

Geological and Geomorphological Overview on the Surroundings of Ajdovska Jama near Krško (Slovenia)

by

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Abstract

Geological and Geomorphological Overview on the Surroundings of Ajdovska jama near Krško (Slovenia).

— The cave Ajdovska or Kartuševa jama is situated at the southern margin of the Krško hills within grey, grained, chert bearing limestones which are overlain by flysch-like sediments. These sediments are the south-eastern extension of Posavske gube and – in respect of their tectonic position – they belong to the Inner Dinarids. Because of the alternation of more or less water permeable limestones, manifold karstic phenomena developed in the surrounding of Ajdovska jama. Amongst these are several dolines of special interest, which are up to 50 m deep. Some of them show characteristics of karstic fields. Both entrances of Ajdovska jama are situated in the north-eastern slope of such a karstic field, Kartušev dol, at an altitude of 240 m above sealevel.

Keywords: geology, geomorphology, karst, Ajdovska jama

Izvleček

Geološki in geomorfološki pregled okolice Ajdovske jame (Slovenija). — Ajdovska ali Kartuševa jama se nahaja na južnem obrobju Krškega hribovja. Izoblikovana je v zgornjekrednih sivih zrnatih apnencih z roženci, ki navzgor prehajajo v flišu podobno kamnino. Predstavljajo jugovzhodni odrastek Posavskih gub in sodijo tektonsko k Notranjim Dinaridom. Zaradi menjavanja bolj ali manj za vodo prepustnih apnencev so v okolici jame razviti številni kraški pojavi. Morfološko so zanimive do 50 m globoke vrtače, nekatere med njimi imajo značilnosti kraških polj. V pobočju enega izmed takih polj imenovan

Kartušev dol se na nadmorski višini 240 m nahajata vhoda v Ajdovsko jama.

Ključne besede: geologija, geomorfologija, kras, Ajdovska jama

Zusammenfassung

Geologie und Geomorphologie der Umgebung der Ajdovska jama bei Krško (Slowenien).

— Die Höhle Ajdovska jama oder Kartuševa jama liegt in dem südlichen Randgebiet des Hügellands von Krško. Sie wurde in grauen, körnigen, hornsteinführenden Kalksteinen der Oberkreide gebildet, die nach oben in flyschartige Gesteine übergehen. Sie sind der südöstliche Fortsatz der Posavske gube und gehören tektonisch zu den Inneren Dinariden. Wegen der Wechsellagerung der mehr oder weniger wasserdurchlässigen Kalksteine, haben sich in der Umgebung der Höhle zahlreiche Karsterscheinungen entwickelt. Morphologisch interessant sind die bis zu 50 m tiefen Dolinen, einige davon zeigen Merkmale der Karstfelder. In dem nordöstlichen Abhang eines solchen Feldes Kartušev dol genannt, befinden sich auf der Meereshöhe von 240 m beide Eingänge zur Höhle Ajdovska jama.

Schlüsselwörter: Geologie, Geomorphologie, Karst, Ajdovska jama

1. Geographic Position and Morphology of Ajdovska jama near Nemška vas

The cave Ajdovska (or Kartuševa) jama, the Neolithic necropolis and also the Palaeolithic station is situated in the west of Krško, enclosed by the villages Nemška vas and Brezovska gora. Ajdovska jama can be easily reached via the road that leads from Leskovec to the northern margin of the Krško basin and that turns in north-eastern direction directly towards the heart of the Krško hills in Brezje near Senuše. Shortly after the ascension passing by Brezovska gora, a small karstic area – Kartušev dol – ap-

