Neolitske risbe v jami Bestažovci na Krasu

Neolithic drawings in the Bestažovca Cave in the Kras region, Slovenia

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Izvleček

Jama Bestažovca je del starega vodoravnega jamskega rova, ki so ga preoblikovali zapolnitve s sedimenti, kraška denudacija in podiranja. Glavni rov Bestažovce je bil do nedavnega povezan s Perkovo pečino, o čemer pričajo arheološki ostanki. Kasneje je polzenje sedimenta zaprlo prehod in ločilo jami. To je zaščitilo Bestažovco pred zunanjimi vplivi in obiskovalci. Sedanji dostop v jamo je skozi 25 m globoko brezno. V jami smo našli na steni Glavnega rova 32 z rdečo okro narisanih risb, na stropu pa 28 z ogljem narejenih pik. Radiokarbonske datacije oglja kažejo, da je bil ta del Bestažovce dostopen še pred okrog 7000 leti. Risbe so verjetno enake starosti, lahko pa so tudi veliko starejše. To so prve do sedaj najdene neolitske jamske risbe v Sloveniji.

Ključne besede: Kras; Bestažovca; Perkova pečina; neolitik; jama; sediment; krioturbacija; jamska umetnost; risbe

Abstract

The Bestažovca Cave is part of an old horizontal cave system reshaped by sediment fill, karst denudation and collapsing. Its main part was originally connected with the Perkova pečina Cave. Later, the creeping sediments closed this connection and created two separate caves. This protected Bestažovca against the influences from the surface, which include visitors. The cave is today accessible through a 25 m deep schaft. In it, we found 32 drawings made with red ochre on the walls and 28 charcoal dots on the ceiling of the Glavni rov (Main passage). The 14C dating of the charcoal samples show that this part of Bestažovca was accessible until about 7000 years BP. The drawings may be of a similar age, which would make them the first Neolithic cave drawings found in Slovenia; though they may also be much earlier.

Keywords: Slovenia; Kras; Bestažovca; Perkova pečina; Neolithic; cave; sediment; cryoturbation; cave art; drawings

V Taborskih gričih med Divačo in Sežano so poleg brezen tudi vodoravne jame. Ker ležijo danes skoraj sto metrov nad uravnanim površjem Krasa in okrog 400 m nad sedanjimi vodnimi tokovi, smemo sklepati, da so med najstarejšimi na Krasu. Na slemenu Hrbec, med Sežano in Merčami, se je taka stara jama razčlenila in preoblikovala v dve jami – v Bestažovco in v Perkov spodmol (*sl. 1; 2*).

Poleg velike starosti obeh jam, ki jo nakazuje njuna lega, se je pokazalo, da sta zanimivi tudi zaradi polzenja grušča, ki je zaprl prehod med jamama. Taki čepi so v jamah pogosti, vendar jim težko določimo starost oziroma hitrost premikanja grušča. V Bestažovci pa je to mogoče, saj so vanjo skozi sedaj zaprti prehod v neolitiku še prihajali ljudje, o čemer pričajo ostanki kurišča in na površju jamskih tal ležeči odlomki keramike (Saksida, Turk 1988). Pri proučevanju starosti in oblike tega čepa smo leta 2009 našli na steni Glavnega rova z rdečo okro narisane prazgodovinske risbe.

Namen tega članka je na kratko opisati jamo, njen nastanek in prazgodovinske risbe ter okoliščine, ki so omogočile, da so se risbe na steni v jami ohranile do danes.

Sl. 1: Vhod v jamo Bestažovco (levo) in vhodna dvorana pod 25 m globokim breznom (desno). (Skica: mesto fotografije).
Fig. 1: Entrance to the Bestažovca Cave (left) and the entrance chamber forming a 25 m deep abyss (right). (Sketch: view captured by the photo is marked).

ZGODOVINA RAZISKAV

Prvopristopnik v Bestažovci je bil Gregor Žiberna, o čemer priča v sigova tla vpraskan napis v Kristalni dvorani: *Gregor Žiberna iz Divače, 4. 5. 1913* (*sl. 3*). Žiberna je v jamo prišel nedvomno skozi brezno (*sl. 1*) in se je podpisal na koncu jame. Gotovo pa v jami ni bil sam.

Med obema vojnama je Bestažovca v italijanskem jamskem katastru registrirana pod številko VG 3309.[1] Za ime jame navaja zapisnik iz leta 1935 več imen: Grotta del Monte Chislizza, Grotta sotto il Grande Antro, Grotticella del M. Chislizza in domače ime Pri Bestažovci. V zapisniku ni načrta, pa tudi ne podatkov o dolžini in globini jame, kar kaže na to, da zapisnikar Cap. G. Petrini v jami sploh ni bil. V zapisniku v rubriki *odkriti študijski materiali, notranja morfologija in drugo* navaja, da so v jami ostanki okostja divjega goveda.

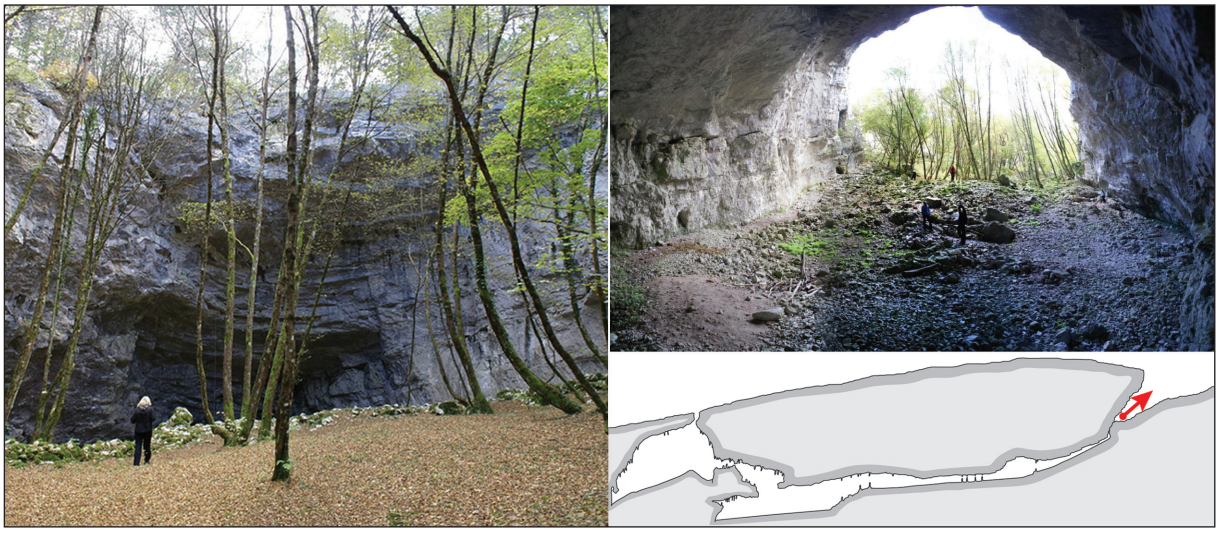
Verjetno je Petrini hkrati registriral tudi bližnjo Perkovo pečino (*sl. 2*) kot Grande Antro caverna del M. Chislizza (št. VG 3308[2]); za domače ime navaja ime Perkova petzina. V zapisniku pa omenja ostanke jamskega medveda, jelena, volka in divjega goveda ter sledove prazgodovinske poselitve.

Leta 1987 so sežanski jamarji jamo izmerili ter izdelali načrt.[3] Iz taga časa so štirje v stene vpraskani podpisi Viktorja Sakside. Pri merjenju so v jami našli odlomke lončenine, kosti ter oglje. Najdbe so pokazali sodelavcem Inštituta za arheologijo ZRC SAZU, nato po skupaj z njimi obiskali jamo. O nahajališču so poročali v reviji *Varstvo spomenikov* (Saksida, Turk 1988), najdbe pa izročili Goriškemu muzeju v Novi Gorici. Ivan Turk je lončenini po značilnih masivnih visokih nogah in ornamentu šrafiranih trikotnikov pripisal neolitsko starost in jo tako uvrstil med najstarejšo pri nas najdeno keramiko.

[1] VG 3309, Il Catasto regionale delle grotte del Friuli Venezia Giulia. – Podatki iz: *Kataster jam IZRK ZRC SAZU in JZS*, Bestažovca, kat. št. 3630.

[2] VG 3308 (= Perkova pečina, kat. št. 1361). Glej *op. 1*.

[3] J. Coraci, *Bestažovca, jamski zapisnik in načrt jame* (1989).



