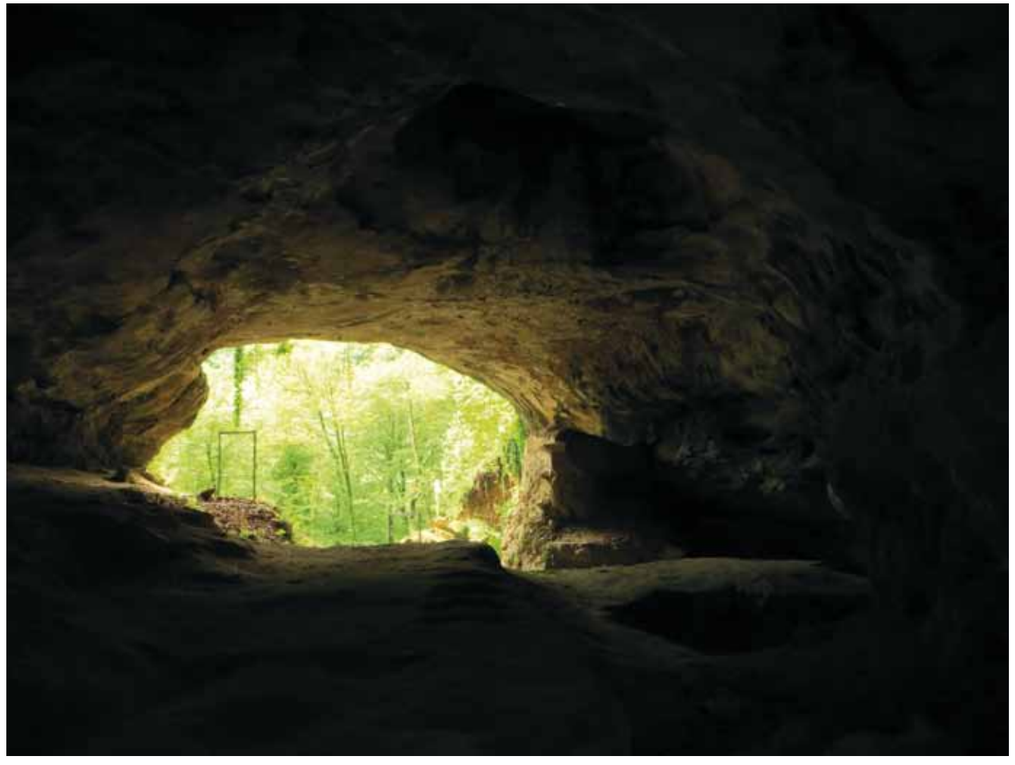
Kao srednjopaleolitička nalazišta u Hrvatskom zagorju, dosad su nam poznata samo špiljska staništa, dok u jadranskoj Hrvatskoj, osim špilja, postoje i nalazišta na otvorenom te podvodna nalazišta koja su također nekoć bila na kopnu i na otvorenom. Postoji, dakako, i mnoštvo potopljenih špilja od kojih su neke zasigurno bile staništa paleolitičkih ljudi, međutim, dosad nisu pronađeni ostaci života tih ljudi ni u jednom takvom objektu, što nije čudno, s obzirom na to da su nekadašnji slojevi isprani valovima.

Dok se slojevi srednjeg paleolitika na nekim kopnenim nalazištima na otvorenom mogu nalaziti na velikoj dubini, drugdje se izrađevine iz tog razdoblja pojavljuju na površini samih nalazišta. Poznata špiljska nalazišta koja sadrže slojeve iz srednjeg paleolitika u Hrvatskoj zasigurno su Krapina, Vindija, Velika pećina u Hrvatskom zagorju, Veternica kod Zagreba, Velika pećina u Kličevici kod Benkovca i Mujina pećina kod Kaštela. Veća se koncentracija nalazišta na otvorenom nalazi na prostoru Ravnih kotara između Ljubačkoga zaljeva i Posedarja te na Velom Ratu (Dugi otok). Na površini spomenutih nalazišta najčešće dolaze izrađevine srednjopaleolitičke starosti koje su često po-

Although Neandertals mainly lived in the open, they often used caves and rock shelters (Fr. *abri)* as natural havens. There is an extremely high concentration of sites in Southwestern France (the region of Dordogne), where living conditions were more favorable (environment, raw materials) compared to many other places and resulting in a higher population. Among Middle-Paleolithic sites, caves and rock shelters are more numerous than sites in the open, probably because they are more easily discovered and excavated as Paleolithic sites, and because their archaeological layers and finds are usually well protected. The layers contain traces of material culture and fauna that tell the tale about the life and activities of the hunters and nomads of the time who often changed their habitats, returning to the places they had already been. It was important for hunter-gatherers to make camp in a good position so that they could monitor the surrounding area, preferably near water, and select a cave with plenty of light and suitable for lighting fires.

When it comes to Middle-Paleolithic sites in the Hrvatsko Zagorje region, only caves are known so far, while along Croatia's Adriatic coast, in addition to caves, there are also open-air sites and underwater sites, which were also once on land and in the open. There are, of course, a multitude of submerged caves, some of which were surely used for habitation by Paleolithic people, but so far no traces of occupation have been found in any such cavern, which is not surprising, since the former layers were washed away by waves.

While Middle-Paleolithic layers in some open-air land sites may be found at significant depth, at other sites, artefacts from that period appear on the very surface level of the site. The known cave sites containing layers from the Middle Paleolithic in Croatia are certainly Krapina, Vindija, Velika pećina in Hrvatsko Zagorje, Veternica near Zagreb, Velika pećina in Kličevica near Benkovac, and Mujina pećina near Kaštela. A higher concentration of open-air sites is located in the area of Ravni Kotari between Ljubački Bay and Posedarje, and on Veli Rat (Dugi Otok). On the surface level of the mentioned sites, there are most



SLIKA. 1. Špilja Vindija (snimio I. Karavanić).

FIGURE. 1. Vindija (photo by I. Karavanić).

miješane s neobrađenim rožnjacima oslobođenima erozijom iz vapnenačkih ležišta, a katkad i s litičkim izrađevinama mlađih razdoblja.[1]

Osim osnovne podjele na špilje i pripećke, s jedne, te nalazišta na otvorenom, s druge strane, bitno je imati u vidu da su mnoga staništa imala i različitu funkciju.[2] Na nekima se moglo živjeti više mjeseci, dok su druga mogla biti posjećivana samo prigodom kratkih lovnih epizoda. Ako faunalni ostaci sadrže oštećenja od razbijanja i rezanja, onda upućuju na mesarenje životinja zbog jela, a ako su na njima pronađeni i tragovi gorenja, mogla je biti riječ i o termičkoj pripremi hrane. Nadalje, prema mnogobrojnosti i vrsti litičkih nalaza, bit će moguće ustanoviti je li određeno nalazište bilo radionica za izradu oruđa i, ako jest,

1 Batović 1988.

often Middle-Paleolithic stone artefacts intermixed with unworked flint freed from the limestone deposits by erosion, and sometimes with stone artefacts from younger periods.[1]

In addition to the basic classification to caves and rock shelters on one hand, and open-air sites on the other, it is important to take into account that many habitations also had different functions.[2] Some could be occupied for several months, while others could only be visited during short hunting episodes. If the fauna remains exhibit damage from breaking and cutting, they point to butchering animals for eating, and if there are burn marks present, they could indicate thermal food processing. Furthermore, according to the number and types of discovered stone artefacts, it is possible to determine whether a particular site was a workshop for the production of tools and, if so, whether all stages of production were present at the site. For example, if only a few tools were found without waste products, it is clear that this is not a workshop. In such cases, the tools were brought to the site as finished products ready for use.

1 Batović 1988.

jesu li sve faze proizvodnje bile prisutne na nalazištu. Ako su, primjerice, pronađena samo malobrojna oruđa bez otpadnih proizvoda, jasno je da nije riječ o radionici. U tom su slučaju oruđa donesena kao gotovi proizvodi spremni za uporabu.

Ljudi i životinje naizmjenično su se koristili istim staništima u razdoblju paleolitika, što se vrlo dobro vidi na dvama hrvatskim paleolitičkim nalazištima, koja ćemo uzeti kao primjere. Jedno je od njih špilja Vindija, smještena u kontinentalnom dijelu (Hrvatsko zagorje), kod Donje Voće, zapadno od Varaždina, a drugo je Mujina pećina, u jadranskom dijelu (Dalmacija), kod Planog, sjeverno od Kaštela.

Špilju Vindiju (slika 1) naizmjenično su nastanjivali špiljski medvjedi i neandertalci. Fosilni su ostaci neandertalaca pronađeni u slojevima G3 i G1, ali njihova oruđa dolaze u nizu slojeva, odnosno razina koje su nekoć nastanjivali u razdoblju između 150 i 40 000 godina prije sadašnjosti. Međutim, špilja je uglavnom bila medvjeđi brlog,[3] dok su ju ljudi posjećivali povremeno, ponekad donoseći plijen (ulovljene životinje, odnosno njihove dijelove). Obično su lovili različite vrste jelena te pragoveda.[4] Nedostatak izgorenih kostiju sugerira da meso prije konzumiranja nije bilo termički obrađeno,[5] premda, na osnovi oštećenja na kostima, znamo da su životinje bile mesarene u svrhu konzumacije.[6] Prehrana se neandetalaca uvelike temeljila na mesu, a do tog su prehrambenog resursa neandertalci dolazili lovom, o čemu svjedoče i analize nalaza iz Vindije.[7]

Osim na životinjskim kostima, oštećenja od skidanja mesa ustanovljena su i na ljudskim kostima neandertalaca iz Vindije.[8] Nije nam poznata svrha te prakse, ali je moguće da se radi o kanibalizmu (zbog potrebe za hranom ili o ritualu). Dakako, na ljudske su i životinjske kosti djelovali i različiti prirodni procesi tijekom vremena, pa sve to treba uzeti u obzir prilikom interpretacije.

Za razliku od Vindije, u Mujinoj pećini nisu pronađeni fosilni ostaci ljudi, ali, na osnovi tipološke analize oruđa i kronometrijskog datiranja slojeva, znamo da su ju nastanjivali neandertalci prije više od 40 000 godina. Kao i u Vindiji, boravak je čovjeka bio povremen, ali ovdje su špilju znatno rjeđe posjećivali medvjedi, koji u fauni Vindije uvelike prevladavaju.

Postupci izrade kamenih izrađevina u Mujinoj pećini (slika 2) uglavnom su se odvijali na istim mjestima na kojima se obrađivala i fauna.[9] U gotovo svim srednjopaleolitičkim razinama, prostor desne niše bio je najintenzivnije korišten dio špilje, na što upućuje velika koncentracija nalaza na tom mjestu. Međutim, nalazi iz sloja E1 (slika 3) bili su koncentrirani u središnjem

2 Binford 1983.
3 Miracle 1991.
4 Patou-Mathis *et al.* 2018.
5 Brajković i Miracle 2008.
6 Brajković, Miracle 2008; Patou-Mathis *et al.* 2018.
7 Richards *et al.* 2000.
8 Patou-Mathis *et al.* 2018.
9 Nizek, Karavanić 2020; Karavanić *et al.* 2020.

Humans and animals used the same habitations in different periods of the Paleolithic, which is apparent in two Croatian Paleolithic sites that can serve here as examples. The first cave is Vindija, located in the continental part (Hrvatsko Zagorje), near Donja Voća, west of Varaždin, and the second is Mujina pećina, in the Adriatic region (Dalmatia), near Plano, north of Kaštela.

Vindija (Figure 1) was alternately inhabited by cave bears and Neandertals. Fossil remains of Neandertals were found in layers G3 and G1, but their tools were discovered in several layers, i.e. levels that they once inhabited during the period between 150 000 and 40 000 years ago. However, the cave was mostly a bear den,[3] while people occupied it occasionally, sometimes bringing in the prey (caught animals or parts thereof). Usually, they hunted different kinds of deer and aurochs.[4] The lack of burned bones suggests that the flesh was not thermally processed before being eaten[5] , although, based on bone damage, the animals were definitely butchered for consumption.[6] Neandertal diet was largely based on meat, which was a dietary resource the Neandertals procured by hunting, as evidenced by the analysis of the findings from Vindija.[7]

In addition to animal bones, traces of removing flesh have been discovered on human bones belonging to the Neandertals from Vindija.[8] We do not know the purpose of this practice, but it is possible that this is evidence of cannibalism (out of necessity or as part of a ritual). Of course, human and animal bones were also affected by different natural processes over time, which should be taken into account when interpreting these finds.

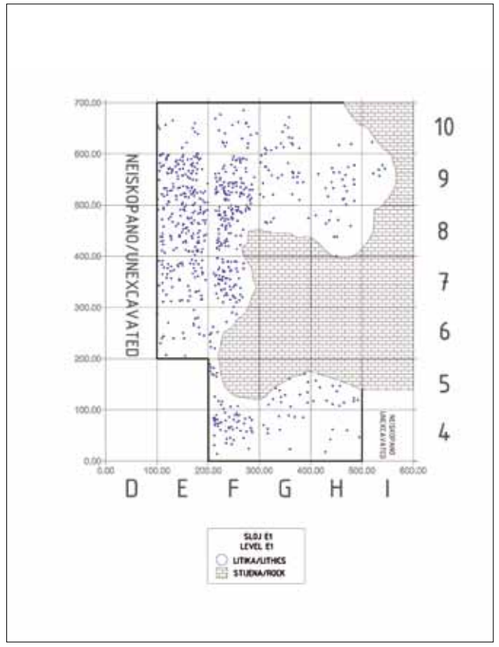
As opposed to Vindija, there were no fossil human remains found in Mujina pećina, but based on a typological analysis of tools and chronometric layer dating, we know that Neandertals inhabited it more than 40 000 years ago. As in Vindija, human occupation was occasional, but here the cave was visited considerably less by bears, the remains of which are most numerous in Vindija.

The process of stone artefact production in Mujina pećina was mainly carried out in the same places, where the fauna was also processed.[9] In almost all Middle-Paleolithic layers, the area of the right niche was the most highly used part of the cave, sug-

2 Binford 1983.
3 Miracle 1991.
4 Patou-Mathis *et al.* 2018.
5 Brajković & Miracle 2008.
6 Brajković, Miracle 2008; Patou-Mathis *et al.* 2018.
7 Richards et al. 2000.
8 Patou-Mathis *et al.* 2018.
9 Nizek, Karavanić 2020; Karavanić *et al.* 2020.

SLIKA. 2. Mujina pećina (snimio I. Karavanić).

FIGURE. 2. Mujina pećina (photo by I. Karavanić).



SLIKA. 3. Horizontalna distribucija litičkih nalaza u sloju E1 Mujine pećine (prema Nizek i Karavanić 2020).

FIGURE. 3. Horizontal distribution of stone artefacts in Layer E1 at Mujina pećina (after Nizek and Karavanić 2020).

(svijetlom) dijelu špilje.[10] Nišom se koristilo kao zakloništem, a središnjim prostorom vjerojatno za aktivnosti koje zahtijevaju više svjetla. Pronađena su dva otvorena vatrišta u sloju D2, koja su, osim za grijanje, mogla biti korištena za osvjetljavanje i pripremu hrane, iako su nagorene kosti rijetke,[11] a za loživo je korištena borovica.[12] Vatrišta nisu posebno omeđena, nego je vatra zapaljena na stanišnoj razini. Oko jednog je vatrišta, koje je bilo u desnoj niši, pronađen veći komad jelenjeg roga te nekoliko razasutih kamenih izrađevina i kosti.

Promatramo li učestalost nalaza po slojevima Mujine pećine, najviše ih se zamjećuje u najdonjim slojevima, tj. u najstarijim (E3, E2 i E1), pa se nameće zaključak da je špilja bila dugotrajnije nastanjena tad nego, recimo, u razdoblju nastajanja gornjih slojeva (D2, D1 i B), gdje je učestalost nalaza vidno manja. No, to ne mora biti točno jer je ustanovljeno da velike koncentracije nalaza (sl. 4 i 5) u slojevima mogu nastati i kao posljedica uza-

gested by the high concentration of finds at that exact spot. However, the finds from Layer E1 (Figure 3) were concentrated in the central (illuminated) section of the cave.[10] The niche was used because it offered cover, and the central space was probably for activities that required more light. Two open fireplaces were found in Layer D2, which, except for heating, could have been used to illuminate the cavern and to prepare food, although burned bones are rare,[11] and juniper was used as fuel.[12] The fireplaces have no exact outline, and the fires were lit on the habitational level. Around one fireplace, which was discovered in the right niche, a larger piece of deer horn was found and several scattered stone artefacts and bones.

When observing the frequency of the finds across the layers of Mujina pećina, they are most numerous in the lowest layers, i.e. in the oldest (E3, E2, and E1), so the conclusion must be drawn that the cave was occupied for a longer period than, say, at the

10 Nizek, Karavanić 2020.
11 Miracle 2005.
12 Karavanić *et al.* 2008.

10 Nizek, Karavanić 2020.
11 Miracle 2005.
12 Karavanić *et al.* 2008.

SLIKA. 4. Donji dio čeljusti jelena in situ u Mujinoj pećini (snimio I. Karavanić).

FIGURE. 4. A part of deer's jaw in situ u Mujinoj pećini (photo by I. Karavanić).

SLIKA. 5. Strugalo iz Mujine pećine (snimio I. Karavanić).

FIGURE. 5. Sidescraper from Mujina pećina (photo by I. Karavanić).

stopnih kratkih boravaka u špilji ili tijekom kratkog perioda ako je djelatnost bila izrazito intenzivna. Manja učestalost nalaza u gornjim slojevima sugerira na povremeno kratkotrajno korištenje špiljom u funkciji lovnog logora.[13]

Tragovi rezanja na kostima stepskog bizona, pragoveda, jelena, divokoze i kozoroga iz tih slojeva svjedoče o skidanju mesa zbog konzumacije, dok oštećenja na kostima ekvida i zeca upućuju da su te životinje bile plijen zvijeri.[14] Štoviše, iz oštećenja na kostima vidljivo je da su zvijeri dolazile u pećinu nakon što bi je ljudi napuštali, kako bi se koristile ostacima hrane i otpacima koji su ostali iza čovjeka.

Za gornje slojeve Mujine pećine poznati su i podaci o sezonalnosti. Ljudi su u špilju došli možda u proljeće, tijekom nastajanja sloja D1, a tijekom nastajanja sloja B, dolazili su u jesen ili možda i u proljeće, dok ljeti i zimi nisu dolazili..[15] Možda im je ljetno ili zimsko stanište bilo blizu tadašnje obale, pa je prekriveno izdizanjem morske razine i/ili uništeno valovima.

Međutim, paleolitička je nalazišta pod morem vrlo teško pronaći, a njihovo je istraživanje pravi metodološki izazov. Porastom morske razine, mnoga su nalazišta uništena erozijom, a ostaci nekih još uvijek postoje. Primjerice, na dubini od približno četiri metra na nalazištu Kaštel Štafilić – Resnik, udaljenom svega oko šest kilometara zračne linije od Mujine pećine, pronalaze se srednjopaleolitičke izrađevine. Nekad se radilo o jednom ili o više staništa na otvorenom koje je more razorilo, a ostale su kamene izrađevine.[16] Mnoge je špilje, koje su vjerojatno bile vrlo

time corresponding to the upper layers (D2, D1, and B), where the frequency of finds is considerably lower. However, this does not have to be true because large concentrations of finds (Figures 4 and 5) in the layers may also result from short habitation episodes in the cave or during a shorter period if the activity was highly intensive. The lower frequency of finds in the upper layers suggests the occasional short-term use of the cave as a hunting camp.[13]

Cutting marks on bones of the steppe bison, aurochs, deer, chamois, and ibex from those layers testify that meat was removed for consumption, while the damage to the bones of equids and rabbits suggests that these animals fell as prey to wild beasts.[14] Moreover, from the damage on the bones, it is evident that the beasts came to the cave after people abandoned it, to use the remains of food and waste that was left behind.

For the upper layers of Mujina pećina, the data on seasonality is also available. People may have come to the cave in spring, during the formation of Layer D1, while during the formation of Layer B, they came in fall or maybe also in spring, while they did not come in summer and winter.[15] It may be that their summer or winter habitation was close to the shore at the time, so it was covered by rising sea levels and/or destroyed by waves.

However, Paleolithic underwater sites are very difficult to find, and their exploration is a real methodological challenge. With rising sea levels, many of the sites were destroyed by erosion, but the remains of some still exist. For example, at a depth of

13 Nizek, Karavanić 2020; Karavanić *et al.* 2020.
14 Miracle 2005.
15 Miracle 2005.
16 Karavanić, Barbir 2020.

13 Nizek, Karavanić 2020; Karavanić *et al.* 2020.
14 Miracle 2005.
15 Miracle 2005.

SLIKA 6. Špilja Y na Dugom otoku (snimio I. Karavanić).

FIGURE 6. Cave Y on Dugi Otok (photo by I. Karavanić).

zanimljiva paleolitička nalazišta, more ispralo i potopilo. Na primjer, pregled podmorja Dugog otoka pokazuje da su pojedina, nekoć kopnena, područja bila pogodna staništa paleolitičkih ljudi. Špilja Y jedan je od takvih objekata (slika 6), ali u njoj vjerojatno nema pleistocenskih sedimenata, kojih je nekoć moglo biti. Jednog će se dana možda pronaći špilja sa zatrpanim, odnosno sačuvanim pleistocenskim sedimentima i neporemećenom stratigrafijom. Istraživanja podvodnih nalazišta mogu pridonijeti boljem poznavanju mobilnosti paleolitičkih ljudi, omogućiti razvoj metodologije istraživanja i pronalaženja takvih nalazišta te njihovo povezivanje s kopnenim nalazištima.

Stoga je izuzetno bitno istraživati različite vrste nalazišta u različitim područjima, kako bi se povezivanjem rezultata interdisciplinarnih analiza dobile što vjernije interpretacije ponašanja paleolitičkih ljudi i njihove prilagodbe uvjetima koje je pred njih postavljao okoliš. Ako u tom smislu, primjerice, usporedimo situaciju u Hrvarskom zagorju i Dalmaciji, regijama koje su bile različite paleoekološke zone, možemo zaključiti da su se neandertalci na obama područjima uspješno prilagođavali različitim okolišnim uvjetima, što znači da su bili inteligentni, spretni i prilagodljivi.

about four meters at the site of Kaštel Štafilić – Resnik, only about six kilometers aerial distance from Mujina pećina, Middle-Paleolithic artefacts were found. The site used to be one or more open-air habitations that were destroyed by the sea, leaving only the stone artefacts.[16] Many caves, which were probably very interesting Paleolithic sites, were washed away by the sea or are now completely submerged. For example, underwater survey around Dugi Otok showed that certain areas, which were once land, were suitable habitats for Paleolithic people. Cave Y is one such cavern (Figure 6), but there are probably no Pleistocene sediments in it, which could have existed. One day, a cave may be discovered with buried, or preserved Pleistocene sediments and undisturbed stratigraphy. Research into underwater sites can help better the understanding of the mobility of Paleolithic people, enable the development of methodology for research as well as finding such sites and linking them to sites on land.

Therefore, it is essential to explore different types of sites in different areas, so that by linking the results of interdisciplinary analyses, the most accurate interpretation of the behavior of Paleolithic people and their adaptation to the environmental conditions can be provided. For example, if we compare the situation in Hrvatsko Zagorje and Dalmatia in this regard, regions that were different Paleoecological zones, we can conclude that Neanderthals successfully adapted to different environmental conditions in both areas, which means they were intelligent, skillful, and adaptable.

16 Karavanić, Barbir 2020.

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ROMUALDOVA PEĆINA — OD PRAPOVIJESTI DO DANAŠNJIH DANA

ROMUALD'S CAVE — FROM PREHISTORY TO MODERN TIMES

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Romualdova pećina, špilja svetog Romualda, ili Lomardova pećina (sl. 1), kako se u starijoj literaturi ponekad naziva,[1] važno je arheološko nalazište, no ujedno je i važan spomenik prirodne baštine, dom zaštićenih vrsta šišmiša, kao i mjesto hodočašća. Smještena je na južnim obroncima Limskog zaljeva, nedaleko od Kanfanara u Istri. Uspon do špilje, iako nije sasvim lagan, dobro je označen i moguće ga je savladati uz manji napor. Razlog tome jest što su dugi niz godina mnogi posjećivali špilje – od onih zainteresiranih za njene prirodne ljepote, vjernika koji ovdje dolaze iz drugih razloga pa sve do znanstvenika raznih profila (biologa, speleologa te, naravno, arheologa). Prvi zapisi o njoj potječu iz 1590. godine, a, prema predaji, u njoj je oko 1000. godine živio i sveti Romuald (951. – 1027.) – redovnik i pustinjak podrijetlom iz Ravene.[2] Špilja je relativno jednostavne morfologije i sastoji se od jednog špiljskog kanala ukupne dužine od sto pet metara te nekoliko manjih špiljskih dvorana.

Prve bilješke o arheološkim tragovima u špilji zabilježili su Carlo Marchesetti krajem 19. stoljeća i Anton Gnirs na samom početku 20. stoljeća te su proveli prva istraživanja ograničenog opsega u Romualdovoj pećini,[3] no, nažalost, detaljniji zapisi o samim istraživanjima nisu sačuvani. Sustavna sodnažna istraživanja započinju između 1960. i 1962. godine kad je akademik Mirko Malez iskopao dvije sonde pri kraju špilje i u njima pronašao zanimljive arheološke nalaze iz razdoblja željeznog i brončanog doba te gornjeg paleolitika, kao i brojne ostatke životinja poput medvjeda, vuka, špiljske hijene, konja, jelena i dr.[4]

Romuald's Cave, the Cave of St. Romuald, or Lomardo's Cave (Fig. 1), as it is sometimes called in older texts,[1] is an important archaeological site, but also an important natural heritage site, being the home of protected species of bats, as well as a pilgrimage site. It is located on the southern shores of the Lim Bay, near the municipality of Kanfanar in Istria. Although the climb up to the cave is not exactly easy, the path is well marked and is manageable with a modest degree of effort. This is because the cave has attracted visitors for many years now, from those interested in its natural beauty, through Christians who come there for other reasons, to various types of scientists (biologists, speleologists, and, of course, archaeologists). The first texts mentioning the cave date back to 1590, and according to tradition, around the year 1000, the cave served as the home of St. Romuald (951 – 1027), a monk and hermit from Ravenna.[2] The cave's morphology is relatively simple, consisting of one channel 105 meters in length and several smaller caverns.

The first written records of archaeological findings in the cave were made by Carlo Marchesetti at the end of the 19th century and Anton Gnirs at the beginning of the 20th century. They conducted the first small-scale excavations in Romuald's Cave,[3] but, unfortunately, more detailed records of their research have not been preserved. Systematic excavations began from 1960 to 1962, when the prominent Croatian palaeontologist Mirko Malez excavated two trenches near the end of the cave, resulting in interesting archaeological findings from the Iron and Bronze Ages and the Upper Paleolithic, as well as numerous animal remains, from animals such as bears, wolves, cave hyenas, horses, and deer.[4]

1 Komšo *et al.* 2017.
2 Komšo *et al.* 2017; 2020a.
3 Komšo *et al.* 2017; 2020a.
4 Malez 1960; 1962a; 1962b; 1968; 1987.

1 Komšo *et al.* 2017.
2 Komšo *et al.* 2017; 2020a.
3 Komšo *et al.* 2017; 2020a.
4 Malez 1960; 1962a; 1962b; 1968; 1987.

SLIKA 1. Ulaz u Romualdovu pećinu (snimio I. Janković) .

FIGURE 1. Entrance to the Romuald's Cave (photo by I. Janković).

Upravo su nalazi koje je moguće pripisati vremenu pleistocena, odnosno gornjeg paleolitika ponukali Darka Komšu da u Romualdovoj pećini obnovi arheološka istraživanja. Između 2006. i 2008. godine u sondama u prvoj špiljskoj dvorani pronašao je arheološke nalaze iz željeznog i brončanog doba te gornjeg paleolitika, a veliko je iznenađenje bio nalaz nekoliko kamenih alatki koje su sugerirale da je na nalazištu boravio i puno raniji stanovnik ovih prostora – neandertalac.[5] Postalo je jasno da se radi o vrlo složenom i vrijednom nalazištu te od 2014. do 2017. godine traju sustavna sondažna istraživanja u prvoj špiljskoj dvorani (sl. 2).[6] Tijekom posjeta lokalitetu 2010. godine Komšo je zamijetio i tragove boje na zidu unutar pećinskog kanala. Naknadna su istraživanja pokazala pravu senzaciju – postojanje paleolitičke stijenske umjetnosti![7]

Što je moguće zaključiti na temelju dosad provedenih istraživanja u Romualdovoj pećini? Prvi ljudi koji su je posjećivali bili su lovci-skupljači u vrijeme srednjeg paleolitika – neandertalci. Iako nisu pronađene same kosti ovih zanimljivih pradavnih Europljana (za razliku od nalaza u kontinentalnom dijelu naše domovine – onih na poznatim nalazištima u Krapini i Špilji Vindiji),

It was these findings dating back to the Pleistocene, or rather the Upper Paleolithic, that prompted Darko Komšo to initiate new archaeological excavations in Romuald's Cave. From 2006 to 2008, trenches excavated in the first cavern resulted in findings from the Iron and Bronze Ages and the Upper Paleolithic, with a surprising finding of several stone tools that suggested that the site had also been home to a much earlier inhabitant of the region: the Neandertal.[5] It became clear that this was a very complex and valuable archaeological site, and more excavations were conducted in the first cavern from 2014 to 2017 (Fig. 2).[6] During a visit to the site in 2010, Komšo also noticed traces of paint on the wall of the cave tunnel. Subsequent research resulted in a sensational discovery: the existence of Palaeolithic cave art![7]

What can we conclude on the basis of the research that has been conducted in Romuald's Cave thus far? The first humans to visit the cave were hunter-gatherers in the Middle Paleolithic: Neandertals. Although no bones of these interesting prehistoric Europeans have been discovered in the cave (as opposed to the findings in continental Croatia, at the famous archaeo-

5 Komšo 2008; Komšo *et al.* 2017.
6 Janković et al. 2016; 2017a; 2017b
7 Ruiz-Redondo *et al.* 2019.

5 Komšo 2008; Komšo *et al.* 2017.
6 Janković *et al.* 2016; 2017a; 2017b
7 Ruiz-Redondo *et al.* 2019.

SLIKA 2. Arheološka istraživanja u Romualdovoj pećini (snimio I. Janković).

FIGURE 2. Archaeological excavations at Romuald's Cave (photo by I. Janković).

u slojevima starijima više od 50 000 godina otkrivene su kamene alatke musterijenske kulture (sl. 3 i 4). To je vrijeme koje prethodi širenju anatomski modernih ljudi (*Homo sapiens sapiens*) na ove prostore, pa sa sigurnošću možemo identificirati upravo ne-

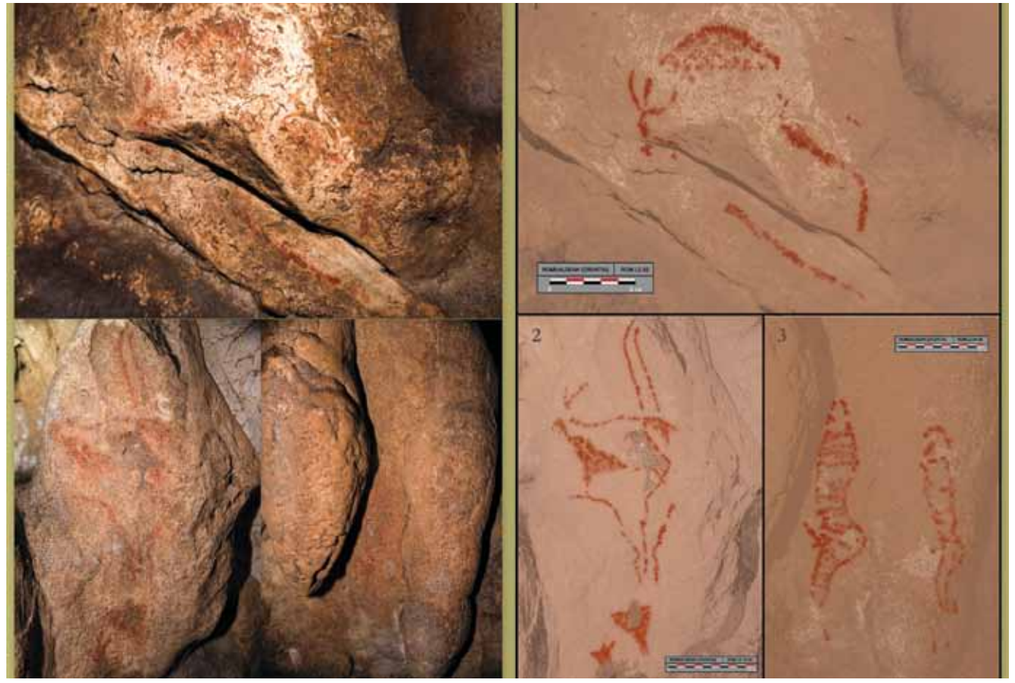
logical sites of Krapina and the Vindija Cave), Mousterian stone tools were discovered in layers more than 50 000 years old (Fig. 3 and 4). This predates the arrival of anatomically modern humans (*Homo sapiens sapiens)* to these parts, so we can safely

SLIKA 4. Dio čeljusti jelena iz Romualdove pećine (snimio I. Janković).

FIGURE 4. Fragment of a deer jaw from Romuald's Cave (photo by I. Janković).

SLIKA 3. Musterijenske alatke iz Romualdove pećine (snimio I. Janković).

FIGURE 3. Mousterian tools from Romuald's Cave (photo by I. Janković).



SLIKA 5. Paleolitičke slikarije u Romualdovoj pećini prije (lijevo) i nakon digitalne obrade fotografija (desno) (snimio i obradio A. Ruiz-Redondo).

FIGURE 5. Palaeolithic paintings from Romuald's Cave before (left) i and after digital processing of photographs (right) (photo and digital processing by A. Ruiz-Redondo).

andertalce kao najranije posjetitelje Romualdove pećine. Ipak, priča o Romualdovoj pećini ovdje nije završena. Desecima tisuća godina poslije u špilji borave lovci skupljači i prvi umjetnici iz razdoblja gornjeg paleolitika. Prije otkrića u Romualdovoj pećini, stijensko se slikarstvo ovog razdoblja uglavnom vezivalo za prostore Španjolske i Francuske (svima su poznata remek-djela iz pećina poput Altamire, Lascauxa i dr.). Ovim novim otkrićem dokazano je da se, možda u nešto skromnijem izričaju, i Romualdova pećina može pridružiti panteonu umjetničkog stvaralaštva razdoblja pleistocena. Postoje brojne teorije o razlozima koji su ponukali ljude iz daleke prošlosti da na zidovima špilja i pripećaka započnu slikati prikaze životinja, ljudi, stvorenja iz mašte ili samo njima znanih simbola. Radi li se o lovnoj magiji, drevnim inicijacijama, o samom umjetničkom izričaju ili o pak nekom, nama, stanovnicima drugačijeg svijeta, sasvim nedokučivom razlogu, možda nikada nećemo znati. Činjenica je da su na zidovima Romualdove pećine ostali tragovi prikaza davno izumrlih životinja. Tako je u Romualdovoj pećini moguće prepoznati bizona i kozoroga, ali i antropomorfne motive, kao i tragove geometrijskih oblika (sl. 5).[8]

identify the Neandertals as the earliest visitors of Romuald's Cave. However, the story of Romuald's Cave does not end there. Tens of thousands of years later, the cave was home to hunter-gathers and early artists from the Upper Paleolithic. Before the discovery in Romuald's Cave, Paleolithic cave paintings from this period were mostly associated with Spain and France (i.e. the world-renowned masterpieces in caves such as Altamira and Lascaux). This new discovery proves that Romuald's Cave can, perhaps in a more modest form, also enter the artistic pantheon of the Pleistocene. There are many theories as to the reasons which first prompted humans in the distant past to start painting depictions of animals, humans, fantastic creatures or arcane symbols on the walls of caves and rock shelters. We may never know whether this was hunting magic, ancient initiation rites, pure artistic expression, or perhaps something else entirely, inscrutable for us who inhabit a different world. The fact is that the walls of Romuald's Cave retain the traces of depictions of long-extinct animals, such as bison and ibex, as well anthropomorphic motifs and geometric shapes (Fig. 5).[8]

8 Redondo-Ruiz *et al.*2019; 2020; Komšo *et al.*2020a; 2020b.

8 Redondo-Ruiz *et al.*2019; 2020; Komšo *et al.* 2020a; 2020b.

SLIKA 6. Zapisi na zidovima Romualdove pećine iz 19 i početka 20. stoljeća (snimio I. Janković).

FIGURE 6. Graffiti on cave walls at Romualds cave dating from the 19th and early 20th century (photo by I. Janković).

Završetkom pleistocena započinje razdoblje holocena u kojem živimo i danas. To je razdoblje kad se klima mijenja i postaje sličnija današnjoj, što uzrokuje podizanje razine mora i mnoge uz to povezane promjene u ekosustavu. Dolaze druge ljudske populacije, čiji je život sve manje ovisio o lovu i sakupljanju. Ljudi si polako počinju prilagođavati svijet koji ih okužuje. Pripitomljavaju stoku i kultiviraju mnoge biljke. Kao i drugdje, na prostoru oko Limskog zaljeva stvaraju se trajnija naselja poput brončanodobnih utvrda, rimskih naselja, srednjovjekovnih gradova – sve do današnjih dana. Sva ta događanja ostavljaju tragove i u Romualdovoj pećini. Već je spomenuto da su arheološka istraživanja pokazala prisustvo ljudi iz željeznog i brončanog doba.[9] Osim samih tragova kulturne ostavštine, iz brončanog doba potječu i kosturni nalazi najmanje dviju osoba.[10] Nije poznato jesu li, i iz kojih razloga, odrasli muškarac i dijete bili namjerno pokopani. Ostaci njihovih kostiju, kao i druga vrsta arheološke ostavštine pomoći će nam da rekonstruiramo mnoge zanimljive priče i tajne prošlosti.

The end of the Pleistocene brought about the Holocene epoch, in which we still live today. This is the epoch in which the climate changes and becomes more similar to the current-day climate, causing sea levels to rise and many accompanying changes in the ecosystem to occur. New human populations appear, whose lives depend less and less on hunting and gathering. Humans slowly begin to change the world around them to better suit them. They domesticate cattle and cultivate many plant species. As elsewhere, the area of the Lim Bay sees the creation of more permanent settlements, such as Bronze Age forts, Roman settlements, and medieval towns, all the way up to modern times. All of these processes left their mark in Romuald's Cave as well. As we have already mentioned, excavations in the cave revealed the presence of Iron and Bronze Age humans.[9] Aside from these traces of cultural heritage, the cave also contained the skeletal remains of at least two persons dating back to the Bronze Age.[10] It is not known whether the adult male and the child were interred intentionally, and for what reason. Their skeletal remains, along with the other archaeological findings, will help us to reconstruct many interesting stories and secret histories.

9 Komšo *et al.*2017; Franković et al. 2017.
10 Janković *et al.* 2015.

9 Komšo et al. 2017; Franković *et al.*2017.
10 Janković *et al.*2015.

Ukoliko ste posjetili Romualdovu pećinu (organizirane je ulaske godinama vodila *Natura Histrica*), utoliko ste sigurno zamijetili mnoge grafite, potpise i zapise na zidovima. Osim spomenutih gornjopaleolitičkih posjetitelja, mnogi su drugi odlučili tamo ovjekovječiti svoje posjete (sl. 6). Danas ovakav vid ostavštine smatramo devastacijom i cilj nam je pri posjetima špiljama ne ostaviti ništa, a ponijeti samo lijepe uspomene. Ipak, bilo bi pogrešno zanemariti podatke koje možemo dobiti iz potpisa i zapisa. Možda će se neki povjesničar ili lokalni kroničar jednom upustiti u proučavanje zapisa iz novijih razdoblja i time obogatiti spoznaje o posjetima Romualdovoj pećini. Možda se među njima kriju i neka poznata imena. Tko zna, možda je tijekom boravka u špilji nešto zapisao i sam sveti Romuald.

No, Romualdova pećina krije još mnoge tajne. U planu je nastavak ciljanih arheoloških istraživanja i prikupljanja uzoraka za različite vrste analiza. Svakako je važan aspekt provedba stručne valorizacije potencijala špilje za turističke posjete. To se, naravno, mora napraviti na temelju procjena stručnjaka uz najstroža pravila zaštite, kako se zauvijek ne bi izgubile vrijedna kulturna i prirodna baština te, naravno, kako ne bi trenutnim stanovnicima špilje – šišmišima – uznemirili san.

If you have visited Romuald's Cave (for many years, the *Natura Histrica* organized tours to the cave), you have surely noticed many graffiti, signatures and inscriptions on the walls. Aside from the aforementioned visitors in the Upper Paleolithic, many others decided to leave a record of their visit to the cave (Fig. 6). Today, this is regarded as destruction of cultural and natural heritage, and our goal in visiting such caves is to leave no mark, and take with us only wonderful memories. Still, it would be wrong to ignore the data that can be extracted from such signatures and inscriptions. Perhaps some historian or local chronicler will one day decide to study the newer inscriptions and thereby enrich our knowledge of visits to Romuald's Cave. Perhaps they even hide some famous names. Who knows, perhaps St. Romuald himself wrote something down during his stay in the cave.

Romuald's Cave, however, contains many more secrets. We plan to continue conducting targeted archaeological excavations and collecting samples for various types of analysis. One important step is the expert evaluation of the cave's potential for tourism. Of course, tourist visits would have to be organized on the basis of expert evaluations and with the most stringent rules for conservation in place, in order for the cave's valuable cultural and natural heritage to not be lost forever, and, of course, in order to not disturb the sleep of the cave's current tenants: bats.

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PEĆINA VLAKNO NA DUGOM OTOKU

VLAKNO CAVE ON THE ISLAND OF DUGI OTOK

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Sve do otkrića pećine Vlakno, paleolitik i mezolitik Dugog otoka bili su poznati po rijetkim površinskim nalazima prikupljenima na nalazištima povezanim uz eksploataciju litičke sirovine.[1] Vlakno je omogućilo povezivanje tih nalaza sa staništem, ali i povezivanje nalazišta u dinamičnu socijalno-ekonomsku mrežu epigravetijenskih i postepigravetijenskih zajednica na širem prostoru Jadrana.

Pećina Vlakno smjestila se na središnjem dijelu Dugog otoka nasuprot otoka Rave gotovo uz samu obalu (sl. 1). Urušeni kameni blokovi ispred ulaza pokazuju da je, danas mali speleološki objekt sa svega 40 m² iskoristivog prostora, u prošlosti bio većih dimenzija. U kombinaciji s velikim ulazom okrenutim prema istoku i izvorom vode u neposrednoj blizini, pećina djeluje kao odličan odabir za boravak manjih zajednica u svim vremenskim periodima. U prilog tome ide i u recentno vrijeme korištenje pećinom kao pastirskim stanom ili skloništem, pri čemu je otvor pregrađen debelim suhozidom, dok je prostor pred suhozidnom pregradnjom dobio oblik kvadratne prostorije (sl. 2).[2]

Pećina je pokazala arheološki potencijal već prilikom probnih istraživanja koja je 2004. godine proveo Zdenko Brusić.[3] Tri su kratke kampanje bile uvod za sustavna istraživanja koja su pod vodstvom djelatnika Odjela za arheologiju Sveučilišta u Zadru započela 2011. godine.[4] Do danas je u pećini provedeno petnaestak istraživačkih kampanja u kojima je dosegnuta dubina od pet metara s kulturnim slojevima koji se u kontinuitetu trenutno mogu pratiti sve do 17 530 kal. god. pr. Kr., uz napomenu da dosegnuta dubina nije i konačna u smislu kulturnih slojeva (sl. 3). Sterilni slojevi, ili matična stijena, još uvijek nisu dosegnuti.

1 Malez 1967; 1979; Batović 1973; 1983; 1988; 1993; Vujević 2013.
2 Vujević 2018.
3 Brusić 2004.
4 Vujević, Parica 2009.

Up until the discovery of Vlakno Cave, the Paleolithic and the Mesolithic of the island of Dugi Otok were known for rare surface finds collected from sites connected to the exploitation of lithic raw materials.[1] Vlakno enabled these finds to be linked to a specific habitat, and for the habitat to be linked to a dynamic socioeconomic network of Epigravettian and post-Epigravettian communities in the wider Adriatic area.

Vlakno Cave is situated in the middle of Dugi Otok, near the coast, facing the island of Rava (Fig. 1). The toppled stone blocks in front of the cave entrance suggest that this small speleological object, with no more than 40 square meters of usable space, was once larger in size. In combination with its large, east-facing entrance and the nearby water source, the cave looks like an excellent choice for the habitation of smaller communities in all time periods. This is also supported by the fact that, in recent times, the cave was used as a shepherd's hut or shelter, with the entrance being walled off with a thick dry stone wall, and the space in front of the wall forming a square-shaped room (Fig. 2).[2]

The cave's archaeological potential was revealed as early as 2004, with trial excavations conducted by Zdenko Brusić.[3] These three short campaigns led to more systematic excavations, which the Department of Archaeology at the University of Zadar initiated in 2011.[4] To this day, some fifteen excavations have been conducted, reaching a depth of five meters and with cultural layers exhibiting continuity all the way to 17 530 BC (Figure 3). It should be noted that this depth does not exhaust the cultural layers. Sterile layers, or the geological substratum,

1 Malez 1967; 1979; Batović 1973; 1983; 1988; 1993; Vujević 2013.
2 Vujević 2018.
3 Brusić 2004.
4 Vujević, Parica 2009.

SLIKA 1. Pogled na Ravski kanal (snimio D. Vujević).

FIGURE 1. A view of the Rava Sound (photo by D. Vujević).