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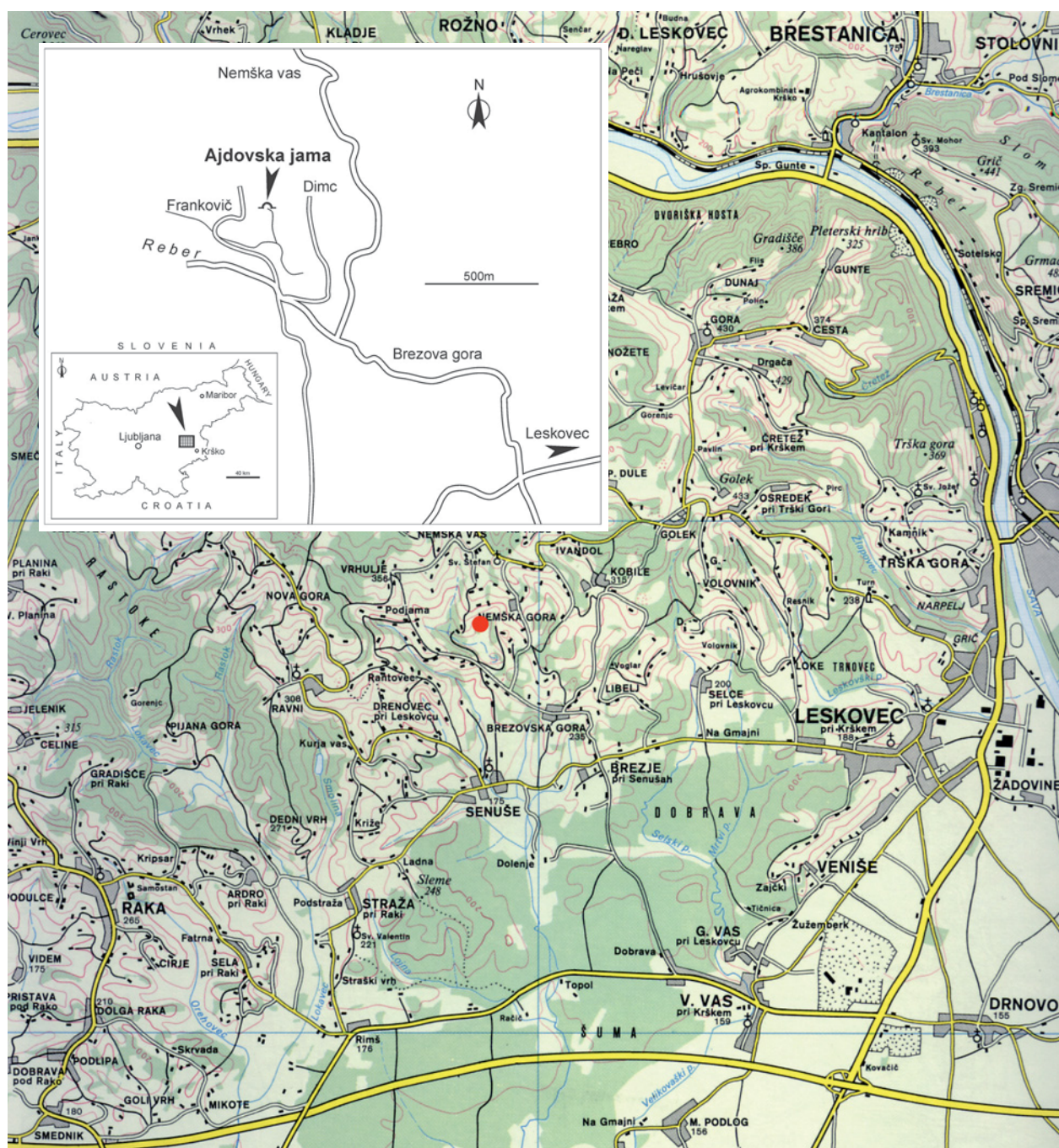


Figure 1: Topographic map of the area around Ajdovska jama near Nemška vas (Slovenia).

pears in front of us which brings up two cave entrances close to its entrée, see fig. 1.

No. of allotment: 1312

No. of cadastre: 417

Coordinates: $x = 5089500$, $y = 553300$

Altitude of entrances: 244 and 240 m a.s.l.

Owner: Municipality of Krško

No. of legacy unit: 6032

In a grey, grained limestone the cave was formed by water in the north-western part of the Kartušev dol valley. On three sides the latter is surrounded by comparably

steep slopes which are covered with vegetation mainly consisting of deciduous trees with a domination of locust and chestnut trees. Both entrances are situated above the flat bottom of the dolina and look to the east, see fig. 3. The left entrance – in a southern position and at an altitude of 244 m a.s.l. – is approximately 9 m high, the right one, at an altitude of 240 m a.s.l., is approximately 5 m high. There is an intermitting spring (estavelle) at a distance of about 30 m from the right entrance of the cave. Most of the time it is dry and only in the course of heavy rains it becomes active (BRODAR, 1953:8). Beginning with the left entrance, a corridor of about 10 m length and 3 - 6 m with leads towards Trša, this branches



Figure 2: Overview on the valley Kartušev dol (Foto: M. Horvat).

off in two separate corridors. The left one is about 6 m long and between 5 and 8 m wide and is connected with a funnel-shaped central dome with a diameter between 15 and 17 m. The latter is connected with the right cave entrance by a corridor of approximately 20 m length and 2 - 4 m width, which inclines steeply towards the aforementioned entrance (Fig. 4). In the central dome several smaller corridors branch off which are partially filled with loam, rubble and big stones. In the deepest part of the central dome there is – according to the archaeologists BRODAR (1953) and HORVAT (pers. comm.) – a pothole, which is filled with an extremely wet loam. In the course of heavy rains the sound of flowing water can be detected in the western part of the central dome. This is probably due to water flowing through the channel under the cave and flowing further to the ponor close to the right cave entrance where it wells up (BRODAR, 1953:38). According to HABIČ (1983:16) the cave was formed by erosion and corrosion. Later on it was excluded from the hydrographical network by means of erosion of the surrounding sedimentary stones and was formed by the forces of frost, rock fall and of course by permeating water.