Sl. 2: Vhod v Perkovo pečino. Polzenje tal v spodmolu je zaprlo prehod v Bestažovco. Pogled na vhod s površja (levo) in iz jame (desno).
Fig. 2: Entrance to the rock shelter of Perkova pečina. The creeping of its floor blocked the entrance to Bestažovca. View from the exterior (left) and the interior (right).

Sl. 3: Podpis prvopristopnika Gregorja Žiberne v Kristalni dvorani Bestažovce.
Fig. 3: Signature of Gregor Žiberna, the first recorded individual to have entered Bestažovca since the Neolithic.

Sl. 4: Bestažovca. V ožini med Vhodno dvorano in spodnjim delom jame so bila leta 2009 nameščena železna vrata.
Fig. 4: Bestažovca. An iron grille door was installed in the narrow passage between the entrance and the lower part of the cave in 2009.

Odlomke posod in kosti ter oglje smo v jami opazili tudi kasnejši obiskovalci. Nekateri smo na površini tal in uničenju izpostavljeno lončenino izročili v hrambo Notranjskemu muzeju v Postojni, gotovo pa so je nekaj iz jame odnesli tudi drugi obiskovalci jame in je sled za njo izgubljena.

Leta 1997 sem med proučevanjem brezstropnih jam in speleogeneze jam na tem območju postal pozoren na Bestažovco in sosednjo Perkovo pečino. Ponovili smo meritve jame ter izdelali nov načrt (*sl. 5b* in *5c*).[4] Izmerili smo tudi Perkovo pečino ter površje med obema jamama, kar je omogočilo primerjavo njune medsebojne lege, starosti in razvoja jamskega sistema (Mihevc 2001). Novi načrt je omogočil razlago oblike jamskih tal, ki jo lahko

[4] Bestažovca, kat. št. 3630, IZRK 13. 2. 1997. Meritve: Andrej Mihevc in Franček Gabrovšek. Risba: A. Mihevc.

razložimo samo s polzenjem tal (*sl. 2,* desno). To je mogoče s pomočjo na površju ležeče neolitske keramike časovno dokaj natančno opredeliti.

Pomen in dinamiko polzenja jamskih tal sem želel maja 2009 na primeru Potočke zijalke, Skednene jame in Bestažovce pokazati s prispevkom na srečanju arheologov v Ljubljani (Mihevc 2009a). Ker pa nisem imel primernih digitalnih fotografij za pripravo prezentacije, sem januarja 2009 jamo obiskal z jamarjem Bojanom Volkom. V jami nisva le fotografirala, ampak tudi pazljivo pregledovala tla in stene. Pri tem je Bojan Volk opazil na steni Glavnega rova z rdečo okro narejene risbe. Pregledala sva stene rova ter našla še več risb, na stropu pa črne, z ogljem narejene pike in zasigane kose lesa, trave ter zelišč (Mihevc 2009b). Zaradi občutljivosti risb sva odkritje obdžala v tajnosti.

Ob naslednjem obisku jame smo vzeli vzorec barve, vzorec oglja s stropne črne pike ter dva vzorca oglja s tal. Ko so analize oglja potrdile veliko starost, smo predlagali pristojnemu Zavodu za varstvo kulturne dediščine Slovenije, OE Nova Gorica, zaprtje jame. Še isto leto so bila v ozkem prehodu v spodnji del jame nameščena vrata (*sl. 4*).

Poleg tega smo v jami z RTV Slovenija posneli prispevek o najdbi.[5]

OPIS PERKOVE PEČINE IN BESTAŽOVCE

Perkova pečina (kat. št. 1361) in Bestažovca (kat. št. 3630) ležita na Hrbcu, oblem grebenu, ki se vleče od Zidovnika (575 m) proti Širokemu vrhu (517 m) (*sl. 5*). Območje Hrbca gradijo plastoviti in masivni svetlo sivi apnenci, katerih plasti vpadajo pod kotom okrog 15° proti JZ. Plasti so debele od 40 cm do preko enega metra.

Perkova pečina:

Na vrhu grebena Hrbec je nastala 70 m široka in okrog 25 m globoka udorna vrtača. Njeno dno je v nadmorski višini 483 m. Južni obod vrtače ima navpične stene, pod katerimi je 35 m širok vhod v 30 m dolgi spodmol Perkova pečina. Strop spodmola je visok do 10 m, tla so pokrita s skalami in gruščem. Najnižja točka spodmola je v nadmorski višini 476 m oziroma le 9 m nad skrajnim vzhodnim delom Bestažovce. Perkova pečina je bila prvotno del Bestažovce. Polzenje jamskih tal pa je prekinilo povezavo in ločilo jami.

Bestažovca:

Okrog 2 m širok in 6 m dolg navpični vhod v Bestažovco leži na blago, proti zahodu nagnjenem površju, okrog 120 m zahodno od temena Hrbca in Perkove pečine, na nadmorski višini 483 m. Jamo sestavljata dve izraziti morfološki enoti – Vhodna dvorana in spodnji del jame z Glavnim rovom, Biserno in Kristalno dvorano (*sl. 5b*).

Vhod v jamo je nastal v temenu 20 m visoke dvorane. Dno Vhodne dvorane tvori nasipni stožec; njegovo kamenje izvira s površja in je bilo v jamo zmetano ob čiščenju pašnikov. Nasip pokriva večji del dna dvorane (*sl. 5c*).

Stene in strop Vhodne dvorane so povečini pokrite s sigo ali masivnimi stalaktiti. Povsod so sledovi zmrzovanja sige in kapnikov, odlomne površine so stare. Odlomljeni kosi kapnikov v gornjem delu dvorane ter na nekaj metrov višji polici roba dvorane, kjer je prehod v spodnji del jame, so bili zaradi zmrzovanja in odtaljevanja tudi premaknjeni in sortirani. To krioturbatno premikanje v jamo nametanega kamenja ni zajelo.

Glavni del jame je do 12 m širok in visok ter preko 150 m dolg Glavni rov. V osrednjem delu je ohranjen primarni rov, v obeh končnih delih, v Biserni dvorani in v Kristalni dvorani, pa so ga močno preoblikovali procesi razpadanja kamnine oziroma so ga prekrili sedimenti.

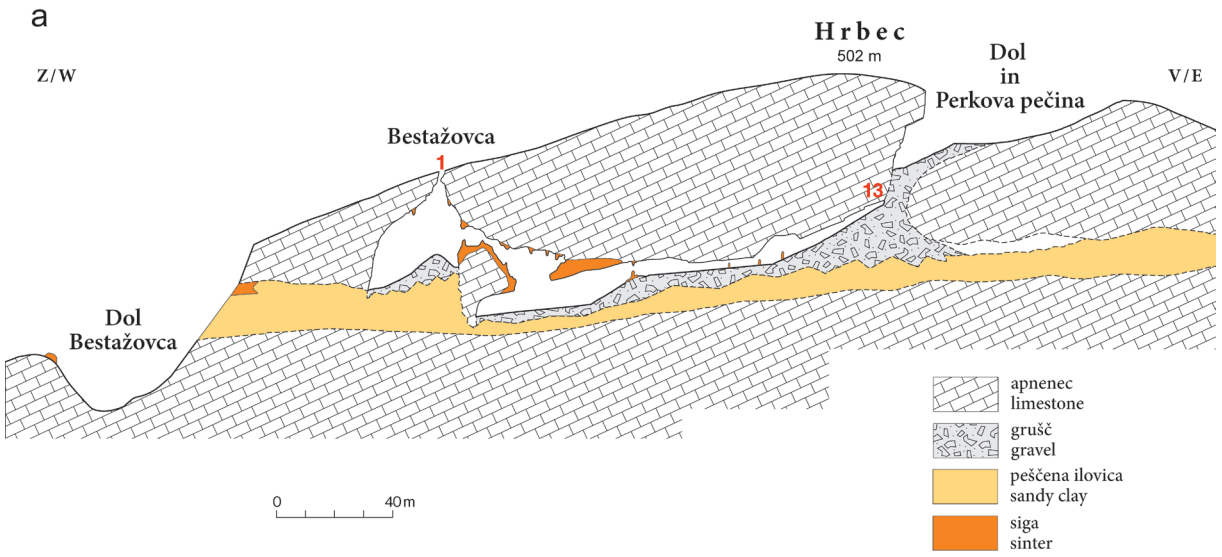
Profil Glavnega rova (*sl. 6*) in drobna oblikovanost sten v plitve kotlice in stenske zajede z gladkimi površinami so nastali, ko je skozi še tekla podzemna reka. Druga izrazita drobna oblika na stenah rova so površine skale z ravnimi lomnimi ploskvami, ki so nastale zaradi zmrzovanja. Zmrzovanje sten je odstranilo ponekod do 10 cm debelo plast kamnine, zajelo pa je predvsem

[5] Predvajan 11. novembra 2009.