Debeo kulturni sloj i stratigrafija bez vidljivih prekida smješta Vlakno u krug malobrojnih nalazišta šireg jadranskog područja na kojem je moguće pratiti razvoj posljednjih faza starijeg kamenog doba i njihov postupni prelazak u kulturno razdoblje mezolitika.[5]

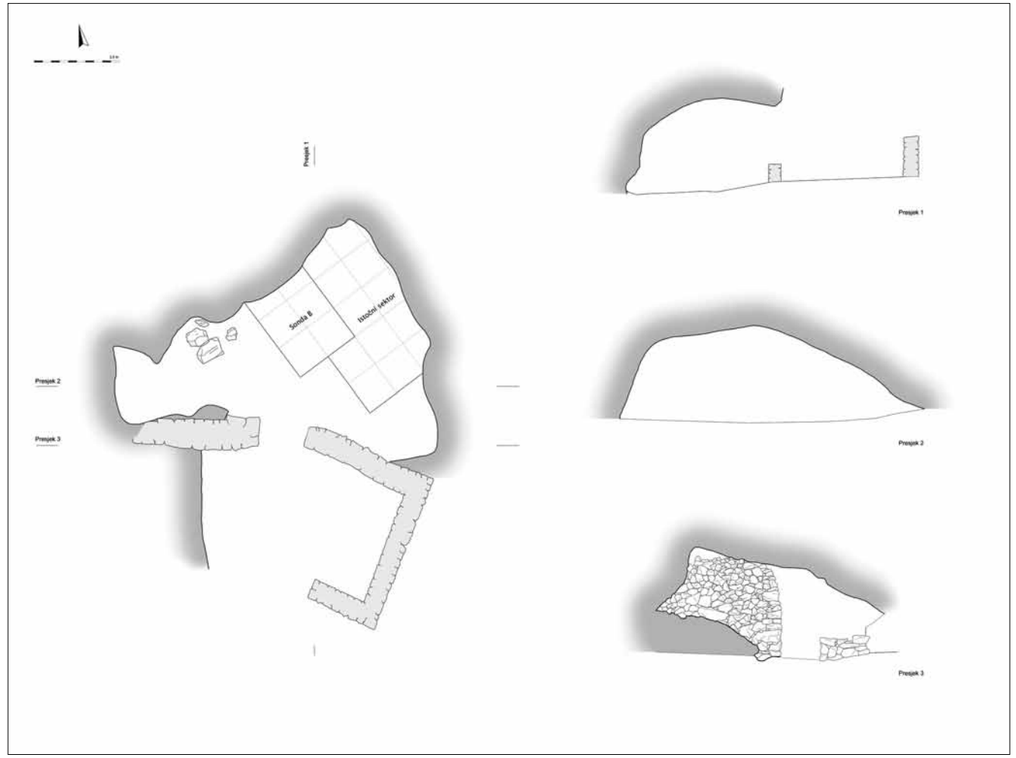
Slojevi s artefaktima, koji se svojim karakteristikama savršeno poklapaju s epigravetijenskom kulturom, nižu se kroz gotovo cijeli stratigrafski slijed još od najdublje dosegnutih razina. Čak i najviši slojevi sekvence, koji pripadaju holocenu i kulturno bi trebali pripadati razdoblju mezolitika, pokazuju snažnu epigravetijensku tradiciju. Trenutna su istraživanja usmjerena na slojeve neposredno nakon vrhunca posljednjeg ledenog doba (Sl. 4, 5) – najhladnijeg razdoblja u novijoj klimatskoj povijesti kad je cijeli prostor Jadrana izgledao bitno drugačije u odnosu

have not yet been reached. Its thick cultural layer and stratigraphy with no visible breaks make Vlakno Cave one of the few archaeological sites in the wider Adriatic area which enable us to track the development of the latter stages of the Old Stone Age and their gradual transition into the cultural period of the Mesolithic.[5]

Layers containing artifacts, whose characteristics match those of the Epigravettian culture perfectly, can be found throughout the stratigraphic sequence, from even the deepest layers that have been reached thus far. Even the highest layers in the sequence, which belong to the Holocene and should culturally belong to the Mesolithic period, exhibit a strong Epigravettian tradition. Current research is directed at layers dating back to just after the peak of the last ice age (Fig. 4 and 5), the coldest

5 Vujević, Parica 2009; Vujević, Bodružić 2012; Vujević 2016; Vukosavljević, Perhoč, Altherr 2014; Cvitkušić, Radović, Vujević 2017.

5 Vujević, Parica 2009; Vujević, Bodružić 2012; Vujević 2016; Vukosavljević, Perhoč, Altherr 2014; Cvitkušić, Radović, Vujević 2017.



SLIKA 2. Tlocrt i presjeci pećine (izradio D. Vujević).

FIGURE 2. Floor plan and cross-sections of the cave (made by D.Vujević).

na danas. Zbog zadržavanja vode u ledenjacima na sjevernom dijelu hemisfere, svjetska je razina mora pala za više od sto dvadeset metara. Jadransko more bilo je svedeno na poluzatvoreni bazen, dok je sjeverni dio današnjeg mora bila prostrana dolina rijeke Po.[6] Pećina se tad nalazila visoko iznad okolnog prostora, a cijeli je Dugi otok imao oblik grebena visokog od sto do četiristo metara iznad tadašnjih dolina.[7] No, unatoč hladnim uvjetima ledenog doba, prostrani je krajolik, okružen planinskim lancima Alpa i Dinarida i natapan vodom rijeke Po, predstavljao svojevrsnu zaštićenu zonu i pogodno područje kako za biljke i životinje tako i za paleolitičke zajednice lovaca sakupljača,[8] iako Mussi osporava takvu hipotezu.[9] Pojedine studije također ukazuju da su hladni i suhi okolišni uvjeti ograničavali kretanja

period in the later climate history, when the entire Adriatic area looked markedly different in comparison to today. Due to water being trapped in glaciers in the north of the hemisphere, the global sea level dropped by more than 120 meters. The Adriatic Sea was reduced to a semi-enclosed pool, while the northern part of the current-day sea was transformed into a sweeping valley around the Po River.[6] At that time, the cave was situated high up above the surrounding area, while the entire island of Dugi Otok formed a ridge over the valleys, some 100 to 140 meters in height.[7] However, despite the cold conditions of the ice age, this vast landscape, surround by the Alps and the Dinaric Alps mountain ranges and watered by the Po River, served as a sort of protected zone and a suitable environment, both for

6 Surić 2006.

7 Vujević 2016.

8 Shackleton, van Andel, Runnels 1984, 312; Miracle 1995, 45; 2007; Whallon 1999, 338.

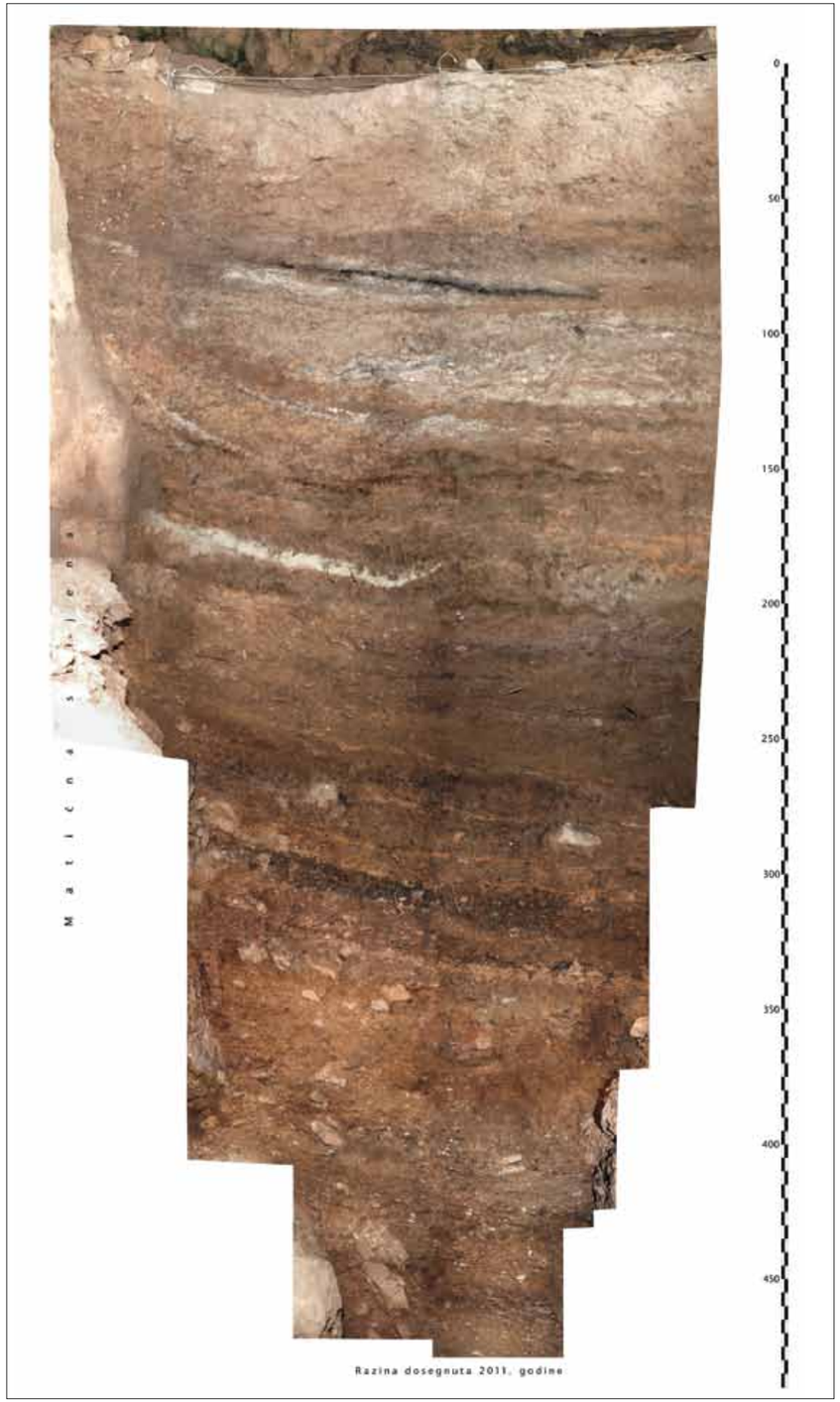
9 Mussi 2001, 311.

6 Surić 2006.

7 Vujević 2016.

SLIKA 3. Stratigrafski profil (snimio D. Vujević).

FIGURE 3. Stratigraphic profile (photo by D. Vujević).



SLIKA 4. Iskopavanje (snimila M. Grgurić).

FIGURE 4. Excavation (photo by M. Grgurić).

zajednica prema jugu,[10] no Pilaar Birch i Miracle smatraju da su, zbog zadržavanja vodenih površina između brda, uvjeti bili vlažni, a otvoreni je šumski pokrov bio prisutan tijekom cijelog glacijala bez prepreka za kretanje zajednica ili prepreke nisu bile toliko izražene.[11] Takvu hipotezu potkrepljuje prisustvo kulturnog materijala u slojevima Vlakna. Iako brojčano mala, količina nalaza u slojevima iz samog vrhunca ledenog doba pokazuje da, i u vrijeme kada je većina europskog kontinenta pod stalnim ledom, zajednice borave u pećini.[12]

Bogati kulturni materijal pronađen iskopavanjima epigravetijenskih slojeva pokazuje standardnu paletu nalaza (sl. 6), ali Vlakno je dalo pojedine rijetke, pa čak i jedinstvene nalaze za prostor istočne obale Jadrana. Standardni se repertoar nalaza

10 Boschian, Fusco 2007; Pilaar Birch, Vander Linden 2018.
11 Pilaar Birch, Miracle 2017, 91.
12 Vujević 2016.

plants and animals, and for Paleolithic hunter-gatherer communities,[8] although Mussi questions this hypothesis.[9] Certain studies also suggest that the cold and dry environmental conditions restricted the communities' movement towards the south,[10] but Pilaar Birch and Miracle believe that, due to bodies of water being preserved between hills, the conditions were actually wet, and that open forest cover was present throughout the ice age, with no obstacles to the movement of communities, or at least no marked obstacles.[11] This hypothesis is supported by the presence of cultural material in the layers of Vlakno Cave. Although small in number, the amount of finds in the layers from the peak of the ice age shows that, even at a time when the majority of the European continent was permanently covered in ice, there were communities living in the cave.[12]

8 Shackleton, van Andel, Runnels 1984, 312; Miracle 1995, 45; 2007; Whallon 1999, 338.
9 Mussi 2001, 311.
10 Boschian, Fusco 2007; Pilaar Birch, Vander Linden 2018.
11 Pilaar Birch, Miracle 2017, 91.
12 Vujević 2016.

SLIKA 5. Iskopavanje (snimila M. Grgurić).

FIGURE 5. Excavation (photo by M. Grgurić).

odnosi prvenstveno na ostatke faune i litički skup. Unutar pleistocenskih slojeva dominiraju ostaci jelena (*Cervus elaphus*), konja (*Equus* sp.) i pragoveda (*Bos/Bison*). Analize dobnih skupina ukazuju na selekciju pri odabiru lovine. Na ostacima su uočeni i tragovi mesarenja, kao i tragovi gorenja, što govori da je cjelokupan proces pripreme hrane obavljan na samom nalazištu.[13] Obrada je litičke sirovine usmjerena na proizvodnju projektila s hrptom, šiljke i različite vrste grebala (sl. 7). Tipološke i tehnološke karakteristike alata kroz cijelo vrijeme ukazuju na razdoblje epigravetijena, s tim da najdublji slojevi pripadaju ranoj fazi.[14] Kamena sirovina za izradu alata potječe iz lokalnih izvora, i danas vidljivih na Dugom otoku, ali i s područja talijanskih regija Marche i Umbrije,[15] što svjedoči o kretanju i kontaktima zajednica na širokom području danas potopljene ravnice rijeke Po. Dva su koštana harpuna (sl. 8), kakvi su dosad pronađeni samo na lokalitetima Šandalja II kod Pule ili Badanj kod Stoca u Bosni i Hercegovini, jedni od rijetkih nalaza za ove prostore. Uz rijetkost potonjih nalaza, starost harpuna iz Vlakna od petnaest tisuća godina čini ih i najstarijim primjerima takvog oruđa na širem jadranskom području.

The rich cultural material found in excavating the Epigravettian layers exhibits the standard range of finds (Figure 6), but Vlakno Cave has also yielded certain finds that are rare, and even unique in the context of the eastern Adriatic coast. The standard repertoire of finds includes, first and foremost, animal remains and stone tools. The Pleistocene layers are dominated by remains of deer (*Cervus elaphus*), horses (*Equus* sp.), and aurochs (*Bos/Bison*). Analysis of age groups points to selection when choosing prey. Traces of butchering, as well as burning, have been found on the remains, which suggests that the entire process of preparing the food was conducted at the site itself.[13] The production of stone tools was focused mainly on backed projectiles, points, and various types of endscrapers (Fig. 7). The typological and technological characteristics of the tools throughout the time range point to the Epigravettian period, with the deepest layers belonging to its earliest stage.[14] The raw stone material used in the production of the tools originated from local sources, present on Dugi Otok to this day, but also from the Italian regions of Marche and Umbria,[15] pointing to the movement of and contact between communities in the

13 Košćak 2015.
14 Vujević 2016.
15 Vukosavljević, Perhoč, Altherr 2014

13 Košćak 2015.
14 Vujević 2016.
15 Vukosavljević, Perhoč, Altherr 2014

SLIKA 6. Epigravetijenski nalazi (snimila M. Grgurić).

FIGURE 6. Epigravettian finds (photo by M. Grgurić).

Osobni ukrasi prate nalaze utilitarnog karaktera, a među epigravetijenskim nalazima dominiraju probušeni očnjaci jelena te probušene školjke Čaške (*Glycimeris* sp.). Pred kraj pleistocena, zbog podizanja morske razine i približavanja mora pećini, sve je veće prisustvo i puževa vrste neritoidna vrša (*Tritia neritea*). U osobne ukrase prožete estetskim, a vjerojatno i simboličkim značenjem, spadaju dva fragmenta graviranih gomolja rožnjaka ukrašenih apstraktnim linearnim motivima (sl. 9). Riječ je o dijelu većeg prikaza, koji se nastavlja u odnosu na sačuvani prikaz, ali nažalost nisu pronađeni drugi fragmenti na čijoj bi osnovi mogli govoriti o vrsti prikaza i njegovu značenju. No, zato je to jasno kod koštanog antropomorfnog privjeska (sl. 9) pronađenog u istom kulturnom stratumu. Iako nije sačuvan u cijelosti, sasvim je jasno da je riječ o stiliziranom prikazu ljudskog lika ukrašenog različitim urezanim šrafurama. Njegovo je simboličko značenje dodatno naglašeno činjenicom da je privjesak nošen duže vrijeme nakon što je bio slomljen. Primjerci stiliziranih antropomorfnih privjesaka mogu se naći na drugim nalazištima gornjeg paleolitika, kao što su, primjerice, Dolni Vestonice u Češkoj ili Mal'ta u Rusiji, a ukrasi, tj. šrafure koje ispunjavaju površinu privjeska, neodoljivo podsjećaju na slične nalaze s lokaliteta Pŗedmosti u Češkoj.[16] Važnost ovog nalaza može se sagledati u činjenici da su na prostoru Hrvatske tek na lokalitetu Vela spila na otoku Korčuli pronađeni ulomci životinjskih figura,[17] dok je Vlakno dalo prvu figuru ljudskog lika.[18]

Pleistocenski dio stratigrafskog slijeda pećine Vlakno sadrži još jedan važan nalaz. Na otprilike dva metra dubine nalazi se desetak centimetara debeo sloj tefre koji je nastao kao posljedica velike vulkanske erupcije na Flegrejskim poljima u Napuljskom zaljevu od prije 14 900 godina, koja je svoj trag na ovim prostorima ostavila u vidu sloja vulkanskog pepela nataloženog u pećini.[19]

16 Svoboda 2008; Verpoorte 2001.
17 Farbstein *et al.* 2012.
18 Vujević 2018.
19 Vujević, Parica 2009.

SLIKA 7. Litički nalazi (snimila M. Grgurić).

FIGURE 7. Lithic finds (photo by M.Grgurić).

wide area of the now submerged valley of the Po River. The two bone harpoons (Fig. 8) are rare in these parts, with such finds having been found only at two other sites, Šandalja II near Pula and Badanj near Stolac in Bosnia and Herzegovina. Besides the rarity of these finds, the harpoons from Vlakno are 15 000 years old, making them the oldest tools found in the wider Adriatic area.

Alongside utilitarian finds, there are also personal ornaments, with pierced deer canines and pierced shells of bittersweet clams (*Glycimeris* sp.) dominating among the Epigravettian finds. Near the end of the Pleistocene, due to the sea level rising and approaching the mouth of the cave, there is an increasing number of sea snails of the species *Tritia neritea*. The category of personal ornaments imbued with aesthetic, but likely also with symbolic meaning includes two fragments of engraved lumps of chert, decorated with abstract linear motifs (Fig. 9). They are part of a larger depiction, which extends out from the preserved depiction, but, unfortunately, no other fragments have been found on the basis of which we might speak to the type of depiction and its meaning. However, those aspects are quite clear in the case of the anthropomorphic bone pendant (Fig. 9) found in the same cultural layer. Although it has not been preserved in its entirety, it is quite clear that we are dealing with a stylized depiction of a human figure decorated with

SLIKA 8. Koštani harpuni (snimio D. Vujević).

FIGURE 8. Bone harpoons (photo by D. Vujević).

Prestankom ledenog doba započinje razdoblje holocena. Zatopljenje i poplavljivanje sjeverne polovice Jadrana dovelo je prostor današnje obale i prostor trenutno poznatih nalazišta na sam rub teritorija mezolitičkih zajednica ujedno ograničavajući njihovo kretanje. Iako se podizanje mora često gleda kroz prizmu gubitka teritorija i resursa, u kombinaciji s promjenom klime, na ovim je prostorima došlo do stvaranja mnogih obalnih izvora pitke vode, močvara i laguna bogatih hranom.[20] U takvim klimatskim okolnostima, u vrijeme ranog mezolitika, Dugi otok zajedno s okolnim otocima tvorio je znatno veći otok, te se pećina tada nalazila više desetaka metara iznad mora s vjerojatnim izvorom slatke vode u podnožju i lagunama koje su se stvorile između Dugog otoka, Rave i Iža.[21]

U depozitima Vlakna prelazak na razdoblje holocena obilježen je postupnom prilagodbom zajednica na novonastale klimatske i okolišne uvjete, što je vidljivo kroz povećanje udjela morske faune u privredi,[22] ali i promjena u gotovo svim ostalim kategorijama nalaza. Iznimka su litički nalazi koji u svim holocenskim slojevima pokazuju kontinuitet s kasnim epigravetijenom. Jedina je izražena litička promjena vezana uz sirovinu. Podizanje mora ograničilo je kontakte sa suprotnom obalom Jadrana te usmjerilo zajednice na jače iskorištavanje lokalnih resursa i na veću mobilnost prema unutrašnjosti u potrazi za novim lovnim područjima. Lokalni kamen, koji je u pleistocenskom litičkom inventaru dopunjavan sirovinom koja potječe s većih udaljenosti, sad je isključiva sirovina za izradu alata.

20 Pluciennik 2008, 338.
21 Brusić 2004, 198.
22 Radović, Vujević 2021.

engraved hatching. Its symbolic meaning is further emphasized by the fact that the pendant was worn for a long time after being broken. Examples of stylized anthropomorphic pendants can be found at other sites from the Upper Paleolithic, such as Dolní Věstonice in Czechia or Mal'ta in Russia, while the decorations (i.e. the hatching covering the surface of the pendant) recall to mind similar finds from the Předmostí site in Czechia.[16] The importance of this find is obvious from the fact that, in the territory of Croatia, only the Vela Spila site on the island of Korčula has yielded fragments of animal figures,[17] while Vlakno has given us the first human figure.[18]

The Pleistocene portion of the stratigraphic sequence of Vlakno Cave contains another important find. At a depth of around two meters there is a ten-centimeter-thick layer of tephra created in a large volcanic eruption at the Phlegraean Fields in the Gulf of Naples 14 900 years ago, which left its mark in these parts in the form of the layer of volcanic ash that settled in cave.[19]

With the end of the ice age, the Holocene Epoch began. The warming and flooding of the northern half of the Adriatic Sea moved the current-day coastline and the area of known sites to the very edge of the Mesolithic communities' territories, thereby limiting their movement. Although the rising of sea levels is often viewed through the lens of the loss of territory and resources, in combination with climate change, these parts saw the creation of many coastal sources of fresh water, swamps, and lagoons abundant with food.[20] In such climate conditions, during the Early Mesolithic, Dugi Otok and the surrounding islands together formed a much larger island, with the cave being situated dozens of meters above sea level, likely with a fresh water source at the base of the cliff, and lagoons that were formed among the islands of Dugi Otok, Rava, and Iž.[21]

In the deposits in Vlakno Cave, the transition to the Holocene is characterized by the gradual adaptation of the communities to the new climate and environmental conditions, noticeable by the increasing significance of sea fauna as a resource,[22] but also by the change in almost all other categories of finds. The exception are lithic finds, which in all Holocene layers exhibit continuity with the Late Epigravettian period. The only marked lithic change has to do with raw materials. The rising sea levels restricted contact with the opposite coast of the Adriatic Sea and forced the communities into greater exploitation of local resources and greater mobility inland, in search of new hunting grounds. The local stone, which in the Pleistocene lithic inventory had been supplemented by raw materials obtained from greater distances, is now the only raw material used to produce tools.

16 Svoboda 2008; Verpoorte 2001.
17 Farbstein *et al.* 2012.
18 Vujević 2018.
19 Vujević, Parica 2009.
20 Pluciennik 2008, 338.
21 Brusić 2004, 198.
22 Radović, Vujević 2021.

SLIKA 9. Predmeti posebne namjene (snimili D.Vujević, E. Cristiani).

FIGURE 9. Special purpose items (photo by D.Vujević, E. Cristiani).

Porast značaja morske komponente u privredi zajednica prate i nalazi ukrasnog karaktera, pri čemu u mezolitiku glavni ukras čine brojni probušeni morski puževi: kokica (*Columbella rustica*) i neritoidna vrša (*Tritia neritea*).[23] Brojnost nalaza, prisutnost većeg broja cjelovitih primjeraka, neprobušenih *Columbella*, uz zabilježene pogreške i lomove prilikom proizvodnje, kao i provedeni eksperimenti idu u prilog hipotezi da je tijekom mezolitika u Vlaknu postojala radionica za izradu ukrasa.

Kao i pleistocenski, i holocenski su slojevi dali pojedine nalaze kojima se može pretpostaviti ne samo estetsko nego i simboličko značenje. Najbolji su primjer dva oblutka obojana crvenim okerom po linijama stranica (sl. 9). Koncept je to koji se oslanja na već spomenute gravirane nodule, ali i slične nalaze na drugim europskim lokalitetima. Mikroskopski pregled i analize tragova korištenja pokazuju da su ovi predmeti bili zavezani i, kao takvi, nošeni.

Uz brojne su nalaze materijalne kulture, prilikom istraživanja, pronađeni i ostaci ljudi koji su naseljavali pećinu (Sl. 10). Izvrsno je sačuvan kostur muškarca robusne građe, visine oko 165 centimetara i starosti od trideset do četrdeset godina.[24] Analize 14C smještaju kostur u razdoblje 7 500 kal. god. pr. Kr.[25] To nisu jedini

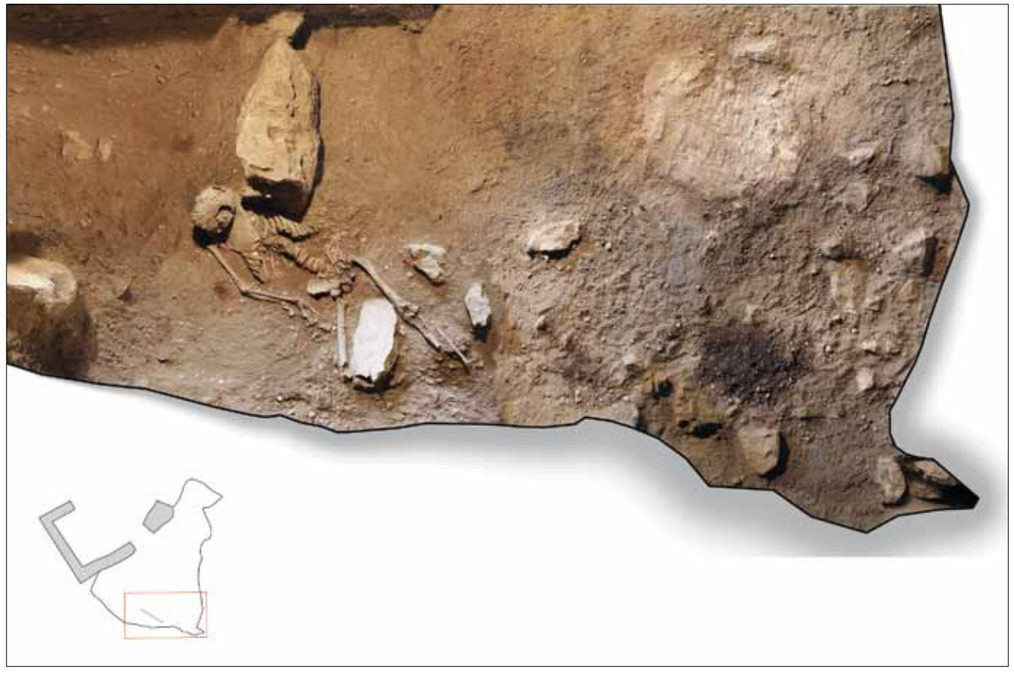
23 Cvitkušić, Vujević, 2021.
24 Vujević, Bodružić 2012.
25 Vujević, Bodružić 2012; Cristiani *et al.* 2018.

The increase of the significance of the marine component as a resource for the communities is reflected in the ornamental finds as well, with the main ornament in the Mesolithic being pierced sea snails of the species *Columbella rustica* and *Tritia neritea*).[23] The multiplicity of finds, the presence of a large number of whole samples of unpierced *Columbella* shells, with recorded errors and breaks in production, as well as conducted experiments, all support the hypothesis that, during the Mesolithic, Vlakno Cave was home to an ornament workshop.

Just like the Pleistocene layers, the Holocene layers yielded certain finds that can be attributed not only with aesthetic, but also with symbolic meaning. The best example are the two pebbles colored with red ochre along the lines of their sides (Fig. 9). This concept is reminiscent of the aforementioned engraved nodules, but also of similar finds from other European sites. Microscopic examination and analyses of the traces of use show that these objects were tied and, as such, worn.

Alongside the numerous material finds, excavations also yielded the remains of the humans who lived in the cave (Fig. 10). One excellently preserved skeleton is that of a robustly built man, around 165 centimeters in height and 30 to 40 years old.[24]

23 Cvitkušić, Vujević, 2021.
24 Vujević, Bodružić 2012.



SLIKA 10. Grob 1 (snimio D. Vujević).

FIGURE 10. Grave no. 1 (photo by D. Vujević).

ljudski ostaci iz Vlakna, već su uz rub pećine pronađeni razbacani fragmenti lubanje muškarca za koju 14C analiza pokazuje gotovo identično vrijeme, kao i kod prethodno spomenutog nalaza te manji broj drugih kostiju mlađe ženske osobe. Sačuvani ostaci iz Vlakna govore o općenito dobrim hranidbenim i zdravstvenim uvjetima. Na muškom je kosturu prisutan tek blagi degenerativni osteoartritis, koji nastaje kao posljedica kontinuiranog fizičkog rada.[26] Ekološka je i topografska raznolikost, dostupna obalnim mezolitičkim grupama, očito smanjila hranidbeni i sezonski stres, što je utjecalo na zdravlje populacije. Analiza stabilnih izotopa pokazuje prehranu s visokim postotkom morskih proteina, a analize zubnih naslaga otkrile su, uz tragove riba iz porodice skušovki (*Scombridae* sp.), prisutnost divljih žitarica (*Hordeum* spp.) i trava iz porodice kopriva (*Urtica* spp.).[27]

Carbon-14 dating dates the skeleton to 7500 BC.[25] These are not the only human remains from Vlakno: scattered fragments of a man's skull (for which Carbon-14 dating yields almost identical results as for the aforementioned skeleton) and a smaller number of other bones of a younger woman were discovered along the edge of the cave. The preserved remains from Vlakno point to generally good dietary and health conditions. The male skeleton exhibits only a mild degenerative osteoarthritis, a result of continued physical labor.[26] The ecological and topographical diversity available to the coastal Mesolithic communities clearly served to ameliorate dietary and seasonal stress, which affected the health of the population. Stable isotope analysis points to a diet with a high percentage of marine protein, while dental plaque analyses revealed, alongside traces of fish from the *Scombridae* family, the presence of wild grains (*Hordeum* spp.) and grasses from the nettle genus (*Urtica* spp.).[27]

26 Vujević, Bodružić 2012.
27 Cristiani *et al.* 2018.

25 Vujević, Bodružić 2012; Cristiani *et al.* 2018.
26 Vujević, Bodružić 2012.
27 Cristiani *et al.*2018.

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STOČARSKE ŠPILJE U HRVATSKOJ

PASTORAL CAVES IN CROATIA

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Špilje su važan izvor podataka o ljudskim kulturama u prošlosti. Čovjek se njima koristio za boravak i za niz drugih namjena tijekom vrlo dugog vremenskog razdoblja – najranije prije dva milijuna godina sve do danas.

Makroskopski i mikroskopski pokazatelji prisutnosti životinja (uglavnom preživača) upućuju na to da se od neolitika špiljama koristilo kao stajama, kao što je slučaj na čitavu prostoru sjevernog Sredozemlja – od Pirenejskog poluotoka do Italije i juga Balkanskog poluotoka. Na temelju rasprostranjenosti prapovijesnih nalazišta na otvorenom i špiljskih nalazišta, može se zaključiti da su špilje bile sastavni dio kompleksnih agropastoralnih sustava upotrebe prapovijesnog krajolika.[1]

Korištenje špiljama u stočarstvu može se u mnogim slučajevima prepoznati već na terenu izravnim promatranjem specifičnih pokazatelja, od kojih je najznačajnija vrsta sedimenta koji su francuski autori nazvali *fumier*[2] – pojam koji označava mješavinu stelje (ležaja za životinje) i životinjskog izmeta (goveda, konja ili bilo kojih drugih stajskih životinja) koja se raspala djelovanjem mikroorganizama i kojom se koristilo kao gnojivom. Ovaj je sediment vrlo poseban i lako prepoznatljiv na terenu te je ujedno i najneposredniji i najpouzdaniji pokazatelj boravka životinja u špilji, čak i na makroskopskoj razini, jer nijedan drugi prirodni ili antropogeni proces ne stvara slične taložine. Karakteristični su pravilni nizovi naizmjeničnih crnih i bijelih horizonata koji nalikuju slojevitim tortama i mogu biti debeli i do četiri ili pet metara (sl. 1). U špiljama u kojima su velika stada dugo boravila mogu se prepoznati i polirane stijene kao posljedica kontinuiranog trljanja ovčjeg i kozjeg runa o zidove špilje kad je unutarnji prostor prepun zatvorenih životinja.

Caves are important sources of information about past human cultures. Humans lived in caves and have been using them for several other purposes over a very long period, since at least two million years ago, up until today.

Macroscopic and microscopic indicators of the presence of animals (mostly ruminants) suggest that caves were used as stables from as early as the Neolithic, throughout the northern Mediterranean area, from the Iberian Peninsula to Italy and to the south of the Balkan Peninsula. Following the distribution of open-air sites and caves, we can conclude that caves were relevant parts of complex agropastoral systems aimed at exploiting the prehistoric landscape.[1]

In many cases, the use of caves for stabling animals can even be recognized directly in the field by observing specific indicators, among which the most important one is a type of sediment called *fumier*[2], by the French authors, a term which denotes a mixture of litter (bedding for animals) and manure (from sheep, goats, cows, horses, or any other domesticated animals) which had decomposed under the influence of microorganisms and was used as fertiliser. Fumiers are very specific and easily recognizable in the field, and is also the most direct and reliable indicator of animals being kept in a cave, even at macroscopic level, because no other natural or anthropogenic process results in similar sediments. It is commonly organized in regular stacks of alternating black and white layers, which resemble a layer-cake and can be up to four or five metres thick (Figure 1). In caves where large herds were kept for long periods, the rock of the walls can be polished, because of continuous rubbing of sheep or goat fleece when the interior was entirely filled with animals.

1 Gerometta, Boschian u tisku.
2 Brochier 1996.

1 Gerometta, Boschian u tisku.
2 Brochier 1996.

SLIKA 1. Vela peć kod Vranje: debeli slijed tipičnog neolitičkog facijesa slojevite torte (snimio G. Boschian).

FIGURE 1. Vela peć near Vranja: thick sequence of typical Neolithic layer-cake facies (photo by G. Boschian).

„Slojevite torte“[3] i drugi makroskopski pokazatelji često su dokaz korištenja špiljom kao stajom, ali postoje konteksti u kojima oni nisu prisutni unatoč boravku životinja u špilji. Stoga treba potražiti i druge pokazatelje, najčešće na mikroskopskoj razini.

Mikromorfologija sedimenata i tala, tj. proučavanje neporemećenih uzoraka (sl. 2) pod mikroskopom, metoda je kojom možemo razotkriti mikroskopske pokazatelje okolišnih i antropogenih procesa. Ovom se metodom mogu dokazati specifični aspekti ljudskog ponašanja, koji se inače ne bi mogli otkriti prostim okom i koji pod mikroskopom postaju relevantni za tumačenje ljudske upotrebe špilja kroz vrijeme.

Mikroskopskom analizom mogu se identificirati specifične komponente sedimenta povezane sa stočarskom aktivnošću. Nekoliko je vrsta osnovnih mikromorfoloških pokazatelja upotrebe špilja kao staja, a to su sferuliti, fitoliti, pepeo i ugljen.

Sferuliti[4] su male, bezbojne i prozirne sferične strukture sastavljene od iglastih vapnenačkih, radijalno raspoređenih kristala (sl. 3). Sferuliti se redovito nalaze u balegi koju proizvode neretrocekalni preživači (tj. ovce i koze, goveda, deve i dr., ali i nepripitomljene životinje poput jelena, srne, kozoroga itd.), i to u ogromnim količinama na mjestima gdje životinje borave duže vrijeme. Iz tog razloga sferuliti mogu koristiti kao pokazatelji prisutnosti životinja u špilji.

These “layer cakes”[3] and other macroscopic indicators provide reliable evidence that a cave was used as a stable. However, they do not occur in some cases despite animals being kept in the cave. Therefore, we must also look for other indicators, most often at microscopic level.

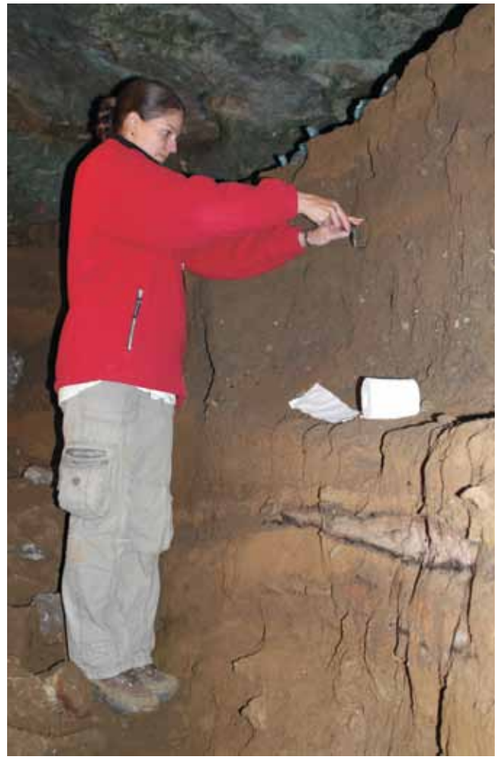
Sediment and soil micromorphology, i.e. observing thin sections of undisturbed samples under a microscope (Figure 2), is one of the methods we can use to find microscopic indicators of environmental and anthropogenic processes. This method can put into evidence some aspects of human behaviour that would not be discernible to the naked eye, but become relevant for interpreting the human use of caves through history.

Several specific components of sediments connected to stock rearing can be identified by microscopic analysis. The basic micromorphological indicators that caves were used as stables are spherulites, phytoliths, ash, and charcoal.

Spherulites[4] are small, colourless and transparent spherical features that consist of radiate fibrous calcite crystals (Figure 3). Spherulites occur regularly in ruminant dung (i.e. sheep, goats, cows, and camels, but also non-domesticated animals such as deer, roe-deer, ibex, etc.), and can accumulate in very large amounts in places where animals were kept for a long time. For that reason, spherulites are typical indicators of the presence of ruminants in a cave.

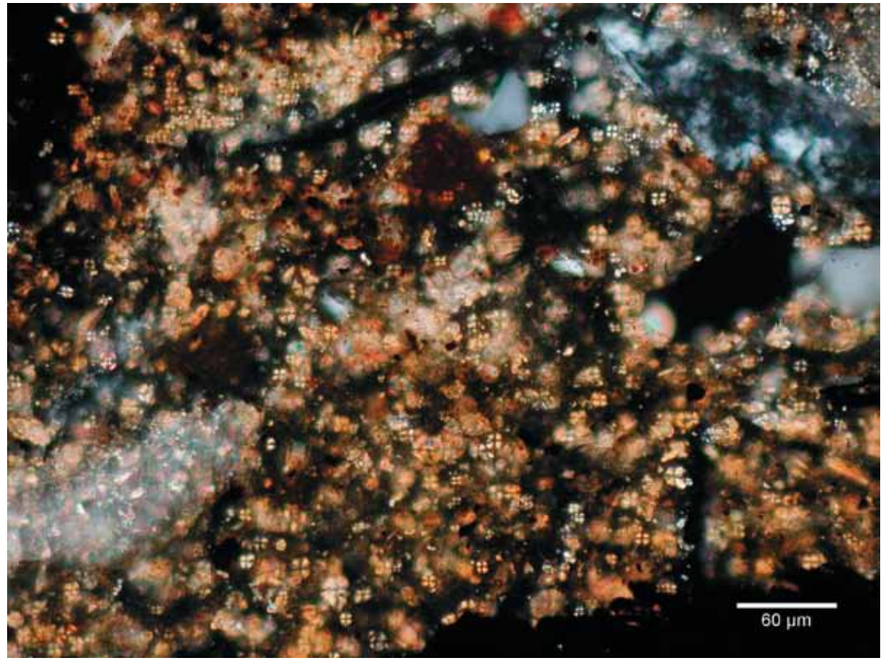
3 Boschian 2006.
4 Canti 1997; 1998.

3 Boschian 2006.
4 Canti 1997; 1998.



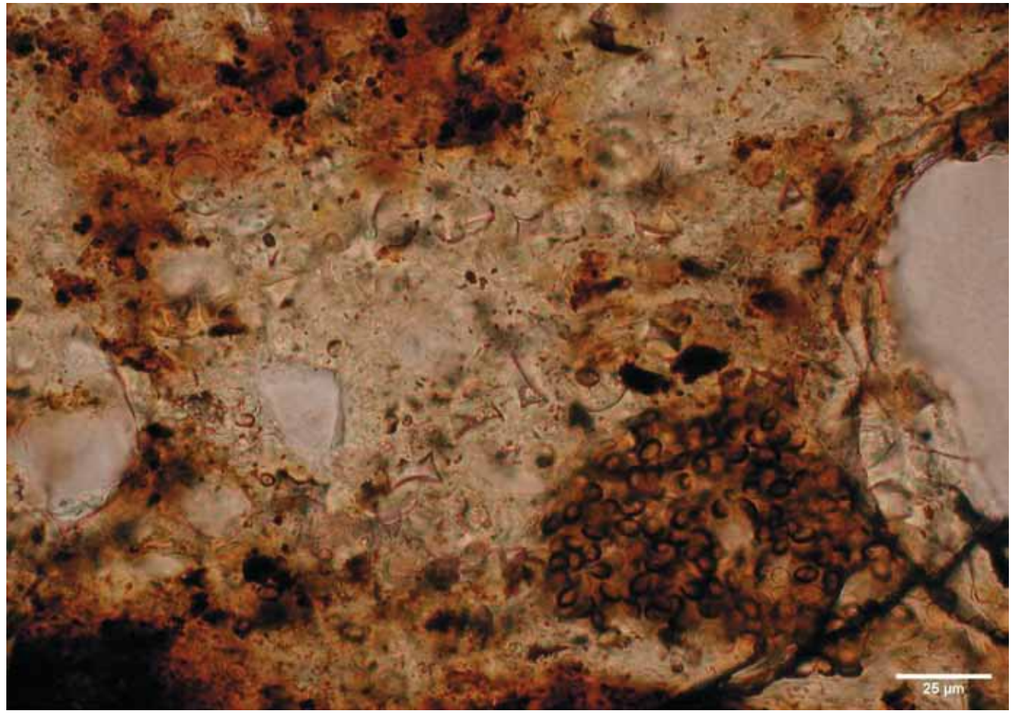
SLIKA 2. Uzorkovanje za mikromorfološku analizu u špilji Zali (snimio G. Boschian).

FIGURE 2. Zala cave: sampling for micromorphological analysis (photo by G. Boschian).



SLIKA 3. Mikroskopski pokazatelj stočarske upotrebe špilja; fekalni sferuliti u sedimentima špilje Zemunice, XPL (snimila K. Gerometta).

FIGURE 3. Microscopic indicator of pastoral use of caves: faecal spherulites, XPL, Zemunica cave (photo by K. Gerometta).



SLIKA 4. Mikroskopski pokazatelj stočarske upotrebe špilja; fitoliti u sedimentima špilje Zale, PPL (snimila K. Gerometta).

FIGURE 4. Microscopic indicator of pastoral use of caves: phytoliths, PPL, Zemunica cave (photo by K. Gerometta).

Fitoliti[5] su silikatne (hidratizirani silicijev dioksid, opal) komponente nekih biljnih svojti (pteridofiti, bazalne kritosjemenjače, monokotiledoni, eudikoti), posebno travā i šaša, koje su u arheološkom kontekstu vrlo raširene (sl. 4). Fitoliti se pojavljuju na stočarskim lokalitetima u dva osnovna oblika: 1) u obliku balege koja sadrži ostatke biljaka, koje su životinje pojele, ili 2) kao stelja, ležaj za životinje koji su pastiri namjerno rasprostrli po podu špilje. Vrlo je teško razlikovati ta dva načina jer je biljni materijal vjerojatno jednak u oba slučaja, a osim toga, međusobno se miješaju gaženjem životinja koje na tom mjestu borave.

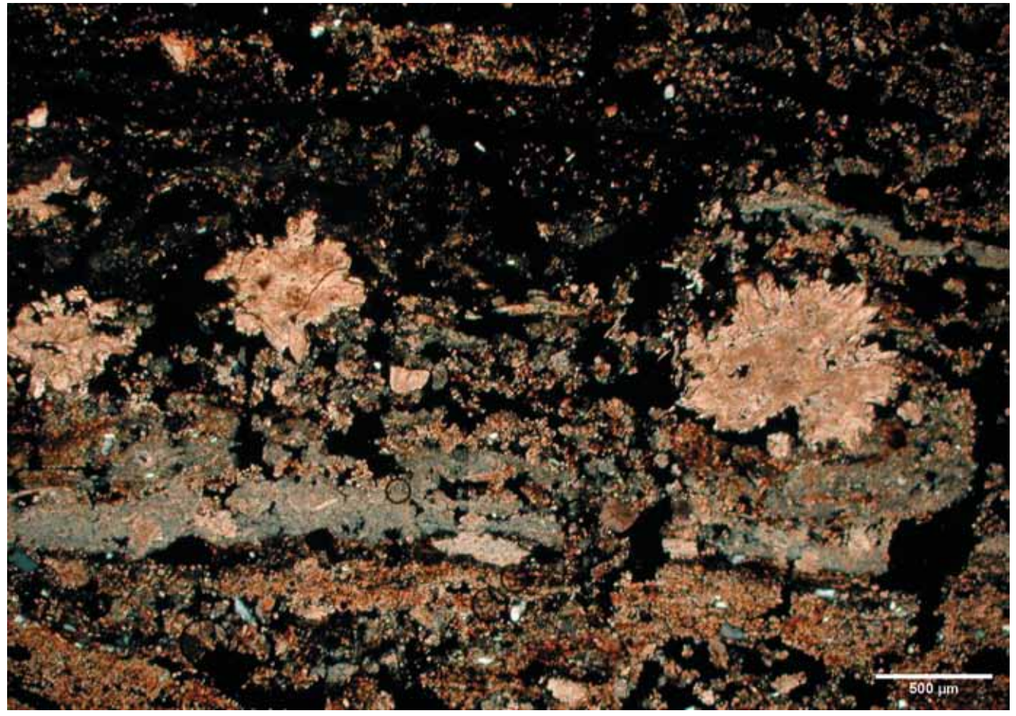
Pepeo[6] je ostatak izgaranja biljaka (drva, lišća, plodova) (sl. 5). Nije specifičan samo za stočarske naslage jer se može naći u mnogim drugim kontekstima, prije svega u onima koji pokazuju tragove gorenja. Ipak, pepeo može ukazivati da su neki biljni sastojci stočarskog podrijetla bili spaljeni prirodnim procesima ili su ih ljudi namjerno spalili.

Phytoliths[5] are silica (hydrated silicon dioxide, opal) components of certain plant taxa (pteridophytes, basal angiosperms, monocots, eudicots), especially grasses and sedges, which are very common (Figure 4). Phytoliths occur in pastoral sites in two main forms: 1) within dung, which contains the residues of plants eaten by the animals, or 2) in litter, i.e. the bedding for animals, intentionally strewn across the cave floor by shepherds. It is very difficult to distinguish between these two forms, because the vegetal material is identical in both cases, and because litter and dung are likely mixed together when animals trample over them.

Ash[6] is the residue after vegetal burning (wood, leaves, fruits) (Figure 5). It is not specific only of stable sediments, but can be found also in many other contexts. Nevertheless, the presence of ash can indicate that certain plants used in cattle-raising were burned at the site through natural processes, or that humans burned them intentionally.

5 Sharma, Kumar, Kumar 2019; Piperno 2006.
6 Canti, Brochier 2017; Canti 2003.

5 Sharma, Kumar, Kumar 2019; Piperno 2006.
6 Canti 2003; Canti, Brochier 2017.



SLIKA 5. Mikroskopski pokazatelj stočarske upotrebe špilja; sferuliti, fitoliti i pepeo u sedimentima špilje Zale, XPL (snimila K. Gerometta).

FIGURE 5. Microscopic indicators of pastoral use of caves: faecal spherulites, phytoliths and ash, XPL, Zala cave (photo by K. Gerometta).

Na mikroskopskoj razini u stajskim naslagama mogu se primijetiti i druge razne komponente mogućeg stočarskog podrijetla. Iako nisu dijagnostičke, one mogu pridonijeti dokazivanju stočarske aktivnosti i razumijevanju iskorištavanja lokaliteta. Među takve pokazatelje svrstavamo dijatomeje (alge kremenjašice, silicijske jednostanične mikroalge), koje potječu iz slatkovodnog okoliša, a mogu se pojaviti u koprogenim sedimentima nakon što su ih progutale životinje koje piju iz bara i lokvi.

Ugljen i/ili djelomično spaljeni biljni fragmenti mogu biti relativno veliki te se mogu svrstati i među makroskopske pokazatelje. Oni se mogu prepoznati na razini roda i vrste, a prepoznavanje specifičnih organa može rasvijetliti gospodarenje šumama za ishranu životinja.

