HUMAN REMAINS AND ARTEFACTS FROM ROMUALD'S CAVE, ISTRIA, CROATIA

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INTRODUCTION

Romuald's cave is located on the southern slopes of the Lim channel in Istria, Croatia. It was recognized as potentially interesting archaeological site in the late 19th century when several researchers led small-scale excavations in the cave. In the mid 20th century M. Malez conducted more extensive excavations of the site and unearthed various archaeological and paleontological material dating from the Late Pleistocene to the Bronze and Iron Ages (Malez 1962, 1968; 1975). The Late Pleistocene finds included Upper Palaeolithic types of tools, faunal remains and two juvenile human teeth. In 2007 and 2008 D. Komšo (2008) led small scale excavations during which several Mousterian artefacts were found. In 2014 new excavations of the site started as a part of the ARCHAEOLIM (Archaeological Investigations into Late Pleistocene and Early Holocene of the Lim Channel, Istria) financed by the Croatian Science Foundation. During the three years of work at the site, human skeletal material and artefacts from Bronze Age, as well as artefacts from Iron age were found (Janković et al. 2015). The middle sequences yielded several Upper Palaeolithic tool types, while the lower sequence yielded Mousterian artefacts and Pleistocene faunal remains dated to over 48 kya.

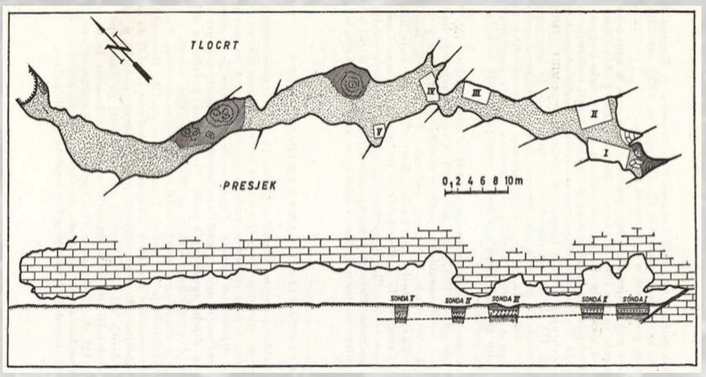


Figure 1: Ground plan of Romuald's cave and Trenches from excavations by M. Malez

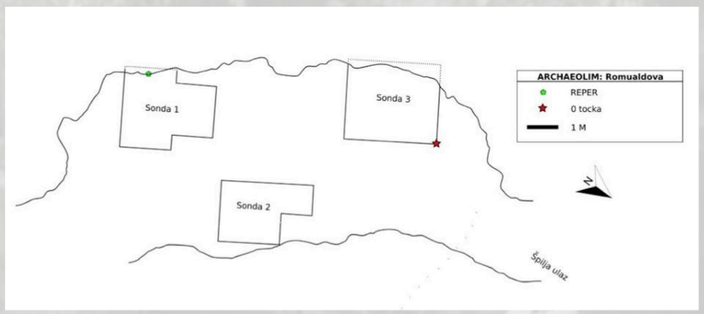
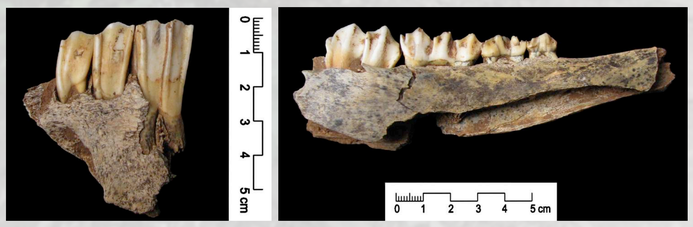