→

Sl. 5: Bestažovca in Perkova pečina. Oštevilčene so točke, omenjene v besedilu. – ***a***: Shematični prerez čez greben Hrbec in lega jam, ki sta nastali z razpadom nekoč velike vodne jame. – ***b***: Iztegnjeni profil jame Bestažovca. – ***c***: Tloris. Vhodna dvorana je ločena od spodnjega Glavnega rova. Ta je bil prvotno dostopen iz Perkovega spodmola, prehod je bil pri točki 13. Na pobočju med točkama 11 in 13 je večina najdb lončenine.

Fig. 5: Bestažovca and Perkova pečina. Numbers mark the points mentioned in the text. – ***a***: Schematic section across the Hrbec ridge and the position of the caves formed after the collapse of the once large water cave. – ***b***: Extended section of Bestažovca. – ***c***: Plan.
The entrance chamber is separate from lower-lying Glavni rov originally accessible from Perkov spodmol via the passage at Point 13. Most of the pottery finds were collected on the slope between Points 11 and 13.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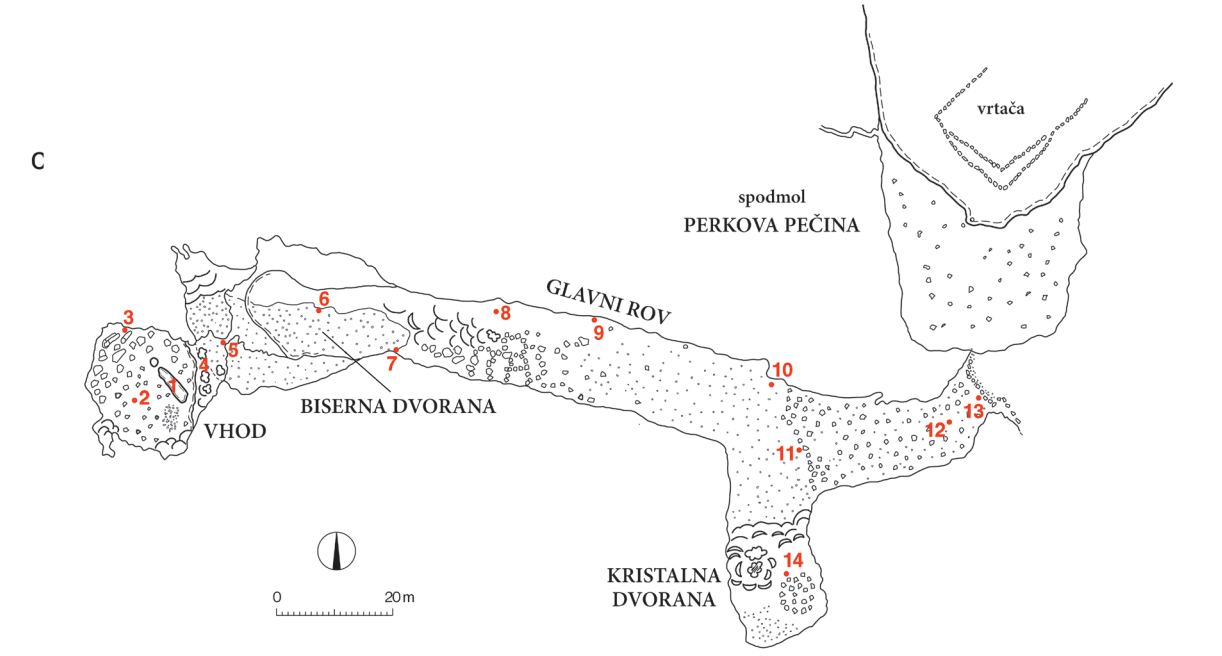
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Sl. 6 / Fig. 6

Sl. 7 / Fig. 7

Sl. 8 / Fig. 8

spodnja dva metra stene rova. Proces v sedanjosti ni več aktiven, saj so te površine, kakor tudi starejše gladke površine jamskega rova ponekod že pokrite s tankimi skorjami sige.

Najnižji del spodnjega dela jame je v Biserni dvorani, kjer so gruščnata tla rova skoraj povsem uravnana in vodoravna (*sl. 9*). Proti vzhodu se tla rova vzpnejo v 9 m visokem strmem odseku, ki ga v celoti sestavljajo velike skale. Nad njim se začne velik uravnani del jamskih tal. V vzdolžnem profilu se tla blago vzpenjajo z naklonom okrog 5° v dolžini več kot 40 m. Sprva so tla iz večjih kamnov in grušča, v njih so razvita tudi poligonalna tla. To so v obroče oziroma v nepravilne mnogokotnike razporejeni kamni, ki so znotraj vsakega obroča sortirani po velikosti. Takšni obroči nastanejo pri zaporednem zmrzovanju in odtaljevanju tal (Gams 1963). Navzgor po rovu (*sl. 7*) so grušči prekriti z bolj drobnimi sedimenti. Zdi se, da je večji del tega sedimenta antropogenega izvora oziroma da gre za ostanek pepela z velikega ognjišča, ki je pri steni Glavnega rova pri točki 10.

V vzhodnem delu se Glavni rov razširi in razcepi v dva kraka. Kristalna dvorana je nadaljevanje rova proti jugu. Njeno dno sestavljata več metrov visoka sigova kopa (*sl. 8*) ter grušč, pomešan z ilovico. Na tem mestu je močan curek prenikajoče vode in nekaj ponvic, zalitih z vodo.

Drugi del Glavnega rova se nadaljuje proti vzhodu. Rov se tu začne dvigovati z naklonom

←

Sl. 6: Bestažovca, Glavni rov. Značilni profil: tla so izravnali krioturbatni procesi. Zaradi zmrzovanja so tla v jami polzela in se uravnala. Danes se ne premikajo več – ko se je prehod med jamama zaprl, je nehalo zmrzovati in v stabilnih klimatskih razmerah so začeli rasti veliki paličasti kapniki. Jamar stoji pred glavno skupino slik.
Fig. 6: Bestažovca, Glavni rov. Characteristic profile: cryoturbation processes caused the floor to creep and level out. The floor is no longer moving today – the blocked connection between the two caves caused the freezing to stop and the ensuing stable climatic conditions enabled the growth of large stick-like stalagmites. The caver is standing in front of the main group of drawings.

←

Sl. 7: Bestažovca. Iz Biserne dvorane se Glavni rov nadaljuje navzgor. Tik preden se začne dvigovati, so na desni (južni) strani na steni ohranjene risbe in nekaj zaplat barve.
Fig. 7: Bestažovca. From Biserna dvorana westwards, the cave rises into Glavni rov. Just before the rise, there are several drawings and patches of pigment on the south wall.