2. Geologic Overview

The cave Ajdovska jama, its synonym is Kartuševa jama, is situated at the southern margin of the hillside near Krško where the vineyard covered hills smoothly lower towards the Krško valley (Fig. 1). From a geological point of view (RAMOVŠ, 1958a, b; ŽLEBNIK, 1958; LESKOVAR, 1960; PLENIČAR et al., 1976; RIŽNAR, 1991; POLJAK et al., 1997) the Krško hillside is the south easternmost

extension of the Posavske gube and, from a tectonic viewpoint, belongs to the Inner Dinarids. The basement for the soils of the aforementioned hillside consists of Upper Cretaceous layers of Turonian and Senonian age, discordantly overlying the Triassic and Jurassic formations underneath. These Cretaceous limestone appear as slabs which are transformed into flysch like sediments towards the top. There are chert, fine grained carbonate sandstones with quartz grains and partly marly and breccias like calcareous stones embedded into these limestone. Because of the alternation of the Upper Triassic limestone of varying permeability, all typical phenomena of karstic region developed in the area between the river Sava and the Krško valley, described above. But, in contrary to the “classic karst”, this karstic region is different by its comparably dense vegetation. It was upon HABIČ (1983:16) to describe this karst as a fluvio-karst in the gradually appearing sub-Pannonian karst of Slovenia. Within the grey, grained limestone numerous but small caves developed of which Ajdovska jama is the biggest one. Depending on their morphology, the karstic fields with a depth between 20 and 50 m are the most interesting. According to Habič they are more similar to uvalas than to the dolina of the classic karst of the Dinarids. Some of them show the typical characteristics of a karstic field, e.g. the valley Kartušev dol. The latter is an area of approximately two ha size and a flat floor, which consists of a deposited soil. A very interesting phenomenon is the intermitting spring (estavelle) close to the right entrance of Ajdovska jama, from which a meandering creek bed, leads to the southern part of this valley, which is dry most of the time. Only during long lasting and heavy rains water is flowing from the estavelle towards this part of the valley which is dry most of the year, see fig. 2.



Figure 3: The cave Ajdovska jama with its left and right entrance (Foto: M. Horvat).

3. References

- BRODAR, S., 1953. Ajdovska jama pri Nemški vasi (Die Ajdovskahöhle). — *Razprave l. razr. SAZU*, 3:7–44, Ljubljana.
- HABIČ, P., 1983. Kraški pojavi v Krškem hribovju (Karst Phenomena in the Hills around Krško). — *Acta carsologica SAZU*, 11(1982):5–18, Ljubljana.
- LESKOVAR, V., 1960. Razvoj krednih plasti v Krškem hribovju (Die Entwicklung der Kreideschichten im Hügelland von Krško). — *Diplomsko delo*, 50 str., 1 geol. karta.
- PLENIČAR, M., PREMUR, U. & HERAK, M., 1976. Osnovna geološka karta SFRJ 1:100.000, list Novo mesto L 35-79, Geološki zavod Ljubljana, Savezni geološki zavod Beograd.
- POLJAK, M., DOZET, S., STOJANOVIĆ, B., RIŽNAR, I., DEMŠAR, E. & PLACER, L., 1997. Geološko kartiranje Krške kotline (Geological mapping of the Krško basin). — *Geol. zbornik*, 13:46–55, Ljubljana.
- RAMOVŠ, A., 1958a. Starost krških skladov v okolici Krškega. (Das Alter der „Gurkfelderschichten“ in der Umgebung von Krško). — *Geologija*, 4:149–152, Ljubljana.
- RAMOVŠ, A., 1958b. Starost velikotrnskih skladov v okolici Velikega Trna pri Krškem (The age of the „Grossdornerschichten“ in the neighbourhood of Veliki Trn near Krško). — *Razprave 4. razr. SAZU*, 4:651–657, Ljubljana.
- RIŽNAR, I., 1991. Speleologija Ajdovske jame (Die Speleologie der Höhle Ajdovska jama). — *Diplomsko delo*, 50 str., 21-sl., Ljubljana.
- ŽLEBNIK, L., 1958. Prispevek k stratigrafiji velikotrnskih skladov (On the geologic relation of Veliki Trn strata). — *Geologija*, 4:79–93, Ljubljana.