OVERVIEW OF THE RESEARCH AND PROJECT WORK ON THE CLAUSTRA ALPIUM IULIARUM BARRIER SYSTEM AFTER THE SECOND WORLD WAR

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INTRODUCTION

The history of research until the end of the Second World War was exemplarily researched and published by Jaroslav Šašel in the book *Claustra Alpium Iuliarum 1*. At his initiative, the Slovenian, Croatian and German archaeologists began with the second wave of systematic research, which lasted until the late 1970s. The intensity then decreased. We may talk about individual researches and publications, which were limited to one location or dealt with the topic indirectly.[1] In recent years, the research of Alpine barriers has intensified but has so far not reached the dynamics and systematics of the work from the 1970s. The European projects such as PArSJAd,[2] Claustra[3] and Claustra+[4] partly represent the common thread of the research, and in addition to scientific work, also include the potential of cultural tourism.

THE *CLAUSTRA ALPIUM IULIARUM* SYSTEM

Most of the fieldwork was carried out in the form of topographic surveys. This is fundamental for the understanding of CAI as a whole. The method looks for answers to the questions of why the CAI system was set up in this area, how it could work, etc. In addition, new technology now enables more accurate, better and more transparent documentation of space. This positioned the CAI system in the space, the situation on the ground was assessed and on the basis of this, it was also possible to evaluate older publications to a great extent.[5] Aerial laser scanning (LiDAR) is an excellent method for the spatial study of CAI, but in order to maximize its potential, it must be combined with other methods (topographic survey, geophysical methods, sampling, etc.). With this method, it is not only possible to detect, but also interpret and imagine the landscape as never before, which is of great importance for the study of CAI.[6] The mentioned works also offered new results – these include the discoveries

[1] On the history of research: Kusetič 2014b, 18–26; Kos 2015, 7–12.
[2] Acronym for the strategic project of cross-border cooperation Slovenia–Italy 2007–2013, Archaeological Parks of the Northern Adriatic.
[3] Acronym for the international project of the European territorial cooperation Slovenia–Croatia 2007–2013, Stone Bulwarks of the Roman Empire.
[4] Acronym for the cross-border project Interreg Slovenia–Croatia 2014–2020, Cross-Border Destination of Cultural and Green Tourism.
[5] Kusetič 2014a. GPS measurements in the field were performed with an accuracy of 0.5–7 m and were included on the basic topographic maps (source: Surveying and Mapping Authority of the Republic of Slovenia).
[6] Mlekuž 2015.

of the sections of the Alpine barriers previously unknown to archaeologists, compiling of individual archaeological traces into the landscape, more effective protection of cultural heritage, etc.

Historical and archaeological sources had to be re-examined and critically evaluated before continuing with the research. This was exemplarily performed by Peter Kos, who presented the results in several publications. By examining the numismatic finds, which are chronologically most telling among the archaeological material pertaining to Alpine barriers, he re-evaluated the coin finds in their original archaeological context and critically evaluated the interpretations carried out so far that are based on them.[7] He prepared a comprehensive presentation of the barrier system. He positioned the CAI in the space, outlined the architecture of the barriers, defined the chronological issues of building the system and defined its function.[8]

In his latest article, Kos analyses the description and depiction of the function *comes Italiae* in the *Notitia dignitatum* manual from the beginning of the 5th century. He assumes that the term *tractus Italiae circa Alpes* cannot be understood to denote the entire Alpine belt from the Ligurian Sea to the Kvarner Gulf, but the term may refer to the line barrier walls of the 4th century in the Julian Alps, also known as *claustra Alpium Iuliarum*. He believes that the term *tractus Italiae circa Alpes* cannot be linked to the deep defence of Italy, which appears after the collapse of the line defence system in the Julian Alps. The *Prima*, *Secunda* and *Tertia Iulia Alpina* legions operated in the 4th century in the area of the Julian Alps, two in the Italic part of CAI and one in the Illyrian part – it was most likely stationed in *Tarsatica* (anc.) (present-day Rijeka in Croatia).[9] On contrast, based on the archaeological finds, Slavko Ciglenečki tried to connect the linear barrier walls to a network of contemporary highland outposts of a military character in the southeastern Alps.[10] Together with Tina Milavec, they assume that the units of the legions *I–III Iulia Alpina* were positioned along the network of outposts between *Forum Iuli* (present-day Cividale in Italy) and *Emona* (anc.) (present-day Ljubljana) also in the 5th century in the context of *tractus Italiae circa Alpes* after the abandonment of line barriers and the introduction of deep defence of Italy.[11]