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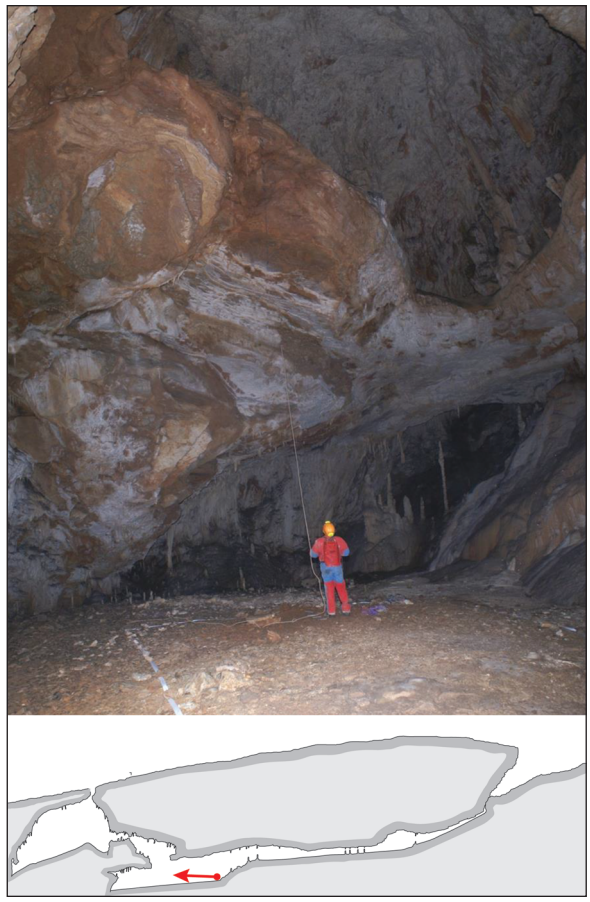
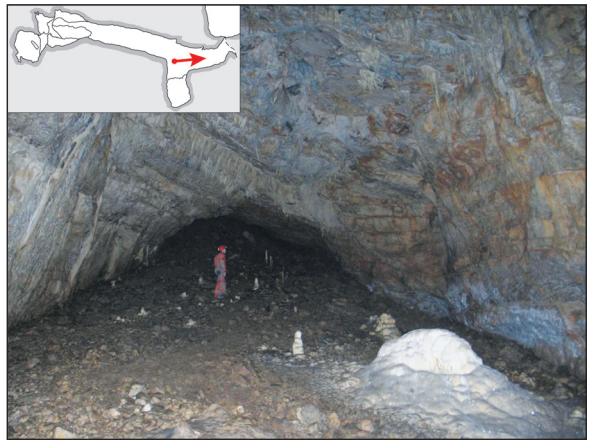
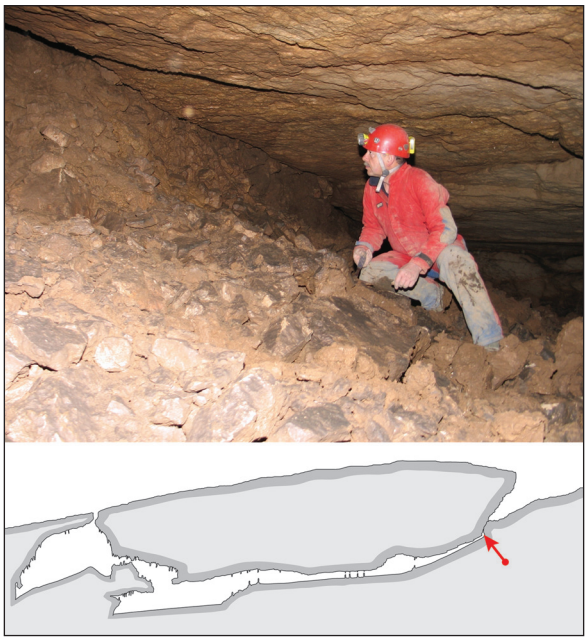
Sl. 8: Bestažovca. Kristalna dvorana z veliko sigovo kopo.
Fig. 8: Bestažovca. Kristalna dvorana with a large flowstone cone.



Sl. 9: Bestažovca, Biserna dvorana. Med vhodnim in notranjim delom jame je 15 m globoka navpična stopnja. Tla dvorane so krioturbatno uravnana. V tem delu je med gruščem le nekaj koščkov lončenine in oglja.
Fig. 9: Bestažovca, Biserna dvorana. There is a 15 m high vertical step between the entrance chamber and interior part of the cave. The floor of this chamber is levelled by cryoturbation. Only few pieces of pottery and charcoal were found among the gravel here.



Sl. 10: Bestažovca. Dno Glavnega rova tvorita kamenje in grušč, ki sta pripolzela iz Perkove pečine.
Fig. 10: Bestažovca. The floor of Glavni rov is composed of stones and gravel that crept down from Perkova pečina.



Sl. 11: Bestažovca. Jamar pri čepu, ki je zaprl prehod med Bestažovco in Perkovo pečino. Neolitske črepinje so pomešane v sediment.
Fig. 11: Bestažovca. Caver at the blockage that separates Bestažovca and Perkova pečina. Sherds of Neolithic pottery were found mixed among the sediment.

okrog 20°. Sprva je visok več metrov, nato se tla približajo stropu (*sl. 10*).

Na koncu je Glavni rov popolnoma zatrpan s kamenjem, pomešanim z ilovico. Ta material je pripolzel kot veliko melišče iz Perkove pečine in zatrpal prehod med jamama. Konec rova je v tlorisu 5 m južneje in 9 m pod skrajno točko Perkove pečine (*sl. 11*).

V melišču med kamenjem in gruščem najdemo kose oglja, kosti in neolitske keramike. Nekateri predmeti so pomešani s kamenjem in ilovico, kar kaže na polzenje in premikanje skal na pobočju. Poleg tega najdemo na površini tudi koščke oglja, ki so očitno nekaj mlajši in jih premikanje pobočja ni več zajelo. Te koščke lahko pripišemo ostankom bakel zadnjih prazgodovinskih obiskovalcev pred naravnim zaprtjem prehoda. Na pobočju so zrasli številni paličasti stalagmiti, najvišji so visoki okrog 50 cm, kar kaže, da se melišče ne premika več.

Klimatske poteze v Bestažovci

Temperatura in vlaga sta danes v jami zelo stabilni. Občasne meritve v Glavnem rovu so

Sl. 12: Bestažovca. Spodnji del stene Glavnega rova je poškodovalo zmrzalno preperevanje, ko je v jamo še pritekal mrzel zimski zrak.
Fig. 12: Bestažovca. The bottom part of the wall in Glavni rov was damaged by frost weathering at the time when the cold winter air still blew through the cave.

pokazale letno nihanje temperature med 9 °C in 10 °C. V jami na nekaj mestih močno kaplja s stropa. Znak stabilnih razmer so tu zrasli številni paličasti stalagmiti in cevčice na stropu. Nekoliko večje temperaturno nihanje je le v Vhodni dvorani. V ožini na prehodu med Vhodno dvorano in spodnjim delom jame niha temperatura med 6 °C in 11 °C (*sl. 12*).

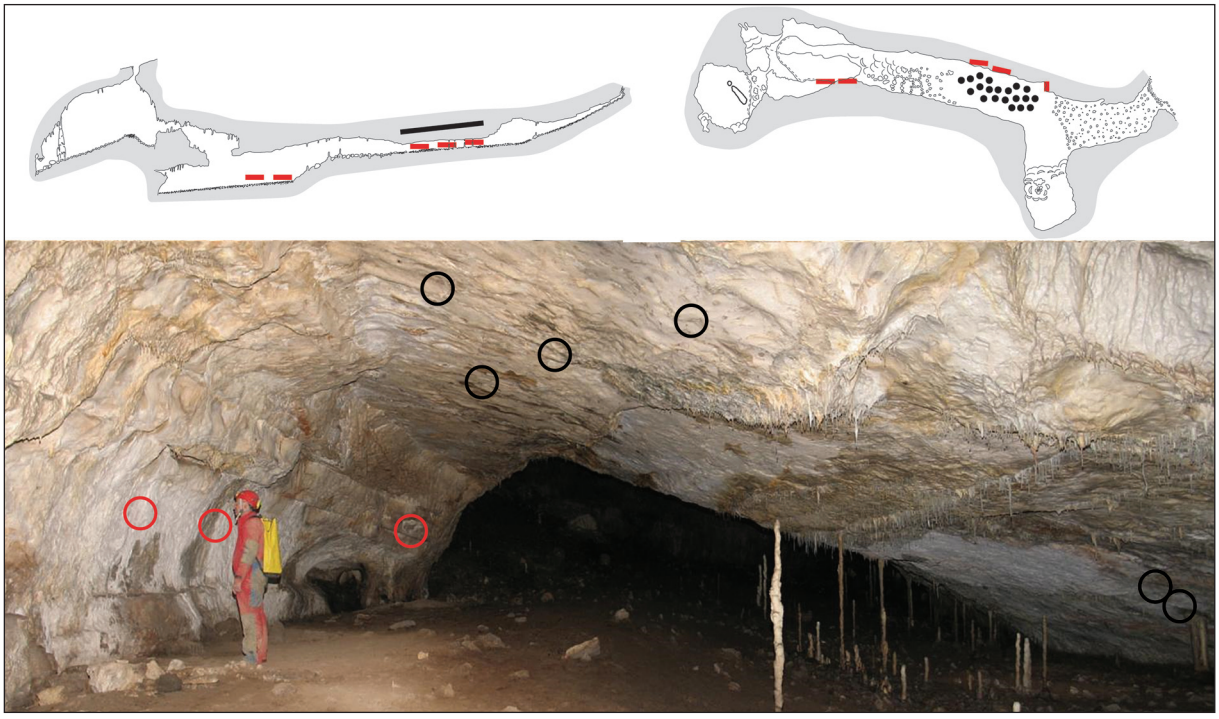
V preteklosti je bila klima v jami precej drugačna. To dokazujejo sledovi zmrzalnega preperevanja sten v jami in polzenja ter uravnavanja jamskih tal, kar lahko povežemo z obstojem dveh vhodov in z močnimi prepihi, ki jih je to povzročilo. Ti so bili pomembni zlasti v zimski polovici leta, ko so jamo ohladili pod ledišče. Zimska cirkulacija je povzročala tudi zmrzovanje ter izsuševanje kapnikov, zato so v jami pogosti razpokani in beli kapniki. Ko se je zaradi polzenja grušča iz Perkove pečine začel zoževati in zapirati prehod med jamama, se je zmanjšal tudi prepih. Temperaturna nihanja so se zmanjšala in približala letnemu poprečju zunanje temperature. Prenehalo je tudi zimsko izsuševanje sten rova in kapnikov, zato so novejši kapniki temnejši. Na tleh v Glavnem rovu, ki so se nehala premikati, so začeli rasti paličasti kapniki, na stropu pa cevčice. Zaprtje prehoda je ustvarilo tudi ustrezno okolje za ohranitev risb.