Na stočarskim lokalitetima najčešće se može pronaći izmet biljojeda i/ili svinja, a najlakše ga je prepoznati u mikropresjeku zbog njihova pretežito biljna sastava. Neporemećeni i nepromijenjeni izmet relativno je rijedak zbog svoje mekoće i neprekidnog gaženja životinja unutar špilja. Međutim, njihovim se oblikom i unutarnjom organizacijom biljnih vlakana može koristiti

At the microscopic scale, stable sediments also exhibit many other components that are potentially connected to animal raising. Although not diagnostic, they can contribute to inferring stock rearing and to understanding the use of the site. Among such indicators are diatoms (unicellular silica microalgae), which live in freshwater environments, and can occur in coprogenous sediments after being swallowed by animals drinking from ponds and puddles.

Charcoal and/or partially burned plant fragments can be relatively large, and can thus also be considered as macroscopic indicators. They can be identified at the level of genus and often also of species, while identifying specific organs can hint about forest management aimed at feeding animals.

Pastoral sites most often contain the dung of herbivores and/or pigs, which are easy to identify in micromorphological samples, due to its mainly vegetal composition. Undisturbed and unaltered dung is relatively rare, because it is soft and is constantly trampled by the animals inside caves. However, its shape and internal structure of plant fibres can be used to differentiate

za razlikovanje ovaca/koza (zaobljen brabonjak s valovitom unutarnjom strukturom) i goveda (više ili manje plosnata, s gotovo paralelnom valovitom unutarnjom strukturom). U izmetu mogu biti razne biljne komponente, ovisno o životinjskoj svojti, prehrani, sezoni, značajkama okoliša, npr. trava, lišće, grančice, kora itd.[7]

U posljednje je vrijeme više novih iskopavanja, koja su provedena u obalnom dijelu Hrvatske, a neka i u zaleđu, pokazalo da većina špilja koje su dale arheološke ostatke od neolitika sadrže i sedimente koji se mogu povezati sa stočarskim aktivnostima. Među špilje na čijim je sedimentima mikroskopskim analizama dokazan boravak stada, ubrajaju se Pupićina peć[8] i Vela peć kraj Vranje u Istri[9], Zala kod Ogulina[10], Špilja u Rebićima nedaleko Generalskog Stola te u Dalmaciji Zemunica[11] i Vela Spila na Korčuli[12]. Osim navedenih, veći je broj špilja na jadranskoj obali s makroskopskim dokazima koji upućuju na stočarsku uporabu poput Vaganačke pećine[13], Vele Špilje na Lošinju[14], Grapčeva špilja na Hvaru[15] te mnogih drugih.[16]

Stočarske su špilje često smještene na određenoj visini iznad obližnjih ravnica. Budući da krška područja, posebno kad su strma i podložna eroziji tla, uglavnom nisu pogodna za poljoprivredu, idealno okruženje nalazi stočarstvo.

Zanimljivo je uočiti neke osobitosti rasprostranjenosti stočarskih špilja. Iako su gotovo sve smještene na teško pristupačnim područjima, neke se nalaze na strmim padinama iznad relativno uske ravnice (Nakovana[17], Mala (Nova) pećina[18]; Vela Spilja na Lošinju), šireg ravničarskog područja (Žukovica[19], Zemunica, Vela Spila na Korčuli), u klisurama blizu visoravni (Pupićina peć, Vela peć) ili čak visoko u planinama (Vaganačka). U svakom slučaju, čini se da su sve špilje smještene tamo gdje su bila dostupna barem neka obližnja područja pogodna za kvalitetne pašnjake.

Špiljama se od neolitika najčešće koristilo kao torovima za ovce i koze (o čemu svjedoče balega i životinjske kosti – uvijek više od 50 %), povremeno i za goveda, a u znatno manjoj mjeri postojala je i mješovita uporaba – za ljude i životinje (tzv. *habitats-bérgeries*).

between sheep/goats (rounded droppings with random internal structure) and cows (more or less flat, with an almost parallel wavy internal structure). Dung can contain various plant components, depending on the animal's taxon, diet, season, and the availability of different plants within the environment (e.g. grass, leaves, twigs, bark).[7]

In recent years, a number of new excavations (conducted mostly in the coastal region, with some in continental Croatia) have shown that most caves containing archaeological findings from the Neolithic period onwards also include sediments indicating cattle raising. Some of the caves whose sediments indicate stabling of flocks and herds of animals (Figure 5) are Pupićina peć[8] and Vela peć near Vranja in Istria[9], Zala near Ogulin[10], the cave in Rebići near Generalski Stol, as well as Zemunica[11] and Vela Spila on the island of Korčula[12] in Dalmatia. Aside from these, a number of caves along the Adriatic coast contain macroscopic evidence of being used for cattle raising, such as Vaganačka pećina[13], Vela Špilja on the island of Lošinj[14], Grapčeva špilja on the island of Hvar[15], and many others.[16]

Pastoral caves are often situated on elevated positions overlooking nearby plains. Karst areas, especially when they are steep and prone to erosion, are mostly not suitable for agricultural use, whereas they are ideally suited for raising animals.

It is interesting to note some characteristics of pastoral cave distribution within the territory. Although almost all these caves are situated in hard-to-reach areas, some of them are located on steep slopes overlooking a relatively narrow plain (Nakovana[17], Mala (Nova) pećina[18], Vela Spilja on Lošinj) or wider lowlands (Žukovica[19], Zemunica, Vela Spila on Korčula), on cliffs near a plateau (Pupićina peć, Vela peć), or even high up in the mountains (Vaganačka). In any case, it seems that all of these caves are situated in places that are close to at least some areas suitable for good quality grazing.

From the Neolithic period onwards, caves were mostly used for penning sheep and goats (as also indicated by the animal bone remains, which always include more than 50 per cent of these animals), occasionally -and mostly later- for cows, with only rare cases of mixed use, i.e. shelters for humans and animals partly sharing the inside spaces (so-called habitats-bérgeries).

7 Boschian 2017.
8 Forenbaher, Miracle 2006; Miracle, Forenbaher 2006.
9 Forenbaher, Rajić Šikanjić, Miracle 2008; Forenbaher, Nikitović 2009.
10 Vukosavljević, Karavanić 2015.
11 Šošić Klindžić *et al.* 2015.
12 Čečuk, Radić 2005.
13 Forenbaher, Vranjican 1985.
14 Komšo, Miracle, Boschian 2005; Mirosavljević 1968.
15 Forenbaher, Kaiser 2008.
16 Gerometta, Boschian u tisku.
17 Forenbaher, Kaiser 2010.
18 Drnić *et al.* 2018; Trimmis, Drnić 2018.
19 Forenbaher, Miracle, Radić 2019.

7 Boschian 2017.
8 Forenbaher, Miracle 2006; Miracle, Forenbaher 2006.
9 Forenbaher, Rajić Šikanjić, Miracle 2008; Forenbaher, Nikitović 2009.
10 Vukosavljević, Karavanić 2015.
11 Šošić Klindžić *et al.* 2015.
12 Čečuk, Radić 2005.
13 Forenbaher, Vranjican 1985.
14 Mirosavljević 1968; Komšo, Miracle, Boschian 2005.
15 Forenbaher, Kaiser 2008.
16 Gerometta, Boschian u tisku.
17 Forenbaher, Kaiser 2010.
18 Drnić *et al.* 2018; Trimmis, Drnić 2018.
19 Forenbaher, Miracle, Radić 2019.

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MALA PEĆINA KOD SUTINE — IZMEĐU RITUALNOG I PROFANOG

MALA PEĆINA NEAR SUTINA— BETWEEN RITUAL AND THE PROFANE

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Povijest istraživanja u Maloj pećini

U *Viestniku Hrvatskog arkeologičkog družtva* br. 4, izdanom 1882. godine u Zagrebu, objavljen je prilog pod naslovom *Nova pećina (špilja)* koji je uz kraći tekst sadržavao i skicu spomenute špilje, ujedno i prvi objavljeni nacrt nekog speleološkog objekta u Hrvatskoj (Sl. 1). Uz opis položaja objekta i njegove morfologije, u tekstu se iznosi podatak da su u špilji pronađeni i arheološki ostatci poput ulomaka keramičkih posuda, željeznog zvona, kosti itd. Autor priloga bio je don Miho Jeronim Granić, župnik crkve svetog Petra u Muću Gornjem, povjerenik tadašnjeg Narodnog muzeja u Zagrebu. Župnik Granić pronašao je 1869. godine ulomak oltarne pregrade prilikom obnove crkve svetog Petra u Muću s natpisom hrvatskog kneza Branimira, koji je datiran u 888. godinu. Ovaj izniman čovjek, svećenik, narodnjak i priučeni arheolog rođen je 1819. godine u Splitu, a 1869. godine dolazi u Muć gdje je svojim radom znatno pridonio razumijevanju povijesti tog kraja, istražujući, između ostalog, i ostatke rimskog Andetrija.[1] Don Miho Jeronim Granić umro je 29. prosinca 1886. godine u Splitu, četiri godine nakon objave priloga o Novoj pećini.

Objekt se u ponovno našao u fokusu arheologa tek 1998. godine, odnosno 2003. godine kad je Damir Kliškić iz Arheološkog muzeja u Splitu, uz pratnju Zvonimira Veića, proveo površinski pregled na nalazištu. Pritom je prikupljen keramički materijal datiran u rani i kasni neolitik te srednje/kasno brončano doba.[2]

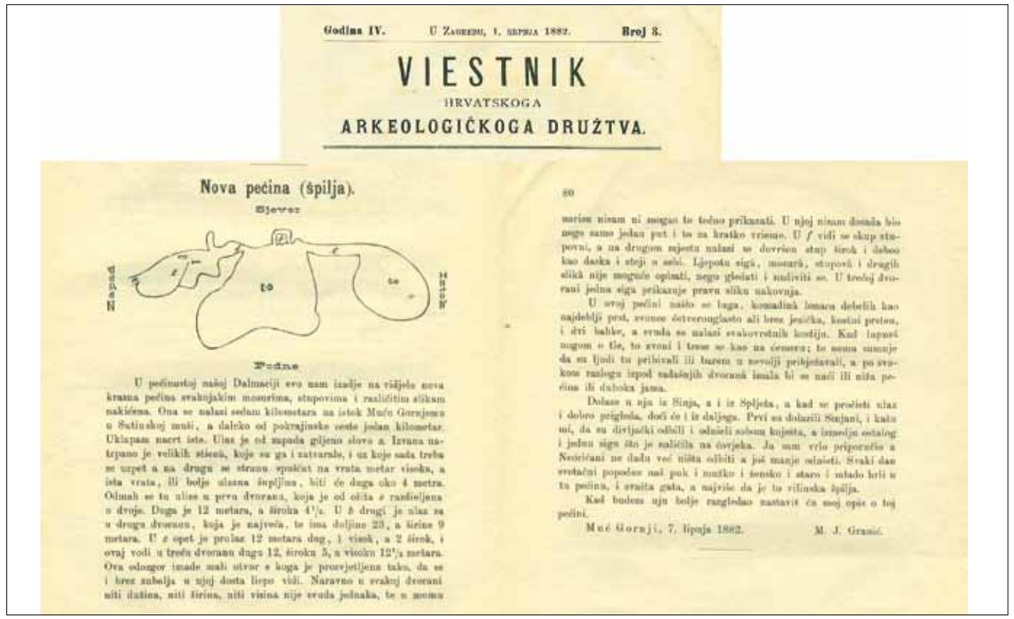
The history of research in Mala pećina

In the fourth issue of the journal of the Croatian Archaeological Society *Viestnik Hrvatskog arkeologičkog družtva* published in Zagreb in 1882, there was an article titled “Nova pećina (špilja)”, which included a sketch of a cave, which is now the first published map of a speleological asset in Croatia (Fig. 1). In addition to the description of the cave’s location and morphology, the article also stated that archaeological remains, such as fragments of pottery, an iron bell, and bones, were discovered in the cave. The author of this article was Don Miho Jeronim Granić, parish priest of the Church of St. Peter in Muć Gornji, commissioner of the National Museum in Zagreb at the time, most well-known as the person who during renovation works on the Church of St. Peter in Muć in 1869 discovered a fragment of an altar barrier with the inscription of Duke Branimir dated to AD 888. This extraordinary man, a priest, a man of the people, and an self-taught archaeologist, was born in 1819 in Split and came to Muć in 1869, where he made important contributions to the understanding of the history of the region, exploring, among other sites, the remains of the Roman Andetrium.[1] Don Miho Jeronim Granić passed away on the 29th of December 1886 in Split, four years after the publication of the article about Nova pećina.

The cave was once again brought into the focus of archaeologists in 1998, or rather 2003, when Damir Kliškić from the Archaeological Museum in Split undertook a survey of the site along with Zvonimir Veić. The collected pottery fragments were dated to the Early and Late Neolithic and Middle/Late Bronze Age.[2]

1 Mirnik 2010, 60.
2 Kliškić 2004, 94–109, 121–124.

1 Mirnik 2010, 60.
2 Kliškić 2004, 94-109, 121-124.



Godina IV. U Zagrebu, 1. srpnja 1882. Broj 3.

VIESTNIK
HRVATSKOGA
ARKEOLOGIČKOGA DRUŽTVA.

Nova pećina (špilja).

Sjever

Zapad

Istok

Podne

U pećinarstvu našoj Dalmaciji evo nam izađje na vidjelo nova krasna pećina svakojakim mramorima, stupovima i različitim slikam nakićena. Ona se nalazi sedam kilometara na istok Muću Gornjemu u Sutinskoj muši, a daleko od pokrajinske ceste jedan kilometar. Uklapam nacrt iste. Ulaz je od zapada gljeno slovo a. Izvana natrpano je velikih stienâ, koje su ga i zatvarale, i u koje sada treba se uzpet a na drugu se stranu spuštat na vrata metar visoka, a ista vrata, ili bolje ulazna šupljina, biti će duga oko 4 metra. Odmah se tu ulaze u prva dvorana, koja je od oblika *e* razdieljena u dvoje. Duga je 12 metara, a široka 4½. U *b* drugi je ulaz za u drugu dvoranu, koja je najveća, te ima duljine 23, a širine 9 metara. U *c* opet je prolaz 12 metara dug, 1 visok, a 2 široka, i ovaj vodi u treću dvoranu dugu 12, široku 5, a visoku 12½ metara. Ova odnegor imade mali otvor s kojega je provejetljena tako, da se i brez zubelja u njoj dosta liepo vidi. Naravno u svakoj dvorani niti dužina, niti širina, niti visina nije svuda jednaka, te u mnogo

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mnogo nisam ni mogao to točno prikazati. U njoj nisam dosada bio nego samo jedan put i to za kratko vrieme. U *f* vidi se skup stupovni, a na drugom mjestu nalazi se dovršen stup široka i debelo kao daska i steji u sebi. Ljepota sige, mozaru, stupovi i drugih slika nije moguće opisati, nego gledati i naživiti se. U trećoj dvorani jedna siga prikazuje pravu sliku nakovnja.

U svoj pećini našo se baga, komadinâ lonacu debelih kao najdebljji prst, svuduc četverouglasto ali brez jezička, kostni prstov, i dvi bakve, a svuda se nalazi svakovrstnih kostiju. Kad lupneš nogom o tle, to zvoni i trese se kao na ćemeru; to mora sunuje da su ljudi tu pribivali ili barem u novijji pribjeđavali, a po svakoj razloga izpod sadašnjih dvoranâ imala bi se naći ili nitka pećina ili duboka jama.

Dolaze u nju iz Sinja, a i iz Splieta, a kad se pročisti ulaz i doleo prigleda, doći će i iz daljega. Prvi su dolazili Sinjani, i kažu mi, da su divljački odbili i odnieli sobom knjestâ, a između ostaleg i jednu sigu što je nalićila na čovjeka. Ja sam vrlo prigorećio a Neorićani ne dadu već ništa odbiti a još manje odnieti. Svaki dan svetačni popodne naš pok. i nuzkoj i ženskoj i staro i mlado hrli u tu pećinu, i svaša gata, a najviše da je to vilinska špilja.

Kad budem iju bolje razgledao nastaviću moj opis o toj pećini.

Muć Gornji, 7. lipnja 1882. M. J. Granić.

SLIKA 1. Graničev prilog u *Viestniku Hrvatskog arkeologičkog družtva* iz 1882. godine.

FIGURE 1. Article by M. Granić in *Viestnik Hrvatskog arkeologičkog družtva* from 1882.

Slijedeći trag Granićeva priloga, članovi Društva za istraživanje i snimanje krških fenomena Zagreb (DISKF) posjetili su i istražili ovaj objekt koji za hrvatsku speleologiju i arheologiju ima simboličku važnost.[3] Špilja je smještena u brdima, oko kilometar jugoistočno od zaseoka Bazina kod sela Sutina u općini Muć (Sl. 2). Ulaz u špilju smješten je u maloj dolini i predstavlja uzak i kratak prolaz, dimenzija 1 x 1,5 m i dubine od dva metra (sl. 3). Prolaz/okno vodi do male komore dužine pet i pol i širine tri metra. Na završetku „predvorja“, kako je istraživački tim nazvao komoru, nalazi se uzak prolaz kroz koji se može proći samo puzanjem i koji vodi do prve špiljske dvorane dužine dvanaest i najveće širine pet metara. U sjeveroistočnom dijelu dvorane 1 drugi prolaz vodi do druge, najveće dvorane dimenzija 21 x 7 metara. Dvanaest metara prije sjeverozapadnog završetka dvorane započinje nizak (najveća visina jedan i pol metar) i trinaest metara dug hodnik koji vodi do treće i posljednje špiljske dvorane, dimenzija 13 x 7 metara. Iako je najmanja, dvorana 3 najviša je u objektu s drugim, okomitim ulazom na vrhu stropa kroz koji u špilju dopire danje svjetlo (Sl. 4).

Inspired by Granić's article, the members of the Society for Research, Surveying, and Filming of Karst Phenomena from Zagreb (DISKF) visited and explored this cave, which due to Don Miho Jeronim Granić publication, has a symbolic significance for Croatian speleology and archaeology.[3] The cave is located in the hills, about a kilometre to the south-east of the hamlet of Bazina near the village of Sutina in the municipality of Muć (Fig. 2). The cave entrance is located in a small valley and is a narrow and short shaft, 1 x 1.5 meters across and two meters deep (Fig 3). The shaft leads to a small chamber that is 5.5 meters long and three meters wide. At the end of the "outer entrance hall", as the research team dubbed the chamber, there is a narrow passage that can only be passed through by crawling, leading to the first large chamber, 12 meters long and with a maximum width of five meters. In the north-eastern corner of chamber 1, a second passage leads to the second, largest chamber, which has a surface area of 21 x 7 meters. Twelve meters before the north-western end of the chamber begins a low (maximum height 1.1 m) and 13 meters long corridor leading to the third and last chamber, 13 x 7 meters in size. Although the smallest, chamber 3 is the highest in the cave and has another, vertical entrance at the top of the ceiling, through which daylight shines into the cave (Fig. 4).

3 Mladen Garašić, Boris Watz, Ivan Krpina, Toni Terzić, Krešimir Ajduković, Goran Kresnik i Ivan Drnić sudjelovali su u akciji, a pridružio im se i arheolog Tomislav Jerončić.

3 The expedition was undertaken by Mladen Garašić, Boris Watz, Ivan Krpina, Toni Terzić, Krešimir Ajduković, Goran Kresnik and Ivan Drnić, and they were joined by archaeologist Tomislav Jerončić.

SLIKA 2. Položaj Male (Nove) pećine (Geoportal, snimio M. Garašić) .

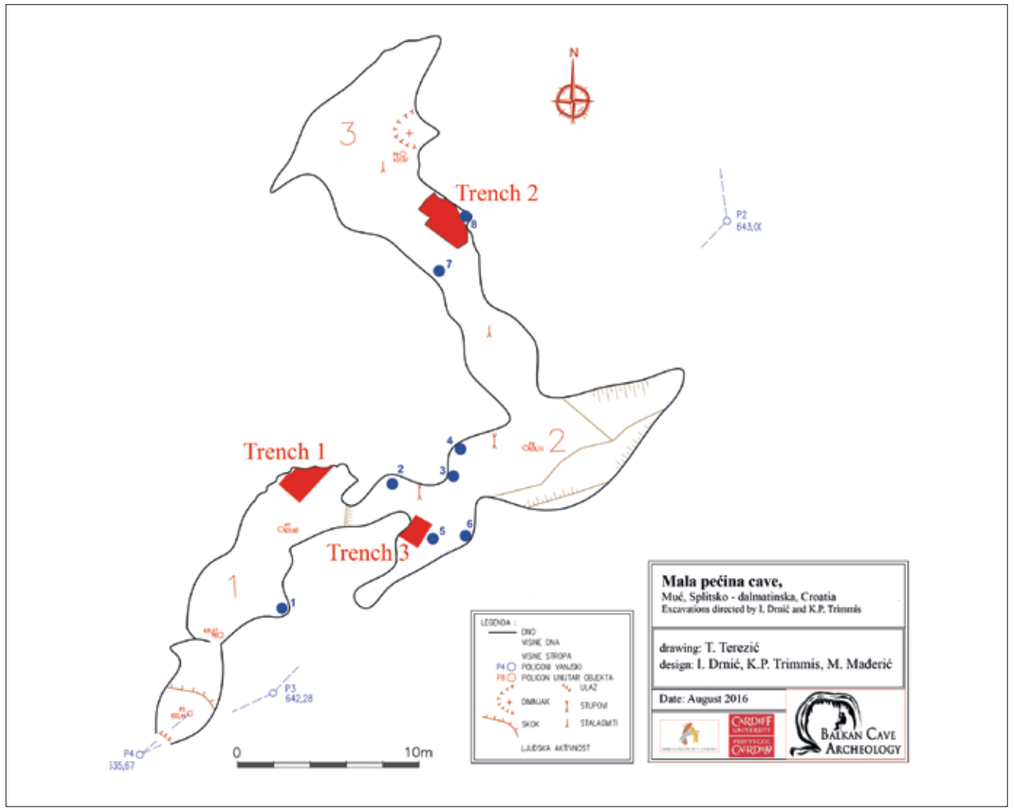
FIGURE 2. Geographical position of Mala (Nova) pećina cave (Geoportal, photo by M. Garašić).

Cilj akcije koju su članovi DISKF-a proveli od 7. do 9. listopada 2010. godine bio je izrada detaljnog geodetskog nacrta špilje, geološka i arheološka prospekcija te izrada fotodokumentacije i videodokumentacije objekta, na današnjim kartama zabilježenog kao Mala pećina. Arheološkim rekognosciranjem špilje 2010. godine, koje je imalo revizijski karakter, ulomci keramičkih posuda pronađeni su na ukupno osam pozicija i to u prvoj i drugoj dvorani te u hodniku koji spaja drugu i treću dvoranu (Sl. 4). Neki od ulomaka nalazili su se na samoj površini, dok je na trima pozicijama materijal prikupljen iz iskopana špiljskog sedimenta koji su vjerojatno izbacile životinje. Rezultati opisanog pregleda

The goals of the expedition, undertaken by the members of the DISKF from the 7th until the 9th of October 2010, was to create a detailed map of the cave, perform geological and archaeological surveys, and photo and video documentation of the cave, which appears on modern maps under the name of Mala pećina. During the archaeological survey in 2010, pottery fragments were found in a total of eight places in the cave; in chambers 1 and 2 and in the corridor connecting chamber 2 and chamber 3 (Fig. 4). Some of the fragments were found on the surface, while in three places the fragments were collected from the excavated cave sediment, which was probably dug out by animals. The results

SLIKA 3. Špiljski ulaz (snimio K. P. Trimmis).

FIGURE 3. Cave entrance (photo by K. P. Trimmis).



SLIKA 4. Plan Male pećine s pozicijama nalaza keramičkih ulomaka prikupljenih u pregledu iz 2010. godine (plave točke) i sondi iz iskopavanja iz 2016. godine (izvorni crtež T. Terzić, grafička obrada I. Drnić, K. P. Trimmis, M. Mađerić).

FIGURE 4. Map of Mala pećina with positions of the pottery finds from 2010 survey (blue dots) and trenches from 2016 excavation (original drawing by T. Terzić, graphics by I. Drnić, K. P. Trimmis, M. Mađerić).

predstavljeni su na Prvom hrvatskom speleološkom kongresu održanom u studenom 2010. godine u Poreču.[4] Također, rezultati ove akcije bili su povod za organiziranje sustavnog arheološkog istraživanja.

Arheološka iskopavanja u Maloj pećini provedena su tijekom ljeta 2016. godine, između 11. lipnja i 8. srpnja, kao zajednički projekt Sveučilišta u Cardiffu i Arheološkog muzeja u Zagrebu. Istražene su tri sonde: Sonda 1 na kraju prve dvorane, Sonda 3 na južnom dijelu druge dvorane i Sonda 2 u nisku hodniku neposredno prije ulaza u dvoranu 3 (sl. 4).[5]

of the survey were presented at the first Croatian Speleological Congress held in Poreč in November of 2010.[4] Also, the results of this survey were the catalyst for organizing a systematic archaeological excavation later in 2016.

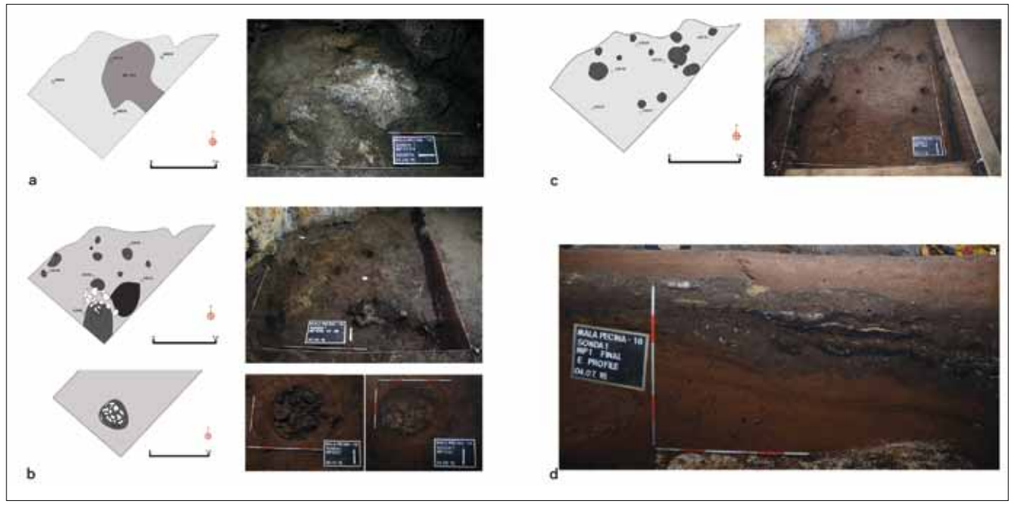
Archaeological excavations at Mala Pećina took place during the summer of 2016, between the 11th of June and 8th of July, as a joint project of Cardiff University and the Archaeological Museum in Zagreb. A total of three trenches were excavated. Trench 1 at the end of the first chamber, Trench 3 at the south end of the second chamber, and Trench 2 in the low corridor just before the entrance to the third chamber (Fig. 4).[5]

4 Drnić *et al.* 2010.

5 Rezultati istraživanja su objavljeni u Drnić *et al.* 2018 i Trimmis, Drnić 2018.

4 Drnić *et al.* 2010.

5 The results were published in Drnić *et al.* 2018 and Trimmis, Drnić 2018.



SLIKA 5. Sonda 1: a) struktura 1; b) struktura 2; c) struktura 3; d) istočni profil (snimili K. P. Trimmis, I. Drnić; izradili M. Mađerić, I. Drnić).

FIGURE 5. Trench 1: a) structure 1; b) structure 2, c) structure 3; d) eastern profile (photo by K. P. Trimmis, I. Drnić; made by M. Mađerić, I. Drnić).

Rezultati istraživanja iz 2016. godine

Istraživanja u Sondi 1 potvrdila su postojanje triju horizonata korištenja ovim dijelom špilje koji su radiokarbonski datirani u rano brončano i bakreno doba te u stariji neolitik. U najmlađoj ranobrončanodobnoj fazi (datiranoj između 2490. i 2335. godine pr. Kr.)[6] koju je na prostoru Dalmacije obilježila cetinska kultura, istraženi su ostatci ognjišta te malobrojni ulomci keramičkih posuda od kojih je jedan ukrašen motivom izrezanih trokuta, karakterističnim za ljubljansko-jadranski stil ukrašavanja (Sl. 5a).[7] U drugom su horizontu također istraženi ostatci ognjišta oko kojeg se nalazilo nekoliko ukopa za stupove, manja jama te nakupina oblutaka položenih u ovalnu jamu (Sl. 6), što potvrđuje intenzivnu aktivnost u ovom dijelu špilje. Rupe su vjerojatno služile za temeljenje stupova/kolaca koji su korišteni za izgradnju privremena skloništa kojemu pripadaju i ostatci ognjišta, dok je nakupina oblutaka, namjenski položenih u jamu, mogla imati funkciju temelja za glavni stup nešto većih dimenzija (Sl. 5b). Brojem skroman prikupljen keramički materijal sastoji se od ulomaka ukrašenih urezivanjem i inkrustacijom, koji su u objavi iz 2018. godine interpretirani kao kasnoneolitički, te ulomak karakteristična ranoneolitička *impresso* ukrasa, ali je naknadno radiokarbonsko datiranje potvrdilo da se radi o bakrenodobnom horizontu koji na prostoru Dalmacije predstavlja nakovanska kultura[8] (datirana u drugu polovicu 4. tisućljeća pr. Kr.). Slijedio je najraniji naseobinski sloj u Sondi 1 s nizom rupa za stupove s

Results of archaeological research conducted in 2016

Excavations of Trench 1 confirmed the existence of three phases of activity for this part of the cave, which were dated by using the radiocarbon method to the Early Bronze and Copper Age and Early Neolithic (Fig. 4). From the most recent Early Bronze Age phase (dated to the period between 2490 and 2335 BC)[6] represented by the Cetina Culture in Dalmatia, the remains of a hearth and the few fragments of pottery were discovered. One fragment was decorated with the triangle motifs, characteristic of the Ljubljana-Adriatic pottery style (Fig. 5a).[7] The second horizon also contained the remains of a hearth, with several post holes around it, a small pit, and a cluster of pebbles in a oval pit (Fig. 6), which confirmed intensive human activity in this part of the cave. The holes are likely the result of securing pillars or stakes used for building a temporary shelter, to which the remains of the hearth also belong, while the cluster of pebbles, placed into the pit with intent, could have served as a kind of foundation for a central pillar of somewhat greater proportions (Fig. 5b). The scarce pottery finds consist of fragments decorated with incision and incrustation, which were interpreted as Late Neolithic in a publication from 2018, and fragments decorated with *impresso* marks characteristic of the Early Neolithic period. However, subsequent radiocarbon dating showed that the phase interpreted as Late Neolithic is in fact a Copper Age horizon, represented in Dalmatia by the Nakovana Culture[8] (dated to the second half of the 4th

6 Radiokarbonska analiza je provedena u laboratoriju Sveučilišta u Bristolu (BRAMS-2962, 2963, 2965).

7 Forenbaher 2018.

8 Forenbaher 1999–2000.

6 Radiocarbon analysis was conducted in the laboratory of the University of Bristol (BRAMS-2962, 2963, 2965) .

7 Forenbaher 2018.

8 Forenbaher 1999–2000.

SLIKA 6. Čišćenje oblutaka položenih u ovalnu jamu (struktura 2 u sondi 1) (snimio K. P. Trimmis).

FIGURE 6. Cleaning of the pebbles placed in the oval pit (structure 2 in Trench 1) (photo by K. P. Trimmis).

ostatcima spaljena drveta u nekoliko zapuna smještenih uglavnom uz špiljski zid. Također, istražene su i tri manje jame s nekoliko ulomaka karakteristične *impresso* keramike u zapunama. U ovom horizontu nisu zabilježeni tragovi ognjišta, ali su rupe od stupova vjerojatno imale istu funkciju kao i u prethodno opisanoj, mlađoj fazi (sl. 5c). Antropogena stratigrafija, debljine 20 – 40 centimetara, nalazila se na debelu sterilnu sloju koji je prekrivao kamen živac.

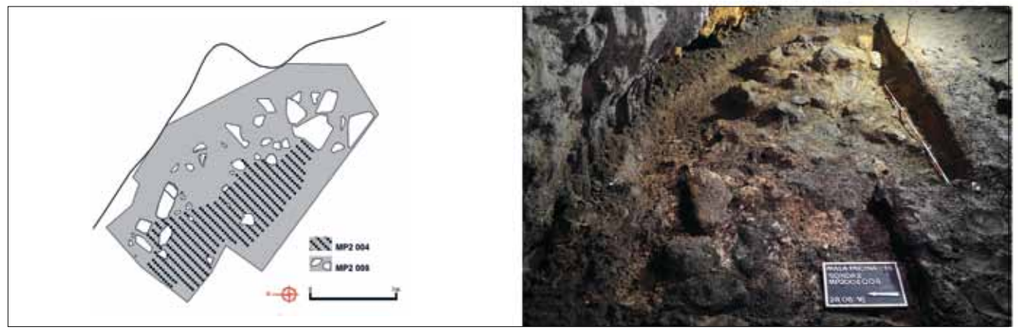
Najistaknutiji nalaz u Sondi 2, smještenoj duboko u unutrašnjosti špilje, predstavlja jednostavna polukružna kamena struktura s tragovima gorenja (Sl. 7). Važno je napomenuti da se u strukturi nalaze i komadi okorine te stalagmita, što ukazuje na iskorištavanje postojećih geoloških formi u špilji. Spaljen sloj, zabilježen između površinskih slojeva i kamene strukture, može se dovesti u vezu s aktivnošću koju nalaz velike količine *impresso* keramike

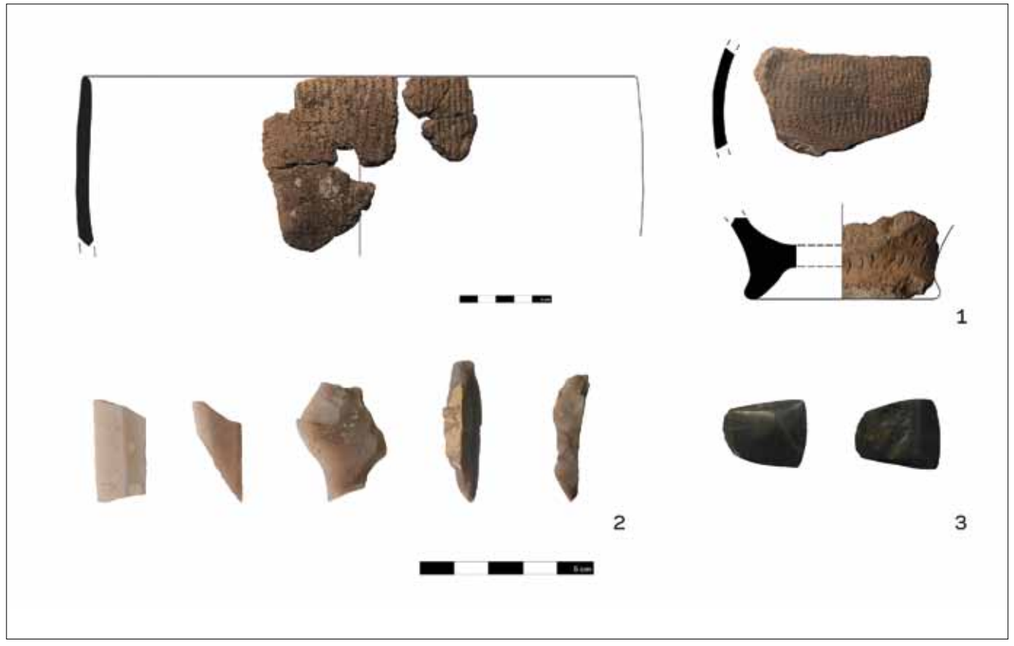
millenium). What followed was the earliest occupational layer in Trench 1, with a series of post holes and burned wood residue in several fills, located mainly along the cave wall. Furthermore, three smaller pits were also excavated, with several fragments of characteristic *impresso* ware in the fills. There were no traces of a hearth in this horizon, but the post holes probably had the same function as described earlier for the later phase (Fig 5c). Anthropogenic stratigraphy, 20–40 cm thick, was on a thick, sterile layer that covered the bedrock.

The most prominent find in Trench 2, located deep inside the cave, is a simple semi-circular structure with burn traces (Fig. 7). It is important to note that the structure also contained pieces of travertine and stalagmites, indicating the use of existing geological forms from the cave. The burned layer documented between the surface layers and the stone structure can be con-

SLIKA 7. Kamena struktura u Sondi 2
(snimio K. P. Trimmis, izradili M. Mađerić, I. Drnić)

FIGURE 7. Stone structure in Trench 2
(photo K. P. Trimmis, made by M. Mađerić, I. Drnić).





SLIKA 8. Ranoneolitički nalazi iz Male pećine: 1. keramičko posuđe; 2. litika; 3. glačana alatka (snimio I. Drnić, izradila: K. Brkić).

FIGURE 8. Early Neolithic finds from Mala pećina: 1) pottery; 2) stone artefacts; 3) polished stone tool (photo by I. Drnić, made by K. Brkić).

i radiokarbonsko datiranje smještaju u rani neolitik. U tankim površinskim slojevima prikuplјena je znatno veća količina keramičkih ulomaka u odnosu na Sonde 1 i 3, ali, zanimljivo, gotovo je zanemariv broj životinjskih kostiju i arheobotaničkih uzoraka! Ispod kamene strukture nalazio se sterilni špiljski sediment.

Sonda 3 istražena je u zapadnom dijelu druge špiljske dvorane (Sl. 4). Moguće je da prva dva tanka sloja u Sondi 3 pripadaju razdoblju ranog neolitika, iako grafiti na zidu iznad sonde potvrđuju i aktivnost u relativno bliskoj prošlosti zbog čega je teže interpretirati površinske slojeve koji su mogli biti kontaminirani recentnim procesima. Ipak, ističe se jedna struktura – ognjište koje potvrđuje ranoneolitičku prisutnost i u ovom dijelu objekta. U ovom kontekstu pronađena je veća količina životinjskih kostiju, ulomak cijepane alatke od kremena i jedanaest ulomaka keramičkih posuda od kojih su tri ukrašena *impresso* ukrasom. Druga je zanimljiva struktura u Sondi 3 sloj kamenja polukružnog ili kružnog oblika, pri čemu, nažalost, veličina Sonde 3 od samo jednog i pol metra kvadratnog ne dozvoljava konačne zaključke. Ispod navedena kamenja nalazio se arheološki sterilni špiljski sediment.

nected to human activity dating back to the Early Neolithic, which was confirmed by a large amount of *impresso* ware fragments and radiocarbon dating. In the thin surface layers, a significantly higher volume of pottery fragments was collected than in Trenches 1 and 3, but, interestingly, only a small number of animal bones and archaeobotanical specimens. Under the stone structure, there was only sterile cave sediment.

Trench 3 was excavated in the western part of the second chamber (Fig. 4). It is possible that the first two thin layers in Trench 3 belong to the period of the Early Neolithic, although the graffiti on the wall above the trench also confirms activity in the relatively recent past, making it harder to interpret surface layers that could have been disturbed by more recent activities. However, one structure should be pointed out - a hearth, confirming human presence in this part of the object during the Early Neolithic. In this context, a large quantity of animal bones, a fragment of a knapped flint tool and 11 pottery fragments, three of which of *impresso* ware, were found. Another interesting structure in Trench 3 is a layer of semi-circular or circular rock. However, the 1.5 square meters excavated in Trench 3 were not enough to draw any final conclusions. Under the stone structure, there was only sterile cave sediment.

Interpretacija nalaza iz Male pećine

U istraživanju Male pećine definirano je nekoliko dijakronijskih faza korištenja objektom. Najstarija, ranoneolitička posvjedočena je ulomcima keramičkih posuda karakterističnih za *impresso* kulturnu skupinu. Zabilježena je u svim trima istraženim sondama. Slijede naseobinski tragovi iz Sonde 1 datirani u bakreno (nakovanska kultura) i rano brončano doba (cetinska kultura), a površinskim pregledima prikupljeni su ulomci koji bi mogli potjecati iz srednjeg, odnosno kasnog brončanog doba.

Ono što je karakteristično za Malu pećinu jest jasna diferencijacija između korištenih položaja, kao i prostornog rasporeda unutar objekta između starijeg neolitika i kasnijih razdoblja. Naime, tragovi ljudskih aktivnosti iz starijeg neolitika zabilježeni su u cijelom objektu, u dvorani 1, ali i dublje u špilji, u zoni mraka, u dvoranama 2 i 3. S jedne su strane naseobinski tragovi ostataka ognjišta i s tragovima arhitekture (rupe od kolca/stupova) te s manjom količinom keramičkih ulomaka u dvorani 1 smještenih na prijelazu zone sumraka u zonu mraka. S druge su strane zabilježeni ostatci jednostavne kamene strukture na najneudobnijoj poziciji u špilji – u usku prolazu između dvorana 2 i 3, s tragovima gorenja, uz znatno veći broj keramičkih nalaza (s višim postotkom ukrašenih ulomaka), što bi ukazivalo na potencijalne ritualne aktivnosti u dubokoj unutrašnjosti špilje. Na to upućuje i složena morfologija špilje s uskim ulazom i tri dvorane spojene niskim prolazima, što bi išlo u prilog pretpostavci o špilji kao „liminalnoj zoni između svakodnevnog i podzemnog svijeta“. Važno je istaknuti da ranoneolitički horizont u Maloj pećini, iako skroman, sadrži tipični neolitički „paket“ za prostor istočne jadranske obale s keramičkim posuđem, domensticiranim životinjama i biljkama te jednom glačanom alatkom (Sl. 7).[9] Među litičkim materijalom nalazi se nekoliko komada izrađenih od rožnjaka koji potječe iz talijanske regije Gargano,[10] a nedavno su analize stijenki ranoneolitičkih posuda, provedene u laboratoriju Sveučilišta u Bristolu, potvrdile prisutnost mlijeka, odnosno mliječnih proizvoda, što bi bio jedan od najranijih tragova potrošnje ovih namirnica na istočnoj obali Jadrana. Prema dostupnim podatcima, možemo pretpostaviti da ranoneolitičke skupine vjerojatno nisu živjele niti su se zadržavale u objektu duže vrijeme. Ti su povremeni dolasci vjerojatno bili kratkotrajni, ali je potrebno provesti dodatna istraživanja kako bi se istražili obrasci i trajanje tih aktivnosti.

Ako prihvatimo hipotezu da se u ranom neolitiku Malom pećinom koristilo u profane (sklonište) i „ritualne“ svrhe, u usporedbi s kasnijim razdobljima kad su objekt kao sklonište posjećivali putujući stočari, onda je jasno da su se ove skupine koristile špiljskim prostorom na različite načine. Naime, kasnije skupine koristile su se samo prvom dvoranom smještenom bliže ulazu u objekt na granici zone sumraka i mraka, o čemu svjedoče ostatci ognjišta i tragova jednostavne arhitekture, kao i malobrojni ulomci keramičkih posuda, arheobotanički ostatci te životinjske kosti na kojima su uočeni tragovi mesarenja i termičke obrade.

9 O početku mlađeg kamenog doba na istočnoj jadranskoj obali: Batović 1979; Forenbaher, Miracle 2005; Marjanović 2007; 2009 i dr.

10 Analizu je proveo kolega Zlatko Perhoč.

Interpretation of the finds from Mala pećina

During the excavation of Mala Pećina, several diachronic activity phases in the cave were identified: the oldest is an Early Neolithic phase, confirmed by pottery fragments characteristic of the *Impresso* Culture documented in all three trenches. The second activity layer from Trench 1 was dated to the Copper Age (Nakovana Culture), followed by an Early Bronze Age layer (Cetina Culture), while surface surveys yielded pottery fragments that could date back to the Middle or Late Bronze Age.

What is characteristic of Mala pećina is a clear differentiation when it comes to the places used and the spatial arrangement within the cave between the Early Neolithic and the later periods. Namely, traces of human activity from the Early Neolithic were documented throughout the cave, in chamber 1, but also deeper in the cave, in the dark zone, in chambers 2 and 3. On one hand, there are traces of structures built in the cave, with remains of a hearth and architecture (post holes) and a small amount of pottery fragments in chamber 1, located on the boundary between the light zone and the dark zone, and on the other, remains of a simple stone structure were documented at the most uncomfortable position in the cave, in a narrow corridor between chambers 2 and 3, with burn marks and a significantly higher number of pottery (with a higher percentage of decorated fragments), indicating potential spiritual expression or even cult activities deep inside the cave. This is also suggested by the complex morphology of the cave, with a narrow entrance and three chambers and low passages that support the idea of a “liminal zone between the everyday and underground worlds”. It is important to point out that the Early Neolithic horizon in Mala pećina, although modest, contains a typical Neolithic “package” for the eastern Adriatic coast, including pottery, domesticated animal and plant remains, and a polished tool (Fig. 7).[9] The discovered stone artefacts include several pieces made of flint originating from the Italian region of Gargano,[10] and recent analyses of the walls of Early Neolithic vessels, conducted at the University of Bristol lab, confirmed the presence of milk or dairy products, which makes this one of the earliest examples of using dairy products along the eastern Adriatic coast. Given the available data, we can assume that Early Neolithic groups probably did not live or stay in the object for a long time. The visits were likely short-lived, but additional research is needed to investigate the patterns and duration of these activities.

If one accepts the hypothesis that during the Early Neolithic Mala Pećina was used in both as a shelter and as a place of spiritual expression, compared to later periods, when the cave have possibly been visited mainly by travelling herders, it is clear that these groups interacted with the cave in different ways. Namely, later groups used only the first chamber, located closer to the entrance of the fcave where there is still daylight, which was confirmed by the remains of a hearth and traces of simple architecture, as well as sparse fragments of pottery, archaeobotanical remains, and animal bones, on which signs of butchering and cooking were observed.

9 About the beginning of the Late stone Age in the eastern Adriatic: Batović 1979; Forenbaher, Miracle 2005; Marjanović 2007; 2009 and others.