Over the past two decades, a relatively large number of publications covering, among other, the CAI system have been published.[12] The interpretations of the genesis of the barrier system can largely be considered as assumptions that are based on the analyses of historical events but mostly ignore the results of archaeological excavations and Slovenian literature.[13]

[7] Kos 2012, 265–300; Kos 2014, 112–132.
[8] Kos 2013, 233–261; Kos 2015, 13–37.
[9] Kos 2014a, 409–422.
[10] Ciglenečki 2011, 259–271; Ciglenečki 2015, 385–430.
[11] Ciglenečki, Milavec 2009, 184; Ciglenečki 2011, 271.
[12] See Napoli 1997; Marcone 2004; Vannesse 2007; Christie 2008; Poulter 2013.
[13] Kos 2015, 32.

The CAI Protection Guidelines aim at protecting the entire Alpine barrier system as a single monument. This is the first step towards including the barrier system on the UNESCO World Heritage List. For this purpose, professional foundations were made for the area between Vrhnika and Hrušica.[14] In order to prepare a study of the entire Alpine barrier system, a professional database[15] and a conservation and management plan were prepared, also in compliance with Croatian legislation.[16] The first thoughts on CAI management and marketing were published by Marko Frelih.[17] A more comprehensive publication is provided by Marko Stokin and Andreja Breznik.[18] They believe that the priorities should include the administrative organization of the system with the status of a monument of national importance and subsequently the proclamation of designated sections with the status of a reserve and the establishment of a professional, scientific and executive commission that will prepare a long-term management and research plan and coordinate the work and tasks of maintaining CAI.[19]

ARCHAEOLOGICAL RESEARCH AT THE CAI LOCATIONS

In Croatia, we can highlight the research on the alleged ***Tarsatica*** *principia*, published in the monograph[20] and internal reports of the Croatian Conservation Institute.[21] In 2007, the Croatian Conservation Institute began with the archaeological research that covered the southwestern quarter of a Roman building in the present-day old city centre of Rijeka. Although a relatively small number of military and horse equipment was discovered, archaeologists interpret it as an object of military command – the *principia*. The interpretation is based primarily on archaeological finds that indicate the supply of the military. Luka Bekić dates the construction of the *principia* between the years 260 and 270.[22] Based on numismatic finds, Kos more precisely dated the object to a later time, to the end of the seventies or the eighties of the 3rd century, and its abandonment or arson to the beginning of the 5th century.[23] A more intensive inflow of money in the 4th century in *Tarsatica* starts only after the middle of the century, which is why Kos assumes with reservation that the fortified city of *Tarsatica* was built at the same time as the Lanišče and Martinj Hrib fortlets.[24] Despite good results, research leaves many questions open. There is no archaeologically proven architectural contact between the remains of the barriers on Kalvarija (Calvary Hill) above Rijeka and the ancient wall of *Tarsatica*. For this reason, the direct inclusion of *Tarsatica* in the CAI system

[14] Rutar, Vinazza, Nadbath 2012.
[15] Kusetič 2013.
[16] The documents are kept in the archive of the Institute for the Protection of the Cultural Heritage of Slovenia.
[17] Frelih 2003, 43–46.
[18] Breznik, Stokin 2014, 133–164.
[19] Breznik, Stokin 2014, 164.
[20] Radić Štivić, Bekić 2009.
[21] Višnjić 2011.
[22] Bekić 2009, 220.
[23] Kos 2012, 299; Kos 2014, 127; Kos 2015, 32–35.
[24] Kos 2015, 34.

can only be assumed. The chronologically diverse architectural remains also leave open the question of interpretation of the object under study.[25]