RISBE V BESTAŽOVCI

Risbe so se ohranile na stenah in stropu. Na stenah so narejene z rdečo okro, na stropu pa z ogljem v obliki črnih pik ali tankih črt. Razporejene so na petih mestih.

Skupaj je vidnih 32 relativno dobro ohranjenih in vidnih rdečih črt in pik ter nekaj ostankov rdeče barve, ki pa jim ne moremo določiti prvotne oblike (*sl. 13*).

Največja skupina risb, narisanih z okro, je na steni Glavnega rova med točkama 9 in 10, kjer je v dolžini 160 cm in višini 120–180 cm vidnih 23 rdečih črt in pik. Prevladujejo navpične ravne črte. Verjetno so bile narejene s prstom, pomočenim v rdečo barvo. Najdaljša meri 31 cm in se pri dnu razcepi v dva kraka. Nekaj črt ima dvojno širino; zdi se, da so tudi te proti dnu razcepljene. Ob desnem robu tega panela je več širokih pokončnih črt, vendar so zabrisane in prekrite z belim poprhom, ki ga tvorijo kalcitni kristali. Ponekod

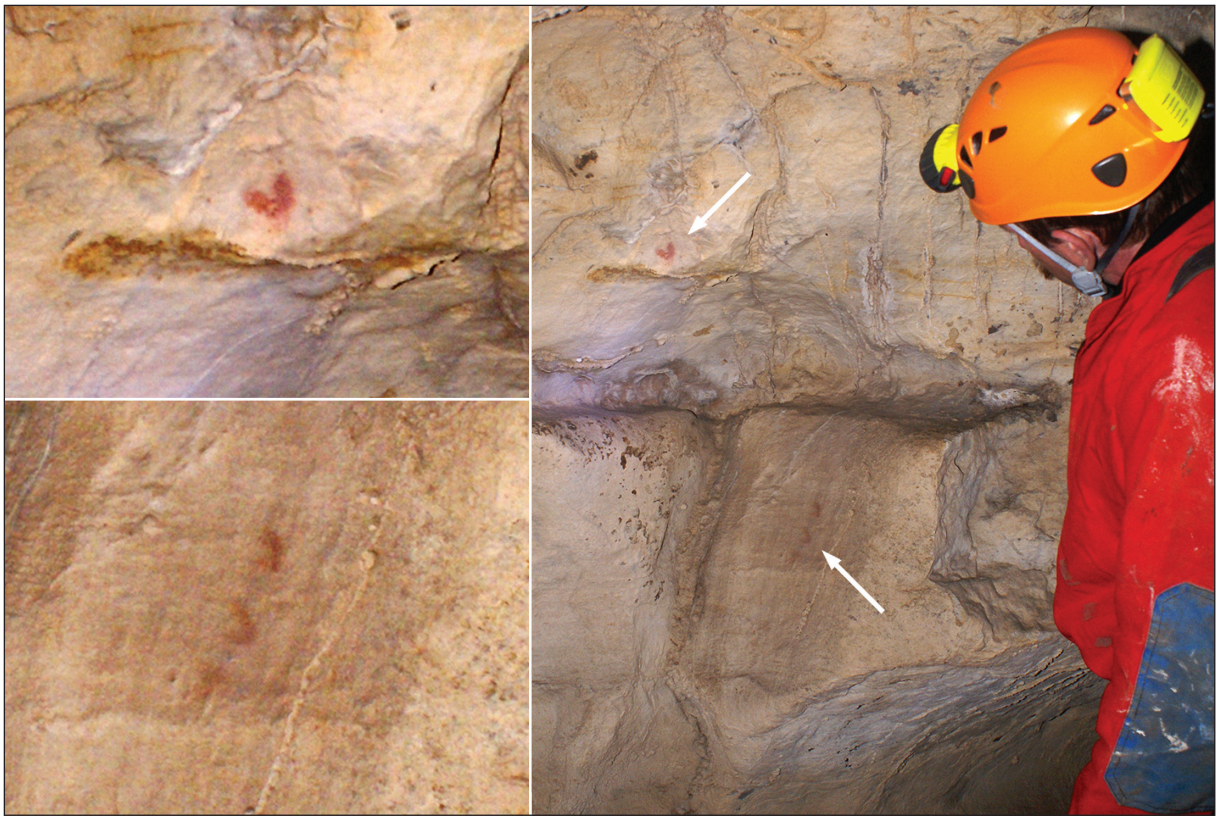


Sl. 13: Bestažovca, Glavni rov. Lokacije risb, narisanih z okro, ter črnih pik in tankih črnih črt. Jamar stoji med točkama 6 in 10 na mestu, kjer so na steni ohranjene risbe. Na stropu so črne pike, v nizkem delu rova na desni strani pa so na stropu tanke črne črte. (Krožci označujejo približne lokacije).
Fig. 13: Bestažovca, Glavni rov. Locations of drawings with red ochre and charcoal. The caver is standing between Points 6 and 10 of drawings on the wall, while the ceiling holds black dots in the highest part and thin black lines on the far right. (Circles mark approximate locations).

l. 14: Bestažovca, Glavni rov. Največja skupina risb na steni (med točkama 9 in 10), kjer je veliko belega kalcitnega poprha. Verjetno so risbe tudi pod njim.
Fig. 14: Bestažovca, Glavni rov. The largest group of wall drawings (between Points 9 and 10) with patches covered with a white coating of calcite crystals that presumably hides additional drawings.

Sl. 15: Bestažovca. Z rdečo okro narejen simbol v obliki ležeče črke L.
Fig. 15: Bestažovca. A horizontally-oriented L-shaped drawing with red ochre.

Sl. 16: Bestažovca. Črne črte na nizkem stropu Glavnega rova.
Fig. 16: Bestažovca. Black lines on the low ceiling of Glavni rov.



Sl. 17: Bestažovca, Biserna dvorana. Risbo pri točki 7 sestavljajo štirje enaki znaki, najbolje je ohranjen zgornji; verjetno gre za ženske simbole.
Fig. 17: Bestažovca, Biserna dvorana. The drawing at Point 7 is composed of four equal signs, with the upper one preserved best; they are probably female symbols.

je poprh tako gost, da je stena popolnoma bela. Verjetno je pod njim še več risb (*sl. 14*).

Pri točki 10 je na steni narisana 7 cm dolga in 1,5 cm široka črta v obliki ležeče črke L. Del tega geometrijskega lika prekriva poprh, del pa ne, vendar je tam risba slabše ohranjena. Zraven je na skali še nekaj komaj zaznavnih sledov okre. Verjetno je risbo poškodovala oziroma sprala kondenzna voda (*sl. 15*).

V južnem delu Glavnega rova, nasproti točke 9 in 10, je strop visok okrog enega metra. Tukaj je na več mestih ohranjenih več skupin nekaj milimetrov širokih, z ogljem narejenih črt. Te črte ne sestavljajo risbe, ampak so verjetno nastale slučajno. Zdi se, da so ljudje v jami uporabljali šope povezanih tankih vej kot bakle. Pri tem so v nizkem delu rova po nesreči podrsali po stropu (*sl. 16*).

Naslednja skupina risb je v vzhodnem delu Biserne dvorane pri točki 7. V skalni niši je v višini 140 cm z rdečo barvo narisan znak v obliki črke V. Kraki znaka so dolgi 3,5 cm, znak pa je nekoliko nagnjen v levo (*sl. 17*). Pod njim so v višini 70–80 cm od tal narisani še trije enako veliki, a ležeči

Sl. 18: Bestažovca. Črne pike na stropu. Jemanje vzorca oglja za datacijo.
Fig. 18: Bestažovca. Black dots on the ceiling. Taking charcoal samples for radiocarbon analyses.