10 The analysis was conducted by Zlatko Perhoč.

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ZAGONETKE PROŠLOSTI— NALAZI IZ PEĆINE BEZDANJAČE KOD VRHOVINA

THE MYSTERIES OF THE PAST— FINDS FROM THE BEZDNJAČA CAVE NEAR VRHOVINE

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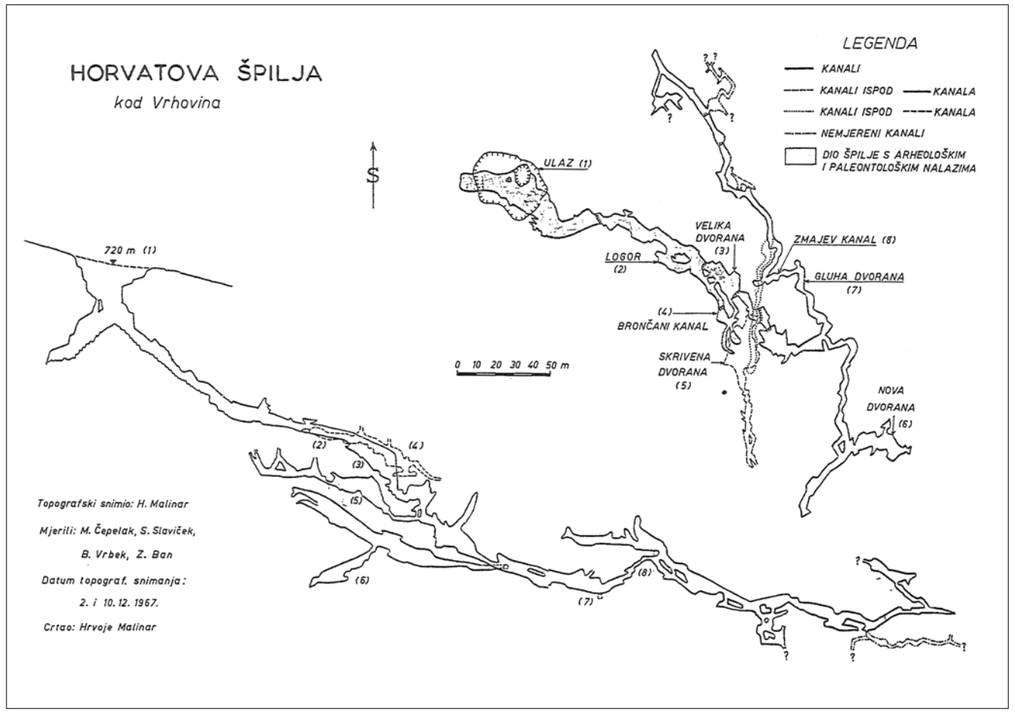
Špilja Bezdanjača nalazi se na sjeveroistočnoj strani brda Vatinovac kod Vrhovina u Lici, na jugozapadnom dijelu planinskog masiva Male Kapele,[1] a nastala je u donjokredskim vapnencima.[2] U literaturi se ponekad spominje i pod imenom Horvatova špilja, prema planinaru i speleologu Vladimiru Horvatu.[3] Iako se naziva špiljom, odnosno pećinom, Bezdanjača ima i elemente jame (otuda i dolazi naziv Bezdanjača koji se u pučkom govoru često koristi za dublje jame – ne vidi im se dno). Radi se o speleološkom objektu čiji je ulaz vertikalan i pri ulasku zahtijeva speleološku opremu i primjerenu logističku podršku, što je otežalo provođenje samih istraživanja. Ulaz je oblika lijevka dimenzija 30 x 12 metara s vertikalom od trideset i jednog metra. Dio ulaza predstavlja kosina koju je moguće savladati opreznim silaženjem ili osiguravajućim užetom, no donji je dio vertikale moguće savladati samo pomoću užeta ili ljestava (sl. 1). Navedeno ukazuje na činjenicu da su i drevni posjetitelji Bezdanjače morali pronaći siguran način ulaska u objekt, s obzirom na to da su u špilju otpremali mrtve članove svoje zajednice. Malinar smatra da je u prošlosti, kao pomoć pri ulaženju u objekt, bilo moguće koristiti se i srušenim truplom drveta i njegovim granama kao ljestvama.[4] Zbog toga je možda ispravno razmišljati o ljudima brončanog doba, koji su dijelom posjećivali špilju, kao o prvim speleolozima! Sam je objekt morfološki vrlo složen te se sastoji od više vertikalnih i horizontalnih kanala. Temeljem mjerenja provedenih pri istraživanjima, Malez navodi da najveća duljina

1 Malez, Nikolić 1975; Malez 1979 – 80.
2 Malinar 1976.
3 Malinar 1976.
4 Malinar 1976.

The cave of Bezdanjača is located on the northeastern side of the Vatinovac Hill near Vrhovine in Lika, in the southwestern part of the Mala Kapela mountain range,[1] and it was formed in Lower-Cretaceous limestone.[2] It is sometimes mentioned in the literature under the name of Horvatova špilja, after the mountaineer and speleologist Vladimir Horvat.[3] Even though it is considered a cave, Bezdanjača also has elements of a pit (hence the name Bezdanjača, which is derived from the Croatian word for abyss and is often used for deep pits – the bottom of which is not visible). The cave is a speleological object that requires vertical entry by using speleological equipment as well as appropriate logistical support, which makes conducting research difficult. The entrance is funnel-shaped, 30 x 12 meters wide, with a 31-meter vertical drop. Part of the entrance is a slope that can be overcome by careful descent or by the use of security rope, but the bottom part of the vertical drop requires rope or a ladder (Fig. 1). The above-mentioned points to the fact that the ancient visitors of Bezdanjača also had to find a safe way to enter the object, given that they brought dead members of their community to the cave. Malinar believes that in the past, as help while entering the object, it was also possible to use a tree trunk and its branches as a ladder.[4] It is therefore correct to think of the people of the Bronze Age, who visited the cave, as the first speleologists! The object itself is morphologically very complex and consists of multiple vertical and horizontal

1 Malez, Nikolić 1975; Malez 1979 – 80.
2 Malinar 1976.
3 Malinar 1976.
4 Malinar 1976.



SLIKA 1. Nacrt Horvatove špilje (crtež H. Malinar, Arhiva SO PDS „Velebit“).

FIGURE 1. Plan of the Horvatova špilja (drawing by H. Malinar, Arhives of SO PDS „Velebit“).

u horizontalnoj projekciji iznosi 305 metara, a najveća dubina u vertikalnoj projekciji 165 metara.[5] Kasnijim je mjerenjima dobiven podatak od 1176 metara duljine i dvjesto metara dubine.[6]

Špilja je otkrivena tijekom speleoloških istraživanja u kolovozu 1960. godine. Zanimljivo je čitati sjećanja Vlade Božića iz SO PD „Željezničar“, koji je uz Ivana Filipčića bio prvi speleolog koji se spustio u objekt i pritom uočio arheološke ostatke.[7] Nakon toga, dvije godine poslije, špilju posjećuju i članovi SO PDS „Velebit“ pod vodstvom Hrvoja Malinara te sakupljaju još arheološkog materijala.[8] Shvativši značaj objekta, Malinar idućih nekoliko godina organizira više kraćih ekspedicija u Bezdanjaču, otkriva nove kanale i radi detaljniji nacrt.[9] Sve je spomenuto rezultiralo zanimanjem arheologinje Ruže Drechsler-Bižić, koja uz sudjelovanje akademika Mirka Maleza istražuje špilju tijekom 1965. godine (sl. 2).[10]

channels. Based on the measurements carried out during the research, Malez stated that the maximum length in horizontal projection is 305 meters and the maximum depth in vertical projection is 165 meters.[5] Later measurements confirmed a total length of 1176 meters and a depth of 200 meters.[6]

The cave was discovered during speleological surveys in August 1960. It is interesting to read the notes of Vlado Božić from the speleological department of the “Željezničar” mountaineering society, who was the first speleologist along Ivan Filipčić to descend into the object and see the archaeological remains.[7] Two years later, the cave was visited by members of the “Velebit” speleological section, under the leadership of Hrvoje Malinar, who collected additional archaeological material.[8] Realizing the importance of the object, Malinar organized several short

5 Malez 1979 – 80.
6 Malinar 1976.
7 Božić 2005.
8 Malinar 1976.
9 Malinar 1976.
10 Malez 1967; 1979 – 80.

5 Malez 1979 – 80.
6 Malinar 1976.
7 Božić 2005.
8 Malinar 1976.
9 Malinar 1976.

SLIKA 2. Akademik Mirko Malez prilikom istraživanja Bezdanjače (AMZ-DZ3_058_BZD_ 1965 - 0032).

FIGURE 2. Academician Mirko Malez during the exploration of Bezdanjača cave (AMZ-DZ3_058_BZD_ 1965 - 0032).

Arheološki i antropološki materijal koji je otkriven u istraživanjima pokazao je vrlo zanimljive rezultate. Budući da je pristup lokalitetu otežan, nije vjerojatno da je Bezdanjača bila mjesto gdje su ljudi često boravili. Sve ukazuje na to da se špiljom tijekom brončanog doba koristilo kao mjestom ukapanja, pri čemu je sama špilja predstavljala svojevrsnu grobnicu. Ljudski su koštani ostaci bili položeni na špiljsko tlo ili ponekad u niše uz zidove špilje bez ukapanja ili pokrivanja kostura (sl. 3 i 4).[11] Iako pojam groba često poistovjećujemo s ukopima, činjenica da ovdje to nije bio slučaj vjerojatno ukazuje na simbolički sustav poput onoga za koji paralele nalazimo i u kasnijim razdobljima, tzv. grobnicama-maternicama,[12] gdje sama špilja predstavlja maternicu kojoj se pokojnici vraćaju – svojevrstan završetak, ali i početak stalnog ciklusa rađanja-umiranja-rađanja.

Međutim, već je Malez iznio mišljenje da je kraći horizontalni krak zapadno od ulaza mogao biti i mjesto boravka živih, dok su drugi dijelovi služili kao mjesto pokapanja.[13] Ovu zanimljivu tezu kasnije podupire i Malinar na temelju nalaza poput grube keramike za svakodnevnu upotrebu i pitosa, koji su služili za skladištenje hrane, zaravnjenih i sazidanih platoa s tragovima sijena, koji su mogli služiti kao mjesta boravka ili za spavanje, te nalaza oružja koje nije karakteristično za grobne priloge.[14] Moguće je da su ljudi u dijelu špilje uistinu boravili kraće vrijeme (bilo za vrijeme provođenja pogrebnih rituala, ili za kraće borav-

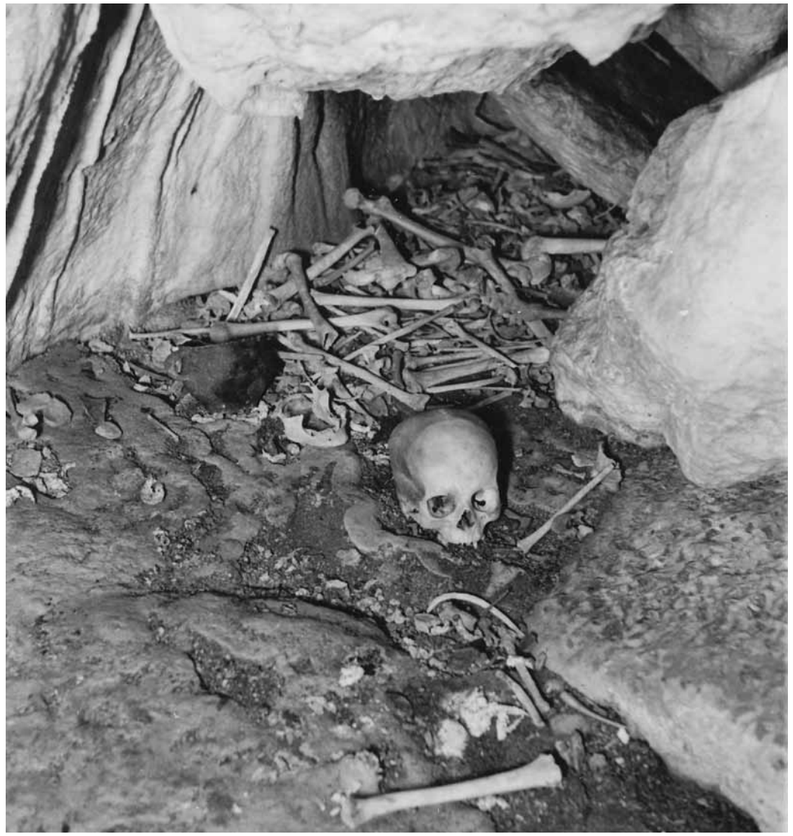
expeditions to Bezdanjača over the next few years, discovering new channels and working on a more detailed plan of the cave[9]. All this resulted in the interest of archaeologist Ruža Dreschsler-Bižić, who, with the participation of academician Mirko Malez, explored the cave in 1965[10] (Fig. 2).

The archaeological and anthropological material discovered during the research showed very interesting results. Since access to the site is difficult, it is unlikely that Bezdanjača was a place people visited often. Everything points to the fact that the cave was used as a burial site during the Bronze Age, with the cave itself representing a kind of tomb. Human remains were laid on the cave floor or sometimes in niches along the cave walls without inhumation or covering the skeleton[11] (Fig. 3 and 4). Although we often equate the concept of the grave with burials, the fact that it was not the case here probably points to a symbolic system such as the one for which analogies exist in later periods, the so-called womb tombs,[12] where the cave itself represents the womb to which the deceased return – it signifies a kind of end, but also the beginning of a permanent cycle of birth and death.

However, Malez speculated that a short horizontal shaft west of the entrance could also have been used for habitation by the living, while the other parts of the cave served as a burial site.[13]

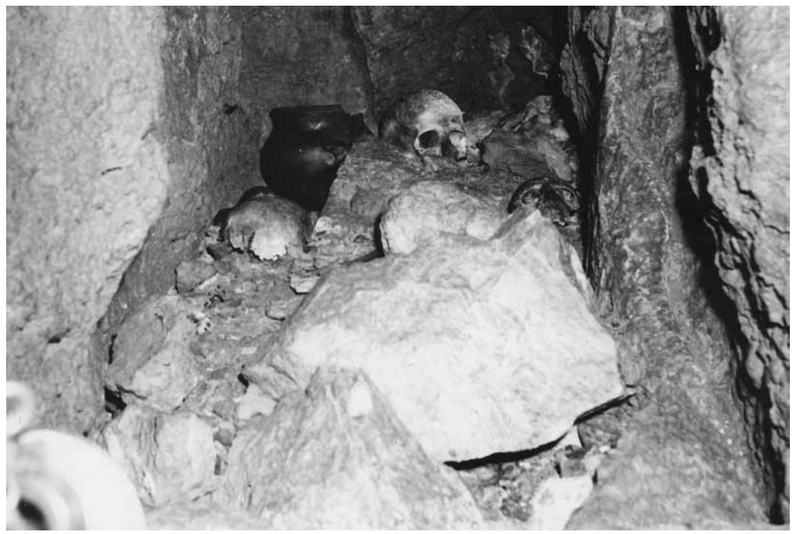
11 Drechsler-Bižić 1979 – 80.
12 Stadler, Luz 2014.
13 Malez 1973.
14 Malinar 1998.

10 Malez 1967; 1979 – 80.
11 Drechsler-Bižić 1979 – 80.
12 Stadler, Luz 2014.
13 Malez 1973.



SLIKA 3. Ljudski kosturni ostaci i brončanodobna keramika tijekom istraživanja (AMZ-DZ3_058_BZD_1965-0032).

FIGURE 3. Human skeletal remains and Bronze Age Pottery forund during exploration (AMZ-DZ3_058_BZD_1965-0032).



SLIKA 4. Arheološki i antropološki nalazi *in situ* (AMZ-DZ3_058_BZD_1965-0036).

FIGURE 4. Archaeological and anthropological remains *in situ* (AMZ-DZ3_058_BZD_1965-0036).

SLIKA 5. Drvene žlice iz Bezdanjače (snimio I. Krajcar).

FIGURE 5. Wooden spoons from Bezdanjača cave (photo by I. Krajcar).

SLIKA 6. Brončani predmeti iz Bezdanjače (snimio I. Krajcar).

FIGURE 6. Bronze finds from Bezdanjača cave (photo by I. Krajcar).

SLIKA 7. Keramičke posude iz Bezdanjače (snimio I. Krajcar).

FIGURE 7. Ceramic vessels from Bezdanjača cave (photo by I. Krajcar).

SLIKA 8. Brončani i jantarni nalazi iz Bezdanjače (snimio I. Krajcar).

FIGURE 8. Bronze and amber finds from Bezdanjača cave (photo by I. Krajcar).

ke u nemirna vremena poput svojevrsnih zbjegova).[15] Svakako je najzanimljiviji i najvažniji grobni karakter špilje Bezdanjače. Aktivnosti poput tragova gorenja, različite strukture od drva i kamenja, nalaza keramike, okera, nagorjelih štapića, drvenih žlica i drugih predmeta, mogle bi ukazivati na provođenje složenih grobnih rituala. Istraživanjem su zabilježena ognjišta, kao i strukture od kamenja i drva, nagorjele životinjske kosti te keramičko posuđe (sl. 5 – 8). Nadalje, uz dio ljudskih kostura položeni su i životinjski kosturi ili dijelovi kostura. Valja napomenuti da je, osim jake lovačke komponente, koja se odlikuje ostacima životinja poput divlje svinje, jelena, srne, divljeg zeca i sl., prisutan i dio životinja domesticiranih vrsta – koza, ovca i govedo.[16]

This interesting thesis is later supported by Malinar, who based her opinion on finds such as rough ceramics for daily use and *pithoi*, which were used to store food, flattened and walled-off plateaus with traces of hay, which could have served as living or sleeping spaces, and finds of weapons that are not typical grave goods.[14] It is possible that people truly inhabited a part of the cave for a short time (either during the funeral rituals or during troubled times, using the cave like a type of refuge).[15] Certainly the most interesting and most important is the burial character of Bezdanjača. Traces of burning, different structures made from wood and stone, ceramic finds, ochre, burned sticks, wooden spoons, and other items (Fig. 5 – 8) could indicate that complex burial rituals were being carried out there. During the research, hearths were documented, as well as structures made of stone and wood, burned animal bones, and ceramic

15 Drechsler-Bižić 1979 – 80; Malinar 1998.
16 Malez 1979 – 80; Drechler-Bižić 1979 – 80.

14 Malinar 1998.
15 Drechsler-Bižić 1979 – 80; Malinar 1998.

SLIKA 9. Trepanacija na lubanji (snimio M. Carić).

FIGURE 9. Trepanation on a skull (photo by M. Carić).

Prema zapisima istraživača, ukupno je otkriveno pedeset i sedam grobnih cjelina s ostacima od oko dvjesto ljudi.[17] Deset je grobova sadržavalo više pokojnika (od pet do dvadeset osoba). Na temelju arheološke građe, Drechsler-Bižić smatra da je moguće razlikovati barem dva razdoblja služenja lokalitetom tijekom brončanog doba – stariji horizont, iz razdoblja srednjeg brončanog doba (Horizont I, BrC/D), i mlađi horizont, koji pripada kasnijem brončanom dobu (Horizont II, BrD/HaA).[18] Temeljeno na analogijama s drugim lokalitetima Drechsler-Bižić kao tipove Horizonta I izdvaja polukuglaste zdjele zaravnjenog ili neznatno uvučenog oboda, konične zdjele s koso zasječenim rubovima, šalice s jednom drškom i šalice višeg vrata, konične šalice s višim vratom i drškom koja prelazi obod, konične lonce s jednom drškom, poluloptastu zdjelu s četiri bradavičasta ispupčenja i zaravnjenim rubom te zdjelu s četiri jezičaste drščice ispod oboda.[19] Za kronološke su paralele posebno pogodni oblici, odnosno tipovi drški – trakaste drške zadebljanih rubova i drške s proširenim i vertikalno izvučenim gornjim dijelom.[20] Ne treba zaboraviti ni brončane predmete – brončano šilo i igle s produžetkom iznad ušica, srp s drškom s jezičcem i dva paralelna naglašena rebra koja se javljaju u stupnju Br D[21] te konična dugmad i spiralne cjevčice od tankog brončanog lima. Horizontu II odgovaraju tipovi poput šalice s oštro profiliranim

17 Drechler-Bižić 1979 – 80.
18 Drechler-Bižić 1979 – 80.
19 Drechler-Bižić 1979 – 80.
20 Drechler-Bižić 1979 – 80.
21 Vinski 1973; Drechsler-Bižić 1979 – 80.

vessels. Furthermore, complete animal skeletons or parts of animal skeletons were laid alongside a portion of the human skeletons. It should be noted that, apart from a strong hunting component, which is reflected in the remains of animals such as the wild boar, deer, roe deer, wild rabbit, and others, domesticated species are also present - goat, sheep and bovines.[16]

According to the researchers, a total of 57 separate grave units were discovered, with the remains of about two hundred people.[17] Ten graves contained more than one deceased (five to 20 individuals). With regard to the archaeological material, Drechsler-Bižić believes that it is possible to distinguish between at least two periods of site use during the Bronze Age – the older layer, from the Middle Bronze Age (Horizon I, Br C/D), and the younger layer, which belongs to the Late Bronze Age (Horizon II, Br D/Ha A).[18] Based on analogies with other sites, Drechsler-Bižić states that the typical vessel types for Horizon I are semi-globular bowls with flat or slightly retracted rims, conical bowls with diagonally cut edges, cups with one handle and cups with a longer neck, conical cups with a higher neck and handle that goes above the rim, conical pots with one handle, semi-globular bowls with four bulges and a flat edge, and bowls with four tongue-like handles under the rim.[19] Shapes or types of handles are especially suitable for drawing chronological analogies – band handles with thick edges and handles with widened and vertically extended upper sections.[20] Bronze items should also be mentioned – a bronze awl and needles with an appendage above the eye, a flange-hilted sickle and two parallel protruding ribs that appear in phase Br D,[21] and finally conical buttons and spiral tubes made of thin bronze sheets. Horizon II is characterised by cups with a sharply-profiled biconic belly, small amphorae with two handles under the rim, and small goblets. It is especially important to mention the appearance of decorations made by faceting or fluting, which provides a strong chronological framework for this phase.[22] The situation is similar with bronze finds such as the mace-like needle, bronze knife with a flange handle, and violin-bow fibulae. Finally, a very interesting find are pierced round amber beads, the analysis of which showed that they were imported from the Baltic, which is one of the earliest indications of contact between that area and Lika.[23] Although the systematic research in Bezdanjača was relatively short and lasted only thirty days (July 1965),[24] speleologists discovered new parts of the cave in further expeditions to the site and collected some of the archaeological material analysed in the work of M. Malinar.[25] The dates for the site were also confirmed by the results of ra-

16 Malez 1979 – 80; Drechler-Bižić 1979 – 80.
17 Drechler-Bižić 1979 – 80.
18 Drechler-Bižić 1979 – 80.
19 Drechler-Bižić 1979 – 80.
20 Drechler-Bižić 1979 – 80.
21 Vinski 1973; Drechsler-Bižić 1979 – 80.
22 Drechsler-Bižić 1979 – 80.
23 Drechsler-Bižić 1979 – 80.
24 See Drechsler-Bižić 1979 – 80.
25 Malinar 1998.

SLIKA 10. Antemortalna trauma na čeonoj kosti (snimio M. Carić).

FIGURE 10. Antemortem trauma on the frontal bone (photo by M. Carić).

SLIKA 11. Perimortalna trauma na lubanji (snimio M. Carić).

FIGURE 11. Perimortem trauma on a skull (photo by M. Carić).

bikoničnim trbuhom, amforice s dvije drške ispod otvora i male kupe na nozi. Posebno je važno spomenuti pojavu ukrasa izvedenih fasetiranjem ili kaneliranjem, što pruža čvrst kronološki okvir ove faze.[22] Slično je i s brončanim nalazima kao što su topuzaste igle, brončani nož s drškom u obliku jezičca te fibula s lukom u obliku violinskog gudala. Na kraju, vrlo je zanimljiv nalaz okruglih probušenih zrna jantara, čija je analiza pokazala da se radi o importu s prostora Baltika, što je jedan od najranijih pokazatelja kontakta područja Like s tim prostorom.[23] Iako su sustavna istraživanja u Bezdanjači bila relativno kratka i trajala tek trideset dana (srpanj 1965.)[24] speleolozi su u daljnjim posjetima lokalitetu otkrivali nove dijelove špilje te sakupili dio arheološkog materijala koji je obrađen u radu M. Malinar.[25] U prilog ovakvoj dataciji korištenja lokalitetom, govore i rezultati radiometrijskog datiranja metodom radioaktivnog ugljika na nekoliko uzoraka drva sakupljenog pri istraživanju koji su rezultirali datumima između 1350. i 1100. godine prije Krista.[26]

Značaj je ljudskih kosturnih ostataka bio vidljiv odmah po otkriću, no dosad su provedene tek preliminarne analize ili analize ograničenog opsega dijela ljudskog kosturnog materijala.[27] Jedan je od zanimljivijih antropoloških nalaza lubanja odrasle žene, starosti između dvadeset i trideset godina u trenutku smrti s vidljivim ozljedama, odnosno otvorom na desnoj strani čeone kosti (sl. 9).[28] Lubanja je pronađena u završnom dijelu lije-

22 Drechsler-Bižić 1979 – 80.
23 Drechsler-Bižić 1979 – 80.
24 vidi Drechsler-Bižić 1979 – 80.
25 Malinar 1998.
26 Sliepčević, Srdoč 1979 – 80.
27 Malez 1973; 1979 – 80; Malez, Nikolić 1975; Percač 1992 – 93; Boljunčić 1991; 1997.
28 Malez, Nikolić 1975; Carić *et al.* 2020.

diometric dating performed on several wood samples collected during the research. The radiocarbon analysis showed dates between 1350 and 1100 BC.[26]

The significance of the human skeletal remains was evident immediately after discovery, but only preliminary analyses or analyses of a limited scope of human skeletal material have been carried out so far.[27] One of the more interesting anthropological finds is that of a skull belonging to an adult female, aged between twenty and thirty, with a visible injury at the time of death, or more specifically, a hole on the right side of her frontal bone[28] (Fig. 9). The skull was found at the end of the left arm of the main cave channel, among the mixed remains of at least thirty individuals of both sexes and of different ages.[29] Unfortunately, due to the post-mortem interference to the skeletal material, it was not possible to connect post-cranial and cranial remains. In the analysis of this find, Malez and Nikolić determined that this was a perimortem wound that the individual survived (fresh bone tissue is clearly visible). However, even though they suggest the hole is a result of trepanning, they point out that it can also be a result of injury.[30] Deliberate violence, or blunt force trauma with a hard object, as the explanation for the aforementioned pathology, is also advocated by Šlaus.[31] A recent analysis of the skull, using computer tomography, provided better insight into the issue, and trepanning by scrapping seems to be the most likely explanation.[32]

26 Sliepčević, Srdoč 1979 – 80.
27 Malez 1973; 1979 – 80; Malez, Nikolić 1975; Percač 1992 – 93; Boljunčić 1991; 1997.
28 Malez, Nikolić 1975; Carić *et al.* 2020.
29 Malez, Nikolić 1975.
30 Malez, Nikolić 1975.
31 Šlaus 2002.
32 Carić *et al.* 2020.

vog kraka glavnog špiljskog kanala, unutar skupine koja je sadržavala izmiješane ostatke najmanje trideset ljudi obaju spolova i različite starosti.[29] Nažalost, zbog postmortalnog miješanja kosturnog materijala, nije bilo moguće povezati postkranijalne i kranijalne ostatke. U analizi ovog nalaza, Malez i Nikolić utvrđuju da se radi o perimortalnoj mehaničkoj ozljedi koju je osoba preživjela (jasno je vidljivo stvaranje nove kosti), no, iako sugeriraju mogućnost da se radi o trepanaciji, u svom radu upozoravaju da nije moguće isključiti da se radi o rezultatu ozljede.[30] Namjerno nasilje, odnosno udarac tupim, tvrdim predmetom, kao etiologiju navedene patologije, zagovara i Šlaus.[31] Novija je analiza lubanje, upotrebom računalne tomografije, omogućila bolji uvid u problematiku i najvjerojatnije je objašnjenje trepanacija, izvedena tehnikom struganja.[32]

U novije su doba provedene nove analize dijela antropološkog materijala na uzorku od trideset i pet lubanja. Kao prvo, radiokarbonskom je metodom određena njihova starost, ovog puta izravno na samom antropološkom materijalu. Rezultati datiranja za dvije od tri lubanje dale su identičan rezultat starosti između 1422. i 1281. godine prije Krista (cal.),[33] što je gotovo identično rezultatima radiokarbonske datacije dviju ljudskih postkranijalnih kosti objavljenih u analizi stabilnih izotopa Zavodny i suradnika.[34] Iznenađujuće, treća lubanja, na kojoj su vidljivi tragovi nasilja, pripadala je osobi koja je u Bezdanjači skončala puno kasnije – u 17. stoljeću. Iako arheološka građa upućuje na to da većinu materijala iz Bezdanjače možemo pripisati brončanom dobu, prisustvo ostataka iz kasnijih razdoblja upozorava da analizama ljudskog kosturnog materijala treba pristupiti s oprezom. Malinar iznosi podatak o pronalasku dvaju ljudskih kostura koji su dospjeli najvjerojatnije za vrijeme Drugog svjetskog rata, kao i kosture životinja koji su slučajno upali.[35] Srećom po arheološku struku, ljudski su kosturni ostaci, pronađeni uz arheološke nalaze iz brončanog doba, smješteni dublje u horizontalnim kanalima i dvoranama špilje.[36]

Bioarheološke analize koje su provedene na spomenutom uzorku pokazuju podjednaku zastupljenost obaju spolova (deset lubanja pripada ženskim i deset muškim osobama; četiri lubanje koje su bile lošije očuvane vjerojatno također pripadaju muškim osobama te još jedna lubanja ženskoj osobi, dok za jednu spol nije bilo moguće odrediti). Osim odraslih osoba, u uzorku nalazimo i sedmero djece starije dobi te dva adolescenta. Nisu sve osobe iz Bezdanjače dočekale miran kraj života, o čemu svjedoče i ozljede na lubanjama koje smo uočili analizom. Na čak pet lubanja vidljivi su tragovi udarca tupim predmetom (sl. 10), koji su bili i izravan rezultat smrti za barem tri osobe (sl. 11).

New analyses of a part of the anthropological material have been conducted in recent years on a sample of 35 skulls. Firstly, radiocarbon dating was performed on the anthropological material itself to determine the age of the remains. The results for two of the three skulls were identical and showed an age of between 1422 and 1281 BC (cal.),[33] which is almost the same as the results of the radiocarbon dating for two human postcranial bones published in the analysis of stable isotopes by Zavodny and associates.[34] Surprisingly, the third skull, which exhibits signs of violence, belonged to a person who came to Bezdanjača much later – in the 17th century. Although archaeological material suggests that most of the material from Bezdanjača can be attributed to the Bronze Age, the presence of remains from later periods suggests that the analysis of human skeletal material should be approached with caution. Malinar mentions information about the find of two human skeletons that most likely ended up in Bezdanjača during World War II, as well as skeletal remains of animals that accidentally fell in.[35] Fortunately for the archaeological profession, human skeletal remains found along archaeological finds from the Bronze Age were located deeper in the horizontal channels and caverns of the cave.[36]

Bioarchaeological analyses carried out on this sample show equal representation of both sexes (ten skulls belong to female and ten to male individuals; four skulls that were less preserved probably also belong to male individuals and another skull to a female individual, while it was not possible to determine the gender for one skull). In addition to adults, seven older children and two adolescents are also present in the sample. Not all the people from Bezdanjača had a peaceful death, which is evident from the skull injuries discovered during analysis. Five skulls exhibit traces of blunt force trauma (Fig. 10), which was a direct result of death for at least three individuals (Fig. 11). Furthermore, analysis of ancient DNA was carried out on as many as 35 samples[37] and provided important data on kinship, geographical origin, and population structure of these Bronze-Age inhabitants of Lika. Perhaps the most interesting piece of information is that among the 35 analysed individuals, ten were confirmed relatives that belonged to four families.[38] In addition, an analysis of stable carbon and nitrogen isotopes extracted from collagen isolated from the dentin of 16 people (first permanent molar) was conducted.[39] This type of analysis is used to reconstruct the diet of individuals during early childhood, i.e. during the growth and development of the first molar (up to about age six). This research showed that a good portion of the diet during early childhood was based on cereal foods, especially millet,[40] most likely in the form of some sort of porridge.

29 Malez, Nikolić 1975.
30 Malez, Nikolić 1975.
31 Šlaus 2002.
32 Carić *et al.* 2020.
33 Lazaridis *et al.* u pripremi.
34 Zavodny *et al.* 2014.
35 Malinar 1976.
36 Drechsler-Bižić 1979 – 80.

33 Lazaridis *et al.* in prep.
34 Zavodny *et al.*2014.
35 Malinar 1976.
36 Drechsler-Bižić 1979 – 80.
37 Lazaridis *et al.* in prep.
38 Lazaridis *et al.* in prep.
39 Martinoia *et al.* in press.
40 Martinoia *et al.* in press.

Nadalje, provedene su analize drevne DNA na čak trideset i pet uzoraka[37] koje su pružile važne podatke o srodstvu, geografskom podrijetlu i populacijskoj strukturi tih brončanodobnih stanovnika Like. Možda je najzanimljiviji podatak da je među trideset i pet analiziranih osoba registrirano deset pojedinaca u krvnom srodstvu koji se mogu podijeliti u četiri obitelji.[38] Uz to, provedena je i analiza stabilnih izotopa ugljika i dušika koji su dobiveni iz kolagena izoliranog iz dentina zuba šesnaest osoba (prvi trajni kutnjak).[39] Riječ je o vrsti analize pomoću koje se rekonstruirala prehrana spomenutih osoba tijekom ranog djetinjstva, tj. tijekom rasta i razvoja prvog kutnjaka (do otprilike šeste godine života). Ovo je istraživanje pokazalo da se dobar dio prehrane osoba tijekom ranog djetinjstva temeljio na žitaricama, ponajviše prosu,[40] i to najvjerojatnije u obliku neke vrste kaše.

Iako su nalazi iz pećine Bezdanjače dosad bili predmet različitih znanstvenih istraživanja, od kojih neka i dalje traju, mnogo je toga još uvijek obavijeno velom tajne. Značaj ovog nalazišta svakako opravdava pokretanje novih terenskih istraživanja uz korištenje suvremenih znanstvenih metoda. Nažalost, špilja se nalazi na minski sumnjivom području, te je prije provođenja novih istraživanja nalazišta nužno provesti razminiranje prilaza, kao i stručan uvid u moguće prisustvo eksplozivnih sredstava u samom objektu. Nadajmo se da će se to u skorijoj budućnosti provesti te da će nove generacije arheologa, antropologa, speleologa i mnogih drugih moći uživati u uzbuđenju otkrivanja tajni prošlosti koje čuva Bezdanjača.

Although the finds from Bezdanjača Cave have so far been the subject of various scientific research, some of which continue to this day, much is still covered with the veil of mystery. The importance of this site certainly justifies new field research using modern scientific methods. Unfortunately, the cave is located in an area with suspected mine fields, and the approach to the site should be cleared of mines before new research can commence. Expert insight is also required regarding possible explosives inside the object itself. Hope remains that this will be carried out in the near future and that the next generation of archaeologists, anthropologists, speleologists and many others will be able to enjoy the thrill of discovering the secrets of the past that are hidden in Bezdanjača.

37 Lazaridis *et al.* u pripremi.
38 Lazaridis *et al.* u pripremi.
39 Martinoia *et al.* u tisku.
40 Martinoia *et al.* u tisku.

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SVETA MJESTA I ŠPILJE — VILINA ŠPILJA IZNAD IZVORA OMBLE

SACRED PLACES AND CAVES — VILINA ŠPILJA ABOVE THE SOURCE OF THE RIVER OMBLA

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Od pradavnih vremena, u suživotu čovjeka i prirode, sve što je nepoznato, mračno i tajnovito izazivalo je strah i poštovanje. Špilje i jame zasigurno su ulazile u takvu kategoriju i poimanje svijeta oko nas. Stoga ne iznenađuje činjenica da se speleološkim objektima koristilo kao svetim mjestima u raznim civilizacijama i razdobljima. Zadnjih se godina pomalo kristalizira fenomen ilirskih svetišta u špiljama na istočnojadranskoj obali. Vjerujemo da će nova istraživanja i reinterpretacije postojećih potvrditi takve hipoteze. U radu ćemo prikazati jednu od takvih špilja s užeg dubrovačkog područja.

Smještaj i povijest istraživanja

Vilina se špilja nalazi u strmim stijenama brda Bjelotina, iznad izvora rijeke Omble, u Rijeci dubrovačkoj (Sl. 1). Prostor koji obuhvaća arheološko nalazište predstavlja samo manji dio špiljskog sustava Vilina špilja – Kaverna iza izvora Omble – koji je dosad istražen u duljini od tri tisuće šezdeset i tri metra i dubini od sto devedeset i dva metra te je, prema svojim dimenzijama, potencijalno najduža špilja na području Dalmacije te dvanaesta špilja po dužini u Hrvatskoj.[1] U literaturi i među stanovništvom, špilja se još naziva Vilin stan, Vilina kuća i Vilina pećina iznad izvora Omble.[2] O špilji prvi piše Miho Kusijanović[3], a nakon njega ju Mirko Malez detaljno opisuje i donosi njezin tlocrt.[4] Noviji tlocrt cijelog špiljskog sustava poznat nam je iz konteksta speleoloških i biospeleoloških istraživanja.[5]

1 Ozimec *et al.* 2009, 85; Ozimec, Cukrov 2014, 49.
2 Kusijanović 1938, 85–88; Bedek *et al.* 2006, 79.
3 Kusijanović 1938, 85–88.
4 Malez 1970, 56–58.
5 Ozimec *et al.* 2015., 47–48, 137.

Since ancient times, in the coexistence of man and nature, all that is unknown, dark, and mysterious has inspired fear and respect. Caves and pit caves must have been in that category and were subject to such an interpretation of the world around us. Therefore, the fact that speleological objects were used as sacred sites in different civilizations and periods comes as no surprise. In recent years, more and more light has been shed on the phenomenon of Illyrian shrines in caves on the eastern Adriatic coast. We believe that new research and reinterpretation of previous excavations will confirm such hypotheses. This paper will discuss one such cave from the area around Dubrovnik.

Location and history of research

Vilina špilja (lit. Fairy Cave) is located on the steep rocky slopes of Bjelotina Hill, above the source of the River Ombla, in Rijeka dubrovačka (Fig. 1). The archaeological site encompasses only a small part of the Vilina špilja cave system - Kaverna behind the source of the Ombla - which has been explored to the length of 3,063 meters and a depth of 192 meters and is, according to its dimensions, potentially the longest cave in Dalmatia and the 12th-longest cave in Croatia.[1] In the literature and among the general population, the cave is also called Vilin stan, Vilina kuća, and Vilina pećina above the source of the Ombla.[2] Miho Kusijanović was the first to write about the cave[3], followed by Mirko Malez, who described it in detail and drew its floor plan.[4] A newer floor plan of the entire cave system was created in the context of speleological and biospeleological research.[5]

1 Ozimec *et al.* 2009, 85; Ozimec, Cukrov 2014, 49.
2 Kusijanović 1938, 85–88; Bedek *et al.* 2006, 79.
3 Kusijanović 1938, 85–88.
4 Malez 1970, 56–58.
5 Ozimec *et al.* 2015., 47–48, 137.

SLIKA 1. Pogled na ulaz u Vilinu špilju i izvor Omble (snimio D. Perkić).

FIGURE 1. View of the cave entrance to Vilina špilja and the source of the Ombla (photo by D. Perkić).

Kao prapovijesno nalazište s kraja neolitika, eneolitika i brončanog doba, postaje nam poznata iz radova Nikše Petrića, koji opisuje nalaze keramike iz Viline špilje dospjele u Arheološki muzej u Zagrebu.[6] Na njih se osvrće i Zorko Marković u svom radu o eneolitiku i brončanom dobu južne Dalmacije.[7] Navedeni se podatci zasnivaju na površinskim nalazima koje su prikupili francuski inženjeri radeći na dubrovačkom vodovodu dvadesetih godina prošlog stoljeća. Prvi su arheološki radovi u smislu rekognosciranja, prikupljanja površinskih nalaza te izrade fotodokumentacije i nacrtne dokumentacije obavljeni u razdoblju od 2008. do 2010.[8] i 2012. godine,[9] a arheološka istraživanja 2014. i 2015. godine.[10]

As a prehistoric site dated to the end of the Neolithic, Eneolithic, and Bronze Age, it is discussed in the work of Nikša Petrić, who described the findings of ceramic vessels from Vilina špilja that are kept in the Archaeological Museum in Zagreb.[6] They are also addressed by Zorko Marković in his work on the Eneolithic and Bronze Age of southern Dalmatia.[7] The data was based on surface finds gathered by French engineers working on Dubrovnik's water supply system in the 1920s. The first archaeological work in terms of surveying, collecting surface finds, photo documentation, and drafting plans was carried out from 2008 to 2010[8] and in 2012,[9] and archaeological excavations were conducted in 2014 and 2015.[10]

6 Petrić 1981, 1–9; 1984, 56–59.

7 Marković 1988, 79–80, 82.

8 Perkić 2010a, 33–38; 2010b, 159–161.

9 Perkić 2013, 872–875.

10 Voditelj arheoloških istraživanja bio je dr. sc. Domagoj Perkić, zamjenik voditelja Darko Milošević, dipl. arheolog, obojica iz Arheološkog muzeja Dubrovačkih muzeja. Stručnu i tehničku ekipu činili su speleolozi iz speleološkog društva „Ursus spelaeus" iz Karlovca: Hrvoje Cvitanović, Nataša Cvitanović i Neven Šuica, dipl. geolog, te Nikša Grbić, dipl. arheolog. Opširnije vidi u: Perkić 2015; 2016; Perkić, Novak 2020, 22–28.

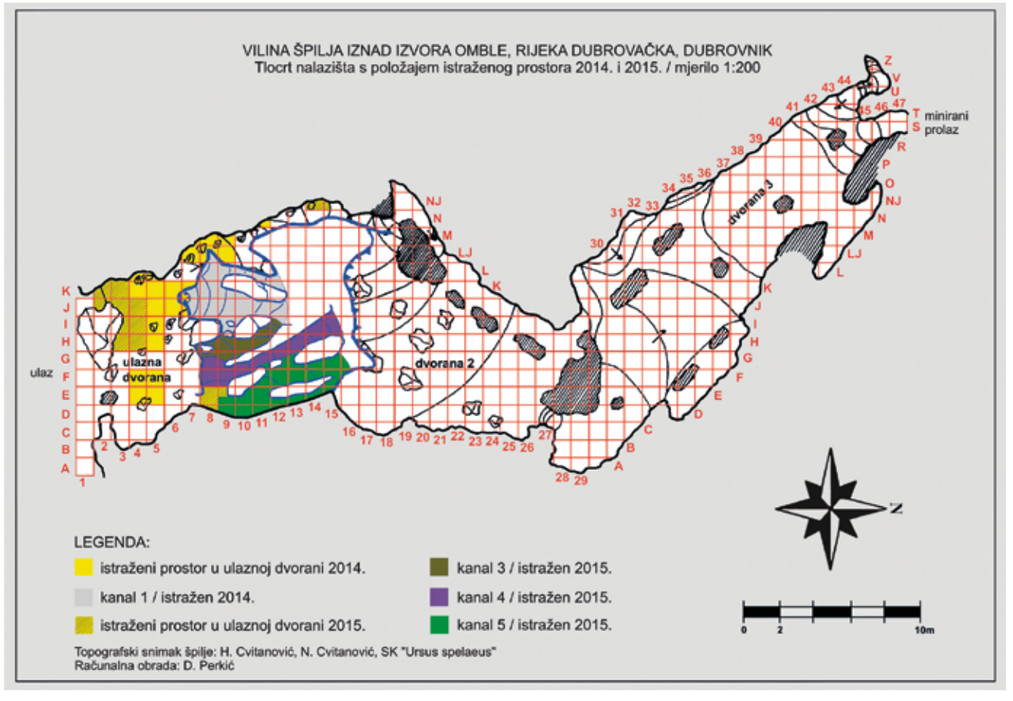
6 Petrić 1981, 1–9; 1984, 56–59.

7 Marković 1988, 79–80, 82.

8 Perkić 2010a, 33–38; 2010b, 159–161.

9 Perkić 2013, 872-875.

10 The archaeological research was headed by Domagoj Perkić, PhD, Deputy Director Darko Milošević, M. Sc. Archaeol., both from the Archaeological Museum of Dubrovnik Museums. The expert and technical team consisted of speleologists from the "Ursus spelaeus" speleological society from Karlovac: Hrvoje Cvitanović, Nataša Cvitanović, and Neven Šuica, M. Sc. Geol., and Nikša Grbić, M. Sc. Archaeol. For more detail see: Perkić 2015; 2016; Perkić, Novak 2020, 22–28.



SLIKA 2. Tlocrt Viline špilje s postavljenim mrežištem i istraženim prostorima (topografski snimak H. Cvitanović, računalna obrada D. Perkić).

FIGURE 2. Ground plan of Vilina špilja with grid and excavated areas (topographic image by H. Cvitanović, digital processing by D. Perkić).

Arheološka istraživanja 2014. i 2015. godine

Istraživanja su obavljena u sklopu programske djelatnosti Arheološkog muzeja Dubrovačkih muzeja 2014. i 2015. godine kad je istražen veći dio Ulazne dvorane i početni dijelovi Dvorane 2 (Sl. 2).[11] Arheološki lokalitet predstavlja samo dio koji se odnosi na Vilinu špilju, a preostalim se dijelom špiljskog sustava nije koristilo u ranijim razdobljima. Ukupna je dužina špilje, kao arheološkog lokaliteta, četrdeset i sedam metara, širina je u rasponu od sedam metara, a na ulazu je široka i do četrnaest metara u svojim najširim dijelovima. Najintenzivnije je korištenje špiljom bilo u prvih petnaestak metara od ulaza. Sam ulaz u špilju leži na 137,66 metara nadmorske visine, orijentiran je prema jugu i djelomično zatvoren kamenim blokovima, koji su u prošlosti otpali sa svoda nekadašnjeg ulaza. Primjetno je kako je cijeli prostor špilje znatno poremećen tektonskim i geološkim djelovanjima, stvaranjima „kanala" koji su nastali otpadanjem kamenih blokova i gromada sa svoda, a tijekom vremena su

Archaeological research conducted in 2014 and 2015

The research was carried out as part of the program activities of the Archaeological Museum of Dubrovnik Museums in 2014 and 2015, when the majority of the Entrance Hall and the front part of Hall 2 were excavated (Fig. 2).[11] The archaeological site is limited to Vilina špilja, and the remaining parts of the cave system were not used in previous periods. The total length of the cave, as an archaeological site, is 47 meters, the width is seven meters, and it is up to 14 meters wide at the entrance, which is the widest part. The first 15 meters from the cave entrance were used the most. The entrance to the cave lies at 137.66 meters above sea level, it faces south, and is partially covered by stone blocks that had fallen from the ceiling of the former entrance in the past. It is evident that the entire cave is significantly affected by tectonic and geological movement, which caused pieces to break off from the ceiling and create "channels", which were later filled by cultural layers and finds from various periods due

11 Cijeli prostor špilje podijeljen je na kvadrante A – Z / 1 – 47, a sveukupno su istražena devedeset i četiri kvadranta istražene površine od oko sedamdeset metara kvadratnih (zbog konfiguracije terena i stijena svi kvadranti nisu u cijelosti istraženi).

11 The entire cave area is divided into quadrants A - Z/1 - 47, and a total of 94 quadrants were excavated with a surface area of approximately 70 square meters (all the quadrants could not be fully excavated due to terrain configuration and bare rock).

SLIKA 3. Ulazna dvorana Viline špilje (snimio D. Perkić).

FIGURE 3. The entrance hall of Vilina špilja (photo by D. Perkić).

zbog erozije zapunjeni kulturnim slojevima i nalazima iz raznih razdoblja. To je i dovelo do nepostojanja vertikalne kulturne stratigrafije, odnosno svi su slojevi izmiješani, pa je kulturno-kronološko određenje nalaza moguće samo na osnovi njihovih tipološko-oblikovnih i drugih obilježja, a nikako položajem u kulturnom sloju (Sl. 3).

Pristup je od podnožja i izvora Omble do ulaza u špilju fizički i tehnički vrlo zahtjevan. Prve dvije trećine puta predstavljaju penjanje uz strme padine brda, dok zadnja trećina, neposredno ispod ulaza u špilju, zahtijeva upotrebu i poznavanje speleološke opreme te tehnika penjanja (Sl. 4–5). Naime, veći dio zadnje trećine prilaza sastoji se od gotovo vertikalnih stijena kojima se uspinje. Stoga je, zbog sigurnosti, uspon u tom dijelu bio moguć isključivo uz pomoć speleološke opreme i konopa.[12]

Na temelju provedenih istraživanja, zaključujemo kako Vilinu špilju možemo promatrati u dvama različitim kontekstima – profanom i svetom. Naime, u ranim je prapovijesnim razdobljima, od ranog neolitika (nalazi impresso kulture) do srednjeg brončanog doba, dakle u razdoblju od oko 6200. do 1500. godine prije Krista, špilja služila kao izvjesni oblik povremenog staništa – zbijeg uslijed konfliktnih razdoblja, vremenskih (ne)prilika ili kao sezonsko stanište. Potrebno je naglasiti da je riječ o povremenim i kratkotrajnim boravcima u špilji koji su ostavili materijalne tragove, ali ne i kompleksniju arheološku stratigrafiju u smislu višeslojnih kulturnih slojeva.

to erosion. This led to the lack of vertical cultural stratification, i.e. all the cultural layers are intermixed, so the cultural-chronological determination of the finds is only possible on the basis of their typological and other characteristics, and not their position in the cultural layer (Fig. 3).