Figure 2: Trenches in the first chamber at Romuald's cave

FAUNAL REMAINS

Faunal remains found during our excavations are very fragmented. This, in addition to the taxonomic composition of the faunal remains, point to a Pleistocene date. Most common taxa represented in the sample are cave bear (*Ursus spelaeus*), horse (*Equus ferus*), ibex (*Capra ibex*) and red deer (*Cervus elaphus*), which is in agreement with finds from excavations by Malez in which almost 90% of fauna belongs to cave bear (Malez 1968; 1981). Cranial and post-cranial remains of micro-mammals (i.e. small rodents) were present in different layers, but they were particularly numerous in layers 13A and 13B. This abundance and concentration - especially in layer 13A – most probably has its origin in the presence of pellets regurgitated by raptor birds roosting in the cave. Similarly, the presence of carnivore coprolites (e.g. layer 9 and 10) and a gnawed bone specimen (layer 9A) indicate that the cave was used – at least intermittently – as a carnivore den. The presence of cave bear remains, especially the deciduous canines (e.g. layer 10 and 11) strongly suggest that this species used the cave during winter/early spring time as a hibernation den. No butchery marks were observed in any of the specimens. At this stage, however, the human agency in the accumulation of the faunal assemblage cannot be rejected.



Figures 6 and 7: Faunal remains of *Capra ibex* (left) and *Cervus sp*. (right)

CONCLUSION

Excavations at Romuald's cave show human use of the site at various times during prehistory (Middle and Upper Palaeolithic, Bronze and Iron Age). Analysis of finds from excavations by M. Malez and later work by D. Komšo and us, point to different use of space during Upper Palaeolithic and Middle Palaeolithic. While Upper Palaeolithic material is present mostly in the central part and back of the cave (Figure 1), our work in the first cave chamber (Figure 2) yielded mostly Mousterian types of tools. There is also a difference in raw material preference for production of lithics, as all Upper Palaeolithic types of tools were made on non-local stone (probably from Italy), while the Mousterian tools are made on the regionally available material. The quantity of the archaeological material suggests neither population stayed in the cave for a longer period. Lithic, faunal, geoarchaeological and geophysical work on material from Trench 3 is in progress and may help shed more light on various aspects of human use of the site during the Pleistocene.

PALAEOLITHIC SKELETAL REMAINS FROM ROMUALD'S CAVE

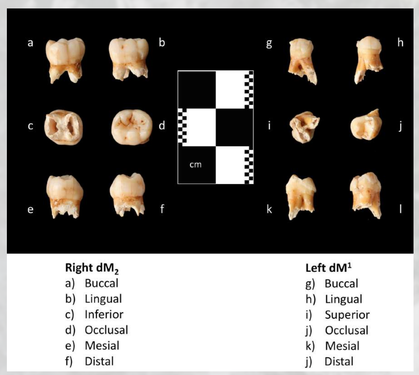
Tooth no. 1: deciduous right lower second molar (rdm_2) (Figure 3)

Discovered by M. Malez in 1962 in trench IV, layer 3 and reported as "right M_1" (Malez 1962).

Tooth no. 2: deciduous left upper first molar (ldm^1) (Figure 3)

Discovered by M. Malez in 1973 in trench IV, layer 3 and reported as "an upper premolar" (Malez 1978:563), or "a juvenile human tooth" (Malez 1975:509, although in Malez 1987:20 he mentions "two juvenile molars of a lower jaw").

As both teeth come from the same layer and same excavation trench, he argued that they are most likely from the same individual (Malez 1978). This is likely, and based on tooth development and tooth wear (Schaefer et al. 2009; Liversidge & Molleson 2004; Ubelaker 1979) we assess age at death to between 2 and 4 years. Further, when the size proportions are examined between the two teeth, they both fall within the two standard deviations of the average size proportions for analogous teeth among a sample of Palaeolithic, Mesolithic and recent Europeans.