Vzorec / Sample	Kalibrirana starost / Calibrated date	Radiokarbonska starost / Radiocarbon age
Beta-264737 (ognjišče / hearth)	7280–7150 BP	6270±50 BP
Beta-277753 (strop / ceiling)	6920–6730 BP	5980±40BP
Beta-264736 (tla / floor)	7260–7000 BP	6230±50BP

Sl. 19: Bestažovca. Rezultati radiokarbonskega datiranja vzorcev oglja.
Fig. 19: Bestažovca. Results of the radiocarbon analysis of the charcoal samples.

znaki, ki pa so nekoliko slabše ohranjeni. Le 60 cm stran je v skalo vpraskan podpis Viktorja Sakside.

V sosednji niši in na steni je še pet ostankov risb, narejenih z rdečo barvo, vendar so te tako slabo ohranjene, da ni jasno, kaj je narisano.

Poleg risb iz rdeče okre je na stropu v delu Glavnega rova še z ogljem narejenih 28 črnih pik. Strop je tam visok od 2,5 m do 3 m, na njem pa ni sledov saj oziroma dima zaradi kurjenja. Pike so okrogle oblike, v premeru so velike 5–10 cm. Imajo ostre robove, narejene pa so tako, da so pritisnili ožgani konec palice ali bakle v strop ter ga morda zavrteli (*sl. 18*). Nikjer ni sledov potegov, ki bi oblikovali podolgovate črne sledove oziroma črte. Takšni potegi bi morda lahko pomenili, da je šlo pri tem za čiščenje oglja z bakel. Pike na stropu ne kažejo nekega vzorca.

Analiza barve in datacije oglja

Za analizo barve smo vzeli del barvila z risbe pri točki 10 in dva vzorca dali v analizo v Nacionalni forenzični laboratorij pri Generalni policijski upravi v Ljubljani.[6] Vzorca sta bila pregledana z optičnim in z vrstičnim elektronskim mikroskopom. Določena je bila elementarna sestava barvila. Poleg ogljika, kisika, kalcija in silicija ter aluminija je bil ugotovljen velik delež železa. To je značilna sestava okre.

Za datacijo oglja smo vzeli vzorce oglja na treh mestih (*sl. 19*):

– iz ognjišča pri točki 10;
– iz pike na stropu pri točki 10;
– koščck oglja, ki je ležal na površini jamskih tal med kamenjem pri točki 11; koščck oglja je imel ostre robove in je verjetno del bakle.

Vzorce oglja smo poslali na datiranje v Beta Analytic Radiocarbon Dating Laboratory v Miami na Florido. Rezultati datacije so pokazali, da so vsi vzorci podobne starosti ter kažejo na zelo ozko časovno obdobje. Vzorec oglja iz ognjišča je datiran na 7280–7150 let pred sedanjostjo, oglje ene od črnih pik na stropu na 6920–6730 let in koščck oglja bakle, ki je ležal na površini jamskih tal, na 7260–7000 let.

Sl. 20: Bestažovca, Glavni rov. Koščki oglja pri točki 11.
Fig. 20: Bestažovca, Glavni rov. Pieces of charcoal at Point 11.

Med ogljem je pomembno oglje, pobrano pri točki 11 (*sl. 20*). Verjetno so koščki odpadli z bakle, saj v bližini ni nobenega ognjišča. Oglje je ležalo nepohojeno ali kako drugače poškodovano na tleh. Zadnji obiskovalec je bil v jami, tik preden se je dohod iz Perkove pečine dokončno zaprl in so prenehali zunanji vplivi, ki bi oglje lahko poškodovali. To oglje nam tako določa najmanjšo možno starost risb, narisanih z okro. Seveda pa ne moremo izključiti večje, morda celo paleolitske starosti risb.

DRUGI SLEDOVI

Neolitski ljudje so v jamo prinesli tudi nekaj trave in kosov lesa. Pri točki 9 smo našli šop trave. Bilke je prekrila tanka bela plast sige in ohranila njihov odtis.

Ob zahodni steni v Kristalni dvorani pri točki 14 je okrog 0,7 m visok stalagmit. Okrog njegove

[6] Za analizo se je dogovril višji kriminalistični svetnik Pavel Jamnik, opravila pa jo je univ. dipl. kem. Ester Ceket. Pri tem je sodeloval tudi Pavel Jamnik. Obema se najlepše zahvaljujem.

Sl. 21: Bestažovca, Kristalna dvorana. Okrog stalagmita položena trava, prekriva jo plast sige.
Fig. 21: Bestažovca, Kristalna dvorana. Plant remains placed around a stalagmite and covered with a thin layer of calcite.

Sl. 22: Bestažovca, Kristalna dvorana. Odtis bakle, ob straneh je položeno po eno rebro, vse prekriva plast sige.
Fig. 22: Bestažovca, Kristalna dvorana. The impression of a torch flanked by a rib on either side, all covered with a thin layer of calcite.

baze so položili venec trave, ki ga je prekrila tanka plast sige in ohranila njegovo obliko (*sl. 21*). Zraven so položili okrog 0,7 m dolgo baklo (*sl. 22*). To je v večjem delu prekrila siga, les je strohnel in tako je ostal votli odtis bakle. Ohranil se je le vrhnji zogleneli del bakle.

Podobna bakla je tudi v Biserni dvorani pri točki 6. Bakla je delno pokrita s sigo, vendar je reliefno dobro izražena (*sl. 23*).

ZAKLJUČEK

Iz morfologije jame in lege posameznih enot jame, sedimentov ter odnosa do Perkove pečine lahko izluščimo nekatere speleogenetske procese v razvoju jame. Za razumevanje nastanka in ohranjenosti slik je treba poznati le končni del tega razvoja, ko sta bili obe jami – Bestažovca in Perkova pečina – še povezani. Tedaj je zaradi dveh

Sl. 23: Bestažovca, Biserna dvorana. Zasigana bakla pri točki 6.
Fig. 23: Bestažovca, Biserna dvorana. Torch covered with calcite at Point 6.

vhodov nastajala pozimi močna zračna cirkulacija. Hladen zrak, ki je pozimi tekel skozi jamo, je povzročal zmrzalno preperevanje in polzenje nastalega grušča iz udornice Perkove pečine v Glavni rov. To je bilo najmočnejše v hladni ledenodobni klimi.

V jamo so v neolitiku prihajali ljudje, nastala so ognjišča in risbe na stenah. Jamo so izbrali zaradi lahkega dostopa. Ljudje so živeli v sprednjem delu jame, ki je danes Perkova pečina. O tem pričajo kosi lončenine, ki jo najdemo v Perkovi pečini in v delu Bestažovce. Notranje dele jame, sedaj Bestažovce, so uporabljali kot kultno mesto. Tu so s simboli porisane tri stene in strop. Poleg tega so v jamo prinesli tudi travo ter jo položili okrog kapnika in po sigi. Zato lahko to jamo razumemo kot najstarejše svetišče pri nas.

Zadnji obiskovalci so bili v jami pred približno 7000 leti. Kmalu po tem se je prehod med jamama popolnoma zaprl. Zaprtje prehoda je stabiliziralo jamsko klimo. Prenehali so zimsko zmrzovanje in izsuševanje ter poletna kondenzacija na stenah. Zato so se lahko v jami ohranile stenske in stropne risbe.

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SAKSIDA, V., I. TURK 1988, Merče. – *Varstvo spomenikov* 30, 200.

Neolithic drawings in the Bestažovca Cave in the Kras region, Slovenia

Translation

In the Kras region of Slovenia, the Tabor Hills between Divača and Sežana hold both shafts and horizontal caves. Today, these lie almost a hundred metres above the lowland of the Kras and around 400 m above the underground water flow, which suggests they are among the oldest caves in the region. One of these old caves lies on the ridge of Hrbec between Sežana and Merče, and at one point became separated into two caves: Bestažovca and Perkov spodmol (*Fig. 1; 2*).

The two caves are of interest not only because of their great age, but also because of the creeping gravel sediments that blocked the passage between the caves. Although such blockages are frequent, we can rarely determine the time when they occurred and the speed of the creeping action. Bestažovca is such a rare example, as the remains of a fireplace and pottery sherds found on the cave floor show that people could still use the now closed passage in the Neolithic period (Saksida, Turk 1988). The 2009 investigations of the blockage also stumbled upon prehistoric drawings made with red ochre on the wall of the main passage (Glavni rov).

This contribution offers a brief description of the cave, its formation, as well as the prehistoric drawings and the circumstances that enabled the drawings to survive to this day.