The approach from the foot of the hill and the source of the Ombla to the cave entrance is physically and technically very demanding. The first two-thirds of the way require climbing up the steep slopes of the hill, while the last third, just below the entrance to the cave, requires the use and knowledge of speleological equipment and climbing techniques (Fig. 4–5). Namely, most of the last third of the approach consists of almost vertical rock face. Therefore, for safety reasons, the climb in this section was only possible with speleological equipment and ropes.[12]

Based on the research, Vilina špilja can be viewed in two different contexts - the profane and the sacred. Namely, in the early prehistoric periods, from the Early Neolithic (Impresso culture finds) to the Middle Bronze Age, i.e. in the period from around 6200 to 1500 BC, the cave served as a certain form of occasional habitation – a refuge during conflict and extremely bad weather conditions, or a seasonal haven. It should be noted that these were occasional and short-term stays that left material traces, but not complex archaeological stratigraphy in terms of multiple cultural layers.

12 Zbog velike količine arheoloških nalaza, kao i zbog arheološke opreme, alata, dokumentacije i sl., koje je svakodnevno bilo potrebno podizati i spuštati od podnožja do ulaza, postavljena je tzv. „tirolka", odnosno žičara sa sistemom kolotura pomoću koje je podizan i spuštan sav teret. Ona se nalazila od ulaza u špilju do oko polovice puta prema podnožju.

12 Because of the large amount of archaeological finds, as well as archaeological equipment, tools, documentation etc., which had to be lifted and lowered from the base to the entrance every day, a so-called Tirol-style cable car with a pulley system was set up to lift and lower the equipment. The whole contraption was set up from the entrance to approximately halfway to the base.

SLIKA 4. Penjanje uz strme litice do Viline špilje (snimio D. Milošević).

FIGURE 4. The climb up the steep cliffs leading to Vilina špilja (photo by D. Milošević).

SLIKA 5. Penjanje uz strme litice do Viline špilje (snimio D. Perkić).

FIGURE 5. The climb up the steep cliffs leading to Vilina špilja (photo by D. Perkić).

Sljedeći se arheološki kontekst odnosi na razdoblje samog kraja starijeg i početaka mlađeg željeznog doba, odnosno zadnje četvrtine petog pa sve do početka trećeg stoljeća prije Krista. U tom su razdoblju ulazni dijelovi Viline špilje bili namijenjeni svetom mjestu – izvjestan oblik ilirskog svetišta. Tad se susreću autohtone ilirske zajednice s naprednijom grčkom civilizacijom i kolonizacijom istočnojadranske obale. To je ujedno i vrijeme najintenzivnijeg života u špilji, s najviše nalaza, uglavnom fine grčke i helenističke keramike i drugih artefakata.

Riječ je o najfinijim i najskupocjenijim posudama tog vremena. Utvrđeno je postojanje najmanje dvjesto dvadeset i tri posude grčke provenijencije iz, vjerojatno, matičnih atičkih, ali i italskih (južnoitalske i gornjojadranske – *Alto-Adriatico*) radionica. Većina ih pripada raznim oblicima crnoglazirane keramike, najmanje devedeset i četiri različite posude. Dominiraju atički skifosi tipa A, manjih (šezdeset i dva komada) i većih (sedam komada) dimenzija, zatim manje narebrene šalice s jednom ručkom (dvanaest komada), veće šalice glatke površine s jednom ručkom (pet komada) te veće narebrene posude (nedefinirani oblik, mo-

The following archaeological context refers to the period of the very end of the Early and the beginning of the Late Iron Age, i.e. the last quarter of the 5th until the beginning of the 3rd century BC. During this period, the entrance to Vilina špilja was a holy place – a certain form of an Illyrian shrine. That is when local Illyrian communities meet the more advanced Greek civilization and face the colonization of the eastern Adriatic coast. It is also the time when the cave was occupied the most, with the highest number of finds, mostly consisting of fine Greek and Hellenic ceramic vessels and other artefacts.

The vessels represent the finest and most expensive pieces of the time. The existence of at least 223 vessels of Greek make, probably from Attic but also Italic (southern Italy and northern Adriatic coast – *Alto-Adriatico*) workshops, was confirmed. Most of them belong to various forms of black-glazed ceramics, at least 94 individual vessels. The dominant vessel is the Attic skyphos of Type A, of smaller (62 pieces) and larger (seven pieces) dimensions, then come small ribbed cups with a single handle (12 pieces), larger cups with a smooth surface with a single

SLIKA 6. Crnopremazani skifosi i šalice, 4. st. pr. Kr. (snimili D. Perkić, M. Ćurković Madiraca).

FIGURE 6. Large skyphoi, Alto Adriatico pottery, 4th century BC (photo by D. Perkić, M. Ćurković Madiraca).

SLIKA 7. Veliki skifosi, Alto Adriatico keramika, 4. st. pr. Kr. (snimili D. Perkić, M. Ćurković Madiraca).

FIGURE 7. Black-glazed skyphoi and cups, 4th century BC (photo by D. Perkić, M. Ćurković Madiraca).

guće oinochoe i pelike) (tri komada) (Sl. 6). Crnoglaziranoj keramici pripadaju i kupe na nozi, s konkavnim vratom i bikoničnim prijelazom vrata u trbuh (osam komada) te ulomci tanjura s utisnutim pečatom u obliku palmete (dva komada).

Brojnošću slijede veliki atički skifosi tipa A, koji pripadaju *Alto-Adriatico* keramici, odnosno keramici gornjojadranskih radionica na području Picenuma, Spine i Adrije (pedeset i jedan komad) (Sl. 7).[13] Od crvenofiguralne keramike definirano je najmanje dvadeset i devet različitih posuda. Najviše ih pripada tzv. glaukes ili sovinim skifosima (dvadeset i četiri komada) (Sl. 8).[14] Sova se gotovo isključivo vezuje uz božicu Atenu, koja se s njom često prikazuje. Atenina se sova naziva *glaux*, pa zato Atena dobiva epitet *glaukopis*.[15] Keramika iz Viline špilje pripada atičkim skifosima tipa A, a većina ima crveno oslikan prikaz sove između maslinovih grančica. Takvi su skifosi dosta česti u atičkim radionicama petog stoljeća, ali se proizvode i u južnoj Italiji, osobito u Kampaniji, tijekom cijelog četvrtog stoljeća prije Krista.[16] Samo je jedan primjerak glaukes skifosa s bijelim prikazom na smeđoj podlozi za koji se pretpostavlja autorstvo farskih[17] ili etrurskih[18] radionica. Preostala je crvenofiguralna keramika predstavljena šalicama s jednom ručkom i također

13 Opširnije o *Alto-Adriatico* keramici u nas vidi u: Kirigin 1992, 79–98; 2000, 131–137; 2010a, 23–55.

14 Opširnije o *glaukes* skifosima vidi u: Johnson 1955, 119–124; Kirigin 2020, 58–69.

15 Luyster 1965, 151.

16 Migotti 1987, 159.

17 Za moguće farske radionice ovih skifosa vidi u: Jeličić Radonić 1995, 62, 123; Jeličić Radonić 2002, 229; Katić 1999–2000, 53, T. III; Jeličić Radonić, Katić 2015, 80.

18 Za moguće etrurske radionice ovih skifosa vidi u: Parović-Pešikan, 1985–1986, 41–42.

handle (five pieces), and larger ribbed vessels (undefined shape, possible oenochoe or pelikes, three pieces). Other black-glazed pottery includes single-stem cups with a concave neck and a biconical transition from the neck to the belly (eight pieces) and fragments of plates with an imprinted stamp in the form of a palmette (two pieces).

The next most frequent form of vessel are large Attic skyphoi of Type A, which belong to *Alto-Adriatic* pottery, i.e. pottery produced in workshops in the northern Adriatic in the area of Picenum, Spina and Adria (51 pieces) (Fig. 7).[13] When it comes to Red-figure pottery, a minimum of 29 different vessels was identified. Most of them belong to so-called *glaukes* or owl skyphoi (24 pieces) (Fig. 8).[14] The owl is almost exclusively connected to the goddess Athena, who is often depicted in the company of owls. The term used for Athena's owls is *glaux*, which is why Athena's name is often followed by the epithet *glaukopis*.[15] The pottery from Vilina špilja belongs to Attic skyphoi of Type A, and most of it has a red-figure depiction of an owl between olive branches. Such skyphoi were quite common in 5th century Attic workshops, but they were also produced in southern Italy, especially in Campania, throughout the 4th century BC.[16] A sin-

13 For more on *Alto-Adriatico* pottery in Croatia, see: Kirigin 1992, 79–98; 2000, 131–137; 2010a, 23–55.

14 For more on *glaukes* skyphoi, see: Johnson 1955, 119–124; Kirigin 2020, 58–69.

15 Luyster 1965, 151.

16 Migotti 1987, 159.

Slika 8. Crvenofiguralni skifosi i šalice s prikazima sove, 4. st. pr. Kr. (snimili D. Perkić, M. Ćurković Madiraca).

FIGURE 8. Black-figure skyphoi and cups with depictions of owls, 4th century BC (photo by D. Perkić, M. Ćurković Madiraca).

SLIKA 9. Ulomak *busta*, odnosno *bothrosa* – terakotne plastike u obliku ženske glave, 4. st. pr. Kr. (snimio D. Perkić).

FIGURE 9. Fragment of busta, or bothros – a female head made of terracotta, 4th century BC (photo by D. Perkić).

prikazima sove s maslinovim grančicama (četiri komada) te većim skifosom s blagom „S" profilacijom oboda i prikazom sirene između palmeta (jedan komad).

Od ostalih se vrsta keramičkih posuda ističu ulomci kantarosa koji pripadaju tzv. grupi St. Valentin keramike atenskih radionica. Nadalje se izdvajaju po jedan krater i tanjur Gnathia keramike s narančastim i bijelim prikazima na crnoj podlozi, zatim ulomci oinochoa (četrdeset i četiri komada) i tanjura (jedan komad) koji pripadaju običnoj finoj keramici. Pronađene su tri uljanice od kojih su dvije crnoglazirane i jedna od obične fine keramike s plitkim reljefnim ukrasima. Među najljepše nalaze može se svrstati veći ulomak *busta*, odnosno *bothrosa* – terakotne plastike u obliku ženske glave s vjernim prikazom lica i valovitom plavom (žuto obojenom) kosom kao tipičnom predstavom izvjesnog ženskog božanstva u klasičnoj grčkoj umjetnosti (Sl. 9). Takvi se figuralni prikazi u pravilu nalaze u svetištima ili, rjeđe, u grobovima na matičnom grčkom ili italskom području.[19]

Što se tiče amfora, iako nije pronađena nijedna cjelovita amfora, prema broju različitih ulomaka, možemo pretpostaviti najmanji mogući broj od šezdeset i tri amfore. Od spomenutih, barem pedeset i dvije amfore pripadaju ranim i klasičnim Korint B amforama, čime Vilina špilja predstavlja najbrojnije nalazište takvih amfora na kopnu cijele istočnojadranske obale.

19 Opširnije vidi u: Kilmer 1977; Carter, Hall 1998, 241, 355, sl. 11; Malone 1998, 780, 784.

gle glaukes skyphos has a white-figure depiction on a brown background and was probably made in a workshop in Pharos[17] or in an Etruscan workshop.[18] The remaining Red-figure pottery consists of single-handle cups with depictions of an owl and olive branches (four pieces) and a large spyphos with a subtle S-profile rim and a depiction of a mermaid between some palmettes (one piece).

Other notable pottery finds include fragments of kantharoi belonging to the so-called Saint-Valentin group of pottery produced in workshops in Athens. Furthermore, pieces that should also be pointed out are a Gnathia crater and plate with orange and white depictions on a black surface, fragments of oenochoae (44 pieces) and plates (single piece) belonging to common fine pottery. Three oil lamps were also discovered, two of which were black-glazed and one made of common fine pottery with shallow embossed ornaments. One of the most beautiful finds is a large fragment of *busta*, or rather a *bothros* - a terracotta statue in the form of a woman's head with a faithful depiction of her face and wavy blonde hair (painted yellow) as a typical representation of a certain female deity in classical Greek art (Fig. 9). In general, such figurative depictions are found in sacred places or, less often, in graves in Greece or in the territory inhabited by Italic tribes.[19]

17 For possible workshops of these skyphoi in Pharos, see: Jeličić Radonić 1995, 62, 123; Jeličić Radonić 2002, 229; Katić 1999–2000, 53, T. III; Jeličić Radonić, Katić 2015, 80.

18 For possible Etruscan workshops of these skyphoi, see: Parović-Pešikan, 1985–1986, 41–42.

19 For more detail see: Kilmer 1977; Carter, Hall 1998, 241, 355, Fig. 11; Malone 1998, 780, 784.

SLIKA 10. Ulomak ruke bročanog kipića, 4. st. pr. Kr. (snimio D. Perkić).

FIGURE 10. Fragment of an arm from a bronze statuette, 4th century BC (photo by D. Perkić).

SLIKA 11. Minijaturne votivne posude, 4. st. pr. Kr. (snimili D. Perkić, M. Ćurković Madiraca).

FIGURE 11. Miniature votive pottery, 4th century BC (photo by D. Perkić, M. Ćurković Madiraca).

Osim keramičkih nalaza grčke provenijencije, pronađeni su brojni ulomci minijaturnih posuda (najmanje četrdeset i pet komada) koji pripadaju lokalnoj, ilirskoj keramici rađenoj rukom, loše pečenoj, vrlo grube fakture, s dosta primjesa vapnenca i kalcita. Neupitno, riječ je o posudama votivnog karaktera, kakve inače nalazimo u svetištima i grobovima u raznim prapovijesnim razdobljima (Sl. 10).

Keramičke nalaze dopunjuju samo dva metalna nalaza – brončana ručka manje posude (vrča) i ulomak bročanog kipića od kojeg je preostala samo ruka sačuvana od lakta s, vjerojatno, čašom u šaci (Sl. 11).

Zašto svetište, zašto ilirsko svetište?

Sudeći po vrsti nalaza, položaju špilje, ali i drugim sličnim nalazištima, logična je pretpostavka kako je ulazni dio Viline špilje bio u službi izvjesna oblika svetišta krajem starijeg i u prvom dijelu mlađeg željeznog doba. Sve su pronađene posude namijenjene čuvanju (amfore), miješanju (krater, oinochoa) ili najčešće ispijanju vina (skifosi, kantarosi, oinochoe, razne šalice). Dakle, služile su u određenom ritualu naglašavajući upotrebu vina u kultu. Sve navedene posude grčke provenijencije predstavljaju najskupocjeniju i najkvalitetniju robu tog vremena, a u svetištima su se uvijek ostavljali najdragocjeniji predmeti u službi zavjeta, dara, traženja mira ili milosti od bogova. *Glaukes*, ili sovini skifosi, isključivo su kultne posude. Pojedine su posude sekundarno bušene na dnu (funkcija libacije), a primjetno je i često popravljanje posuda (votivna funkcija). U neupitno kultnom kontekstu možemo promatrati i nalaz bročane ruke s čašom u ruci, kao dio manjeg kipa, te dio antropomorfne terakotne plastike – busta s prikazom ženske glave. U prilog svemu navedenom idu i brojne minijaturne, votivne posude lokalne proizvodnje.

Također, smještaj špilje visoko u strmim i nepristupačnim stijenama neposredno iznad izvora vode upućuje na mogući sakralni karakter špilje. Dolazak do špilje krajnje je zahtjevan. Penjanje uz strme padine, sipare i gotovo u potpunosti vertikalne stijene s teretom teških amfora ili sitnih i krhkih posuda traži iznimnu snagu, sposobnost i jako dobar razlog. Štovanje svetog mjesta ili strahovi kao neminovnost od neispunjenja svete obveze ili rituala mogu biti sasvim dobar razlog tomu.

Zasad ostaju i neka otvorena pitanja, kao što je: „Kakvi su se obredi odvijali u špilji i kojem je božanstvu svetište bilo posvećeno?" Sudeći po vrsti posuda, vezujući ih gotovo isključivo uz ispijanje vina, može se pretpostaviti bitna uloga vina u okviru kulta. Što se tiče izvjesnog božanstva štovanog u špilji, možda ga se može tražiti u sinkretizmu ilirskog i grčkog panteona. Govoreći o određenom razdoblju, s ilirske strane postoji izrazit kult ratnika i kult zmije koji se spaja s grčkim kultom heroja. Poznato je da se kult heroja širi usporedno s grčkom kolonizacijom i biva posebno izražen u perifernom grčkom svijetu,[20] a upravo je Atena zaštitnica gotovo svih heroja, kako u grčkoj mitologiji, tako posredno i u umjetnosti.[21] Da je riječ o ilirskom svetištu, a ne o grčkom, svjedoče minijaturne (očito votivne) posude koje su lokalni produkt. Zasigurno u jednom grčkom svetištu ne bi postojale za Grke bezvrijedne, jednostavne ilirske votivne posude. Također, Grci u svojim svetištima ne ostavljaju rabljene i popravljane posude, već ostavljaju novac, nakit i oružje,[22] čega nema u Vilinoj špilji.

Potvrdu o postojanju ilirskog svetišta u Vilinoj špilji nalazimo i u drugim, sličnim speleološkim objektima na istočnojadranskoj obali. Prije svega, misli se na svetište u špilji Spila u Nakovani[23], no slično se može pretpostaviti i za špilju Raču na Lastovu[24] i za špilju sv. Filipa i Jakova kod Marine.[25] Gotovo se može govoriti o ilirskim svetištima – špiljama – kao nezaobilaznom dijelu slabo poznate ilirske religije.

When it comes to amphorae, even though no whole vessels were found, according to the number of different fragments, a minimum of 63 amphorae can be assumed. Of the above-mentioned amphorae, at least 52 are early and classical Corinth B amphorae, which makes Vilina špilja the site with the most amphorae of this type on the eastern Adriatic coast.

In addition to Greek pottery, numerous fragments of miniature vessels (at least 45 pieces) belonging to local Illyrian handworked pottery were found. It was poorly fired and manufactured, and contains a significant amount of limestone and calcite. The vessels were certainly votive in character, and are normally found in the sanctuaries and tombs during multiple prehistoric periods (Fig. 10).

The pottery finds are complemented by only two metal finds - a bronze handle of a small vessel (jar) and a fragment of a bronze statue, of which only the arm from the elbow to the hand possibly holding a cup was preserved (Fig. 11).

Why was this site interpreted as an Illyrian shrine?

Judging from the types of finds and location of the cave, but also other similar sites, it is logical to assume that the entrance of Vilina špilja was used as a kind of sanctuary during the end of the Early and during the first part of the Late Iron Age. All the discovered vessels were used for the storage (amphorae), mixing (crater, oenochoae), or most frequently consumption of wine (skyphoi, kantharoi, oenochoae, various cups). Therefore, they were used in certain ritual practices that emphasized the use of wine in the cult. All the mentioned Greek vessels represent the most expensive and high-quality merchandise of that time, and people always left the most precious objects in sanctuaries as part of a vow or as gifts when seeking peace or favour from the gods. *Glaukes*, or owl skyphoi, are exclusively cult-vessels. A hole was drilled in the bottom of some vessels subsequently (libation), and it was also noted that the vessels were frequently repaired (votive function). The bronze hand holding a cup, as part of a small statue, and the anthropomorphic terracotta piece, busta depicting a female head, can also undoubtedly be interpreted as belonging to a cult context. Numerous miniature, votive vessels of local make serve to confirm these interpretations.

Furthermore, the location of the cave high in the steep and inaccessible cliffs directly above a source of water may point to its sacral character. The approach to the cave is extremely demanding. Climbing steep slopes, scree, and almost entirely vertical rocks burdened with heavy amphorae or small and fragile ceramic vessels requires exceptional strength, skill, and a very good reason. Worshipping at a holy place or fear resulting from the failure to fulfil sacred obligations or rituals are certainly good explanations.

However, there are still several unanswered questions. What did the rituals performed in the cave look like and to which deity was the shrine dedicated? Judging by the type of ceramic vessels, i.e. judging by the fact that they are almost all exclusively linked to drinking wine, it can be surmised that wine played an important role in the cult. When it comes to the specific deity worshipped in the cave, perhaps it can be sought in syncretism between the Illyrian and Greek pantheons. When it comes to the period in question, the Illyrian cult of the warrior and the snake were very prominent at the time and merged with the Greek cult of the hero. The cult of the hero spread with Greek colonization, and was particularly important along the outlines of the Greek world,[20] with Athena as the patron of almost all heroes, both in Greek mythology and arts as well.[21] That this is an Illyrian and not Greek shrine is affirmed by the miniature (obviously votive) vessels that were manufactured locally. A Greek shrine would surely be no place for simple Illyrian votive vessels, which the Greeks would consider worthless. Furthermore, the Greeks did not leave used or repaired vessels in their sanctuaries, but rather coins, jewellery, and weapons,[22] none of which were found in Vilina špilja.

Confirmation of the existence of an Illyrian shrine in Vilina špilja can also be found in other similar speleological objects along the eastern Adriatic coast. The best example is the shrine in the cave at Nakovana,[23]but the same can be assumed for the cave of Rača on Lastovo[24] and St. Philip and Jacob's Cave near the town of Marina.[25] One could say that Illyrian shrines – caves – are an unavoidable part of the obscure Illyrian religion.

20 Kirigin 2010b, 109.

21 Villing 1992, 71–72.

22 Burkert 1985; Forenbaher 2010, 155.

23 Forenbaher, Kaiser 1999, 75–77; 2001, 677–678; 2002, 53–55; 2003; 2006, 571–582; 2011, 185–193; 2012, 263– 274; Forenbaher, Kaiser, Kirigin 2000, 93–99; 2001, 83–86; 2003, 323–331; Forenbaher, Jones 2011, 425–438; 2014, 7–28; Menalo 2005.

24 Gjivoje 1951, 154–159; Novak 1956, 227–230; Čečuk, Drechsler Bižić 1984, 187.

25 Piteša 2005, 244–246.

20 Kirigin 2010b, 109.

21 Villing 1992, 71–72.

22 Burkert 1985; Forenbaher 2010, 155.

23 Forenbaher, Kaiser 1999, 75–77; 2001, 677–678; 2002, 53–55; 2003; 2006, 571–582; 2011, 185–193; 2012, 263– 274; Forenbaher, Kaiser, Kirigin 2000, 93–99; 2001, 83–86; 2003, 323–331; Forenbaher, Jones 2011, 425–438; 2014, 7–28; Menalo 2005.

24 Gjivoje 1951, 154–159; Novak 1956, 227–230; Čečuk, Drechsler Bižić 1984, 187.

25 Piteša 2005, 244–246.

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SVETIŠTE U SPILI KOD NAKOVANE

NAKOVANA CAVE SANCTUARY

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Nakovanska Spila nalazi se u južnoj Dalmaciji, nedaleko od zapadnog kraja poluotoka Pelješca. Ulaz joj je na nadmorskoj visini od 370 metara, pod vrhom krševitog grebena s kojeg se na sve strane otvaraju vidici na kopno, more i susjedne otoke. Pred ulazom je mala podzidana terasa, danas obrasla u šumarak koji prikriva špilju pogledu iz doline. Tek iz neposredne blizine vidljiv je petnaest metara širok i dva metra visok rascjep u podnožju vapnenačke grede, u novije vrijeme pregrađen suhozidom (sl. 1). Ulazni prostor špilje dubok je petnaest metara, a strop mu se prema kraju spušta sve do razine tla, gdje špilja naizgled završava zatrpana gomilom krupnog kamenja.

Arheolozi već odavno znaju da je Spila prapovijesno arheološko nalazište.[1] Naša istraživanja započela su u srpnju 1999. godine dubokim iskopom pri njezinu ulazu. Na tom mjestu kulturni slojevi debeli su oko četiri metra te obuhvaćaju vremenski raspon od ranog neolitika (oko 6000. godine pr. Kr.) do ilirskog željeznog doba (kraj prvog tisućljeća pr. Kr.).[2] Ostaci vatrišta, hrane i istrošenih upotrebnih predmeta svjedoče da je taj zaštićeni, suhi i osvijetljeni prostor ljudima tisućljećima služio kao zaklon, odmorište i tor za ovce.

Posebno mjesto za obred

Već za prvih posjeta Spili posumnjali smo da se iza kamenja na njenom prividnom završetku možda krije nastavak hodnika. Kad smo uklonili kamenje, pokazao se tijesan prolaz dug nekoliko metara koji se spuštao do prostrane dvorane (sl. 2). Sudeći po netaknutoj korici od sigovine, bio je davno zatvoren, a špilja zapečaćena zajedno sa svojim sadržajem. Površina tla u skrivenoj dvorani bila je posuta ulomcima fine helenističke keramike živih boja iz posljednjih četiriju stoljeća prije Krista. Najviše ih je bilo na najupečatljivijem mjestu pri kraju dvorane, neposred-

Nakovana Cave is situated in Southern Dalmatia, near the western end of Pelješac Peninsula. Its entrance is at an altitude of 370 meters, near the crest of a karst ridge providing views of the coast, sea, and neighboring islands on both sides. In front of the entrance is a small walled terrace, today overgrown in a glade concealing the cave from view from the valley. The 15-meter wide and two-meter high fissure in the limestone ridge, walled off by a recently built drystone wall, is only visible from immediate vicinity (Fig. 1). The part of the cave near the entrance is 15 meters deep, with the ceiling sloping towards the ground to a point where the cave seemingly ends in a pile of large stones.

The fact that the cave is a prehistoric archaeological site has been known to archaeologists for a very long time.[1] Our explorations began in July of year 1999 with a deep trench that we dug near the entrance. The cultural layers in that location run to a depth of four meters, and span the period from the Early Neolithic (around 6000 BC) to the Illyrian Iron Age (end of the first century BC).[2] Remains of hearths, food, and worn everyday items indicate that the protected, dry and well lit space served as a shelter, resting spot and sheepfold for millennia.

A special place for ritual

During our first visits to the cave we suspected that the cave passage might extend beyond the stones at its apparent end. Upon removal of the stones, we discovered a tight channel dropping a few meters to a spacious hall (Fig. 2). Judging by the untouched travertine layer, that channel had been closed, and the cave sealed together with all of its content for a very long time. The floor in the hidden hall was littered with fragments of finely made and brightly colored Hellenistic potshards dating to the last four centuries BC. Most of them were concentrated at the

1 Vuletić-Vukasović 1892, 98–99; Fisković 1956, 219; Petrić 1975.
2 Forenbaher, Kaiser 2010, 26–27; Forenbaher, Perhoč 2015, 8–10.

1 Vuletić-Vukasović 1892, 98–99; Fisković 1956, 219; Petrić 1975.
2 Forenbaher, Kaiser 2010, 26–27; Forenbaher, Perhoč 2015, 8–10.

SLIKA 1. Ulaz u Spilu
(snimio S. Forenbaher).

FIGURE 1. The entrance
to the cave
(photo by S. Forenbaher).

no ispred jedinog krupnog stalagmita (sl. 3 i 4). Raspored nalaza, značajke keramike, kao i obilježja samog špiljskog prostora ubrzo su nas naveli na pomisao da bi se moglo raditi o drevnom obrednom mjestu – o svetištu.

Unutrašnjost špilje bila je vjekovima nedirnuta. Zahvaljujući sreći, pružila nam se prilika istražiti netaknuto svetište staro preko dvije tisuće godina.[3] Tijekom 2000. i 2001. godine otvorili smo površinu od četrdeset i sedam kvadratnih metara i otkopali oko tri tone kulturnih naslaga. Površinski sloj, debeo desetak centimetara, sadržavao je mnoštvo ulomaka keramike i životinjskih kostiju slijepljenih masnom i vlažnom špiljskom ilovačom. Zbog brojnosti i vrijednosti nalaza te mogućnosti rekonstrukcije čitavih posuda, svu iskopanu zemlju prenijeli smo u terenski laboratorij (sl. 5), gdje smo je pažljivo ispirali kroz sita pomoću visokotlačnih perača. Unatoč tome, među mnogobrojnim nalazima nismo pronašli nijedan predmet mlađi od prvog stoljeća prije Krista.

Obredi se često održavaju na neobičnim mjestima u prirodi, dovoljno prostranima za sudionike, ali i dovoljno dojmljivima i tajanstvenima da obredu pruže potrebnu uvjerljivost.[4] Skrivena dvorana nakovanske Spile upravo je takav prostor. U njoj se može smjestiti manja grupa ljudi, ali tek nakon provlačenja kroz tijesni prolaz koji je odvaja od vanjskog svijeta svakodnevice.

U dvorani vlada gotovo potpun mrak. Na nisku pragu pri njezinu kraju stoji krupni osamljeni stalagmit (sl. 6) iza kojeg prostrani špiljski hodnik nestaje u utrobi brda. Pod umjetnim svjetlom, dramatični obris stalagmita na tamnoj pozadini odmah privlači pogled. Stalagmit je vjerojatno slučajno izrastao baš na tom upečatljivom mjestu, no nije posve isključeno da ga je netko

most impressive location, near the end of the hall, right in front of a single large stalagmite (Figs. 3 and 4) The distribution of the finds, the characteristics of the pottery, and the features of the cave very quickly led us to believe that this might be an ancient ritual site, a sanctuary.

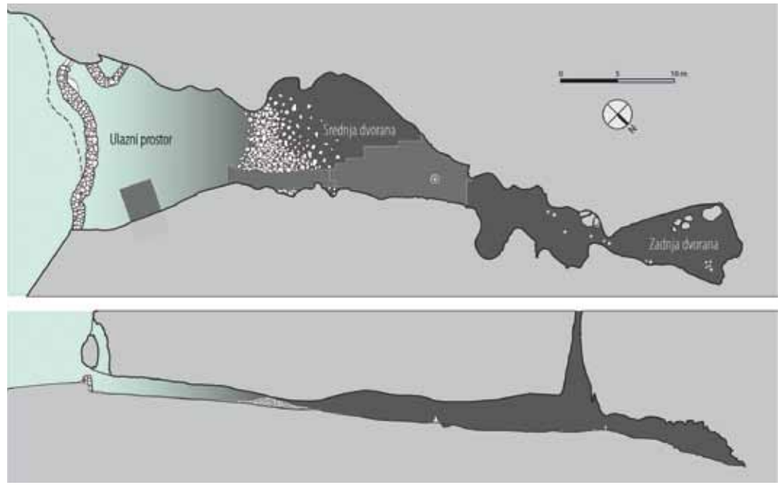
The cave interior had not been disturbed for centuries. By sheer luck, we were blessed with the opportunity to research an intact two thousand year old sanctuary.[3] During years 2000 and 2001, we excavated a surface of 47 square meters and removed approximately three metric tons of cultural deposits. The roughly ten-centimeter-thick top layer contained numerous potshards and animal bones stuck together by the greasy and wet cave loam. Due to the abundance and variety of finds and the possibility of reconstruction of whole vessels, we transported all excavated soil to the field laboratory (fig. 5), where it was carefully passed through sieves with the help of high-pressure washers. Nevertheless, not a single item more recent than the 1st century BC was recovered among the numerous finds.

Rituals are frequently performed in unusual natural settings, spacious enough to accommodate all participants, but also impressive and mysterious enough to make the ritual convincing.[4] The hidden hall of Nakovana Cave is just such a space. It can accommodate a small group of people who first have to squeeze through a narrow passage that connects the hall to the quotidian outside world.

The hall is almost completely dark. A low sill at its far end serves as a base for a large lone stalagmite (Fig. 6), behind which a spacious cave passage disappears into the hill. In artificial light, the dramatic silhouette of the stalagmite outlined against the dark

3 Forenbaher, Kaiser 2003.
4 Renfrew 1985, 18.

3 Forenbaher, Kaiser 2003.
4 Renfrew 1985, 18.



SLIKA 2. Tlocrt i presjek Spile s naznačenim istraženim površinama
(izradio S. Forenbaher).

FIGURE 2. Plan and profile of Nakovana Cave showing excavated areas
(made by S. Forenbaher).

SLIKA 3. Unutrašnja dvorana nakovanske Spile u kojoj su se održavali obredi
(snimio S. Forenbaher).

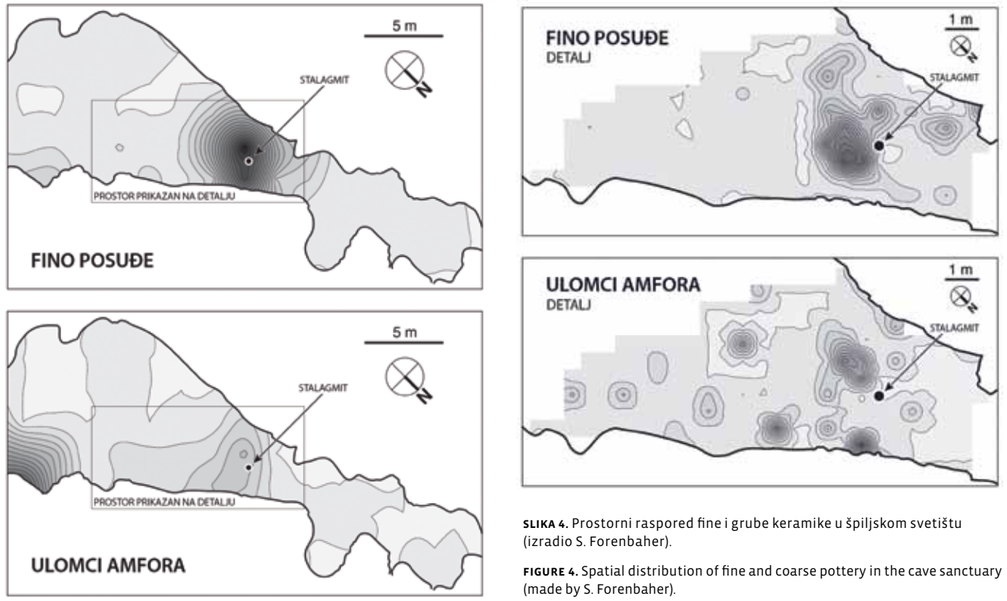
FIGURE 3. The internal hall of Nakovana Cave where the rituals were performed
(photo by S. Forenbaher).

premjestio iz drugog dijela špilje. Po njemu i danas povremeno kaplje voda, pa ne možemo biti sigurni kako je izgledao prije dvije tisuće godina, ali se čini da se priroda poigrala njime i učinila ga nalik falusu.

Iza stalagmita nalazi se pola metra duboka i metar široka jama. U jami nije bilo ničega, a sudeći po sigastom saljevu na njezinu boku, povremeno se punila vodom koja se cijedila sa susjednog zida špilje. Možemo tek nagađati je li taj bazenčić služio obrednom pročišćavanju ili proricanju. Neposredno ispred stalagmita prepriječio se plitak izdužen rov u kojem smo zatekli najveći broj arheoloških nalaza.

background immediately draws one's attention. The stalagmite probably grew accidentally at that conspicuous place, but it cannot be ruled out that someone moved it there from another part of the cave. Water still occasionally drips on it to this day, so we cannot be sure what it looked like two thousand years ago, but it seems that nature has played a trick on it and made it appear distinctly phallic.

Behind the stalagmite, there is a pit about a meter wide and half a meter deep. The pit was empty, but judging by the travertine flow on its side, it was occasionally filled with water draining from the neighboring cave wall. We can only guess whether that small pool served for divination or as a lustral basin. An elongated shallow trench placed directly in front of the stalagmite contained the largest proportion of archaeological finds.



SLIKA 4. Prostorni raspored fine i grube keramike u špiljskom svetištu (izradio S. Forenbaher).

FIGURE 4. Spatial distribution of fine and coarse pottery in the cave sanctuary (made by S. Forenbaher).

Stvari dostojne bogova

Općenje s nadnaravnim silama obično se smatra opasnim, pa je pritom najsigurnije držati se ustaljenih i provjerenih pravila ponašanja. Zbog toga su obredne aktivnosti konzervativne i formalizirane, što dovodi do izrazite strukturiranosti arheološke građe.[5] Prilikom obreda određene vrste predmeta koriste se uvijek na isti način i ostavljaju na istom mjestu.

Keramičko posuđe u nakovanskoj Spili pruža mnoštvo naznaka obrednog ponašanja. Oko dvije trećine, od ukupno desetak tisuća prikupljenih ulomaka, potječe od finih posuda, proizvedenih između sredine četvrtog i početka prvog stoljeća prije Krista. Većinom se radi o čašama i šalicama za piće. Slijede ih plitice, zdjele i vrčići te manji broj vrčeva i različitih minijaturnih posuda. Gruba lončarija i ulomci amfora čine tek desetinu nalaza. Izobilje finog posuđa posve je neuobičajeno i ukazuje na posebnu namjenu nalazišta.

Helenističko posuđe dospjelo je u špilju s različitih strana, ponekad iz vrlo udaljenih krajeva. Veći dio crne i višebojno oslikane *Gnathia* keramike vjerojatno je proizveden u grčkoj koloniji Issi na otoku Visu[6] ili u nekoj drugoj grčkoj ispostavi u Dalmaciji,[7] dok manji dio takvog posuđa potječe iz grčkih kolonija u južnoj Italiji.[8] Nekoliko posuda stila *Alto-Adriatico* stiglo je sa sjevernog Jadrana, možda iz Spine ili Adrije.[9] Pojedine posude uvezene su iz Atene i Korinta, dok je nekoliko ulomaka fajanse stiglo možda čak iz Egipta.

5 Renfrew 1985, 19.
6 Kirigin 1996, 132–133.

Things worthy of gods

Dealing with the supernatural is usually considered dangerous, and in those dealings the safest solution is to adhere to well-established and verified rules of conduct. This results in conservative and formalized ritual activities, leading to a highly structured archaeological record.[5] During the ritual, specific kinds of objects are always used in the same manner and at the same place.

At Nakovana Cave, pottery vessels provide abundant indications of ritual activities. Of the total of some ten thousand recovered fragments, approximately two thirds belong to fine vessels produced between the 4th and 1st century BC. Most of them are beakers and drinking cups. The next most numerous are plates, bowls and juglets, followed by a few jugs and a variety of miniature vessels. Coarse pottery and fragments of amphorae constitute only a tenth of the total finds. The abundance of fine pottery is quite unusual and implies that the site had a special purpose.

Hellenistic pottery arrived to the cave from different sources, sometimes from very distant lands. The majority of the black and polychrome painted *Gnathia* pottery was probably produced in the Greek colony of Issa on the island of Vis[6] or some other Greek outpost in Dalmatia,[7] while a smaller proportion of such pottery comes from Greek colonies in southern Italy.[8] Several of the *Alto-Adriatico* style vessels came from the north Adriatic, probably from Spina or Adria.[9] Several vessels were imported from Athens and Corinth, while a few Maiolica fragments possibly came from as far as Egypt.

5 Renfrew 1985, 19.

SLIKA 5. Mnoštvo helenističkih posudica za piće u terenskom laboratoriju tijekom rekonstrukcije (snimio S. Forenbaher).

FIGURE 5. Numerous Hellenistic drinking cups during reconstruction in the field laboratory (photo by S. Forenbaher).

SLIKA 6. Osamljeni stalagmit u žarištu obrednih aktivnosti (snimio S. Forenbaher).

FIGURE 6. The lone stalagmite in the focus of ritual activities (photo by S. Forenbaher).

6 Kirigin 1996, 132–133.
7 Brusić 1990; Kirigin *et al.* 2002.
8 Forti 1965.
9 Kirigin 2000.

SLIKA 7. Pločice od bjelokosti s prikazima zodijakalnih simbola (snimio D. Doračić, izradio S. Forenbaher).

FIGURE 7. Ivory plaques with depictions of zodiacal symbols (photo by D. Doračić, made by S. Forenbaher).

Bogovima se ne poklanjaju jeftine stvari. Nabava finog uvoznog posuđa, bilo trgovinom ili pljačkom, iziskivala je znatna ulaganja, pa se ono moralo smatrati vrijednim. Sudeći po brojnim rupicama napravljenim radi krpanja, napukle posude nastojale su se što duže zadržati u upotrebi, što znači da su bile i te kako na cijeni, dok su minijaturne posude obično sadržavale mirise ili začine. Pojedine posude – primjerice, plitica ukrašena reljefnim ljudskim likovima, vjerojatno proizvedena u Italiji u trećem stoljeću prije Krista[10] – imale su izričito obrednu namjenu. Nekoliko kratkih natpisa, ugrebenih u stijenke posuda, nedvosmisleno svjedoči o postojanju zavjetnih darova.

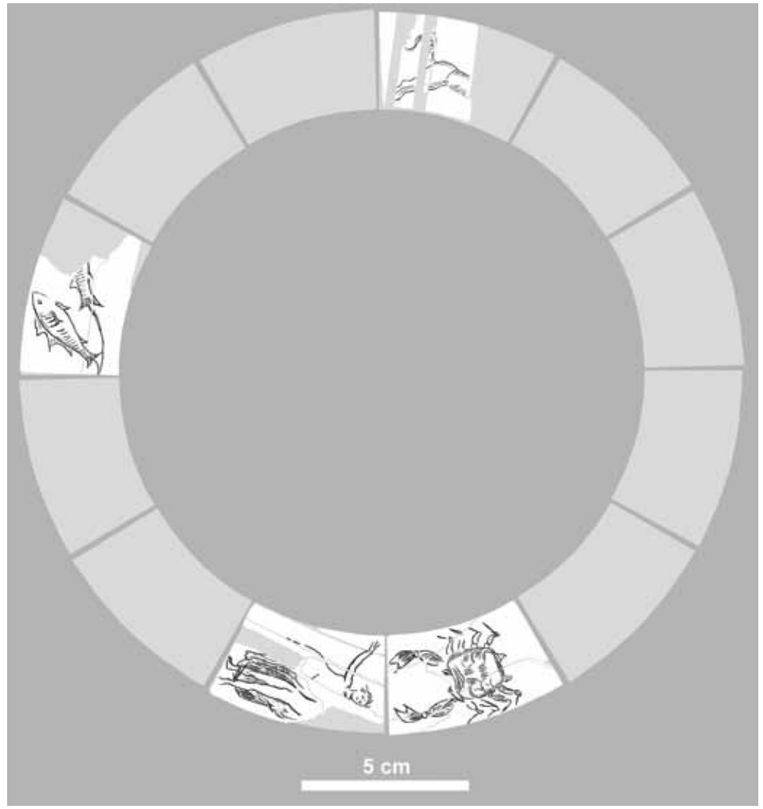
Uz mnoštvo keramičkog posuđa, pronađeno je tek nekoliko predmeta od drugih materijala. Među njima se posebno ističu sitni ulomci bjelokosti ukrašeni finim graviranjem. Nakon sastavljanja, pokazalo se da potječu od pločica s prikazima simbola zodijakalnog kruga (sl. 7 i 8).[11] Rak, blizanci, ribe i strijelac

One does not offer cheap things to the gods. The procurement of fine imported pottery, whether by trade or plunder, required significant effort, and the pottery must have been regarded as very valuable. Judging by the numerous small holes made for reparation, cracked vessels were kept in use for as long as possible, implying that they were highly valued, while the miniature jars probably contained scents and spices. Individual vessels – for instance, a plate with relief decoration showing human figures, probably produced in Italy in the 3rd century BC[10] – had a distinctly ritual use. Several short inscriptions, scratched into the walls of the vessels, clearly testify of the existence of votive offerings.

Aside from the abundant pottery, only a few items made of other materials were recovered. Small fragments of finely engraved ivory stand out among them. After refitting, it was discovered that they belonged to small plaques depicting the symbols of zodiacal cycle (Figs. 7 and 8).[11] Cancer, Gemini, Pisces, and Sagit-

10 Bonomi 1995, sl. 5 i 6; Sanesi Mastrocinque 1987, 95, sl. 555.
11 Forenbaher, Jones 2011; 2014.

10 Bonomi 1995, Fig. 5 and 6; Sanesi Mastrocinque 1987, 95, Fig. 555.
11 Forenbaher, Jones 2011; 2014.



SLIKA 8. Zodijak iz Nakovane (rekonstrukcija) (izradio S. Forenbaher).

FIGURE 8. The Nakovana zodiac (reconstruction) (made by S. Forenbaher).

dovoljno su cjelovito sačuvani da ih se može prepoznati. Radi se o dijelovima astrologove ploče, luksuznog predmeta koji je služio za zorno prikazivanje i tumačenje horoskopa, ali i za impresioniranje astrologovih klijenata.[12] Taj zasad najstariji poznati primjerak iznimno rijetkog arheološkog nalaza,[13] proizveden je vjerojatno u nekom od kasnohelenističkih urbanih centara istočnog Sredozemlja oko stote godine prije Krista, ubrzo nakon što je izumljena grčka horoskopska astrologija.[14]

Rekonstrukcija obreda

Fino helenističko posuđe odlagano je neposredno ispred stalagmita koji je predstavljao žarište obreda. Istovremeno s njim dospjelo je u svetište i nekoliko vrlo grubih čašica, šalica i tanjurića izrađenih u tradiciji lokalnog prapovijesnog lončarstva. Zavjetni darovi ostavljani su u grupicama tijekom više uzastopnih obreda. Posude nisu bile razbijane i razbacivane, već su ostav-

tarius were preserved well enough to be recognizable. The plates were parts of an astrologer's board, a luxury item that served for visualizing and interpreting horoscopes, as well as to impress the astrologer's clients.[12] This item is currently the oldest known example of an extremely rare archaeological find.[13] It was probably produced in one of the late Hellenistic urban centers of the Eastern Mediterranean around year 100 BC, not long after the invention of Greek horoscopic astrology.[14]

Reconstruction of the ritual

The fine Hellenistic pottery was deposited immediately in front of the stalagmite, which served as a ritual focus. Together with them were deposited a few small and very coarse vessels (beakers, cups and saucers) made in the local prehistoric potting tradition. Votive offerings were deposited in clusters during several consecutive rituals. The vessels were not smashed and scattered,

12 Evans 2004.
13 Abry 1993; Gundel 1972.
14 Pingree 1997, 21, 26; Evans 2004, 1–2, 34.

12 Evans 2004.
13 Abry 1993; Gundel 1972.
14 Pingree 1997, 21, 26; Evans 2004, 1–2, 34.

ljene cijele ili su zdrobljene na licu mjesta. Većina ih je bila namijenjena piću ili serviranju hrane, što ukazuje na održavanje stvarnih ili simboličkih gozbi. Možemo tek pretpostaviti da su sadržavale vino koje se do špilje donosilo u amforama. Te velike posude za transport predstavljale su jeftinu ambalažu s kojom se postupalo posve drugačije nego s finim posuđem. Malobrojni ulomci amfora razbacani su po čitavoj dvorani, a najviše ih je u tijesnom prolazu i na padini pod špiljom.

Preduvjet uspješnosti svakog vjerskog obreda je uspostavljanje komunikacije ljudskih sudionika s nadnaravnim bićem. Zato se prisutnost takvog bića označoje simbolom, slikom ili skulpturom. U nakovanskoj Spili, falusoidni stalagmit u žarištu obreda možemo smatrati takvom ikonom. On neizbježno asocira na muževnost, potenciju i druga tradicionalna muška obilježja poput ratničke vještine i snage. To ne znači da u obredu nisu sudjelovale i žene, iako natpisi ugrebeni na posudama poimence spominju samo četiri osobe od kojih su dvije muškarci, a druge dvije neodredivog roda.