At the **Jelenje barrier on Grobničko polje (Grobnik Field)**, in 2013 and 2014, the team of the National Museum of Slovenia conducted several topographic surveys.[26] Considering the architectural elements examined, we can oppose Radmila Matejčić's assertion about a two-phase construction[27] concerning the barrier in question and allow the possibility of only one phase.[28] Based on a satellite image, a field survey confirmed Peter Kos's assumption about the existence of a continuation of the barrier to the east on the slopes of Borovica[29] and Tomažina.[30] After field surveys and a review of archival material at the Institute of Archaeology in Zagreb and the Maritime and Historical Museum of the Croatian Littoral, Rijeka, we (re)discovered the remains of the barrier walls from the canyon of the Rječina River, through Jelenje to Burinje, thus the western part of the barrier. The urbanization of the area almost completely destroyed the remains, so only individual fragmentarily preserved parts can be identified in the field. Based on archival data, it is also possible to reconstruct the course of the barrier through the centre of the settlement of Jelenje, where there are no visible remains of the wall anymore. The publication of these results is under preparation. In 2015, the archaeologists from the Croatian Conservation Institute conducted a smaller archaeological excavation of the tower at the location of Obrovac and the aerial laser scanning (LiDAR) of the wider area. The architectural remains of the tower and the barrier wall were archaeologically documented –the finds were few, as expected.[31]

In 2005 and 2006, at the **Studena** barrier, the locations of Vranjeno and Za Presiku were investigated under the leadership of Ranko Starac. Except for some architectural elements, there were no novelties. The excavated parts of the barrier walls were conserved.[32] The team of the National Museum of Slovenia could not confirm the existence of the remains of the barrier wall at the top of the Šiblje and Zeleni vrh mountains with topographic surveys.[33] In 2015, the archaeologists from the Croatian Conservation Institute carried out geophysical measurements and excavation of the barrier wall at the location of Mlake. Archaeological research revealed a smaller passable tower, suitable only for pedestrians.[34] As the excavated remains indicate, the tower is only a part of a wider passable architectural design that remains

[25] Kos 2014, 125.
[26] See Kusetič 2014a, 39–43.
[27] Matejčić 1969, 30.
[28] Kusetič 2014a, 42; Kos 2015, 33.
[29] Comp. Šašel, Petru 1971, board 1 and Kusetič 2014a, picture 3.14.
[30] The publication is under preparation.
[31] Višnjić 2016.
[32] Starac 2009, 279–285.
[33] Comp. Šašel, Petru 1971, board 2 and Kusetič 2014a, 44 and picture 3.21.
[34] Višnjić 2016, 26–27.

to be explored. This is the first tangible evidence of the existence of a Roman road in this area.[35]

The **Babno polje–Prezid** barrier – today, the state border between Slovenia and Croatia partially runs along its route – was topographically surveyed by archaeologists, partly cleaned and geodetically measured in 2006.[36] A shorter publication of the site shows that some data do not correspond to the state on the ground,[37] but the description of the course of the barrier wall is correct. Namely, in 1971 an incomplete map was published,[38] supplemented in 1988 by Valentin Schein.[39] The archaeologists from the Croatian Conservation Institute conducted probing in 2012 and 2018.[40] In 2015, accurate geodetic measurements were carried out by the archaeologists from the Institute for the Protection of the Cultural Heritage of Slovenia. The interpretation of the LiDAR image was performed by Dimitrij Mlekuž.[41]

The team of the National Museum of Slovenia conducted a topographic survey at the **Benete** barrier in 2013.[42] At the end of the following year, geophysical measurements were carried out on a part of the barrier wall south of tower 4.[43] The measurements confirmed the remains of the barrier wall but did not confirm the supports, the potential existence of which is reflected in the shape of the surface. Additional geophysical research has also shown the supports, with which the methodology for the geophysical research of CAI was created. In addition, the existence of architectural remains of buildings is also potentially shown along the barrier wall. We speculate that they belong to the time of the operation of CAI.[44] The interpretation of the LiDAR image was carried out by Mlekuž.[45] In the hinterland of tower 4 and the barrier wall, the terrain is levelled and the configuration indicates the possible existence of architectural remains below the surface, connected with the barrier. Only further research can confirm or deny this. After archaeological excavations of the southern half of tower 4, Jaroslav Šašel and Mehtilda Urleb reported that the tower was built independently and was not architecturally connected with the barrier wall.[46] This is an interesting piece of information, but it has no chronological value.[47] Archaeological excavations of the northern half of the tower and the conservation and presentation of the entire tower 4 were carried