HISTORY OF RESEARCH

The first recorded person to have entered Bestažovca was Gregor Žiberna, who scratched an inscription in the flowstone floor of the Kristalna dvorana (Crystal Chamber): *Gregor Žiberna from Divača, 4 May 1913* (*Fig. 3*). He entered the cave through the shaft (*Fig. 1*) and left the signature at the end of the cave; we may presume he was not alone to enter the cave.

In the period between the two world wars, Bestažovca was listed in the Italian cave register under No. VG 3309.[1] The records from 1935 give several names for the cave: Grotta del Monte Chislizza, Grotta sotto il Grande Antro, Grotticella del M. Chislizza and the local name Pri Bestažovci. The records include no map or data on the length and depth of the cave, which suggests that the author, Cap. G. Petrini, never went inside. In the section on the 'recovered finds, interior morphology and other', he notes that skeletal remains of wild cattle were found in the cave.

It is likely that Petrini registered the adjacent Perkova pečina at the same time (*Fig. 2*), as Grande Antro caverna del M. Chislizza (No. VG 3308[2]); noting Perkova petzina as the local name. His records mention cave bear, wolf and wild cattle remains, as well as traces of prehistoric habitation.

In 1987, the cavers from Sežana surveyed Bestažovca.[3] The four signatures that Viktor Saksida scratched on the walls date to this time as well. The surveying activities also revealed pottery sherds, bones and charcoal. The cavers showed the finds to the colleagues at the *Inštitut za arheologijo ZRC SAZU* and together they revisited the cave. The report on the site was published in the *Varstvo spomenikov* journal (Saksida, Turk 1988) and the collected finds given to the *Goriški muzej* in Nova Gorica. Based on the characteristic high pedestals and decoration of hatched triangles, Ivan Turk attributed the pottery to the Neolithic, which made these sherds the earliest known remains of pottery in Slovenia.

Later visitors to the cave, including the author, also came across fragments of pottery and bones, as well as charcoal. We handed the pottery collected from the surface, and thus potentially endangered, over to the *Notranjski muzej* in Postojna for storage; we should assume that other visitors also removed some of the surface pottery sherds that are now untraceable.

During the research of unroofed caves and the speleogenesis of the caves in the area conducted in 1997, I became particularly interested in Bestažovca and adjacent Perkova pečina. We repeated the

[1] VG 3309, Il Catasto regionale delle grotte del Friuli Venezia Giulia. – Data from: *Kataster jam IZRK ZRC SAZU in JZS*, Bestažovca, Cat. No. 3630.

[2] VG 3308 (= Perkova pečina, Cat. No. 1361). See *Note 1*.

[3] Record and plan: J. Coraci, *Bestažovca, jamski zapisnik in načrt jame* (1989).

survey of Bestažovca and made a new plan (*Fig. 5b* and *5c*).[4] Perkova pečina was also surveyed, as was the surface between both caves, which enabled a comparison of their location, age and the development of the cave system (Mihevc 2001). The new plan revealed that the only process to explain the shape of the cave floor is sediment creep (*Fig. 2, right*), which can be dated fairly accurately with the help of the surface finds of Neolithic pottery.

Using the examples of the Potočka zijalka, Skednena jama and Bestažovca caves, I intended to present the significance and dynamics of sediment creep at an archaeological meeting that took place in May 2009 in Ljubljana (Mihevc 2009a). Lacking suitable digital photographs for presentation purposes, I set out to revisit the cave in January 2009 in the company of caver Bojan Volk. In addition to photographing, we also carefully inspected the floor and walls. This led to Volk noticing drawings made in red ochre on the wall of Glavni rov. The subsequent examination revealed more such drawings on the walls, as well as black dots made with charcoal on the ceiling and calcite-covered pieces of grass and wood on the floor (Mihevc 2009b). The sensitivity of the drawings led us to not disclose our discovery.

At the next visit, we sampled the red pigment on the walls, the black pigment on the ceiling and two charcoal pieces gathered on the floor. When the charcoal analyses confirmed the great age, we proposed to the competent heritage protection services (*Zavod za varstvo kulturne dediščine Slovenije, OE Nova Gorica*) that the cave be closed. In the same year, a door was installed in the narrow passage into the lower part of the cave (*Fig. 4*).

With RTV Slovenija, we also filmed a special feature on the find.[5]

DESCRIPTION OF PERKOVA PEČINA AND BESTAŽOVCA

The caves of Perkova pečina (Cat. No. 1361) and Bestažovca (Cat. No. 3630) lie on Hrbec, a gentle ridge running from Zidovnik (575 m asl) towards Široki vrh (517 m asl) (*Fig. 5*). The area of Hrbec is composed of bedded and massive light grey limestones, with the strata dipping at an angle of roughly 15° to the southwest. The strata measure from 40 cm to over a metre in thickness.

Perkova pečina:

The summit of the Hrbec ridge holds a 70 m wide and some 25 m deep collapse doline. Its bottom lies at 483 m asl. The southern perimeter of the doline has vertical walls, below which is a 35 m wide entrance to the 30 m long rock shelter of Perkova pečina. Its roof is up to 10 m high, the floor is covered with rocks and gravel. The lowest point of the shelter is at 476 m asl, i.e. only 9 m above the easternmost part of Bestažovca, with which Perkova pečina was originally connected until sediment creep blocked the connection and separated the two caves.

Bestažovca:

The roughly 2 m wide and 6 m long vertical entrance to Bestažovca lies on a terrain gently inclined to the west, some 120 m west of the top of Hribec and Perkova pečina, at 483 m asl. The cave is composed of two distinct morphological units: the entrance chamber (Vhodna dvorana) and the lower part of the cave with the main passage (Glavni rov) and two chambers: Biserna dvorana (Pearl Chamber) and Kristalna dvorana (Crystal Chamber) (*Fig. 5b*).

The cave entrance formed in the apex of a 20 m high chamber. Its floor is largely occupied by a talus cone (*Fig. 5c*) that formed of stones thrown into the cave during pasture clearing.

The walls and ceiling of the entrance chamber are predominantly covered with flowstone or large stalactites; the fracture surfaces are old. The shattered stalactites in the upper part of the entrance chamber and on a ledge located several metres above the floor and holding the passage to the lower part of the cave, were also transported and sorted in the freeze-thaw process. This cryoturbation did not affect the stones of the talus cone.

The main part of the cave is the main passage or Glavni rov, which is up to 12 m wide and high, and over 150 m long. The primary passage survives in its central part, while it was subject to heavy transformation due to rock weathering processes at both ends, i.e. in Biserna dvorana and Kristalna dvorana, which are covered in sediments.

The cross-section of Glavni rov (*Fig. 6*), as well as the minor karst features such as smooth-surface scallops and shallow pools in the walls occurred when an underground river still ran through the cave. Other prominent features in Glavni rov include sharp-edged fracture surfaces that occurred due to frost weathering of the walls, which in places and

[4] Bestažovca, Cat. No. 3630, IZRK 13 February 1997. Survey: Andrej Mihevc and Franček Gabrovšek. Drawing: A. Mihevc.

[5] Shown on 11 November 2009.

particularly in the lower two metres detached up to a 10 cm thick layer of rock. This process is no longer active and the fracture surfaces, as well as the earlier smooth surface of the passage have at places already been covered with thin flowstone.

The lowest part of the cave is in Biserna dvorana, a chamber with a flat and almost horizontal gravel floor (*Fig. 9*). Eastwards, the floor then rises in a 9 m high section composed entirely of large rocks, which is followed by the longest stretch of levelled floor along Glavni rov. In the longitudinal section, the floor here gently rises with a roughly 5º gradient in the length of more than 40 m. It is first made up of large stones and gravel, which also develop into a polygonal floor – stones arranged in rings/semicircles or irregular polygons sorted according to size within each ring. Such rings form during repeated free-thaw cycles (Gams 1963). Further up the passage (*Fig. 7*), the floor gravel is covered with finer sediments. It would appear that a large part of these sediments is anthropogenic in origin, i.e. the remains of a large fireplace located at the wall of Glavni rov, at Point 10.

In the east, Glavni rov expands and forks, with Kristalna dvorana representing the southern end. The floor of this chamber consists of a several metres high flowstone cone (*Fig. 8*) and gravel mixed with loam. In the chamber there is also a strong current of percolating water and several water-filled pans.

The other part of Glavni rov continued eastward, rising with a gradient of around 20º. It is several metres high at first, after which the floor rises towards the ceiling (*Fig. 10*).