Obilje helenističkih nalaza dovodi nas u iskušenje da obrede u Spili pokušamo protumačiti oslanjajući se na klasične grčke izvore. U grčkom svijetu bilo je uobičajeno u svetišta donositi zavjetne darove.[15] Često se darivalo vino, a obredno ispijanje alkoholnih pića predstavljalo je važan simbolički čin koji se obično odigravao u posebnom prostoru namijenjenom toj svrsi. U našem slučaju, tragovi pijanke pred falusoidnom ikonom mogli bi upućivati na dionizijske gozbe i orgijastičku razuzdanost.[16] Slična obilježja nadnaravne muškosti krase različita mitska bića, od Dionizovih pratilaca silena i satira do grčkog Pana i italskog Prijapa. Svetište u nakovanskoj Spili nalazilo se, međutim, u srcu teritorija koji je pripadao lokalnoj zajednici autohtonih Ilira. Nekoliko stoljeća poslije, jedno od najomiljenijih božanstava u rimskoj provinciji Dalmaciji bio je Silvan – rimska verzija Pana koji se često štovao u špiljama. Možda je stalagmit u žarištu nakovanskog špiljskog obreda simbolizirao neko važno ilirsko božanstvo koje se krije iza brojnih dalmatinskih prikaza Silvana.[17]

Nakovanski Iliri koristili su se uvoznom grčkom robom na sebi svojstven način. Grci nisu u svojim svetištima ostavljali rabljene i pokrpane posude, ali su često ostavljali novac, oružje i nakit.[18] U Spili nismo pronašli ništa od spomenutog, kao niti jedan ulomak uljanice kakve su Grci upotrebljavali za rasvjetu svojih špiljskih svetišta.[19]

but left intact or crushed on the spot. Most were intended for drinking or serving food, indicating the practice of real or symbolic feasting. We can only assume that they contained wine that was brought to the cave in amphorae. Those large transport vessels served as cheap packaging, which was handled in a completely different manner compared to the fine pottery. A few fragments of amphorae were strewn about the hall, but most of them were in the narrow passage and on the slope under the cave.

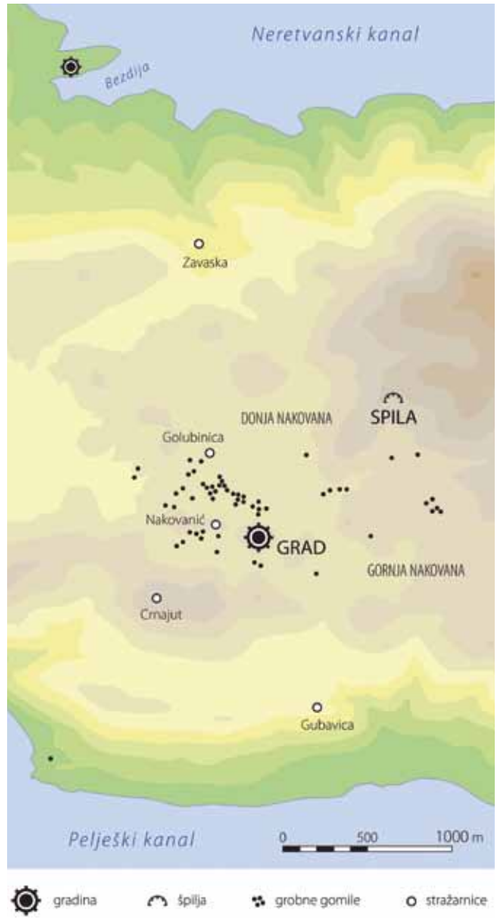
The prerequisite for any successful religious ritual is the establishment of communication between the human participants and the supernatural being. The presence of such a being is therefore marked by a symbol, image, or sculpture. At Nakovana Cave, the phallic stalagmite central to the ritual may be considered as such an icon. It evokes the idea of masculinity, virility, and other traditional male traits such as physical strength and martial prowess. That does not mean that women were excluded from participation in the ritual, although the inscriptions on the vessels name only four people, two of which are men, and the other two of undetermined gender.

The abundance of Hellenistic finds tempts us to interpret the cave rituals by relying on ancient Greek sources. Bringing votive offerings to sanctuaries was standard practice in the Greek world.[15] Wine was commonly offered, and the ritual consumption of alcoholic beverages represented an important symbolic act, usually performed in a special area intended for such a purpose. In our case, the evidence of binge drinking in front of a phallic icon might suggest Dionysian feasts and orgiastic debauchery.[16] Many mythical beings share such supernaturally masculine features, among them sileni and the satyrs of the retinue of Dionysus, the Greek god Pan and the Italic god Priapus. However, the sanctuary in Nakovana Cave was situated in the center of the territory belonging to the local community of indigenous Illyrians. Several centuries later, Sylvanus – the Roman version of the god Pan, often worshipped in caves – would become one of the most popular deities in the Roman province of Dalmatia. The stalagmite in the focus of Nakovana Cave ritual may have been a symbol of an important Illyrian deity hiding behind the many Dalmatian depictions of Sylvanus.[17]

The Nakovana Illyrians used the imported Greek goods in their own unique way. The Greeks would not have offered used and repaired vessels in their sanctuaries, but they often offered money, weapons and jewelry.[18] None of the above was found in the cave, not even a single fragment of an oil lamp often used by the Greeks to illuminate their cave sanctuaries.[19]

15 Burkert 1985.
16 Bruit Zaidman, Schmitt Pantel 1992, 198–207, 218–222.
17 Rendić-Miočević 1955, 10–11.
18 Burkert 1985.

15 Burkert 1985.
16 Bruit Zaidman, Schmitt Pantel 1992, 198–207, 218–222.
17 Rendić-Miočević 1955, 10–11.
18 Burkert 1985.
19 Francis *et al.* 2000.



SLIKA 9. Prapovijesna arheološka nalazišta na nakovanskoj visoravni (izradio S. Forenbaher).

FIGURE 9. Prehistoric archaeological sites on Nakovana plateau (made by S. Forenbaher).

SLIKA 10. Ilirsko naselje na Gradu, zaštićeno okomitim stijenama, nadvisuje nakovansku visoravan (snimio S. Forenbaher).

FIGURE 10. Protected by sheer cliffs, the Illyrian settlement at Grad overlooks Nakovana plateau (photo by S. Forenbaher).

Sudionici obreda

Rijetki zavjetni natpisi ugrebeni u stijenke posuda spominju tri grčka i jedno rimsko osobno ime. Ukoliko se ne radi o helenizira-nim i romaniziranim Ilirima, to bi značilo da su i stranci ponekad mogli sudjelovati u obredima. Iz toga ipak ne slijedi da su svetištem upravljali Grci. Cjelokupna arheološka građa govori upravo suprotno. Brojni arheološki spomenici u neposrednoj okolici Spile svjedoče o identitetu željeznodobnih stanovnika ovog dijela Pelješca.[20] Prapovijesno utvrđeno naselje zvano Grad, koje dominira zapadnim krajem poluotoka,[21] udaljeno je samo pola sata hoda (sl. 9 i 10). Okruženo je desecima kamenih gomila pod kojima su pokopani stanovnici naselja. Na Gradu se intenzivno živjelo i umiralo upravo dok je Spila služila kao svetište. Lokalni

Participants in the ritual

The few votive inscriptions scratched into the vessel walls mention three Greek names and a single Roman personal name. If the aforementioned are not Hellenized and Romanized Illyrians, foreigners sometimes must have been allowed to participate in the rituals. It does not follow, however, that the sanctuary was controlled by Greeks. The comprehensive archaeological evidence suggests exactly the opposite. Numerous archaeological monuments in the immediate surroundings of the cave testify of the identity of the Iron Age inhabitants of this part of Pelješac Peninsula.[20] The prehistoric fortified settlement of Grad, dominating the western part of the peninsula,[21] is only a half hour walk away (Figs. 9 and 10). It is surrounded by dozens of stone

19 Francis *et al.* 2000.
20 Forenbaher *et al.* 2001.

20 Forenbaher *et al.* 2001.
21 Petrić 1978; Forenbaher, Rajić Šikanjić 2008.

ilirski gospodari imali su pristup egzotičnim helenističkim proizvodima zahvaljujući strateškoj poziciji Grada pri vrhu Pelješca. Antički pisci opetovano navode da su trgovina i gusarenje bili važni izvori prihoda obalnim ilirskim zajednicama.[22] Uživajući prirodnu zaštitu na svojoj stijenama opasanoj utvrdi okruženoj brdima, Iliri s Grada mogli su po volji presretati brodove nakrcane vrijednom, nerijetko i egzotičnom robom.

Čini se da su špiljski obredi pred stalagmitom u nakovanskoj Spili bili rijetki i iznimni događaji. Možda je prije nekog posebno opasnog pothvata na kopnu ili moru trebalo osigurati blagonaklonost nadnaravnih sila. Možda su ilirski moćnici s Grada povremeno organizirali gozbe kako bi učvrstili podršku svojih sljedbenika, a možda su priređivali obrede u znak zahvalnosti nakon uspješno obavljenih trgovačkih poslova ili gusarskih prepada.

U kojoj su mjeri pelješki Iliri zajedno s luksuznim proizvodima helenističke civilizacije prihvaćali i grčke bogove i druge elemente stranih kultura? Odgovor na to pitanje teško ćemo pronaći u antičkim pisanim izvorima. Grčki i rimski pisci nisu bili nimalo skloni Ilirima. Uglavnom su ih smatrali gusarima i razbojnicima, ali i opasnim suparnicima koji su igrali važnu ulogu u ravnoteži snaga na Jadranu. Ilirski svijet bio im je stran, a nepristrani opisi ilirskih običaja i vjerovanja nisu ih zanimali. Svetište u Spili pruža vrijedan i rijedak uvid u duhovni svijet Ilira koji, iako je nepotpun, ne dolazi iz pera neprijatelja i stranca.

Svetište u Spili prepoznali smo zahvaljujući tome što se sačuvalo gotovo nedirnuto. Slični obredi vjerojatno su se održavali i u drugim špiljama duž jadranske obale, primjerice u Vilinoj pećini nad izvorom Omble kod Dubrovnika[23] i u špilji Rači na otoku Lastovu.[24] Obje su špilje odavno poznate, posjećivane i prekopavane, pa je arheološka građa, koja bi u njima mogla rasvjetliti pojedinosti obreda, znatno oštećena ili nepovratno uništena.

mounds containing the remains of the settlement's inhabitants. Grad was bustling with life and death at the time when the cave served as a sanctuary. The local Illyrian chieftains had access to exotic Hellenistic products thanks to the strategic position of the settlement near the tip of Pelješac. Ancient historians repeatedly mention that trade and piracy were important sources of income to the coastal Illyrian communities.[22] Naturally sheltered in their cliff-protected fortress surrounded by the hills, the Illyrians from Grad could intercept ships laden with valuable and often exotic goods at their leisure.

It seems that the cave rituals in front of the stalagmite in Nakovana Cave were rare and exceptional events. Maybe the benevolence of supernatural powers had to be obtained before undertaking dangerous ventures on land or at sea. Maybe the Illyrian chieftains from Grad occasionally organized feasts to bolster the support of their followers, or performed rituals as signs of gratitude after successfully accomplished trading missions or pirate attacks.

To which extent did the Illyrians of Pelješac accept the Greek gods and other elements of foreign cultures along with the luxury items of the Hellenistic civilization? The answer to this question cannot be easily found in the written sources of Classical Antiquity. The Greek and Roman authors were not at all fond of the Illyrians. They mainly thought of them as pirates and outlaws, but also as dangerous adversaries who played an important role in the balance of power in the Adriatic. The Illyrian world was foreign to them, and they were not interested in evenhanded descriptions of Illyrian customs and beliefs. The cave sanctuary provides us with a rare and precious glimpse into the spiritual world of the Illyrians, which, although incomplete, does not come from the quill of enemies and strangers.

We identified the cave sanctuary thanks to its almost pristine state of preservation. Similar rituals were probably performed in other caves along the Adriatic coast, for instance in Vilina pećina above the source of the Ombla near Dubrovnik[23] and in Rača on the island of Lastovo.[24] Both caves have been well-known, visited, and excavated for a long time, and the archaeological evidence that could have shed light on the intricacies of the ritual was badly damaged or irretrievably lost.

21 Petrić 1978; Forenbaher, Rajić Šikanjić 2008.
22 Wilkes 1992, 168, 171, 224–225.
23 Petrić 1981, 2; Perkić, Novak 2020, 24.
24 Migotti 1987.

Napuštanje i zatvaranje svetišta

Nakovanska Spila počela se koristiti u obredne svrhe u drugoj polovici četvrtog stoljeća prije Krista, otprilike za vrijeme Aleksandra Makedonskog. Svetište je napušteno u prvom stoljeću prije Krista, u vrijeme uspostave carske vlasti u Rimu. Na istočnom Jadranu, ta nemirna stoljeća započela su osnivanjem grčkih kolonija na srednjodalmatinskim otocima, a završila su rimskim osvajanjem i uključivanjem u sastav Rimskog Carstva.[25] Unatoč legendama vezanima uz ilirsku krajlicu Teutu, bila su to vremena u kojima su ratničke vještine i snaga muškaraca bile na visokoj cijeni.

Ilirske zemlje dospjele su pod rimsku vlast nakon niza dugotrajnih i krvavih vojničkih pohoda koji su započeli prvim ilirskim ratom 229. godine prije Krista. Gotovo dva stoljeća kasnije, Oktavijan, koji će uskoro postati prvi rimski car August, odlučio je konačno pokoriti Ilire. Rat je potrajao osam godina, od 35. do 27. godine prije Krista, obuhvativši gotovo cijelu istočnu obalu Jadrana i veliki dio njezina zaleđa.[26] Već prve godine rata, rimska vojska poharala je otoke Korčulu i Mljet. Rimski povjesničar Apijan spominje domorodačke stanovnike otoka kao razbojnike koji su dijelom pobijeni, a dijelom prodani u roblje jer su ometali pomorski promet. Pelješac se izrijekom ne spominje, no katastrofa koja je pogodila njegovo neposredno susjedstvo nije ga mogla zaobići. O tome najbolje svjedoči činjenica da nakovanska visoravan i zapadni kraj Pelješca nakon rimskog osvajanja stoljećima ostaju posve pusti. Taj prostor bio je strateški prevažan da bi ga Rimljani prepustili domorocima sklonima gusarenju, stoga su ga radije posve opustošili, a njegove stanovnike raselili.

Ulaz u nakovansko špiljsko svetište zatrpan je kamenjem u vrijeme napuštanja utvrde na Gradu ili ubrzo nakon toga. Ne znamo je li to na odlasku učinio neki Ilir ili kasnije neki pastir želeći da mu ovce ne zalutaju u mračnu unutrašnjost Spile. Tko god bio, zahvalni smo mu jer je iznimno vrijednu arheološku građu na taj način sačuvao za budućnost.

Zahvale

Arheološka istraživanja nakovanske visoravni provođena su sredstvima koja je osiguralo Ministarstvo znanosti, obrazovanja i športa Republike Hrvatske (projekti br. 0916004 i 196-1962766-2740) i Kraljevski muzej Ontarija iz Toronta (Kanada). Posebno zahvaljujemo Audry i Davidu Mirvishu iz Toronta (Kanada), čija je velikodušna donacija omogućila sustavno istraživanje svetišta u nakovanskoj Spili.

Abandonment and closure of the sanctuary

The utilization of Nakovana Cave as a ritual space started in the second half of the 4th century BC, approximately at the time of Alexander the Great. The sanctuary was abandoned in the 1st century BC, at the time of the establishment of imperial rule in Rome. Those turbulent times in the east Adriatic started with the establishment of Greek colonies in the middle Adriatic islands, and ended with the Roman conquest and incorporation into the Roman Empire.[25] Despite the legends about the Illyrian queen Teuta, those were times during which martial power and prowess of men were in high regard.

The Illyrian lands came under Roman rule after a series of prolonged and bloody military campaigns starting with the First Illyrian War in 229 BC. Almost two centuries later, Octavian, soon to become Augustus, the first emperor of Rome, decided to finally conquer the Illyrians. The war lasted eight years, from year 35 to 27 BC, engulfing the entire eastern Adriatic coast and a major part of its hinterland.[26] The Roman army conquered the islands of Korčula and Mljet in the very first year of the war. The Roman historian Appian describes the indigenous inhabitants of those islands as outlaws who were either killed or sold into slavery for disrupting naval trade. There is no explicit mention of Pelješac Peninsula, but it could not have avoided the catastrophe that afflicted its immediate neighborhood. The best evidence of the disaster is the fact that Nakovana plateau and the western end of Pelješac were completely deserted for centuries after the Roman conquest. The area was strategically much too important for the Romans to cede it to the indigenous people prone to piracy, so they rather devastated it and removed the inhabitants.

The entry into the Nakovana Cave sanctuary was blocked off with stones at the time of the abandonment of the hill fort, or soon after that. We do not know whether this was done by a departing Illyrian, or later by a shepherd preventing his sheep from getting lost in the dark of the cave. Whoever it was, we are grateful to him for preserving an extremely valuable archaeological site for posterity.

Acknowledgement

The archaeological research of the Nakovana plateau was funded by the Ministry of Science, Education and Sport of the Republic of Croatia (projects nr. 0916004 and 196-1962766-2740) and the Royal Ontario Museum from Toronto (Canada). Special thanks is due to Audrey and David Mirvish from Toronto (Canada), whose generous donation allowed systematic exploration of the Nakovana Cave sanctuary.

25 Novak 1961; Kirigin 1996; Wilkes 1969; 1992.
26 Wilkes 1992, 196–197.

25 Novak 1961; Kirigin 1996; Wilkes 1969; 1992.
26 Wilkes 1992, 196–197.

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NEKROPOLA U BUBIJEVOJ JAMI KAO PRIMJER DEVIJACIJE U RIMSKODOBNOM POGREBNOM RITUALU

THE NECROPOLIS IN BUBIJEVA JAMA AS AN EXAMPLE OF DEVIATION IN ROMAN FUNERAL RITE

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Korištenje špiljama i jamama, kao nekropolama ili pojedinačnim mjestima ukopa, poznato je u gotovo svim prapovijesnim razdobljima od paleolitika do željeznog doba. Međutim, takva upotreba u rimskom razdoblju predstavlja izvjesnu prostornu devijaciju u, inače vrlo uniformiranom, rimskom pogrebnom ritualu. Utvrđena je u više speleoloških objekata na širem području Korduna u Karlovačkoj županiji, uglavnom u međurječju i porječju srednjih i donjih tokova rijeka Korane i Mrežnice sa svojim slivovima u Karlovcu.[1] Osim prostorne ograničenosti, utvrđeno je i vrlo usko vremensko razdoblje devijacije koje je ograničeno na treću četvrtinu 3. stoljeća. Devijacija je prvi put utvrđena 1999. godine otkrićem i istraživanjem Bubijeve jame u šumi Srnjak kod Barilovića. Ujedno je i najsačuvanija nekropola u ovom kontekstu, koja je i najdetaljnije istražena i obrađena. No, što je još važnije, njezinim se otkrićem indirektno došlo do novih spoznaja vezanih uz ostale speleološke objekte u kojima su bili poznati rimski nalazi, koji su nas ponukali na njihovo detaljnije pretraživanje (rekognosciranje), probno iskopavanje i egzaktniju interpretaciju postojećih podataka. Rezultat je utvrđivanje fenomena koji se ubrzo „proširio" i na druge objekte, tako da uz Bubijevu jamu danas možemo govoriti o rimskodobnim nekropolama u speleološkim objektima na sljedećim lokalitetima: Markova špilja u Mateškom selu, Jopićeva špilja kod Krnjaka, Špilja Lipa u Protulipi i Špilja Đutno kod Zdihova.[2] Navedeno se može pretpostaviti i za špilju Vrlovka kod Kamanja,[3] no i za nekoliko špilja u susjednom slovenskom prostoru – prije svega za Predjamu kod Predjamskog grada u Postojni[4] i Levakovu jamu kod Podbočja (Sl. 1).[5]

The use of caves and pit caves as necropolises or for individual burials is present in almost all prehistoric periods from the Palaeolithic to the Iron Age. However, such use of caves in the Roman period represents a certain spatial deviation in otherwise very uniform Roman funeral practices. It has been noted in several speleological sites in the greater Kordun region of Karlovac County, mainly between and along the middle and lower courses of the Korana and Mrežnica rivers, with the two rivers converging in Karlovac.[1] In addition to the spatial limitations, a very narrow deviation period has been established, which is limited to the third quarter of the 3rd century AD. The deviation was first recorded in 1999, with the discovery and excavation of Bubijeva jama in the Srnjak Forest near Barilović. It is also the most preserved necropolis in this context, which has been thoroughly excavated and its material analysed. But more importantly, its discovery indirectly led to new insights into other speleological objects that yielded Roman finds, which encouraged researchers to perform more detailed surveys, test excavations, and to give a more exact interpretation of existing data. The result is the determination of a phenomenon that quickly "spread" to other caves, so today the following speleological objects can be listed along Bubijeva jama as containing Roman necropolises: Markova Cave in Mateško Selo, Jopićeva Cave near Krnjak, Lipa in Protulipa, and Đutno near Zdihovo.[2] The same can also be assumed for Vrlovka near Kamanje[3], but also for several caves in the neighbouring Slovenian area – primarily for Predjama near Predjamski Grad in Postojna[4] and Levakova jama near Podbočje (Fig. 1).[5]

1 Sva ovdje obrađena i spomenuta arheološka istraživanja speleoloških objekata obavljena su uz pomoć i suradnju članova Speleološkog društva Karlovac i Speleološkog kluba *Ursus Spelaeus iz* Karlovca, nadasve uz pomoć pok. Jurice Štefančića, na čemu im svesrdno zahvaljujem.

2 Opširnije o navedenim špiljama u: Perkić 1999; 2000; 2002, 103–131; 2003a, 39–49; 2003.b, 4–6; 2006, 104–105; 2008, 115–117; Perkić 2019; Perkić, Raguž, Olujić 2011, 350–352. Za Jopićevu špilju vidi u: Čučković 1984a, 10; Malez et al.1988, 63–68.

3 Opširnije o špilji vidi u: Čučković 1984a, 10; 1984b, 17–20; 1984c, 595–596; Božičević 1977; Čučković, Žapčić 2016.

4 Korošec 1956, 3–54; Leben 1970, 428.

5 Guštin 1977, 260–273; Slabe 1977, 283–286.

1 All the archaeological research of speleological objects mentioned here has been done with the help and cooperation of the members of the Karlovac Speleological Society and the *Ursus Spelaeus* Speleological Club from Karlovac, especially with the help of the late Jurica Štefančić, for which I am most thankful.

2 For more on mentioned caves see: Perkić 1999; 2000; 2002, 103–131; 2003a, 39–49; 2003.b, 4–6; 2006, 104–105; 2008, 115–117; Perkić 2019; Perkić, Raguž, Olujić 2011, 350–352. For Jopićeva Špilja see: Čučković 1984a, 10; Malez et al.1988, 63–68.

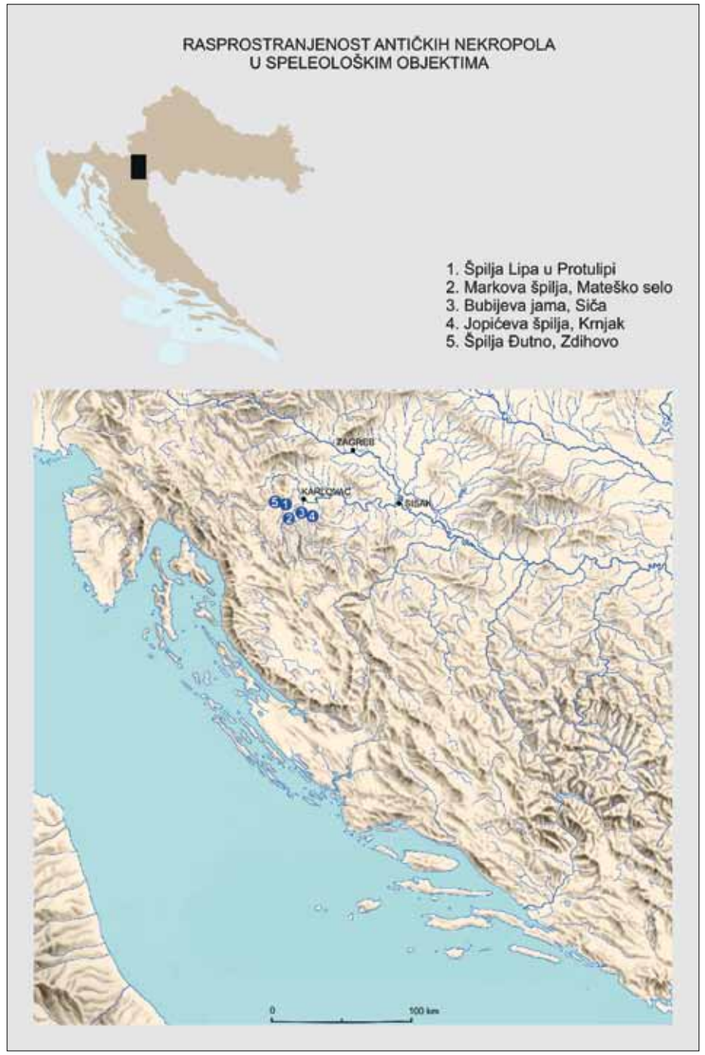
3 For more on the cave see: Čučković 1984a, 10; 1984b, 17–20; 1984c, 595–596; Božičević 1977; Čučković, Žapčić 2016.

4 Korošec 1956, 3–54; Leben 1970, 428.

5 Guštin 1977, 260–273; Slabe 1977, 283–286.

SLIKA 1. Antičke nekropole u speleološkim objektima (računalna obrada D. Perkić).

FIGURE 1. Necropolae in speleological objects dating from Classical antiquity (digital processing by D. Perkić).



U radu će više riječi biti o Bubijevoj jami i o mogućim razlozima upotrebe speleoloških objekata kao nekropola u vrlo uskom vremenskom razdoblju.

Smještaj i opis špilje

Bubijeva jama nalazi se u šumi Srnjak kod mjesta Siča, oko sedam kilometara jugozapadno od Barilovića u Karlovačkoj županiji. Otkrivena je 1999. godine kad je dječak Tihomir Boljar, nadimka Bubi, brao gljive i skoro propao u uski procjep jame. Potom su uslijedila speleološka i arheološka istraživanja. Bubijeva jama pripada jednostavnim speleološkim objektima kojima obiluje ovo krško područje. Nastala je korozivnim djelovanjem

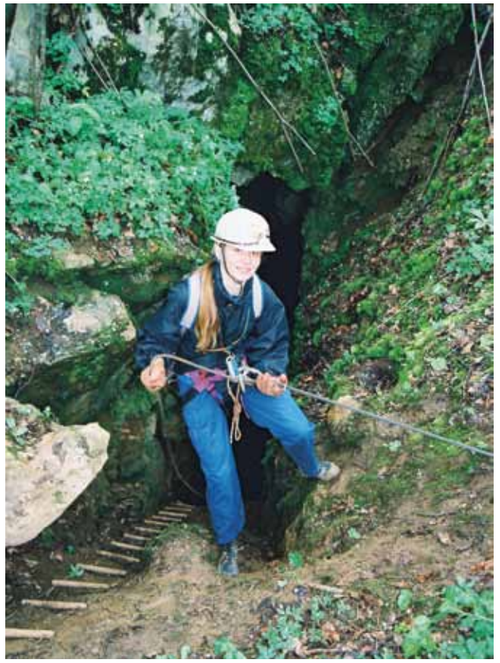
This paper will discuss Bubijeva jama and the possible reasons for the use of speleological objects as necropolises in a very narrow period of time.

Location and description of the cave

Bubijeva jama is located in the Srnjak Forest near the village of Siča, about seven kilometres southwest of Barilović in Karlovac County. It was discovered in 1999, when a boy by the name of Tihomir Boljar, nicknamed Bubi, was picking mushrooms and nearly fell into the narrow entrance crack of the pit cave. Speleological and archaeological research followed soon after. Bubijeva jama belongs to the simple speleological objects that are

SLIKA 2. Jamski ulaz u Bubijevu jamu (snimio D. Perkić).

FIGURE 2. Entrance to the pit cave of Bubijeva jama (photo by D. Perkić).



Slika 3. Spuštanje u Bubijevu jamu (snimio D. Perkić).

FIGURE 3. Descent into Bubijeva jama (photo by D. Perkić).

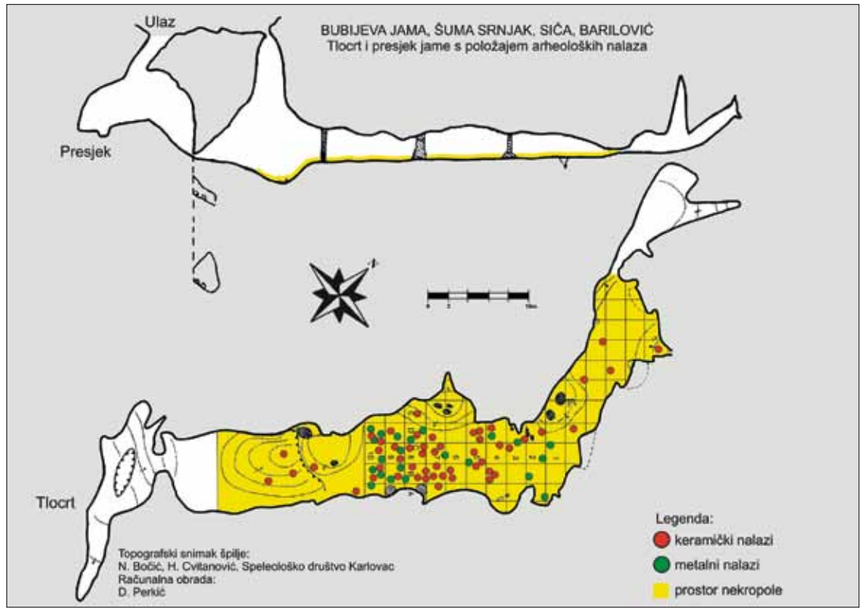
voda unutar razlomljenih vapnenaca najvjerojatnije kredne starosti. Ukupna je dužina jame sto metara, a dubina dvadeset i jedan metar.[6] Po morfološkim obilježjima, sastoji se od tri dijela. Ulazni je dio pukotinski izdužena dvorana u čijem se stropu nalazi ulaz (Sl. 2). U jamu se može sići samo uz upotrebu speleološke opreme kroz navedenu pukotinu veličine pet metara s dva metra (Sl. 3). Spuštajući se s visine od dvanaest metara, dolazi se do ulazne dvorane, a kroz uski kanal i jednu manju prirodnu depresiju dolazi se u centralnu kanalnu dvoranu, koja zaslijepljuje bogatstvom i raznovrsnošću sigastih tvorevina (Sl. 4–5). Na samoj se površini centralne dvorane nalazilo tridesetak razbacanih kostura s grobnim prilozima – sve prekriveno tankim slojem sige. Ne može se govoriti o nalazima skeleta ni priloga *in situ* jer su promjene vodostaja podzemnih tokova obližnjih ponornica dovele do dislociranosti svih skeleta i arheoloških nalaza te nastanka tankog sloja sige, koji je, uz konstantnu temperaturu, gotovo idealno konzervirao sve nalaze (Sl. 6–7). Međutim, ovdje je riječ o jednoj zatvorenoj arheološkoj cjelini koja je ostala u potpunosti sačuvana od antičkih vremena do

abundant in this karst area. It was formed by water corrosion of cracked limestone most likely from the Cretaceous period. The total length of the pit cave is one hundred meters, and its depth is twenty-one meters.[6] With regard to morphological characteristics, it consists of three parts. The frontal part is an elongated crevice-like cavern with the entrance in its ceiling (Fig. 2). The pit cave can only be accessed through the aforementioned five-by-two-meter crack by using speleological equipment (Fig. 3). After a 12-meter descent, one comes to the entrance cavern, and a narrow channel and a minor natural depression lead into the central canal cavern, which astounds with the richness and variety of its speleothem formations (Fig. 4–5). On the very surface of the central hall, there were scattered skeletal remains of 30 individuals and their grave good – all covered with a thin layer of travertine. It is not possible to discuss the finds of skeletal remains and grave goods as being *in situ* due to the changes in the groundwater streams of nearby subterranean rivers, which led to all the skeletons and archaeological artefacts being scattered and the formation of a thin layer of

6 Bočić 1999.

7 Špiljski sedimenti – slojevi nastali kemijskim trošenjem matične stijene ili su nanesene izvana vodom ili vjetrom. Opširnije vidi u: Rukavina 2000, 295.

6 Bočić 1999.



SLIKA 4. Tlocrt i presjek Bubijeve jame s položajem nalaza (topografski snimak N. Bočić, H. Cvitanović, računalna obrada: D. Perkić).

FIGURE 4. Ground plan and cross-section of Bubijeva jama with find locations (topographic photo by N. Bočić, H. Cvitanović, digital processing by D. Perkić).

SLIKA 5. Centralna dvorana Bubijeve jame (snimio H. Cvitanović).

FIGURE 5. Central hall of Bubijeva jama (photo by H. Cvitanović).

SLIKA 6. Dislocirane ljudske kosti na površini Bubijeve jame (snimio H. Cvitanović).

FIGURE 6. Scattered human bones on the floor of Bubijeva jama (photo by H. Cvitanović).

SLIKA 7. Ljudska lubanja na površini centralne dvorane (snimio H. Cvitanović).

FIGURE 7. Human skull on the floor of the central hall (photo by H. Cvitanović).

danas. Pretpostavlja se kako u ovu jamu ljudska noga nije kročila od vremena pokopavanja u antici. Ovdje termin nekropola (*necro polis*) nosi svoje puno značenje. Zaista se radi o gradu mrtvih, gradu sa svojim običajima, pravilima i božanstvima; o gradu sa životom – životom poslije smrti. Pokojnici najvjerojatnije nisu dodatno ukopavani u zemlju nego su samo položeni na površinu. Isključena je mogućnost bacanja pokojnika u jamu. Živi su ih trebali spustiti na visini od dvanaest metara, provući kroz uski kanal, prijeći prirodnu depresiju (dubine dva metra i širine od tri do četiri metra) unutar špilje te konačno ući u glavnu dvoranu relativno ravne površine gdje su ih polagali zajedno s prilozima. Kako su ih spuštali, možemo samo pretpostaviti, no zasigurno im korištenje konopca nije bilo nepoznato, iako su mogli posjeći duže stablo, potkresati mu grane i iskoristiti ga kao priručne stepenice.

travertine, which, in addition to the constant temperature, almost ideally preserved all the finds (Fig. 6–7). However, this is a single closed archaeological unit that has remained completely preserved from ancient times to this date. It is presumed that no one had set foot in the cave since the time of the ancient burial. Here the term necropolis (Lat. *necro polis*) can be used in its original and complete meaning. It is indeed a city of the dead, a city with its own customs, rules, and deities; a city that is alive – and offers life after death. The dead were most likely not buried further into the ground, but placed on the surface. The possibility that the deceased were thrown into the pit cave has been ruled out. The living had to lower the dead from a height of 12 meters, carry them through a narrow channel, cross a natural depression inside the cave (two meters deep and three to four meters wide), and finally enter the main hall that has a relatively flat surface, where they lay them on the ground along with the grave goods. We can only assume how the living lowered the dead, but it is certain that they knew how to use rope, although they also could have cut down a tall tree, sawed off its branches, and used it as a makeshift ladder.

SLIKA 8. Dokumentiranje kostiju i drugih arheoloških nalaza u centralnoj dvorani (snimio D. Perkić).

FIGURE 8. Documentation of bones and other archaeological finds in the central hall (photo by D. Perkić).

Arheološka istraživanja 1999. godine

U okviru su istraživanja prvo dokumentirani, a potom izvađeni svi površinski nalazi (sondiranjem je utvrđeno kako je riječ o jednoslojnom nalazištu sa svim nalazima na površini te neposredno ispod nje u tankom sloju sige i špiljske gline ili ilovače[7]) (Sl. 8). Ukupna površina istraženog i dokumentiranog prostora iznosi nešto manje od sto devedeset i dva kvadratna metra (iznos nije precizan zbog nepravilnosti na rubovima špilje) (Sl. 4). Svi su nalazi, uključujući i metalne, bili izuzetno očuvani, što treba zahvaliti stalnim klimatskim uvjetima unutar špilje (stalna vlažnost), konstantnoj temperaturi od devet stupnjeva Celzijevih te tankom sloju sige koji je sve prekrio.

Prema izvještaju antropološke analize koju je napravio dr. sc. Mario Šlaus sa suradnicima u Odjelu za arheologiju pri HAZU, u Bubijevoj je jami pronađeno minimalno trideset i pet individua, od čega devetero djece, deset žena i šesnaestorica muškaraca.[8] Nisu evidentirani tragovi bilo kakve nasilne smrti, smrti od izgladnjivanja, kao ni tragovi neke akutne zarazne bolesti. Takve bolesti i ne ostavljaju tragove zbog svog brzog učinka. Utvrđeno je da zbog prisutnosti pojedinih izuzetno manjih kostiju ne može biti riječ ni o sekundarnom ukopu.

Pored ljudskih, definiran je i veliki broj životinjskih kostiju, i to uglavnom domaćih životinja: svinje, ovce, koze. Većina je kostiju domaćih životinja termički obrađena, dakle kuhana i pripremana za jelo, a vidljivi su i tragovi ureza (*cutmarks*) od kidanja i rezanja mesa.

Archaeological research conducted in 1999

During the excavations, the surface finds were first documented and then removed from the cave (while probe trenches determined that the cave was a single-layer site with all finds on the surface or directly under a thin layer of travertine and cave clay or loam)[7] (Fig. 8). The total area excavated and documented area is slightly less than 192 square meters (the figure is not precise due to irregularities at the edges of the cave) (Fig. 4). All finds, including those made of metal, were extremely preserved, which is a result of the constant microclimatic conditions within the cave (constant humidity), the constant temperature of nine degrees Celsius, and a thin layer of travertine that had covered the whole site.

According to an anthropological analysis by Mario Šlaus, PhD, and his associates from the Archaeology Division at HAZU, a minimum of 35 individuals were found in Bubijeva jama: nine children, 10 women, and 16 men.[8] No traces of violent death, death from starvation, or any evidence of an acute infectious disease were found. Such diseases do not leave any marks because of their rapid impact on the afflicted. Due to the presence of some extremely small bones, it has been concluded that this could not be a secondary burial.

In addition to human bones, a large number of animal bones were also discovered, belonging mainly to domestic animals: pigs, sheep, and goats. Most of the bones of domestic animals were thermically processed, i.e. cooked and prepared for eating, and there are visible cutmarks on the bones from tearing off and cutting the meat.

8 Šlaus *et al.* 2003, 159.

7 Cave sediments – layers formed by the chemical wear of bedrock or by water or wind deposits from the outside. For more detail see: Rukavina 2000, 295.

8 Šlaus *et al.* 2003, 159.

SLIKA 9. Arheološki nalazi iz Bubijeve jame (numizmatički nalazi, fibula, igla, sjekira) 250.–270. posl. Kr. (izradio M. Perkić, snimio D. Perkić).

FIGURE 9. Archaeological finds from Bubijeva jama (numismatic finds, fibula, pin, axe), AD 250–270 (made by M. Perkić, photo by D. Perkić).

SLIKA 10. Arheološki nalazi iz Bubijeve jame (ključevi, čavli, spojnice, perla, koštani prsljenak, kremen, svrdlo), 250.–270. posl. Kr.

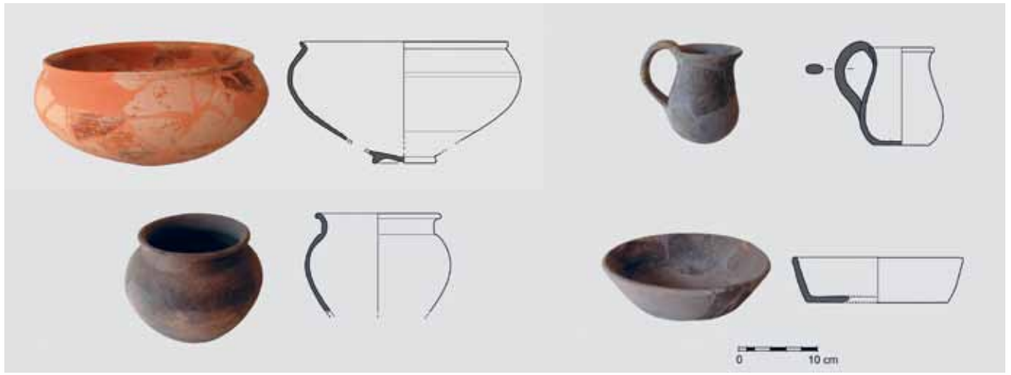
FIGURE 10. Archaeological finds from Bubijeva jama (keys, nails, clips, bead, bone fragment, flint, drill), AD 250-270 (made by M. Perkić, photo by D. Perkić).

Od arheoloških su nam nalaza, najvažnijih za datiranje lokaliteta, bili nalazi novca (Sl. 9). Najstariji je denar cara Elegabala, kovan u vrijeme njegove vladavine 218. – 222. godine, zatim slijede denar cara Aleksandra Severa, kovan 222. godine, i sestercij cara Maksimina Tračanina, kovan u rimskoj kovnici između 236. i 238. godine. Najmlađi je novac, ujedno i najvažniji za užu kronološku determinaciju, antoninijan, kovan u Aziji između 258. – 259. godine, na kojem je prikazana Kornelija Salonina – žena cara Galijena.[9] Prema tome, najmlađi nam novac može poslužiti kao *terminus post quem* za vrijeme pokapanja u špilji. Navedeno potvrđuje pogrebnu namjenu špilje poslije 259. godine. Srebreni je novac u ovim kriznim razdobljima, daleko od većih urbanih centara, bio duže u opticaju, stoga prisutnost ne iznenađuje ni če-

When it comes to archaeological artefacts, the most important for dating the sites were the coins discovered in the cave (Fig. 9). The oldest coin that was found is a denarius of Emperor Elagabalus, minted during his reign from AD 218 – AD 222, followed by the denarius of Emperor Severus Alexander, minted in AD 222, and the sestertius od Maximinus Thrax, minted in a Roman mint between AD 236 and AD 238. The most recent coin, and also the most important one for narrow chronological determination, is an antoninianus, minted in Asia between AD 258 and AD 259, depicting Cornelia Salonina – the wife of Emperor Gallienus.[9] Therefore, the most recent coin can serve as *terminus post quem* for the burials within the cave. The abovementioned confirms the burial purpose of the cave after AD 259.

9 Sve je numizmatičke nalaze očitala i interpretila pok. Zdenka Dukat, tadašnja kustosica Arheološkog muzeja u Zagrebu.

9 All the numismatic finds were analysed and interpreted by the late Zdenka Dukat, curator at the Archaeological Museum in Zagreb at the time.



SLIKA 11. Arheološki nalazi iz Bubijeve jame (keramičke posude), 250.–270. posl. Kr. (izradio M. Perkić, snimio D. Perkić).

FIGURE 11. Archaeological finds from Bubijeva jama (pottery), AD 250-270 (made by M. Perkić, photo by D. Perkić).

trdeset godina nakon kovanja.[10] Od ostalih, izdvajaju se sljedeći metalni nalazi: snažno profilirana brončana fibula, ukrasna igla od srebrene žice, željezna sjekira, šilo, šest željeznih ključeva, sedam željeznih klinova, dvije spojnice stezača i čavao (Sl. 9–10). Keramički su nalazi predstavljeni s najmanje dvadeset i osam različitih posuda, od kojih je devet lonaca, četiri vrča, dvije zdjele, dva tanjura, čaša i poklopac, dok ostale ulomke posuda zbog fragmentiranosti nije bilo moguće oblikovno definirati. U svakom slučaju, sve su posude uglavnom bile namijenjene nošenju sadržaja popudbine uz položene pokojnike (Sl. 11). Ostale nalaze čine perla od staklene paste, predmet od rožnjaka (kremena) – kresivo (?) i privjesak od ulomka jelenjeg paroška (zasigurno apotropejskog karaktera) (Sl. 10).

Prema svemu navedenom, očito je riječ o uobičajenoj skeletnoj nekropoli iz tog vremena s ustaljenim ritusom, grobnim prilozima, popudbinom i sl. Jedina devijacija ogleda se u mjestu ukopa – špilji, odnosno jami.

Mogući razlozi devijacije u pogrebnom ritualu

Postavljamo si niz pitanja: zašto je došlo do takve devijacije; zašto u samo jednom ograničenom vremenu i prostoru; zašto su pokojnike polagali duboko u unutrašnjost zemlje, daleko od živih, pri čemu spuštanje i provlačenje nije bilo nimalo lako; zašto je unatoč prostornoj devijaciji pogrebni ritual obavljen po svim uzusima tadašnjeg doba (grobni prilozi, popudbina, skeletno sahranjivanje); zašto su zastupljene individue svih uzrasta i svih spolova? Mogući se odgovor, ali zasad egzaktno nepotvrđen, pokušao naći u povijesno potvrđenoj epidemiji Ciprijanove kuge, koja se oko 250. godine pojavljuje na području Egipta, a u

Silver coins in these periods of crisis, had been in circulation longer so far from larger urban centres, therefore, the presence of such coins is not surprising even 40 years after minting.[10] The following metal finds are also worth mentioning: heavily profiled bronze fibula, silver-wire decorative pin, iron axe, awl, six iron keys, seven iron wedges, two clamp couplings, and a nail (Fig. 9–10). Ceramic finds consist of at least 28 different vessels: nine pots, four jugs, two bowls, two plates, a cup, and a lid, while other pieces of ceramic vessels could not be defined due to fragmentation. In any case, all vessels were mainly intended for grave goods laid down next to the deceased (Fig. 11). Other finds include a glass paste bead, an item made of flint – used for starting fires (?), and a pendant made from a piece of a deer antler point (certainly of apotropaic character) (Fig. 10).

According to everything mentioned above, the site clearly represents an ordinary skeletal necropolis from that time, with uniform rites, grave goods, food for the afterlife etc. The only deviation is reflected in the burial site – the cave, or pit cave.

Possible reasons for deviation in funeral rites

The deviation in funeral rites poses several questions: what was the reason for the deviation; why was it limited in time and space; why were the deceased taken deep into earth, far from the living, where the descent and movement through the cave were not easy; why, despite the spatial deviation, was the funeral ritual performed according to the requirements of the time (the grave goods, food, skeletal burial); why were individuals of all ages and genders buried there? A possible answer, but as yet unconfirmed, may lie in the historically confirmed outbreak of the Plague of Cyprian, which appeared in Egypt around AD 250,

10 Ovakva je datacija potvrđena i radiokarbonskim (^{14}C) analizama ljudskih kostiju iz špilja Lipa i Đutno, gdje su za uzorke dobiveni datumi oko 270. godine. Radiokarbonska datiranja obavljena su u laboratoriju Beta Analytic Inc, Miami, Florida. Opširnije vidi u: Perkić 2019, 88, 100.