Right dM_2
a) Buccal
b) Lingual
c) Inferior
d) Occlusal
e) Mesial
f) Distal

Left dM^1
g) Buccal
h) Lingual
i) Superior
j) Occlusal
k) Mesial
j) Distal

Figure 3 Dental remains from the Upper Palaeolithic layers of Romuald's cave

	dm^1 MD/dm_2 MD	dm^1 MD/dm_2 MD
Romuald's Cave	0.77	0.88
Modern Humans	Mean = 0.81, s = 0.05, n = 15	Mean = 0.79, s = 0.06, n = 13

		R dm_2 MD	R dm_2 BL	L dm^1 MD	L dm^1 BL
Romuald's Cave		10,2	9,1	7,83	7,97
Neandertal	Mean	10,26	8,82	7,94	9,3
	s	0,7	2,34	0,48	0,67
	n	16	16	12	12
European UP	Mean	10,3	8,87	8,11	8,75
	s	0,7	1,86	1,32	0,5
	n	27	26	9	4
Euro Epipalaeo-Mesolithic	Mean	10,1	9,4	7,18	8,74
	s	0,51	0,53	0,37	0,49
	n	12	12	10	10
Recent Europeans	Mean	10,1	8,9	7,3	8,6
	s	0,6	0,59	0,93	0,5
	n	28	28	17	17

Table 1: Comparative summary statistics for dental finds from Romuald's cave compared to Neandertals, European Upper Paleolithic, Epipalaeolithic and Mesolithic, and recent Europeans.

LITHIC FINDS FROM ROMUALD'S CAVE

Lithic material from excavations by M. Malez consists of only ten artefacts. In his publications, Malez (1962; 1975; 1978; 1981; 1987) refers to these as younger Aurignacian, early Gravettian, or Perigordian. Based on the typological and technological characteristics they can be ascribed to the Upper Palaeolithic, but more specific attribution can not be done. One of more interesting finds is a pierced deer (*Cervus elaphus*) canine (Malez 1968).

Typological and technological analysis on the material from Trench 1 and 2 was done, while analysis of material from Trench 3 is in progress. Parts of both trenches were previously excavated by Malez, who did not report any lithic finds. Technological and typological analyses used protocols described in by Karavanić (2004), Debénath & Dibble (1994), Inizan et al. (1999), and Bordes (1988). Excavations at Trench 1 yielded a total of 36 lithic finds, of which flakes are most frequent (N=22, 55,55%). One artefact shows the use of Levallois technology, while two are produced by blade technology. Of all the lithic finds, 22 are tools (61,11%) of which various types of sidescrapers are most common (N=15, see Table 2). Excavations at Trench 2 yielded a total of 67 lithic finds. As in the material from Trench 1, flakes are most frequent (N=33, 49,25%, see Table 2). A total of 24 finds are tools (35,82%) of which sidescrapers are most abundant (N=18, 79,16%, see Table 2).

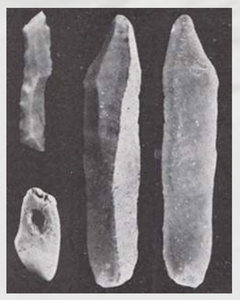


Figure 4: UP lithics and a pierced deer canine

Figure 5: Mousterian tools from Trench 2 at Romualdo's cave

TECHNOLOGY		
CATEGORIES	Sonda 1	Sonda 2
nodule	1	-
flake	20	33
retouch flake	1	8
blade	2	5
Levallois flake	1	-
flake core with cortex	2	-
flake core without cortex	1	-
core fragment with cortex	2	1
core fragment without cortex	1	1
chunk without cortex	4	10
chunk with cortex	1	5
shetters		4
TOTAL	36	67
TOOL TYPES		
Levallois flake	1	-
Mousterian point	1	-
limace	1	-
simple straight sidescraper	1	-
simple convex sidescraper	1	5
simple concave sidescraper	2	3
double straight sidescraper	-	1
double straight-convex sidescraper	2	-
double straight-concave sidescraper	1	2
double convex sidescraper	1	-
double convex-concave sidescraper	-	2
convergent straight sidescraper	1	-
convergent convex sidescraper	1	-
convergent concave sidescraper	1	-
angular sidescraper	1	3
convex transversal sidescraper	2	1
concave transversal sidescraper	1	1
endscraper	1	2
burin	1	-
notch	1	-
varia	1	4
TOTAL	22	24

Table 2: Technological and typological analysis of lithic material from Trench 1 and 2

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