The terminal of Glavni rov is packed with stones mixed with loam. This is debris that crept down from Perkova pečina and closed off the connection between the two caves. In plan, the end of the main passage is 5 m south and 9 m below the endpoint of Perkova pečina (*Fig. 11*).

The rock and gravel debris includes pieces of charcoal, bone and Neolithic pottery. Some of these pieces are mixed among stones and loam, which indicates creeping and transport across a slope, whereas some pieces of charcoal also lie on the surface and are thus apparently slightly later in date, no longer included in the creeping activity. These pieces can be interpreted as the remains of the torches held by the last prehistoric visitors in the cave before the connection was closed off. Further evidence of the stopped transport is the numerous stick stalagmites that formed on the slope, the highest measuring some 50 cm.

Climatic conditions in Bestažovca

The cave today has very stable temperature and humidity levels. The occasional measurements in Glavni rov have revealed an annual temperature fluctuation between 9ºC and 10ºC. Several spots in the cave show heavy percolation from the ceiling. The stable conditions also enabled the growth of numerous stick stalagmites and straw stalactites. A slightly more substantial temperature fluctuation has only been recorded at the entrance chamber; the temperature in the narrow passage between the entrance chamber and the lower part of the cave fluctuates between 6 and 11ºC (*Fig. 12*).

The climate in the cave was very different in the past. This is clear from the traces of frost weathering on the cave walls, as well as the creeping and levelling of the cave floor as the consequence of two entrances and the strong air currents this caused. The drafts were particularly significant in the winter part of the year, when the temperature in the cave fell below freezing point. This also caused the stalagmites and stalactites to freeze and dry out, leaving them cracked and white. With the gravel creeping down from Perkova pečina, the passage between the two caves began narrowing and closing, which also reduced and finally stopped the draft. The temperature fluctuation decreased and came close to the annual mean of the exterior temperature. The winter drying of the passage walls and speleothems ceased, which caused a darker growth of the speleothems. The floor in Glavni rov stopped moving and stick stalagmites began growing, as did thin straw stalactites from the ceiling. The closed passage also created suitable conditions for the preservation of the drawings.

DRAWINGS IN BESTAŽOVCA

Drawings in the cave survived on the walls and ceiling. Those on the walls were made with red ochre, the black dots or thin lines on the ceiling with charcoal. The former group in five areas, with altogether 32 relatively well-preserved and visible lines and dots, as well as remains of red ochre that cannot be reconstructed as to their original shape (*Fig. 13*).

The largest group of red ochre drawings is on the wall of Glavni rov between Points 9 and 10, where 23 red lines and dots are visible in the length of 160 cm and height of 120–180 cm. Most are

straight vertical lines. They were likely made with a finger dipped in red pigment. The longest line measures 31 cm and forks at the bottom. Several lines are double in thickness; these also appear to fork at the bottom. There are several wide vertical lines along the right edge of this group, but they are smudged and covered with a white coating of calcite crystals. The coating is at places very dense so as to make the wall completely white; it may hide additional drawings underneath (*Fig. 14*).

At Point 10, there is a 7 cm long and 1.5 cm wide horizontally oriented L-shaped line. Part of it is under the coating, but the drawing there is less well preserved. There are additional, barely perceptible traces of ochre in the vicinity. The drawing was probably damaged or washed away by condensation moisture (*Fig. 15*).

The ceiling in the south part of Glavni rov, opposite Points 9 and 10, is around a metre high and holds several groups of several millimetres thick lines made with charcoal. These lines do not make up a drawing and were likely created unintentionally. It is possible that people visiting the cave used bundles of thin branches as torches and accidentally brushed against the ceiling (*Fig. 16*).

The next group of drawings is located in the east part of Biserna dvorana, at Point 7. A V-shaped sign is drawn with a red pigment in a rocky niche at the height of 140 cm. Each of its legs is 3.5 cm long and it is slightly tilted to the left (*Fig. 17*). Three other, equally large, but horizontally oriented signs are drawn below it, at the height of 70–80 cm from the floor up; they are slightly less well-preserved. Only 60 cm away, the signature of Viktor Saksida is scratched into the rock.

The adjacent niche and wall hold five other remains of drawings with red ochre, but they survive in a condition that does not allow a reconstruction.

In addition to the drawings with red ochre, the ceiling in this part of Glavni rov also holds 28 black dots made with charcoal. The ceiling there is 2.5–3 m high and shows no traces of soot or smoke as the results of lighting fires. The dots are round and measure 5–10 cm in diameter. They have sharp edges and were produced by pressing the burning end of a stick or torch against the ceiling and possibly turning it. There are no long linear traces such as would have been produced by brushing; these traces would suggest that the dots were made when charcoal was removed from a torch. The dots on the ceiling do not appear to form a design (*Fig. 18*).

Analysis of the pigments and charcoal dating

We sampled the red pigment from the drawing at Point 10 and had two samples analysed at the laboratory of the *Nacionalni forenzični laboratorij* at the Generalna policijska uprava in Ljubljana.[6] The samples were examined using the optical and scanning electron microscope to determine the elemental composition. In addition to carbon, oxygen, calcium, silica and aluminium, the analysis also revealed a high iron content, which is a composition characteristic of ochre.

For dating purposes, we sampled the charcoal in three places (*Fig. 19*):

– in the fireplace at Point 10;

– in the dot on the ceiling at Point 10;

– a piece of charcoal lying among the stones on the cave floor at Point 11; the piece had sharp edges and presumably formed part of a torch, as there were no fireplace remains in proximity.

The charcoal samples were sent to the Beta Analytic Radiocarbon Dating Laboratory in Miami, Florida. The results of their analysis have shown the samples to be of a similar age and of a very narrow span. The charcoal sample from the fireplace has been dated to 7280–7150, the sample from the black dot to 6920–6730 and the piece of torch to 7260–7000 years before the present.

The charcoal sample collected at Point 11 (*Fig. 20*) is also significant in that its sharp edges suggest it was not trampled or otherwise damaged by later visitors to the cave as the access from Perkova pečina became closed off and external influences prevented. This piece of charcoal thus represents the terminus post quem non for the drawings, also those with red ochre; having said that, it is not possible to exclude a greater, possibly even Palaeolithic age of the red ochre drawings.

OTHER REMAINS

The Neolithic people also brought some plant material and pieces of wood into the cave. A tuft of grass was found at Point 9, covered with a thin layer of calcite that preserved its shape.

Along the west wall of Kristalna dvorana, a roughly 0.7 m high stalagmite stands at Point 14

[6] Enabled by Senior Criminal Police Superintendent Pavel Jamnik, the analysis was performed by Ester Ceket, university graduate in chemistry. I kindly thank them both.

that has a wreath of grass placed around its foot, also covered with a thin layer of calcite that preserved its shape (*Fig. 21*). Placed next to it was an approximately 0.7 m long torch (*Fig. 22*) largely covered with calcite that preserved its impression, whereas the wood disintegrated and only the charred top of the torch survived.

A similar torch was found in Biserna dvorana, at Point 6. This torch was only partially covered with calcite, but its outline is clearly visible (*Fig. 23*).

CONCLUSIONS

The morphology of the cave, the position of individual cave units, the sediments and the relationship to adjacent Perkova pečina reveal several speleogenetic processes taking place in the cave. An important part for the understanding and preservation of the drawings is the final episode of this speleogenetic development, when Bestažovca in Perkova pečina were still connected. The two entrances, one at each end of the caves, caused a strong air current in winter; this cold air in turn resulted in frost weathering and creeping of the gravel sediments from Perkova pečina to lower-lying Glavni rov. This process was at its peak in the cold Pleistocene climate.

People in the Neolithic visited the cave, where they lit fires and applied pigments on the walls and ceiling. They chose the cave for its easy access. The recovered pieces of pottery show they inhabited the front part of the cave, i.e. Perkova pečina. In the interior of the cave, i.e. Bestažovca, three of the walls and the ceiling hold drawings and pigment traces. People in the Neolithic also brought plants into the cave and placed them around a stalagmite, suggesting the cave interior served as a cult place; it may represent the earliest known sanctuary in Slovenia.

The last visitors entered the cave some 7000 years ago. Soon after, the passage between the two caves closed completely. This stabilised the cave climate; winter freezing and drying ceased, as did condensation on the walls during summer, allowing for the preservation of the pigments on the walls and ceiling.

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Illustrations: Figs. 1–3; 6–17; 9–23 (photo: Andrej Mihevc). – Figs. 4; 18 (photo: Bojan Volk). – Figs. 5; 13 (drawing: A. Mihevc).