10 The dates were also confirmed by radiocarbon (^{14}C) analysis of human bones from the Lipa and Đutno caves, where the dates obtained for all samples correspond to approximately AD 270. Radiocarbon dating was performed at Beta Analytic Inc. laboratory, Miami, Florida. For more detail see: Perkić 2019, 88, 100.

narednih 20 godina zahvaća cijelo Rimsko Carstvo.[11] Pritom je potrebno naglasiti kako se termin *kuga* u to vrijeme koristi kao općeniti pojam smrtonosne epidemije izvjesne zarazne bolesti, a ne doslovno kao kuga uzrokovana bacilom *yersinia pestis*.[12] Prema nekim su autorima kuge iz 2. i 3. stoljeća u biti epidemije velikih boginja.[13] Trgovina i vojska bili su glavni prijenosnici kuge po cijelom Carstvu.[14] Tako kuga ubrzo dolazi i na prostore Panonije, od koje i car Klaudije II. umire 270. godine u Sirmiju.[15] Izričito spominjanje kuge u Iliriku nalazimo u djelu *Historia Nova* bizantskog povjesničara Zosima.[16]

Nedostatci ovakvoj pretpostavci nalaze se u njezinoj vrlo teškoj dokazivosti – brza zarazna bolest ne ostavlja tragove na kostima.[17] DNA su analize moguće, vrlo skupe, no problem leži u činjenici da je DNA bacila kuge moguće naći u ostatcima pokojnika, ali ne nužno.[18] Postavlja se pitanje: „Tko bi zaražene dodirivao, nosio duboko u špilju kad svi od njih bježe?" Međutim, ne smijemo nikako zanemariti moć (pogrebnog) rituala koji je izuzetno bitan za preživljavanje jedne zajednice i svakog pojedinca unutar nje. Važno je ispravno postupiti s pokojnikom, kako bi njegova duša bila spokojna na putu za „sljedeći" svijet, ali i kako bi se živi utješili, što iz iskonske ljudske potrebe za suosjećanjem i humanosti, što iz straha.[19] Nadalje, jedno je od osnovnih obilježja nekropola nastalih kao posljedica epidemija (bez obzira kojih epidemija i u kojem razdoblju) posjedovanje grobova iz relativno uskog vremenskog razdoblja i često na položajima koji odudaraju od uvriježenih za izvjesni prostor i vrijeme.[20] U prilog epidemiji, kao uzroku devijacije, ide i činjenica postojanja velikog broja ostava novca antoninijana iz vremena Galijena na cijelom prostoru Carstva, ali i oko predmetnih speleoloških objekata. Takve su nam ostave pripale jer se njihovi vlasnici, očigledno, nikada nisu vratili po njih.[21]

Neovisno o tome, Ciprijanova je kuga bila uzrok ovdje opisane prostorne devijacije u pogrebnom ritualu, stoga je neupitno da je riječ o mikroregionalnom arheološkom kontekstu zbog svoje posebnosti, a zasigurno prelazi lokalne okvire i dobiva makroregionalni značaj.

affected the whole Roman Empire in the following 20 years.[11] It should be emphasized that the term *plague* was used at the time as a general term for a deadly epidemic of a certain infectious disease, not literally for the plague caused by the bacteria *Yersinia pestis*.[12] According to some authors, the plagues of the 2nd and 3rd centuries AD were outbreaks of smallpox.[13] Trade and the military were the main carriers of the plague throughout the Empire.[14] The plague soon came to Pannonia, and even Emperor Claudius II died of the plague in *Sirmium* in AD 270.[15] The plague in Illyricum is mentioned specifically in *Historia Nova*, by Byzantine historian Zosimus.[16]

The shortcoming of this assumption is that it is very hard to prove – a contagious disease that kills quickly leaves no trace on the bones.[17] DNA analysis is possible and very expensive, but the problem lies in the fact that it is possible to find traces of the plague's DNA in the remains, but it is not guaranteed.[18] Another question arises: "Who would touch the infected and carry them deep into the cave when everyone tried to get away from them?" However, we must not neglect the power of the ritual (burial) that is essential to the survival of a community and every individual in it. It is important to properly bury the deceased so that their soul is at peace on the path to the afterlife, but also to provide the living with some comfort, partly because of our primal need for compassion and humanity, partly because of our fear of dying.[19] Furthermore, one of the basic characteristics of necropolises formed as a consequence of epidemics (regardless of which epidemic and in which period) are graves from a relatively narrow time period, often in sites that deviate from the norm for a specific area or time period.[20] That the cause of the deviation may be an epidemic is also suggested by the fact that there is a large number of Antoninianus hoards from the time of Gallienus throughout the Empire, but also in the vicinity of speleological objects used as necropolises. The hoards were preserved to this day because their owners, apparently, never came back for them.[21]

Nevertheless, the Plague of Cyprian was the cause of the spatial deviation in the funeral rites described here, so it is unquestionable that it belongs to the micro-regional archaeological context due to its specificity, but it certainly goes outside local boundaries and has macro-regional significance.

11 Opširnije o Ciprijanovo kugi vidi u: D'irsay 1930, 534–535; *Historia Augusta* 1994, 310; Scourfield 1996, 23; Cartwright, Biddiss 2006, 20–21; Hekster 2008, 130–134.

12 Nazvan po istraživaču Aleksandru Yersinu koji je napravio prvi serum protiv kuge izmedu 1894. i 1897. godine. Vidi u: Little 2007, 5–6.

13 Sallares 2002, 124, 198, 272.

14 Duncan-Jones 1996, 125.

15 Watson Williams 1962, 111; Scarre 1995, 183; Veh 2001, 63; Little 2007, 4.

16 Gračanin 2005, 291.

17 Aufderheide, Rodriguez-Martin 1998, 195–198; Antoine 2008, 110.

18 Poznati su primjeri gdje se analizom četiriju zuba jedne individue umrle od kuge u samo jednom zubu utvrdio trag kuge, ali ne i u drugima. Opširnije vidi u: McCormick 2007, 300.

19 Hope 2000, 105–106.

20 Antoine, 2008, 108.

21 Detaljnije vidi u Perkić 2019, 231–232.

11 For more on the Plague of Cyprian see: D'irsay 1930, 534–535; *Historia Augusta* 1994, 310; Scourfield 1996, 23; Cartwright, Biddiss 2006, 20–21; Hekster 2008, 130–134.

12 Named after research scientist Alexandre Yersin, who made the first anti-plague serum between 1894 and 1897. See: Little 2007, 5–6.

13 Sallares 2002, 124, 198, 272.

14 Duncan-Jones 1996, 125.

15 Watson Williams 1962, 111; Scarre 1995, 183; Veh 2001, 63; Little 2007, 4.

16 Gračanin 2005, 291.

17 Aufderheide, Rodriguez-Martin 1998, 195–198; Antoine 2008, 110.

18 There is an example of four teeth from an individual that had died of the plague being analysed, and traces of the plague were only confirmed in a single tooth. For more detail see: McCormick 2007, 300.

19 Hope 2000, 105–106.

20 Antoine, 2008, 108.

21 For more details see Perkić 2019, 231–232.

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SURADNJA SPELEOLOGA I ARHEOLOGA

—

COLLABORATION OF SPELEOLOGISTS AND ARCHAEOLOGISTS

ULOGA SPELEOLOGIJE U OTKRIVANJU, ISTRAŽIVANJU I ZAŠTITI ARHEOLOŠKIH LOKALITETA: NA PRIMJERU DJELOVANJA KARLOVAČKIH SPELEOLOGA

THE ROLE OF SPELEOLOGY IN THE DETECTION, EXCAVATION, AND PROTECTION OF ARCHAEOLOGICAL SITES: THE ACTIVITIES OF SPELEOLOGISTS FROM KARLOVAC AS AN EXAMPLE

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Iako na prvi pogled možda teško spojive, speleologija i arheologija čvrsto su i neraskidivo spojene i isprepletene. Neka su od najvažnijih arheoloških otkrića u Hrvatskoj i svijetu otkrivena i istražena upravo zahvaljujući speleologiji i speleolozima. Specifične, teško dostupne lokacije s arheološkim ostatcima i sadržajima neprocjenjive vrijednosti za bolje i detaljnije poimanje ljudske prošlosti i dalje bi bile skrivene da entuzijasti iz speleoloških redova nisu, kao nuspojavu svojih primarnih istraživanja, na vrijeme shvatili važnost i mogućnosti koje speleologija može pružiti arheolozima. Na kraju, nisu li naši preci korištenjem speleoloških objekata u razne svrhe bili praspeleolozi?

Budući da su karlovački speleolozi od samih početaka svojeg organiziranog djelovanja[1] pokazali poprilično zanimanje za zaštitu arheoloških ostataka koje su nalazili tijekom primarnih istraživanja, autori ovih redaka prikazat će neke od najvažnijih otkrića i istraživanja arheološke baštine (Sl. 1) u kojima su sudjelovali speleolozi vezani uz speleološke organizacije karlovačkog područja. Dosad je u suradnji s Konzervatorskim odsjekom Karlovačke županije i Gradskim muzejom Karlovac napravljen popis s više od dvjesto arheoloških lokaliteta koji su pronađeni u speleološkim objektima.

Although very different at first sight, speleology and archaeology are both firmly and unyieldingly connected and intertwined. Some of the most important archaeological discoveries in Croatia and the world have been discovered and researched thanks to speleology and speleologists. More specifically, hard-to-reach sites with invaluable archaeological remains and contents for a better and more detailed understanding of human past would still be hidden if speleological enthusiasts had not, as a side effect of their primary research, understand the importance of speleology and the opportunities that it could provide to archaeologists in time. After all, our ancestors used speleological objects for various activities, which made them pre-speleologists.

Since the Karlovac speleologists showed considerable interest in protecting archaeological remains they found during their primary expeditions from the very beginning,[1] the authors of this paper will showcase some of the most important discoveries and research of archaeological heritage (Fig. 1) that involved speleologists belonging to speleological organizations of the wider Karlovac area. Thus far, in collaboration with the Conservation Department of Karlovac County and the Karlovac City Museum, a list of over two hundred archaeological sites found in speleological objects has been created.

1 Postružnik 1958, 12–14.

1 Postružnik 1958, 12–14.

SLIKA 1. Prikaz položaja speleoloških objekata koji se spominju u tekstu.
FIGURE 1. The locations of the caves mentioned in the paper.

SLIKA 2. Bočica iz Vrlovke.
FIGURE 2. Bottle from Vrlovka.

Pregled važnijih arheoloških otkrića karlovačkih speleologa i/ili istraživanja u kojima su sudjelovali

Prva su speleoarheološka istraživanja na području današnje Karlovačke županije proveli članovi Speleološkog odsjeka Dubovac (SOD) 29. 11. 1957. godine te su tom prilikom pronašli ulomke keramike i ljudsku čeljust u Vražića špilji (Špilja kod mosta) u Bariloviću. Već iduće godine, krajem ožujka 1958. godine, članovi SOD-a sudjelovali su u speleoarheološkim istraživanjima špilje Vrlovke u Kamanju, kad je pronađena i poznata „bočica" iz Vrlovke koja potječe iz bakrenog doba (Sl. 2).[2]

Godine 1968. speleolozi SOD-a otkrivaju i počinju istraživati Jopićevu špilju kod Krnjaka (Sl. 3). Vrlo je brzo zapažen arheološki potencijal špilje. Prikupljeni su ulomci keramike datirane od 12. do 14. stoljeća te je keramička posuda sačuvana gotovo u cijelosti. Svi su nalazi predani u Gradski muzej Karlovac.[3] Prob-

An overview of important archaeological discoveries of Karlovac speleologists and/or research they participated in

The first speleological research in the area of today's Karlovac County was conducted by members of the Speleological Section Dubovac (SOD) on the 29th of November 1957, during which they found shards of ceramic vessels and a human jaw bone Vražića spilja (Cave by the Bridge) in Barilović. Already during the following year, late in March of 1958, members of the Speleological Section Dubovac (SOD) participated in speleological surveys of the cave Vrlovka in Kamanje, when the famous Vrlovka "bottle", dated to the Bronze Age, was discovered (Fig. 2).[2]

In 1968, Speleological Sektion Dubovac (SOD) speleologists discovered and explored Jopićeva špilja near Krnjak (Fig. 3). The archaeological potential of the cave was very quickly recognised. The ceramic fragments dating from the 12th to

2 Čučković 1997, 29–30.
3 Čučković 1984, 59 –599.

2 Čučković 1997, 29–30.

SLIKA 4. Deformirana lubanja pronađena u Jopićevoj špilji (snimio M. Šlaus).
FIGURE 4. Deformed skull found in Jopićeva špilja (photo by M. Šlaus).

SLIKA 3. Drugi ulaz u Jopićevu špilju (snimio G. Polić).
FIGURE 3. Second entrance to Jopićeva špilja (photo by G. Polić).

na arheološka iskapanja proveo je 1984. godine Gradski muzej Karlovac, a 1987. i 1988. godine članovi Društva za istraživanja i snimanja krških fenomena iz Zagreba[4] te ekipa Zavoda za paleontologiju i geologiju kvartara, koji prikupljaju još osteoloških i keramičkih nalaza (Sl. 4). Recentna su rekognosciranja špilje (područje „Crnog kanala") proveli članovi Speleološkog kluba Ursus spelaeus (SKUS) iz Karlovca, kad su pronađeni i brojni površinski nalazi[5] iz doba antike.

U Jami u Luci (kod Ozlja) članovi Speleološkog odsjeka PD Dubovac iz Karlovaca (SOD) 1994. godine pronalaze potpuno fosiliziranu koštanu alatku (komad jelenjeg roga) (Sl. 5). Prema stupnju fosilizacije, gotovo je sigurno da je riječ o nalazu starijem od pet tisuća godina, što ga čini jednim od najstarijih predmeta izrađenih ljudskom rukom koji se nalazi u Gradskom muzeju Karlovac.[6] Nedaleko od alatke pronađena je i ljudska čeljust.

the 14th century were collected, and a ceramic vessel was preserved almost entirely. All the finds were handed over to the Karlovac City Museum.[3] In 1984, the Karlovac City Museum conducted trial excavations, and in 1987 and 1988, members of the Society for Research, Surveying and Filming of Karst Phenomena from Zagreb[4] (DISKF) and the team from the

Institute for Quaternary Paleontology and Geology discovered additional osteological material and ceramic shards (Fig. 4). The recent surveys of the cave (along the area of the so-called Black Channel) was carried out by members of the Speleological club Ursus spelaeus from Karlovac (SKUS), during which numerous surface finds dating from Classical antiquity were found.[5]

In Jama in Luka (near Ozalj), members of the Speleological Sektion of PD Dubovac from Karlovac (SOD) found a completely fossilized bone tool (a piece of deer antler) in 1994 (Fig. 5). According to the degree of fossilization, it is almost certain that this is a find over 5,000 years old, which makes it one of the oldest human-made objects in the Karlovac City Museum.[6] A human jaw was also found not far from the tool.

4 Malez *et al.* 1988, 63–68.
5 Perkić 2019, 69.
6 Čučković 1998, 53.

3 Čučković 1984, 59–599.
4 Malez *et al.* 1988, 63–68.
5 Perkić 2019, 69.
6 Čučković 1998, 53.

SLIKA 5. Alatka napravljena od roga jelena (snimio D. Perkić).
FIGURE 5. Tool made from a deer antler (photo by D. Perkić).

SLIKA 6. Ulaz u špilju Đutno (snimio H.Cvitanović).
FIGURE 6. The entrance to the cave of Đutno (photo by H. Cvitanović).

Špilju Đutno kod Zdihova (Sl. 6) istraživali su i topografski snimili članovi SDK 1997. godine te predali brojne površinske nalaze ulomaka brončanodobnih keramičkih posuda u Gradski muzej Karlovac. Članovi Hrvatskog biospeleološkog društva (HBSD) 1997. godine i Juraj Štefančić 2009. godine pronalaze površinske metalne nalaze (srebrna rimska fibula, antički željezni ključevi i alatke) (Sl. 7) te su 2010. godine, uz pomoć članova SKUS-a, provedena probna arheološka iskopavanja koja su potvrdila pretpostavku da je riječ o rimskoj nekropoli.[7]

Bubijevu jamu (kod Siče) pronalaze članovi SDK 1999. godine uz pomoć lokalnih stanovnika. Prvim ulaskom u jamu nalaze mnoštvo zasiganih ljudskih kostiju. Istraživanjima je dokazano da je riječ o rimskodobnoj nekropoli koja se datira u prva desetljeća druge polovine trećeg stoljeća poslije Krista. Iznimno je vrijedno i raritetno nalazište prirodne i kulturne baštine.[8] Ova je špilja prva u nizu od sedam antičkih nekropola koje su pronašli karlovački speleolozi.

The cave of Đutno near Zdihovo (Fig. 6) was investigated and topographically documented by the members of the Speleological Society Karlovac (SDK) in 1997, and numerous surface findings of Bronze-Age ceramics were handed over to the Karlovac City Museum. Members of the Croatian Biospeleological Society (HBSD) in 1997 and Juraj Štefančić in 2009 found surface metal finds in the cave (silver Roman fibula, antique iron keys and tools) (Fig. 7), and in 2010, with the help of Speleological club Ursus spelaeus (SKUS) members, trial archaeological excavations confirmed the assumption that there was a Roman necropolis at the site.[7]

Bubijeva jama (near Siča) was discovered by members of the Speleological Society Karlovac (SDK) in 1999, with the help of local residents. During the first expedition to the pit cave, human remains covered in a layer of travertine were discovered. Research confirmed that the site was a Roman necropolis dating back to the first decades of the second half of the 3rd century AD. It is an exceptionally valuable and rare site of natural and cultural heritage.[8] The cave is the first in a series of seven ancient necropolises discovered by Karlovac speleologists.

7 Perkić 2015, 45–50.
8 Perkić 2019, 54.

7 Perkić 2015, 45–50.
8 Perkić 2019, 54.

SLIKA 7. Dio antičkih nalaza iz špilje Đutno (snimio D. Perkić).
FIGURE 7. A selection of finds dated to Classical antiquity from the cave of Đutno (photo by D. Perkić).

SLIKA 8. Keramička posudica u kojoj je pronađena brončana sjekira (snimio H. Cvitanović).
FIGURE 8. Ceramic vessel in which a bronze axe was discovered (photo by H. Cvitanović).

SLIKA 9. Mala brončana sjekira iz Šoića pećine (snimio H. Cvitanović).
FIGURE 9. Small bronze axe from Šoića pećina (photo by H. Cvitanović)

Špilju Zalu (Savića pećinu) otkrili su i topografski snimili članovi Speleološkog odsjeka Željezničar (SOŽ) i Planinarskog društva Zanatlija 1966. godine. U istraživanju su nađeni ulomci keramičkih posuda i kostiju na površini, kao i dijelovi obrambenih suhozida. Karlovački su speleolozi sudjelovali na arheološkim istraživanjima u jesen 2000. godine, kad je utvrđeno da je Zala prvi paleolitički i trenutno najstariji arheološki lokalitet na širem karlovačkom području.[9]

Šoića pećina nalazi se kod Gornjeg Kosinja u zaselku Podjelar. Ovu je špilju prvi put istraživalo Speleološko društvo Hrvatske, a poslije je špilju posjetio i Mirko Malez. U novije su doba špilju posjetili i karlovački speleolozi koji su pronašli ostatke velikog broja keramičkih posuda, kao i dvije brončane sjekire koje su bile skrivene u maloj zdjelici između dva veća kamena bloka (Sl. 8–9). Nalazi su predani Muzeju Like u Gospiću.

The cave of Zala (Savića pećina) was discovered and recorded topographically by members of the Speleological Sektion "Željezničar" (SOŽ) and the "Zanatlija" Climbing Society in 1966. During the research, fragments of ceramic vessels and surface skeletal finds, as well as parts of defensive drywalls were discovered. Karlovac speleologists participated in archaeological research in the fall of 2000, when it was discovered that Zala was the first Palaeolithic and currently the oldest archaeological site in the wider Karlovac region.[9]

Šoića pećina is located near Gornji Kosinj in the hamlet of Podjelar. This cave was first explored by the Speleological Society of Croatia, and later visited by Mirko Malez. In recent years, the cave was also explored by Karlovac speleologists, who discovered fragments of a large number of ceramic vessels, as well as two bronze axes that were hidden in a small bowl between two larger blocks of stone (Fig. 8–9). The finds were handed over to the Lika Museum in Gospić.

9 Perkić 2002, 44–47.

9 Perkić 2002, 44–47.

SLIKA 10. Ljudska lubanja *in situ* u špilji Los Antonio na srednjem Velebitu (snimio H. Cvitanović).

FIGURE10. Human skull *in situ* at the cave of Los Antonio in the central Velebit region (photo by H. Cvitanović).

Siničić špilja kod Brinja prvi se put spominje u literaturi 1911. godine u Vijestima geologijskog povjerenstva, točnije u radu Dragutina Gorjanovića-Krambergera „Izvješće speleološkog odbora za godinu 1911.“, a tijekom narednih desetljeća istraživana je u više navrata. Godine 1997. članovi SDK, kao dio ekipe koju je okupio DISKF,[10] sudjeluju u istraživanjima tijekom kojih su otkriveni znakovi urezani u stijenu špilje. Uočena je i veća količina ljudskih kostiju u kanalu koji se pruža od vertikalnog ulaza dublje u špilju.

U istraživanjima Bezdanjače pod Vatinovcem (Horvatova špilja), nedaleko od Vrhovina u Lici, nisu sudjelovali karlovački speleolozi, ali ju moramo spomenuti kao izuzetno vrijedno nalazište i kao jednu od prvih primjera arheoloških istraživanja koja su provedena zahvaljujući speleolozima. Špilju su prvi istraživali i topografski snimili članovi Speleološkog društva Hrvatske 1960. godine. Istraživanjem je zamijećeno mnoštvo površinskih arheoloških nalaza (ljudske kosti, oružje, oruđe, nakit). Godine 1965. Ružica Drechsler-Bižić vodila je arheološka istraživanja u špilji, a rezultati govore da je riječ o brončanodobnoj nekropoli s oko dvjesto osoba različite dobi. Podatak je posebno zanimljiv ako se uzme u obzir da nalazi u špilji sežu do 120 metara dubine (ulazna vertikala iznosi trideset metara).[11]

Sinčić špilja near Brinje was first mentioned in the literature in 1911 by the Geological Commission, or to be more precise, in a paper by Dragutin Gorjanović-Kramberger titled “The Report of the Speleological Committee for 1911”, and has been explored several times during the following decades. In 1997, members of the Speleological Society Karlovac (SDK), as part of a team assembled by the Society for Research, Surveying and Filming of Karst Phenomena from Zagreb[10] (DISKF), participated in research during which symbols carved into the very rock of the cave were discovered. A larger amount of human bones in the channel that extends from the vertical entrance deeper into the cave was also noted.

No speleologists from Karlovac participated in the research conducted in Bezdanjača under Vatinovac Hill (Horvatova špilja), not far from Vrhovine in Lika, but it should be mentioned as an extremely valuable site and as one of the first examples of archaeological research conducted thanks to speleologists. The cave was first explored and topographically recorded by members of the Croatian Speleological Society in 1960. The researchers noted a variety of archaeological surface finds (human bones, weapons, tools, jewellery). In 1965, Ružica Drechsler-Bižić led the archaeological excavations in the cave, and the results showed that it was a Bronze-Age necropolis with the remains of about 200 people of different age. This information is particularly interesting considering that archaeological artefacts were found as far as 190 meters into the pit cave (there is a 30-meter vertical drop at the entrance).[11]

10 Malez *et al.* 1988, 63–68.
11 Božić 2005, 36–43.

10 Malez *et al.* 1988, 63–68.
11 Božić 2005, 36–43.

SLIKA 11. Sonda u špilji Kukova peć kod Dubrovnika (snimio H. Cvitanović).

FIGURE 11. Trench in Kukova peć near Dubrovnik (photo by H. Cvitanović).

Tijekom speleološkog kampa na srednjem Velebitu 2011. godine pronađena je te istražena špilja Bič Božji, morfološki specifična sa šest ulaza, a u blizini jednog od ulaza pronađeni su keramički ulomci, naknadno spojeni u veliku posudu. Ulomci su se nalazili u ulaznom dijelu špilje. Preliminarni rezultati ukazuju na to da se radi o posudi iz srednjeg ili kasnog brončanog doba. Naknadno provedenim arheološkim istraživanjima nisu pronađeni dodatni arheološki nalazi, tek nekoliko keramičkih ulomaka i kostiju.[12]

Na predjelu Velike japage (srednji Velebit) 2006. godine otkrivena je i istražena špilja Los Antonio. U špilji je pronađena ljudska lubanja, komad prsta i baklja (Sl. 10). Nalazi su predani Muzeju Like u Gospiću. Prema C^{14} analizi ulomka gara baklje, određena je starost od najviše 4870, a najmanje 4580 godina (2920. – 2630. godine prije Krista). Antropološka je analiza lubanje pokazala da je riječ o odraslom muškarcu, starosti od trideset do četrdeset godina. Povezivanje nalaza baklje i lubanje u isti kontekst nagovještava da se radi o nalazu koji se datira u razdoblje od srednjeg do kasnog eneolitika ili bakrenog doba.[13]

Donja je Cerovačka špilja otkrivena 1913. godine trasiranjem željezničke pruge Zagreb-Split na dionici Gračac-Knin. Prvi se arheološki podatci o Donjoj Cerovačkoj špilji datiraju u 1914. godinu. Nakon antropoloških i paleontoloških istraživanja 1951. i 1958. godine, prva je isključivo arheološka istraživanja provela Ružica Drechsler-Bižić 1966. i 1967. godine. Rezultati su upućivali na korištenje špiljom tijekom kasnog brončanog doba. Do

During the speleological camp in the central part of Velebit Mountain in 2011, the Bič Božji Cave was discovered and explored. The cave is morphologically specific because of its six entrances, and fragments of ceramic vessels were discovered at one entrance, which were subsequently put back together into a single large vessel. The fragments were on the ground in the very entrance to the cave. Preliminary results indicate that the vessel dates back to the Middle or Late Bronze Age. Further archaeological research did not yield additional finds except a few ceramic fragments and bones.[12]

In 2006, the Los Antonio Cave was discovered and explored in the area of Velike Japage (central Velebit). A human skull, some finger bones, and a torch were found in the cave (Fig. 10). The finds were handed over to the Lika Museum in Gospić. According to the C^{14} analysis of the burnt wood from the torch, a maximum age of 4870 and a minimum of 4580 years was determined (2929 – 2630 BC). Anthropological analysis of the skull showed that it was an adult male, age thirty to forty. Since the torch and skull were found in the same context, the find probably dates back to the period of the Middle to Late Eneolithic or the Copper Age.[13]

Donja is a Cerovac cave discovered in 1913 during route surveying between Gračac and Knin for the Zagreb-Split railway. The first archaeological data on Donja Cerovačka špilja dates back to 1914. Following anthropological and paleontological research in 1951 and 1958, the first exclusively archaeological

12 Olujić 2013, 9.
13 Kolak 2012, 34–36.

12 Olujić 2013, 9.
13 Kolak 2012, 34–36.

istog zaključka dolaze i djelatnici Muzeja Like u Gospiću koji 2009. godine prikupljaju površinske nalaze u špilji. Tijekom arheoloških istraživanja 2019. godine, u kojima je sudjelovala i jedna karlovačka speleologinja, pronađena je svojevrsna „vremenska kapsula“ – staklena boca koja je sadržavala poruku članova tadašnje Speleološke sekcije Planinarskog društva Željezničar. Članovi Sekcije sudjelovali su 1951. godine u *sondiranju tog dijela špilje*.[14]

Jujnovića špilja (u zaleđu Biokova) otkrivena je 2002. godine u sklopu biospeleoloških istraživanja na kojem su sudjelovali i karlovački speleolozi. Tijekom istraživanja uočeno je da se na površini tla špilje nalazi veći broj ulomaka grube, rukom rađene keramike. Prema općim je obilježjima keramiku moguće datirati u srednje ili kasno brončano doba ili u početak željeznog doba (1500. – 500. godine prije Krista). Uz keramičke je ulomke prikupljeno i pedesetak artefakata od cijepanog kamena (rožnjak).[15]

Špilja Kukova peć, nedaleko od Brsečina kod Dubrovnika, speleološki je istražena 2009. godine, kad su prikupljeni i prvi površinski arheološki nalazi koji su ukazivali na arheološki potencijal špilje. Arheološka su se istraživanja, u kojima su sudjelovali članovi SKUS-a, provodila u dva navrata – 2017. i 2019. godine (Sl. 11). Rezultati istraživanja otkrivaju srednji i kasni neolitik kao period najranijeg korištenja špiljom. Najintenzivniji se život u špilji odvijao krajem razvijenog eneolitika, ranog brončanog doba i prvih faza srednjeg brončanog doba. Špiljom se koristilo i tijekom mlađeg željeznog doba, kasne antike i novog vijeka za sklonište ili zbjeg. Dosadašnja istraživanja govore o povremenom služenju špiljom u rasponu od oko sedam tisuća godina, a posljednju je ulogu skloništa imala tijekom Domovinskog rata.[16]

Vilina špilja nalazi se iznad izvora Omble u Rijeci Dubrovačkoj. Prve su arheološke nalaze pronašli biospeleolozi krajem osamdesetih godina prošlog stoljeća. Tijekom arheoloških istraživanja 2014. i 2015. godine dio stručno-tehničke ekipe bili su i karlovački speleolozi. Rezultati istraživanja, kao i položaj i pristup špilji, ukazuju na vrlo vjerojatno korištenje špiljom kao svetištem krajem starijeg i početkom mlađeg željeznog doba.[17]

research was conducted by Ružica Drechsler-Bižić in 1966 and 1967. The results indicated the cave was used during the Late Bronze Age. The same conclusion was drawn by researchers from the Lika Museum in Gospić, who collected surface finds in the cave in 2009. During the archaeological excavations in 2019, in which a speleologist from Karlovac also participated, a form of “time capsule” was discovered – a glass bottle containing a message from the members of the Speleological Section “Željezničar”. Members of the Section participated in trial excavations of that part of the cave in 1951.[14]

Jujnovića špilja (in the hinterland of Biokovo) was discovered in 2002 during biospeleological exploration involving speleologists from Karlovac. During the research, it was observed that there were multiple fragments of rough, hand-made ceramics on the surface of the cave floor. According to their general characteristics, the ceramic fragments can be dated to the Middle or Late Bronze Age or the beginning of the Iron Age (1500-500 BC). In addition to the ceramic fragments, approximately 50 artefacts made of knapped flint were collected.[15]

The cave of Kukova peć, in the vicinity of Brsečine near Dubrovnik, was explored in 2009, when the first archaeological surface finds were collected, indicating the archaeological potential of the cave. Archaeological research, involving members of Speleological club Ursus spelaeus from Karlovac (SKUS), was conducted on two occasions – in 2017 and in 2019 (Fig.11). Research results revealed that the cave was first used during the Middle or Late Neolithic. Human activity in the cave was the most intense in the end of the Late Eneolithic period, during the Early Bronze Age and the early phases of the Middle Bronze Age. The cave was also used during the Late Iron Age, late Classical antiquity, and during modern times as a refuge. Thus far, research has shown that the cave was used occasionally across a span of seven thousand years, and it was used fairly recently as a refuge during the Homeland War.[16]

Vilina špilja is located above the source of the Ombla River in Rijeka Dubrovačka. The first archaeological finds were discovered by biospeleologists in the late 1980s. During archaeological research in 2014 and 2015, the expert-technical team also included speleologists from Karlovac. The results of the research, as well as the position and accessibility of the cave, indicate the very likely use of the cave as a sanctuary at the end of the Early and beginning of the Late Iron Age.[17]

14 Tresić Pavičić 2020, 60–74.
15 Forenbacher 2004, 79–83.
16 Perkić 2018, 25–34.
17 Perkić 2010, 33–38.

14 Tresić Pavičić 2020, 60–74.
15 Forenbacher 2004, 79–83.
16 Perkić 2018, 25–34.
17 Perkić 2010, 33–38.

Zaključak

Navedeni su primjeri manji dio nebrojenih slučajeva povezanosti arheologije i speleologije, ali su vrlo jasan pokazatelj vrlo dobre suradnje ovih dviju aktivnosti i znanosti. U vrijeme kad se otkriva sve više zagađenih i otpadom onečišćenih speleoloških objekata, od kojih su mnogi zasigurno i arheološki lokaliteti, te kad devastacija speleoloških objekata, što zagađenjem, što nekontroliranim građevinskim zahvatima, postaje gotovo svakodnevna pojava, očita je nužnost još čvršće i jače povezanosti arheologa i speleologa, kako bi se i na taj način djelovalo na svijest pojedinca i neophodnost zajedničkog djelovanja u svrhu očuvanja prirodne i kulturne baštine Republike Hrvatske.

Conclusion

The mentioned examples are but a small part of the countless cases of the connection between archaeology and speleology, but are a very clear indicator of the good cooperation between these two activities and science. At a time when more and more speleological objects that have been polluted or filled with waste are being discovered, many of which are certainly archaeological sites, and when the devastation of speleological objects, some by pollution, some by uncontrolled construction work, occurs almost on a daily basis, there is clearly a necessity for archaeologists and speleologists to work even more closely in order to raise awareness among individuals and together preserve the natural and cultural heritage of Croatia.

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ARHEOLOGIJA I SPELEOLOŠKI ODSJEK HPD *ŽELJEZNIČAR*

ARCHAEOLOGY AND THE SPELEOLOGICAL SECTION OF THE CROATIAN MOUNTAINEERING CLUB *ŽELJEZNIČAR*

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Članovi Speleološkog odsjeka HPD „Željezničar“ već su od prvih dana članstva, i ne znajući, bili u susretu s arheologijom. Boraveći u špiljama, nailazili su na razne artefakte koji su ih zaintrigirali. Takve bi artefakte nosili nekome za koga se „znalo da razumije te stvari“. Sa znatiželjom bi iščekivali determinaciju artefakata i ugrađivali spoznaje u obrazovanje novih generacija speleologa. Stariji su članovi objašnjavali mlađima da se radi o arheološkim nalazima, te su ih počeli upućivati u glavna obilježja arheologije u speleološkim objektima, predstavljali su im općenito arheološka razdoblja i do toga trenutka poznate značajne arheološke speleološke objekte.

Veternica (1950. – 1951.)

S prvim arheološkim nalazima, speleolozi tadašnje Špiljarske, ili Speleološke sekcije PD „Željezničar”, upoznali su se još 1950. godine u špilji Veternici kad su sudjelovali u istraživanju i iskopavanju ulazne dvorane špilje (Sl. 1). Prva je iskopavanja inicirao i sustavno vodio Vladimir Redenšek (speleolog), zatim Slavko Marjanac (speleolog), a kad je 1951. godine Mirko Malez diplomirao geologiju, preuzeo je i vođenje iskopavanja. U članku Srećka Božičevića „Pećina Veternica nekada, sada i u budućnosti”[1] navedeno je kako su u prvom razdoblju nakon otkrivanja Veternicu vandalizirali avanturisti i znatiželjnici. Sige su lomljene i iznošene van, a s njima i arheološki i paleontološki materijal. U članku je jasno naznačeno kako, osnivanjem speleoloških sekcija i početkom speleoloških istraživanja u Veternici, dolazi i do suradnje speleologa s tadašnjim Antropološkim

1 Božičević 1959.

From the very beginning of the Speleological Section of the Croatian Mountaineering Club “Željezničar”, its members were, unbeknownst to them, coming into contact with archaeology. Spending time in caves, they would come across various intriguing artifacts. They would then take these artifacts to someone who “knows about such things”. Burning with curiosity, they would then wait for the artifacts to be identified and would include their discoveries in the education of new generations of speleologists. The older members would explain to the younger ones that these were archaeological finds, and would start acquainting them with the main features of archaeology in speleological objects, teaching them in general about archaeological periods and archaeologically significant speleological objects.

Veternica (1950 – 1951)

The speleologists of the Speleological Section of the Croatian Mountaineering Club “Željezničar” (or the Cave Section, as it was then called) came across their first archaeological finds as early as 1950 in Veternica Cave, where they participated in exploring and excavating the entrance cavern (Fig. 1). The first excavations were initiated and systematically led by Vladimir Redenšek (speleologist), and then Slavko Marjanac (speleologist), and when Mirko Malez graduated in geology in 1951, he also took over the excavations. Srećko Božičević’s article titled “Veternica Cave in the past, present and future”[1] (original title “Pećina Veternica nekada, sada i u budućnosti”, published in *Speleolog*, 1959 – 1960) mentions that in the initial period after its discovery, Veternica was vandalized by adventurers and curious visitors. Speleothems were broken and carried out, and with them archaeological and

1 Božičević 1959.

SLIKA 1. Članovi SS PD "Željezničar" kopaju na ulazu u Veternicu 1951. (snimio A. Markić).

FIGURE 1. Speleological Section of the Croatian Mountaineering Club "Željezničar" digging at the entrance to Veternica cave in 1951 (photo by A. Markić).

i Konzervatorskim zavodom. Vidljiva je osviještenost zaljubljenika u speleologiju o vrijednosti artefakata na koje nailaze pri svojim istraživanjima.

Početkom suradnje sekcije speleologa PD „Željezničar" i Konzervatorskog zavoda Hrvatske, dolazi do sistematskih iskopavanja i evidencije pronađenog. Iskopavanja je vodio i dokumentirao tadašnji tajnik sekcije Slavko Marjanac (speleolog). Jedan je dio nađenog materijala, kako piše, *odnesen u Sekciju, a dio pohranjen (i kasnije izgubljen) u stanovima članova*.

Ipak, jedan je dio nađenog materijala sačuvan. U ovim je iskopavanjima sudjelovao i Vlado Lončar, član Speleološke sekcije koji je pronađeni materijal (dvije koštane igle, odnosno ukosnice) uzeo na čuvanje, ali, nažalost, bez ikakvih podataka (Sl. 2). Ti su predmeti nađeni u njegovoj ostavštini i predani su u Speleološki odsjek, a sad je prilika da se predstave, prouče i odgovarajuće zaštite. Među predmetima iz Veternice, koji se nalaze u zbirci PD „Željezničar", izdvaja se i rimski brončani novac te fibula koju je pronašao B. Jalžić 1973. godine u ostacima sedimenta ispod sigaste ploče zvane Kornjača nakon provedenih paleontoloških istraživanja 1971. godine. Na istom je mjestu pronađena i keramička svjetiljka koja je predana Mirku Malezu, a u SO HPD-u „Željezničar" nalazi se njezin odljev (Sl. 3).

paleontological material as well. The article clearly states that the establishment of the speleological sections and the beginning of speleological research in Veternica also marked the beginning of the cooperation between the speleologists and the Anthropological and Conservation Institutes. It is clear that those speleological enthusiasts were aware of the value of the artifacts they were coming across in their explorations.

The beginning of the cooperation between the Speleological Section Željezničar and the Croatian Conservation Institute led to systematic excavations and the documentation of discoveries. The excavations were led and documented by the section's secretary Slavko Marjanac (speleologist). Part of the discovered material was, he writes, *brought to the Section, while part of it was stored (and later lost) in members' apartments*.

Nonetheless, part of the discovered material was preserved. Vlado Lončar, a member of the Speleological Section, also participated in these excavations, and he took some discovered material (two hair pins) for safekeeping, but, unfortunately, without accompanying information (Fig. 2). The spikes were found in his estate and handed over to the Speleological Section. It is now possible for the spikes to be presented, examined and conserved in an appropriate manner. Among the items from Veternica stored in the collection of the Croatian Mountaineering Club "Željezničar", of special interest are the Roman bronze coins and the fibula discovered by B. Jalžić in 1973 in the remains of a sediment under a travertine slab called The Turtle (Kornjača), after having conducted paleontological research in 1971. A ceramic lamp was discovered in the same place, which was handed over to Mirko Malez, with a cast of the lamp being stored at "Željezničar" (Fig. 3).

SLIKA 2. Koštane igle / ukosnice iz Veternice (snimio I. Krajcar).

FIGURE 2. Hair pins from Veternica (photo by I. Krajcar).

Bezdanjača (1960.)

Speleološko društvo Hrvatske organiziralo je veliko sustavno speleološko istraživanje središnje Like za potrebe vojske u ljeto 1960. godine u kojem su sudjelovale gotovo sve tadašnje hrvatske speleološke udruge. Bilo je organizirano više skupina s od četiri do šest članova i svakoj je skupini bilo određeno područje istraživanja. Zadatak je bio izraditi nacrt špilje ili jame i fotografirati ulaz (svaka je skupina dobila fotoaparat). Prisjeća se Vlado Božić: „Osobno sam vodio skupine od četiri člana (Vlado Božić, Vlasta Šegrc, Ivan Filipčić i Hrvoje Malinar), a područje djelovanja bila je okolica Vrhovina. Tu smo saznali da se na obližnjem brdu Vatinovcu nalazi jama u koju još nitko nije ulazio. Tamošnja nam je Šumarija dala pomoć šumara koji nas je odveo do jame. Baš je tog dana Hrvoje morao otići u pomoć drugoj skupini. Našli smo se kraj otvora jame, promjera desetak metara i dubine, po procjeni, tridesetak metara. Počeli smo s pripremama.

Prema dogovoru, prvi sam se spuštao, a Ivan Filipčić osiguravao je spuštanje. Spustio sam se niz trideset metara na strmi sipar i došao u špiljski kanal okrugla presjeka promjera od pet do šest metara (sl. 4). Na kraju desnog, blago nagnutog kanala naišao sam na neku drvenu konstrukciju i ostatke nekoliko velikih keramičkih posuda. Bio sam zapanjen – takvo što još nikad nisam vidio. Odmah sam se vratio do sipara i sišao niz vrlo strmi lijevi kanal. Spustio sam se nekoliko desetaka metara i opet ostao zatečen – uz desnu je stijenu bilo mnoštvo keramike, ali i ljud-

SLIKA 3. Odljev rimske svjetiljke iz Veternice (snimio I. Krajcar).

FIGURE 3. Cast of the Roman lamp from veternica cave (photo by I. Krajcar).

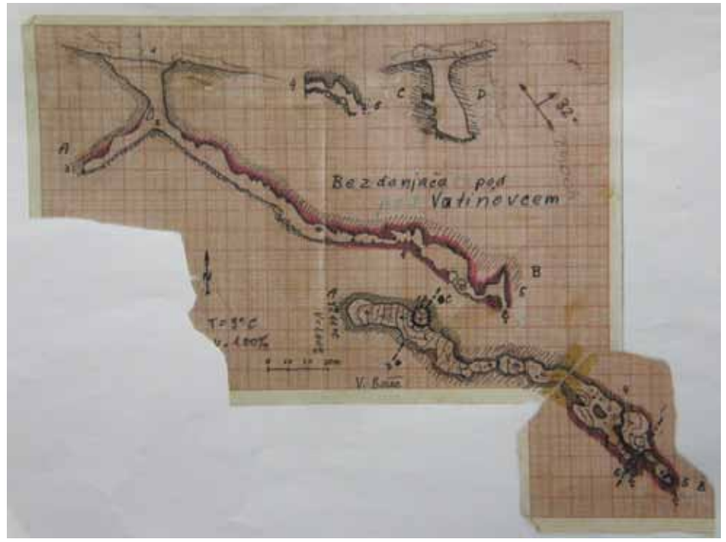
Bezdanjača (1960)

In the summer of 1960, the Croatian Speleological Society organized a large systematic speleological study of central Lika for the purposes of the army, which included almost all Croatian speleological associations that existed at that time. A number of groups consisting of four to six members were organized, with each group being assigned an area to explore. The assignment was to make a map of the cave and photograph the entrance (each group was given a camera). Vlado Božić recalls: "I personally led a four-member group (Vlado Božić, Vlasta Šegrc, Ivan Filipčić and Hrvoje Malinar), and we were assigned the area around the town of Vrhovine. There we learned of a pit cave on a nearby hill called Vatinovac which no one had entered yet. The local forestry service provided us with a ranger who led us to the cave. It just so happened that on that exact day Hrvoje had to go help another group. We found ourselves at the edge of the cave, some ten meters in diameter and approximately thirty meters in depth. We began our preparations.

We agreed that I would go down first, with Ivan Filipčić belaying me. Thirty meters down, I reached a steep scree slope and came to a round cave tunnel, some five or six meters in diameter (Fig. 4). At the end of the gently sloping tunnel on the right side I reached some sort of wooden structure and the remains of several large ceramic vessels. I was astonished; I had never seen anything like it before. I immediately returned to the scree and went down the very steep tunnel on the left side. After going several dozen feet down, I found myself taken aback again: alongside the right wall were strewn many pieces of ceramic, as well as human bones, the most noticeable being skulls. I didn't think anyone would believe what I'd seen, so I went back to the scree and called for Ivan

SLIKA 4. Nacrt Bezdanjače iz 1960. (izradio V. Božić).

FIGURE 4. Map of Bezdanjača from 1960 (made by V. Božić).



skih kostiju, od kojih su se isticale lubanje. Nisam mislio da ćemi tko vjerovati što sam vidio, stoga sam se vratio ispod sipara i pozvao Ivana da siđe. Naravno, i Ivana su preplavili isti osjećaji.

Nismo znali što napraviti, kako postupiti, pa smo otišli na kolodvor u Vrhovinama i nazvali Aleksandra Mujića, tadašnjeg šefa Glavnog kolodvora. Gospodin Mujić odmah je nazvao geologa Mirka Maleza, koji nam je savjetovao da iz špilje uzmemo samo ono što nije zasigano (keramičke posude) i da izradimo skicu mjesta gdje smo ih uzeli. Izvađene smo posude trebali upakirati i vlakom poslati u Zagreb. Dobivši takve upute, najprije smo otišli do najbliže stolarije u Zalužnici gdje smo dobili prikladan sanduk pun piljevine i odnijeli ga do špilje. Ponovno smo se Ivan i ja spustili u jamu i detaljno nacrtali mjesto s kojeg smo uzeli posude te ih pažljivo iznijeli. Tada sam, na vlastitu odgovornost, potrošio jedan i jedini snimak te fotografirao izvađene posude (sl. 5). U svaku smo posudu stavili skicu gdje je posuda bila izvađena, umotali ih u piljevinu sanduk odnijeli na kolodvor i adresirali ga na Aleksandra Mujića u Zagrebu. Time je naš posao s keramikom bio gotov. Vratili smo se do jame i nastavili istraživanje s ciljem izrade nacrta. Izrađeni nacrt predan je vođi istraživanja, dr. Ivi Baučiću koji ga je zbog proučavanja jame predao Mirku Malezu.

Kasnije smo saznali da je sanduk s keramikom Aleksandar Mujić predao Mirku Malezu i od tada se više ne zna gdje su posude završile. Sreća je da sam uspio doći do svoje fotografije snimljene ispred jame jer je sad ta fotografija jedini dokaz onoga što smo tada izvadili. U ostavštini Mirka Maleza nađen je i moj originalni nacrt jame, ali ne i skice mjesta gdje su bile posude."

to come down. Of course, Ivan was overwhelmed with the same emotions as me.

We didn't know what to do, what steps to take, so we went to the train station in Vrhovine and called Aleksandar Mujić, then the head of the main railway station in Zagreb. Mr. Mujić immediately called the geologist Mirko Malez, who advised to take only those items that are not covered by travertine (the ceramic vessels) and to make a sketch of the place from which we took them. We were supposed to pack the extracted vessels and send them to Zagreb by train. Having received these instructions, we first went to the nearest carpenter's shop in Zalužnica, where we obtained a suitable crate filled with sawdust and took it to the cave. Ivan and I once again went down into the cave, made a detailed sketch of the place from which we took the vessels, and then carefully brought them out. I then made the call to use up our one and only photograph to take a picture of the extracted vessels (Fig. 5). We placed a sketch of the place of extraction into each vessel, wrapped them in sawdust, took the crate to the train station, and sent it to Aleksandar Mujić in Zagreb. With that, our work with the ceramics was done. We went back to the cave and continued our exploration, with the aim of making a map. The finished map was given to the head of the project, dr. Ivo Baučić, who then gave it to Mirko Malez in order for him to study the cave.

We later learned that Aleksandar Mujić handed over the crate containing the ceramics to Mirko Malez, and no one knows what happened to the vessels after that. Luckily, I managed to obtain my photograph taken in front of the cave, because now that photograph is the only proof of what we took from there. Mirko Malez's estate also contained my original map of the cave, but not the sketch of the place where the vessels were discovered."

SLIKA 5. Fotografija posuda iz Bezdanjače (snimio V. Božić).

FIGURE 5. Vessels from Bezdanjača cave (photo by V. Božić).

Osnovna znanja iz speleologije (1961.)

Upute speleolozima kako postupiti s arheološkim nalazima napisao je ing. Veljko Šegrc 1961. godine kao članak u prvom hrvatskom speleološkom udžbeniku „Osnovna znanja iz speleologije" tiskanom za potrebe Prvog jugoslavenskog speleološkog tečaja održanog u Tounju. Detaljno je objasnio što je arheologija, kakvi se nalazi mogu naći u špiljama i kako s njima postupati.

Veliki je broj pećina u kojima je čovjek boravio, stalno ili pak samo povremeno.

Pozvani stručnjaci nisu uvijek u mogućnosti da dođu u svaku od njih, sa izvrše potrebna istraživanja, iskapanja....

Samim time, speleolozima je pala u zadatak i signalizacija arheološki vrijednih i interesantnih objekata – pored čuvanja i zaštite pećina, kao prirodnih rijetkosti. Znači, speleolozi imaju i dužnost da uoče u pećinama, da li je u njima boravio čovjek, da ustanove ima li njegovih tragova.

Ovo predavanje nema za cilj da stvori arheologe, jer je za to potreban dugotrajan studij, nego da usmjeri speleološke aktivnosti u pravcu promatranja pećine kao ljudskog boravišta, i hitnog obavještavanja zainteresiranih ustanova kao i aktivne suradnje sa njima. Speleolog tada neće proći pokraj „komadića crepovlja", ili uglađenog kamena, obrađene kosti.. bez pažnje, a već samim izvještajem da je „tu" i „tu" nađena keramika ili nešto drugo, mjerodavne ustanove će dobiti dobar i siguran putokaz, biti će im prišteđeno lutanje po terenu i otkrivanje pećina.

Uvijek držati ću na umu da „divlje istraživanje" gotovo uvijek donosi više štete nego koristi.

Samo u zajedničkom radu i suradnji svih zainteresiranih naučnih krugova sa speleolozima – arheolozima amaterima, biti će sačuvane mnoge kulturne vrednote i postići će se znatno veći uspjesi.

The Basics of Speleology (1961)

The instructions for what speleologists should do when they come across archaeological finds was written by Veljko Šegrc in 1961 as a text in the first Croatian speleological textbook, titled "The Basics of Speleology" (original title "Osnovna znanja iz speleologije"), published for the purposes of the First Yugoslavian Speleological Course, held in Tounj. In the text, Šegrc explained in detail what archaeology is, what types of finds can be found in caves, and what one should do with them.

There are a great number of caverns where humans resided, permanently or occasionally.

However, archaeologists and anthropologists do not always have the means to visit all of them, perform the necessary research, or organize excavations.

That is why speleologists have taken on the task of pointing out valuable and interesting speleological objects – in addition to protecting and preserving caves as natural rarities. Speleologists have a duty to notice whether humans have resided in caves and report signs of human habitation.

The goal of this lecture is not to create archaeologists, for that requires years of study, but to instruct speleologist how to observe a cave as a place where humans resided, how to urgently alert pertinent institutions, and how to cooperate with them. The speleologist should not pass by a "piece of crockery", a polished stone, or a worked bone as if it were not there... They should pay attention. The mere act of reporting that pottery or some other archaeological artefact is located at a specific place will provide the proper institutions with valuable information, sparing them a lot of time wandering the field and searching for caves.

One should always keep in mind that "unprofessional excavation" does more harm than good.

The only way that many valuable cultural treasures will successfully be preserved is if all interested scientists and speleologists, amateur archaeologists, work together.

SLIKA 6. Keramičke posude iz Rudelića pećine i Gospodske špilje (snimio I. Krajcar).

FIGURE 6. The ceramic vessels from Rudelića Pećina and Gospodska Špilja (photo by I. Krajcar).

Cetinsko polje

U prvim su sustavnim speleološkim istraživanjima pronađeni arheološki artefakti iz Rudelića pećine i Gospodske špilje, koji su predani Arheološkom muzeju u Zagrebu. Danas su pohranjene u zbirci Speleološkog odsjeka HPD „Željezničar“ te su ujedno i podsjetnik na suradnju i razumijevanje speleološke zajednice i arheologa (sl. 6). Naime, prema riječima Branka Jalžića, koji je ujedno i nalaznik predmeta, nakon što je predao artefakte muzeju, djelatnici muzeja zabilježili su o njima bitne podatke, restaurirali posude te ih vratili Jalžiću, koji ih je potom odnio u današnju zbirku SO HPD „Željezničar“. Povijest i tijek speleoloških istraživanja opisani su u članku Branka Jalžića „Rudelića pećina na izvoru Cetine“.[2]

Mala jama (2010.)

Prilikom održavanja vježbe penjanja na speleološkoj školi Speleološkog odsjeka HPD „Željezničar“ 2010. godine, na području istočno od Studene, u Maloj jami (sl. 7), na dubini od dvadesetak metara i oko četrdeset metara jugoistočno od ulaza, nađen je mali brončani lonac. Pronašao ga je speleolog Ruđer Novak prilikom topografskog snimanja jame. Ustanovljeno je da lonac nije mogao dospjeti do mjesta nalaza kroz ulazni dio jame i vijugavi neravni horizontalni dio, već kroz otvor iznad mjesta nalaza, koji je sad srušen. Lonac su poslije vidjeli i drugi članovi ovog istraživanja te ustanovili starost koja vjerojatno predstavlja arheološki nalaz.

Po povratku u Zagreb, predmet je predan Arheološkom muzeju u Zagrebu (uz detaljnu dokumentaciju o mjestu nalaza) gdje je arheolog Ivan Radman-Livaja ustanovio da se radi o rimskoj brončanoj posudi, tzv. situli izrađenoj najvjerojatnije u drugom stoljeću (sl. 8). Kako je potvrđeno da se radi o vrijednom arheološkom nalazu, situla je ostala na čuvanju u Arheološkom muzeju u Zagrebu. O situli su 2014. godine Ivan Radman-Livaja, Ruđer Novak, Vlado Božić i Lovel Kukuljan napisali opširan članak „Nalaz rimske brončane posude u Maloj jami kraj Studene“.[3]

Cetinsko Polje

The first systematic speleological surveys led to the discovery of archaeological artifacts from Rudelića Pećina and Gospodska Špilja, which were handed over to the Archaeological Museum in Zagreb. Today, they are stored in the collection of the Speleological Section Željezničar, and serve as a reminder of the cooperation and understanding between the speleological community and archaeologists (Fig. 6). In the words of Branko Jalžić, who was the one to discover the items, after he had handed over the artifacts to the museum, the museum staff recorded all important information on the vessels, restored them, and then gave them back to Jalžić, who put them into the Speleological Section's collection. The history and course of these speleological surveys were described in Branko Jalžić's text "The Cave of Rudelića Pećina at the Source of the Cetina River"[2] (original title "Rudelića pećina na izvoru Cetine", published in *Speleolog*, 1972 – 1973).

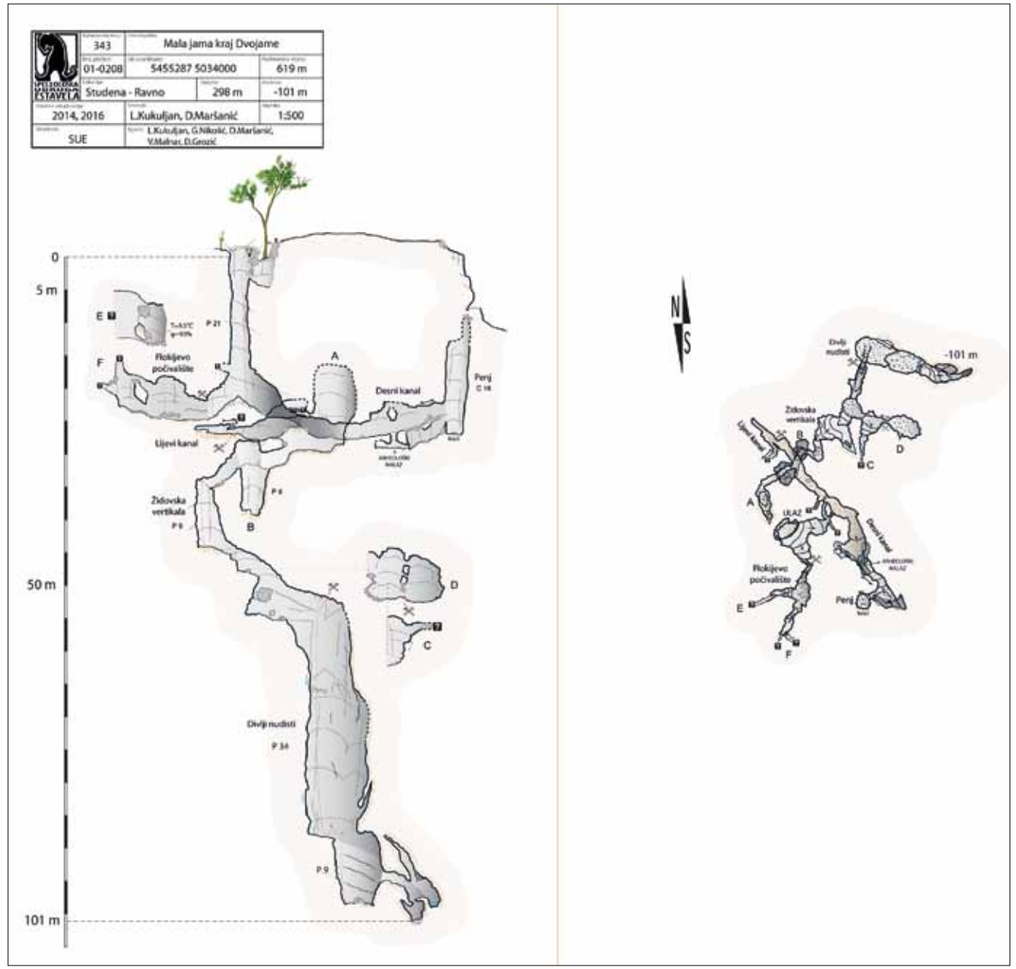
Mala Jama (2010)

During climbing exercises conducted as part of the training course of the Speleological Section Željezničar in 2010, a small bronze pot was discovered in the Mala Jama cave (Fig. 7), east of the village of Studena, at a depth of around twenty meters and approximately forty meters southeast of the entrance. It was discovered by the speleologist Ruđer Novak while he was making a topographical recording of the cave. It was ascertained that the pot could not have reached the place of discovery through the cave entrance and the winding, sloping horizontal portion, but only through the opening above the place of discovery, which is now caved in. The pot was later seen by other participants of the survey as well, who acknowledged its age, suggestive of it being an archaeological find.

After their return to Zagreb, the item was handed over to the Archaeological Museum in Zagreb (with detailed documentation about the place of discovery), where the archaeologist Ivan Radman-Livaja ascertained that it was in fact a Roman bronze vessel, a so-called situla, most likely made in AD 2nd century (Fig. 8). Seeing as it was confirmed that the situla was a valuable archaeological find, it remained in the Archaeological Museum in Zagreb for safekeeping. In 2014, Ivan Radman-Livaja, Ruđer Novak, Vlado Božić, and Lovel Kukuljan wrote an extensive text on the situla, titled "The Roman Bronze Vessel discovered in Mala Jama near Studena"[3] (original title "Nalaz rimske brončane posude u Maloj jami kraj Studene", published in *Speleolog*, 2014).

2 Jalžić 1972–1973.
3 Radman-Livaja *et al.* 2014.

2 Jalžić 1972–1973.
3 Radman-Livaja *et al.* 2014.



SLIKA 7. Karta Male jame (izradili L. Kukljan, D. Maršanić).

FIGURE 7. Map of Mala jama (made by L. Kukljan, D. Maršanić).

SLIKA 8. Brončana situla iz Male jame (snimio I. Krajcar).

FIGURE 8. Bronze vessel from Mala Jama (photo by I. Krajcar).

Božićević 1959 – S. Božičević, Pećina Veternica nekada, sada i u budućnosti, *Speleolog* 7–8, 1959, 7–24.

Jalžić 1973 – B. Jalžić, Rudelića pećina na izvoru Cetine, *Speleolog* 20–21, 1973, 7–10.

Radman-Livaja *et. al.* 2014 – I. Radman-Livaja, R. Novak, V. Božić, L. Kukuljan, Nalaz rimske brončane posude u Maloj jami pokraj Studene, *Speleolog* 62, 5–14.

ŠPILJE KAO ARHEOLOŠKE I OBRAZOVNE RIZNICE

CAVES AS ARCHAEOLOGICAL AND EDUCATIONAL TREASURE TROVES

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U 21. stoljeću čovječanstvo se susreće sa značajnim izazovima. To je pandemija, klimatske promjene, globalni ekološki problemi te uništavanje kulturno-povijesnog naslijeđa uslijed civilizacijskog razvoja, prirodnih nepogoda te na žalost i zbog ratnih zbivanja. Mnogi od tih izazova postali su posebno vidljivi već u 20. stoljeću, a danas poprimaju zabrinjavajuće razmjere.

Stoga su neka od ključnih pitanja danas: Što će ostati budućim generacijama? Možemo li zaštititi zapise o ljudskoj prošlosti iz prapovijesnih i kasnijih razdoblja? Dio odgovora na ova pitanja dati ćemo kratkim razmatranjem specifičnih lokacija koje imaju veliki potencijal daljnjih arheoloških i drugih znanstvenih istraživanja, ali i razvoja suvremenih edukativnih programa. Radi se o špiljama, odnosno općenito speleološkim objektima.

Brojni su primjeri boravka čovjeka u špiljama kroz povijest potvrđeni arheološkim istraživanjima. Od kamenog, bakrenog, brončanog i željeznog doba preko antike, srednjega i novoga vijeka ljudi su špilje, sve do danas, koristili u različite namjene.[1] Znamo i da su prije pojave modernog čovjeka, neandertalci boravili u špiljama.

Osim čovjeka, u špiljama nalazimo i brojne paleontološke nalaze iz pleistocena i holocena. Stoga uz arheološka istraživanja, sustavna istraživanja špilja obuhvaćaju i fosilizirane ostatke bilјaka i životinja. Daleko najveći broj svih paleontoloških nalaza iz razdoblja pleistocena u Hrvatskoj čine oni iz špilja.[2]

In the 21st century, mankind has thus far been beset by significant challenges, such as the global pandemic, climate change, environmental issues, and the destruction of cultural and historical heritage due to civilizational development, natural disasters and, unfortunately, armed conflicts. Many of these challenges had already become very pronounced in the 20th century, and today they are growing to worrying proportions.

Therefore, some of the key questions of today are: What will we leave behind to future generations? Can we preserve the records of human history from prehistoric and later periods? We will partly answer these questions through a short discussion of specific sites with great potential for future archaeological and scientific research, but also for the development of educational programs. These sites are caves, or caves and pits in general.

There are many examples of humans living in caves throughout history, supported by archaeological research. From the Stone, Copper, Bronze and Iron Ages, through Classical antiquity and the Middle Ages, all the way up to modern times, humans used caves for various purposes.[1] We know that, before the arrival of modern humans, Neanderthals also lived in caves.

Aside from humans, caves also offer numerous paleontological finds from the Pleistocene and the Holocene. Thus, alongside archaeological excavations, systematic studies of caves also encompass the fossilized remains of plants and animals. By far the most numerous paleontological finds from the Pleistocene in Croatia have been those discovered in caves.[2]

1 Raguž, 2019.
2 Miculinić, 2019.

1 Raguž, 2019.
2 Miculinić, 2019.

Koje su perspektive špilja kao lokaliteta za istraživanja u 21. stoljeću? Sa speleološkog aspekta gledano, istraživački potencijali su veliki, posebice u Hrvatskoj. U mnogim speleološkim objektima nisu još do kraja izvedena ni osnovna speleološka istraživanja, a u mnogima ona još nisu ni započela. U Hrvatskoj još pronalazimo speleološke objekte u koje istraživači nisu ušli. To predstavlja veliki potencijal za buduća arheološka, paleontološka i druga znanstvena istraživanja.

Razvoj znanstvenih metoda i mjernih tehnika danas omogućuje puno detaljnije rekonstrukcije u špiljama. U zadnjih dvadesetak godina otvorilo se novo znanstveno područje istraživanja koje je fokusirano na sige kao bogate izvore paleoklimatskih i paleookolišnih informacija – znanost o sigama.[3] Današnje analitičke metode mogu u sigama i drugim sedimentima detektirati elemente u tragovima čime se otvara nova riznica povijesnih podataka od kojih veći dio tek treba interpretirati. Na to se nadovezuju vrlo precizna snimanja špilja i sedimenata uz nove geofizičke metode te suvremene metode obrade arheoloških uzoraka. Arheološka istraživanja u tom bogatom interdisciplinarnom kontekstu imaju veliki potencijal kako u znanstvenom aspektu novih spoznaja tako i kao bogata podloga interdisciplinarnih edukativnih programa.

Zahvaljujući novim metodama i prikupljenim podacima otvaraju se teme koje se dotiču suvremenih izazova, što je u konačnici bitno i za financiranje istraživanja i za interes javnosti za rezultate istraživanja. Na primjer, može se istraživati ljudska prošlost u kontekstu klimatskih promjena u prošlosti kako bi se bolje mogli suočiti s istim izazovima u budućnosti.

Speleolozi kao malo neobična grupacija današnjih istraživača špilja, kao i ljudi iz prapovijesti i kasnijih razdoblja imaju poseban odnos prema špiljama. U špiljama smo u prirodnom okruženju koje je očuvano na Zemlji bez utjecaja suvremene civilizacije. Osim toga, špilje se zadnjih 70-tak godina u Europi koriste i kao centri za zdravstveni turizam (speleoterapiju) gdje se boravkom u njima pomaže izlječenju pojedinih bolesti. Moguće je da su ljudi u davnini prepoznali neke od učinaka koji pozitivno utječu na zdravlje.[4] Danas znamo da je to udisanje visokokvalitetnog ionizirajućeg zraka specifičnog za špiljskih okoliš kojeg karakterizira specifična mikroklima i sterilnost, kontakt s blatom u špilji imaju pozitivan učinak na cjelokupno zdravlje. Kretanje u špilji utječe na razvoj motoričkih sposobnosti, snage, preciznosti, ravnoteže, fleksibilnosti, brzine i koordinacije pokreta. Tu su i učinci na umirivanja misaonih procesa pod utjecajem tišine i mraka te podizanje samopouzdanja zbog suočavanja s eventualnim strahovima i savladavanjem različitih prepreka.

What is the potential of caves as research sites in the 21st century? From a speleological point of view, the research potential is great, especially in Croatia. Thus far, in many caves, not even the most basic speleological research has been carried out in full, while in many others it has not even begun. There are caves in Croatia which explorers have not yet set foot in. Such sites show great potential for future archaeological, paleontological and other kinds of scientific research.

The development of scientific methods and measurement techniques has allowed us today to develop reconstructions of caves in much more detail. In the past 20 years, a new field of research has opened up, focusing on speleothems as rich sources of paleoclimate and paleoenvironmental information: the science of speleothems.[3] Using contemporary analytical methods, we can detect trace elements in speleothems and other sediments, opening up a new treasure trove of historical data, the majority of which have yet to be interpreted. Tying into this are very precise recordings of caves and sediments, with new geophysical methods and contemporary methods for processing archaeological samples. In this rich interdisciplinary context, archaeological research has great potential, both in the scientific sense of gathering new insights, and as a rich basis for interdisciplinary educational programs.

These new methods and acquired data open up new questions related to contemporary challenges, which is also important for funding research and for stimulating public interest in research results. For example, we might study human history in the context of climate change in the past, so as to be better equipped to face the same challenges in the future.

Speleologists, as a somewhat unusual group of contemporary cave explorers, have a special relationship with caves, just like prehistoric humans and those from later periods of history. In caves, we find ourselves in a natural environment, preserved and untouched by contemporary civilization. Furthermore, for the past 70 or so years, caves in Europe have also been used as centers for medical tourism (speleotherapy), in which spending time in caves helps in healing certain illnesses.[4] It is possible that humans in the distant past recognized some of these positive health effects. Today we know that breathing high-quality ionizing air, specific to cave environments (which are characterized by a specific microclimate and sterility), and contact with the mud in caves have a positive effect on overall health. Movement in caves affects the development of motor skills, strength, accuracy, balance, flexibility, speed, and motor coordination. There is also the benefit of soothing thought processes under the influence of silence and darkness, and of raising self-esteem through facing potential fears and overcoming various obstacles.

3 Fairchild, Baker, 2012.
4 Josipović, Železnjak, 2019.

3 Fairchild, Baker, 2012.
4 Josipović, Železnjak, 2019.

U kontekstu današnjih zdravstvenih i epidemijskih izazova gdje stres i depresija zauzimaju značajno mjesto, špilje bi mogle biti prepoznate kao jedno od najboljih mjesta na kome će ljudi pronalaziti svoj unutrašnji mir. Pri tome se u turističko-edukativnom aspektu mogu upoznavati s arheološkim otkrićima i time približiti ljudima koji su davno u njima isto boravili. To otvara mogućnosti uključivanja rezultata arheoloških studija u nove edukativno-turističke sadržaje. Suvremeni principi takvih povezivanja danas se razvijaju i realiziraju u okviru geoturizma, visokokvalitetnog oblika turizma 21. stoljeća u kome edukacija ima središnje mjesto. Kvalitetnim geoturističkim sadržajima značajno se unaprjeđuje lokalna turistička ponuda. Geoturizam je specifičan i po tome što se može realizirati tijekom cijele godine i kvalitetno prezentiranim znanstvenim otkrićima brendirati samu turističku destinaciju jer su arheološka i vezana otkrića često posebnosti same lokacije.

Suvremeno obrazovanje u Europi ima novu paradigmu u kojoj se naglasci stavljaju na svijest o ulozi znanosti u trenutačnom društvenom i globalno relevantnom kontekstu. Interes za znanost se pobuđuje u interdisciplinarnom kontekstu prirode i svakodnevnoga života. Izvanučionička, odnosno terenska nastava danas je jedan od najučinkovitijih i učenicima najdražih oblika suvremene nastave 21. stoljeća. Izlazak u prirodu ili prezentacijske centre predstavlja jedinstven doživljaj koji se osim motiviranja i inspiriranja djece za pojedine teme pokazuje i kao učinkovit način za stjecanje trajnih znanja i vještina. Inovativnim i kreativnim doprinosom učitelj na danoj lokaciji može djetetu prenijeti vrhunske obrazovne sadržaje.[5] Djecu je potrebno od rane dobi zainteresirati za pojedina područja i tematike, tako i za arheologiju. Mogući su pristupi pasivnim izlaganjem zanimljivim sadržajima i aktivnim uključivanjem u sam istraživački proces.[6]

Zaključimo s konkretnim primjerom istraživačkog pristupa u pripremi obrazovnog sadržaja. Suvremeni pristup orijentiran je na potrebe korisnika. Za razliku od poučnih staza 20. stoljeća u okviru kojih ključni element bude poučna tabla čiji je sadržaj teško prilagoditi svakoj dobi i predznanju, suvremeni pristup kreće od konkretnih korisnika i njihovih obrazovnih potreba. Posebna ciljana skupina su djeca osnovnoškolske dobi kod koje se kroz rano učenje može pobuditi interes za arheologiju. Struktura programa za osnovne škole sastoji se od pet ključnih elemenata:

Element 1: Uvod – zanimljive priče bazirane na znanstvenim spoznajama, arheološkim nalazima i interpretacijama s dane lokacije kroz koje se pobuđuje interes za daljnje istraživanje na samoj lokaciji.

In the context of current-day medical and epidemiological challenges, among which stress and depression rank very high, caves could be recognized as one of the best places for people to find inner peace. At the same time, from a tourist and educational point of view, they can get acquainted with archaeological discoveries and the humans who lived in these caves in the distant past. This opens up the possibility of incorporating the results of archaeological research into new tourist and educational programs. Today, the contemporary principles of such interdisciplinary endeavors are being realized in the context of geotourism, a high-quality 21st century form of tourism in which education is key. High-quality geotourist attractions significantly improve local tourism. Geotourism is also specific in that it can be realized year-round, and that it can be used for the branding of the tourist destination itself by skillfully presenting scientific discoveries, because it is often precisely archaeological and similar discoveries that make the destination special.

Contemporary education in Europe has a new paradigm which emphasizes the role of science in the current social and globally relevant context. An interest in science is being stimulated in the interdisciplinary context of nature and everyday life. Today, school trips are one of the most effective and, from the point of view of students, well-loved forms of 21st century schooling. Excursions into nature or educational centers is a unique experience which has, aside from motivating and inspiring students to take an interest in certain topics, also proven to be an effective way of acquiring skills and knowledge. At such sites, through their innovative and creative contribution, teachers can convey top-quality educational content.[5] It is important for children to develop an interest in certain fields and topics from an early age, and archaeology is no exception. This can be done by passively exposing them to interesting content or by actively involving them in the research process itself.[6]

Let us conclude with a specific example of a scientific approach in preparing educational content. The contemporary approach focuses on the needs of the user. As opposed to 20th century educational trails, in which the key element is the educational panel, whose content cannot be made suitable for all ages and levels, the starting point of the contemporary approach are specific users and their educational needs. One special target group are elementary school students, in whom an interest in archaeology can be stimulated through early exposure. The elementary school program consists of five key elements:

Element 1: Introduction – interesting stories based on scientific discoveries, archaeological finds, and interpretations from a given location, which stimulate an interest in further exploration at the location itself.

5 Paar, 2019.
6 Janković, Mihelić, 2018.

5 Paar, 2019.
6 Janković, Mihelić, 2018.

SLIKA 1. Ulaz u Zagorsku peć kod Ogulina. Špilje su intrigantne lokacije koje predstavljaju izvrstan okoliš za obrazovne programe (snimio D. Paar).

FIGURE 1. Entrance to Zagorska peć cave near Ogulin. Caves are intriguing locations that represent an excellent environment for educational programs (photo by D. Paar).

Ovaj element u razradi treba sadržavati poveznice na literaturu kojom prije svega edukatori ili učitelji koji vode terensku nastavu mogu proširiti znanja o danoj tematici. Također pojedine dijelove programa treba jasno povezati s dijelovima kurikuluma na različitim razinama kako bi učitelji imali uvid koje teme kurikuluma mogu odraditi na terenu. Time se škole potiče da ovakve programe trajno uključe u terenske nastave.

Element 2: Problem – pred učenike se postavlja zanimljiv istraživački problem, pitanja koje će djeca uz manju ili veću pomoć edukatora, samostalno ili timski nastojati odgovoriti.

Izazov pred stručnjacima je osmisliti zanimljiva, neočekivana, motivirajuća pitanja koja će djecu potaknuti na istraživanje. Kvalitetno postavljena pitanja neće imati jednostavne i jednoznačne odgovore, već će istražujući i odgovarajući na njih djeca shvatiti da niti jedna znanstvena spoznaja nije konačna već ih treba stalno preispitivati i unaprjeđivati.

When developed, this element should contain links to literature which will allow educators or teachers who will take children on excursion to broaden their knowledge on a given topic. Furthermore, certain parts of the program should be clearly tied to parts of the curriculum on various levels, so that teachers know which topics from the curriculum they can cover on the field trip. This will encourage schools to permanently include these kinds of programs into their school trips.

Element 2: The Problem – the students are faced with an interesting scientific problem, with questions that the children will attempt to answer, with more or less help from educators, individually or in teams.

The challenge that experts face here is coming up with interesting, unexpected, motivating questions that will encourage children to explore the topic. Well-phrased questions will not have simple and unambiguous answers; rather, through exploring and answering them, children will realize that no scientific discovery is final, but that they have to be constantly questioned and improved.

Element 3: Metode – upoznavanje djece s odabranim metodama terenskog istraživanja koja će primijeniti u svojem istraživanju. Ako se radi o nekom instrumentu ili metodi, uvježbava se njihova primjena na terenu.

Ovo je jedan od ključnih elemenata. Kada govorimo o znanstvenom obrazovanju, u središtu je znanstvena metoda. Prolazeći kroz obrazovnu vertikalu djeca bi trebala kroz brojne primjere proći primjenu znanstvene metode u pronalasku odgovora na postavljeno pitanje. Svako znanstveno istraživanje ima svoje specifičnosti te se primjenjuju različiti alati i instrumenti.

Element 4: Istraživanje – djeca u grupama izvode istraživanje – traže odgovore na postavljena pitanja. Istraživački proces može obuhvaćati fotodokumentiranje, iskapanje modela arheoloških nalaza u simuliranim uvjetima, bilješke o nalazima itd.

U ovom elementu djeca primjenjuju znanstvenu metodu u okviru konkretnog istraživanja. Pri tome treba predvidjeti dodatne istraživačke izazove za darovitu djecu.

Element 5: Prezentacija rezultata - kritičke diskusije i prijedlozi zaključaka. Na samom terenu istraživačke grupe mogu prezentirati svoja otkrića, a detaljnije diskusije mogu se potaknuti kasnijim izvješćima i prezentacijama rezultata koje se mogu raditi u učionici.

U ovom elementu treba poticati kompetitivnost, grupni rad, kritičko razmišljanje i pažljivu primjenu znanstvene metode.

Sve navedene elemente potrebno je prirediti u suradnji s arheolozima i drugim stručnjacima za tematike koje se obrađuju. Takva detaljna razrada omogućava izvedbu programa koju mogu voditi učitelji koji dolaze s djecom ili edukatori iz nadležnih ustanova, a koji nisu eksperti za arheologiju. Time se cilja na puno širi obuhvat korisnika i programe koji bi se mogli odvijati tijekom cijele godine.

Dakle, špilje predstavljaju ne samo potencijal za nova arheološka otkrića već i izvrsnu lokaciju za suvremene edukativne sadržaje, programe terenske nastave, popularizaciju znanosti i arheologije kao struke te podizanje svijesti o važnosti i potrebi zaštite kulturne i prirodne baštine. Budućnost vrednovanja znanstvenih dosega arheoloških i srodnih istraživanja leži u razvoju edukativnih programa kao dijela suvremenog znanstvenog obrazovanja koje je u strateškim europskim dokumentima. U kontekstu geoturizma kao vrhunskog turizma 21. stoljeća, ovakve lokacije u kombinaciji s postojećim prezentacijskim centrima i muzejima predstavljaju značajan potencijal za nove turističke proizvode i brendiranja lokacije.

Element 3: Methods – acquainting children with certain field research methods which they will apply in their own research. Children will practice using specific instruments or methods in the field.

This is one of the key elements. When it comes to scientific education, the scientific method is of central importance. Throughout their education, children should, through many examples, explore the application of the scientific method in search for an answer to a given question. Every scientific study has its own particularities, and makes use of various tools and instruments.

Element 4: Research – children conduct research in groups; they search for answers to given questions. The research process can include photo documentation, excavation of models of archaeological finds in simulated conditions, taking notes of finds, etc.

In this element, children apply the scientific method in the context of a specific excavation. Additional research challenges should be prepared for gifted children.

Element 5: Presenting the results – critical discussions and suggestions for conclusions. The research groups can present their discoveries in the field, while more detailed discussions can be encouraged through reports and presentations of results in the classroom.

This element should encourage competitiveness, team work, critical thinking, and the careful application of the scientific method.

All of these elements should be developed in cooperation with archaeologists and other experts relevant to the topics being discussed. Such detailed elaboration will allow teachers accompanying children on school trips or educators from relevant institutions, who are not experts in archaeology, to implement the program. This will allow for a much broader scope of users and for the implementation of year-round programs.

To conclude, not only do caves show great potential for new archaeological discoveries, they are also an excellent location for contemporary educational content, school trip programs, the popularization of science in general and archaeology in particular, and raising awareness about the importance of cultural and natural heritage and the need to protect it. The future of valuing the scientific achievements of archaeological and related research lies in the development of educational programs, as part of contemporary scientific education included in strategic European documents. In the context of geotourism, as the foremost form of tourism of the 21st century, such locations, in combination with existing educational centers and museums, show great potential for location branding and new tourist attractions.

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VEZA SPELEOLOGIJE I ARHEOLOGIJE U HRVATSKOJ

THE CONNECTION BETWEEN SPELEOLOGY AND ARCHAEOLOGY IN CROATIA

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Kad sam bio pozvan napisati kratak osvrt na vezu između speleoloških i arheoloških istraživanja u Hrvatskoj, odmah sam prihvatio izazov misleći da je jednostavan posao.

No, već i nakon prvih dubljih razmišljanja o tematici, prisjetio sam se mnoštva zanimljivih podataka koje je neophodno spomenuti u takvu prikazu. Riječ je o više stotina objavljenih i neobjavljenih radova koji su mi dostupni. Posao nije bio ni jednostavan ni brz.

Nastojao sam, ipak, zbog pomanjkanja prostora i vremena, postaviti okvire u kojima bi se trebalo kretati.

Bit ću vezan isključivo uz vremensko razdoblje kojem sam svjedok kroz svoje kontinuirano aktivno bavljenje speleologijom skoro šezdeset godina. Neću pisati o rezultatima neke skupine, kluba, društva, institucije itd., već o neposrednim speleološkim aktivnostima koje su bile potencirane nekim od speleoloških istraživanja u kojima i sam sudjelovao ili na neki način bio uključen u njih.

Speleologija i arheologija nerazdvojne su znanstvene discipline. To je razumljivo kad se zna da su mnogi arheološki izvori, tj. nalazišta locirani baš na ulaznim ili unutrašnjim dijelovima speleoloških objekata, što su ciljevi djelovanja svih temeljnih speleoloških istraživanja.

Ponegdje se pojedinci amaterski bave skupljanjem arheološkog materijala u speleološkim objektima. To, baš kao ni posjećivanje ili istraživanje unutar speleoloških objekata, nije u Hrvatskoj zakonski dopušteno. Takve aktivnosti ne treba spominjati za razliku od stotina onih koje su obavljali za to educirani, regi-

When I was invited to write a short text about the relationship between speleological and archaeological research in Croatia, I immediately accepted the challenge, thinking it would be a simple task.

However, as soon as I gave the subject some more thought, I remembered a lot of interesting data that should be mentioned in such a text. Several hundred published and unpublished articles were at my disposal. The task was anything but simple and could not be completed quickly.

Nevertheless, due to a lack of space of time, I attempted to provide a framework for the topic.

I will limit my discussion exclusively to the time period I actively witnessed through my continuous work in speleology for the past 60 years. I will not limit myself to the results of any one group, club, society, institution, etc., but to direct archaeological activities that were initiated by speleological research in which I was involved in one way or the other.

Speleology and archaeology are inseparable scientific disciplines. This is clear from the fact that many archaeological sources or sites are located at entrances on in inner parts of speleological objects, which are the primary interests of fundamental speleological research.

There are amateurs who collect archaeological finds in speleological objects in their free time. This activity, just like visiting or exploring speleological objects, is forbidden by law in Croatia. Such activities should not even be mentioned when compared to the hundreds of activities performed by individuals

SLIKA 1. Geodetska snimanja prilikom arheoloških i speleoloških istraživanja u Novoj (Maloj) spilji kod Sutine (snimio M. Garašić).

FIGURE 1. Geodetic surveying during archaeological and speleological research in Nova (Mala) spilja near Sutina (photo by M. Garašić)

strirani i valorizirani pojedinci ili organizacije. Naime, i s nenamjernim se neznanjem koji put stvaraju zauvijek nepopravljive štete na arheološkim nalazištima. To je zaseban problem.

Nekonvencionalni pogled na odnos speleologije i arheologije u Hrvatskoj mogao bi odrediti direktne i indirektne uzajame korisnosti i isprepletenosti između tih dviju znanosti.

Speleolozi su u Hrvatskoj, praktički, od svojih početnih istraživačkih koraka prije više od stočetrdeset godina uočili neodvojivost speleologije i arheologije, što nikad nisu zanemarivali. Početni su radovi bili zajednički.

Direktne korisnosti proizašle su iz speleoloških rekognosciranja, istraživanja ili monitoringa, odnosno onda kad su geolozi i speleolozi uočili mogućnosti djelovanja arheologa unutar speleoloških objekata.

To je, primjerice, prisutno još od djelovanja dr. Mije Kišpatića u području Baračevih spilja od oko 1885. do 1891. godine. Također, isto se može reći i za rad dr. Josipa Poljaka u području mnogih spilja u Gorskom kotaru u dvadesetim godinama prošlog stoljeća ili za aktivnost dr. Mirka Maleza na ulaznim dijelovima spilje Veternice, Vindije i drugih u drugoj polovici prošlog stoljeća. U poznate su arheološke radove svjetski poznatih znanstvenika, primjerice, dr. Grge Novaka, svakako uvršteni i oni lokaliteti na koje su ih uputili domicilni stanovnici oko ulaza u te speleološke objekte – primjerice na otoku Hvaru i šire.[1]

and organizations specializing in, registered or commissioned for speleological research. Namely, non-intentional ignorance also results in irreversible damage to archaeological sites. But that is a problem in itself.

An unconventional view of the relationship between speleology and archaeology in Croatia could determine direct and indirect utility and interweaving between the two sciences.

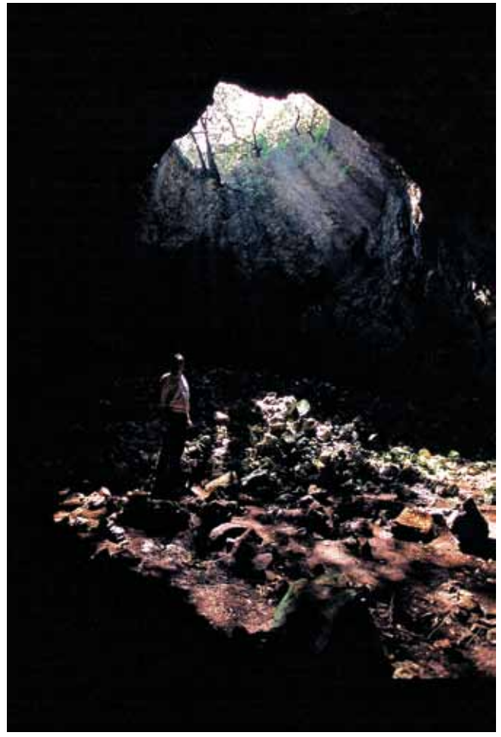
Since their initial steps into research over 140 years ago, speleologists in Croatia have noticed that speleology and archaeology are inseparable and have never ignored this fact. The first research campaigns were joint endeavours.

Direct utility emerged from speleological surveys, research, or monitoring, i.e. when geologists/speleologists saw that archaeologists could potentially conduct their research in speleological objects.

For example, this has been present since the work of Mijo Kišpatić, PhD, regarding Barać Caves from approximately 1885 to 1891, or Josip Poljak, PhD, regarding numerous caves in the Gorski Kotar area during the 1920s, or Mirko Malez, PhD, regarding the entrance to Veternica, Vindija, and other caves during the second half of the 20th century. Archaeological sites that were brought to the researcher's attention by the local population living in the vicinity of the entrances to speleological object, such as those on the island of Hvar for example, have been discussed in papers by world-renowned scientists such as Grga Novak.[1]

1 Novak 1954.

1 Novak 1954.



SLIKA 2. Jamina na Sridi na otoku Cresu (snimio M. Garašić).

FIGURE 2. Jamina on Srida on the island of Cres (photo by M. Garašić).

SLIKA3. Akademik Mirko Malez u Bezdanjači pod Vatinovcem (snimio M. Garašić).

FIGURE 3. Academic Mirko Malez in Bezdanjača under Vatinovac (photo by M. Garašić).

Postoje i drugačiji primjeri. Prvi zapis arheologa, koji je imao i objavljeni grafički prikaz nekog speleološkog objekta na području Hrvatske, datira se još u 1881. godinu kad je objavljen u Vijestima Arheološkog društva u Zagrebu. Riječ je o novootkrivenoj spilji nedaleko Sutine, odnosno Muća koju je spomenuo Mijo Granić. Speleolozi i geolozi tek su stotrideset godina kasnije tu spilju geodetski precizno snimili.[2]

No, ponekad su istraživači nekih arheoloških nalazišta bili isključivo speleolozi. Ovdje ću spomenuti samo nekoliko značajnijih na kojima sam i osobno sudjelovao.

Prilikom gradnje prometnica i većih građevinskih objekata, obavljana su geološka kartiranja i speleološka rekognosciranja, primjerice u Lici, Gorskom kotaru i Dalmatinskoj zagori. Od 1990. godine sve do današnjih dana speleolozi i geolozi upućuju arheo-

There are also other examples. The first record of an archaeologist publishing a graphic depiction of a speleological object in Croatia dates back to 1881, when it was published in the Journal of the Archaeological Society in Zagreb. The site in question was the newly-discovered cave near Sutina, or Muć, mentioned by Mijo Granić. It was not until 130 years later that a detailed geodetic survey of the cave was done by speleologists and geologists[2].

However, some archaeological sites were discovered exclusively by speleologists. I will only mention several more prominent discoveries that I participated in personally.

Geological mapping and speleological surveying was done during the construction of roads and large facilities, for example in Lika, Gorski Kotar, Dalmatian Hinterland etc. Since 1990 until this

2 Drnić *et al.* 2010.

2 Drnić *et al.* 2010.

SLIKA 4. Akademik Mirko Malez u istraživanjima Bezdanjače pod Vatinovcem (snimio M. Garašić).

FIGURE 4. Academic Mirko Malez during excavations in Bezdanjača under Vatinovac (photo by M. Garašić).

loge na potencijalna nalazišta gdje bi trebalo započeti ili nastaviti s arheološkim istraživanjima. Takvih primjera ima kod Lokava, Zdihova, Oštrovice, Zagvozda, kod čvora Bisko, PUO Mosor, na prijelazu Veliki Gložac, kod Stankovaca itd.[3]

Zanimljiva su otkrića speleologa koji su prvi ukazali na arheološki potencijal sljedećih lokaliteta: Bezdanjače pod Vatinovcem, Velike pećine kod Zagvozda, Šimecke jame kod Sodola, spilje kod Kučinić sela,[4] Varićakove spilje, spilje Živa voda na otoku Hvaru, Jopićeve spilje na Kordunu,[5] Jamine na Sridi, Čampari jame na otoku Cresu, Jame na otoku Lavdara,[6] Golubnjače na Ziru, Špilje kod Dunjaka,[7] Spilje u Ždrilu, Spilje Zala.

day, speleologists and geologists have been referring archaeologists to potential sites where they should start or continue archaeological research. Examples include sites around Lokve, Zdihovo, Oštrovica, Zagvozd, Bisko junction, PUO Mosor, Veliki Gložac pass, Stankovci etc.[3]

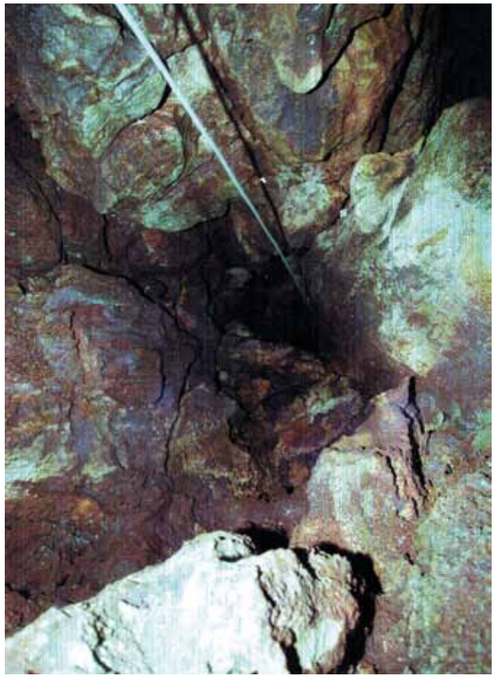
It is also interesting that speleologists were the first to point out the archaeological potential of Bezdanjača under Vatinovac, Velika pećina (near Zagvozd), Šimecka jama near Sodol, the cave near Kučinić Selo,[4] Varićakova spilja, the cave of Živa voda on the island of Hvar, Jopićeva spilja in Kordun,[5] Jamina on Srida and Čampari jama on the island of Cres, Jama on the island of Lavdara,[6] Golubnjača on Zir, Špilja near Dunjak,[7] Spilja in Ždrilo, Zala cave etc.

3 Garašić 2021.
4 Garašić 1983.
5 Malez *et al.* 1988b.
6 Filipi 2001.
7 Malez *et al.* 1988a.

3 Garašić 2021.
4 Garašić 1983.
5 Malez *et al.* 1988b.
6 Filipi 2001.
7 Malez *et al.* 1988a.

SLIKA 5. Ulaz u Jami na otoku Lavdara (snimio M. Garašić).

FIGURE 5. Entrance to Jama on the island of Lavdara (photo by M. Garašić).



SLIKA 6. Unutrašnjost jame na otoku Lavdara (snimio M. Garašić).

FIGURE 6. Inside Jama on the island of Lavdara (photo by M. Garašić).

Stotine speleoloških objekata u Hrvatskoj ima arheološki značaj, te na njihovom istraživanju i zaštiti treba i dalje djelovati. Siguran sam da ih ima još mnogo više.

Indirektne korisnosti djelovanja između speleologije i arheologije mnogo su manje poznate širem krugu, pa se nadalje navode.

Na Prvom Hrvatskom speleološkom kogresu, održanom 2010. godine u Poreču, posebna važnost ukazana je, pored ostaloga, i arheološkim istraživanjima u speleološkim objektima u Hrvatskoj. Bilo je predstavljeno i objavljeno mnoštvo speleoarheoloških radova, što se dotad nikad prije nije dogodilo na nekom speleološkom skupu. Rezultati i važnost arheološkog potencijala u speleološkim objektima pomalo zauzimaju mjesto koje im pripada.

Još je jedan značajan detalj sa speleoloških kongresa ostao manje zapažen. Na državnom speleološkom kongresu 1984. godine, održanom u Karlovcu, na prijedlog Speleološkog društva Hrvatske za posebnu nagradu posthumno je izabran akademik Grga Novak. Možda je ovo prilika spomenuti da je akademik Grga Novak bio i predsjednik organizacijskog odbora četvrtog svjetskog

Hundreds of speleological objects in Croatia have archaeological significance and efforts should continue to research and preserve these sites. I am sure there are even more sites that have yet to be discovered.

Indirect utility resulting from the connection between speleology and archaeology is much less known to the general public. I will mention some examples.

At the first Croatian Speleological Congress held in Poreč in 2010, special attention was given, among other things, to archaeological research in speleological objects in Croatia. Numerous speleo-archaeological papers were presented and published at the conference, which was the first time something like that happened at a speleological gathering. The results and importance of archaeological potential in speleological objects are slowly taking their rightful place.

Another significant detail from past speleological congresses often goes unmentioned. At the National Speleological Congress held in Karlovac in 1984, following a proposal by the Speleologi-

SLIKA 7. Prvi Hrvatski speleološki kongres je održan 2010. godine u Poreču (snimio M. Garašić).

FIGURE 7. The first Croatian Speleological Congress was held in Poreč in 2010 (photo by M. Garašić).

speleološkog kongresa održanog 1965. godine u Postojni, kad je utemeljena svjetska speoeloška unija – UIS (Union Internationale de Speleologie). To je sigurno i priznanje arheološkom djelovanju našeg znanstvenika Novaka.

Prilikom svih novijih gradnji u kršu, uz obvezna hidrogeološka, inženjerskogeološka i speleološka istraživanja i kartiranja, nužno je obavljati i geomehanička te arheološka istraživanja i iskopavanja. Ovdje je neophodno multidisciplinarno djelovanje, pa se danas pomalo uočavaju pozitivni učinci. Potrebno je napomenuti da u prošlim vremenima takve zajedničke aktivnosti nisu bile regulirane propisima ili zakonima.

Sve su to pokazatelji da između speleologije i arheologije u Hrvatskoj postoje mnoge povijesne poveznice koje bi trebalo još više učvrstiti u daljnjim speleološkim radovima, istraživanjima, skupovima, izložbama i drugim.

Neka i ova manifestacija tome dobro doprinese.

cal Society of Croatia, academician Grga Novak was posthumously awarded a special accolade. This may also be a good opportunity to mention that academician Grga Novak was the chairman of the organizational committee of the 4th International Speleological Congress held in 1965 in Postojna, when the International Union of Speleology or UIS (Union Internationale de Speleologie) was founded. This was also a tribute to the archaeological activities of the Croatian scientist.

All modern construction in karst areas requires mandatory hydro-geological, engineering-geological, and speleological research and mapping, as well as geomechanical and archaeological research and excavation. Multi-disciplinary action is necessary in these cases and the positive results of such an approach are visible today. It should be noted that such joint activities were not mandated by regulations or laws in the past.

These are all indications that there are many historical links between speleology and archaeology in Croatia that should be further strengthened through new speleological papers, research, congresses, exhibitions, and other activities.

I sincerely hope that this exhibition will contribute to this process.

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ARHEOLOGIJA
I SPELEOLOGIJA —
IZ TAME PODZEMLJA
DO SVJETLA SPOZNAJE

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ARCHAEOLOGY
AND SPELEOLOGY —
FROM THE DARKNESS
OF THE UNDERGROUND
TO THE LIGHT OF KNOWLEDGE

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