[35] On the problem of Roman roads in the area see Kusetič 2014a, 39.
[36] Lipovac Vrkljan, Šiljeg 2007.
[37] See Kusetič 2014a, 52 and note 88.
[38] Šašel, Petru 1971, board 3.
[39] Schein 1988.
[40] The publication is under preparation in the framework of the Claustra+ project.
[41] Mlekuž 2015, 38–44.
[42] Kusetič 2014a, 53–56.
[43] Mušič 2014.
[44] The publication is under preparation in the framework of the Claustra+ project.
[45] Mlekuž 2015, 32–37.
[46] Šašel, Urleb 1971, 33.
[47] See Ciglenečki 2015, 398.

out in 2018 by the archaeologists from the Institute for the Protection of the Cultural Heritage of Slovenia. At least two settlement stages have been proven archaeologically.[48]

The remains of a 9 m long barrier wall and about 6 x 5 m large tower can be found at the location of **Taborščˇ**.[49] The inclusion of the remains in the CAI system has not been proven, but the architectural similarity is obvious.[50] A possible connection with the system will only be confirmed or denied by further research.

The **Novi Pot** barrier is a new discovery within the CAI system. It was entered in the register of immovable cultural heritage in 2011, when during the renovation of a local road, a local, Anton Marolt, registered the find with the Institute for the Protection of the Cultural Heritage of Slovenia. The remains of the barrier walls are not mentioned in the specialised literature. After conducting a topographic survey[51] and geophysical measurements,[52] it became clear that the barrier was of considerable importance within the CAI system. A strong, 2 m thick and 300 m long barrier wall and two towers, one of which is passable,[53] point to an important control point on a Roman road that has not yet been archaeologically documented here. Perhaps the barrier was the central point on the eastern edge of the Bloke Plateau or its stronger architecture compared to the neighbouring barriers indicates a chronological difference. By interpreting the LiDAR image, Mlekuž assumes two more segments of the barrier walls near Novi Pot.[54]

Tower 2 and part of the wall at the **Rakitna** barrier were investigated by archaeologists in 1962 under the leadership of Josip Klemenc. Except for a brief note in the Journal for the Protection of Monuments, the excavations remain unpublished.[55] After his death, Klemenc's documentation was misplaced, so today only random photographs taken by the team in their spare time are available. In the framework of a municipal project, in which the archaeologist Drago Svoljšak, formerly a member of the Klemenc's excavation team, also participated, the Roman wall (Rimski zid)–Rakitna Forest and Archaeological Educational Trail was arranged in 2012. Svoljšak contributed photographs and some basic information from the mentioned archaeological excavations. Both in the photographs and in the field, the supports stand out, measuring up to 2.5 m in length, which are not built connected to the barrier wall. The gaps between the supports on the excavated part of the wall are not even.

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[48] The publication is under preparation in the framework of the Claustra+ project.
[49] The location has several different toponyms: Taborščˇ, Tabršče, Taborše …
[50] 50Kusetič 2014a, 56–57.
[51] Kusetič 2014a, 58–60.
[52] Mušič 2014.
[53] Geophysical surveys revealed potential partition walls within the tower (Mušič 2014). This is the third example of a proven passable tower in the CAI system. Other two examples are at the Hrušica barrier.
[54] Mlekuž 2015, 19–31.
[55] Klemenc 1962–64.

The **Pokojišče** barrier is one of the less explored barriers, where the terrain configuration clearly shows the architectural elements below the surface.[56] In addition to the clearly visible supports, larger centrally positioned towers are a special feature of the barrier. Behind them, a 2–3 m wide levelling of the terrain can be observed in the hinterland, which can be interpreted as a useful space during the construction and use of the barrier wall. The latter has also been confirmed by geophysical measurements.[57] The remains of some towers indicate that they have not yet been excavated archaeologically. This means that this is a rare case of untouched stratigraphy within the Alpine barriers, which makes the Pokojišče barrier highly important. The position above a steep slope and flat terrain in the hinterland also contributes to its exceptional importance. This is a good example of a CAI barrier, both in terms of strategic layout and architecture, as well as scientific value. Unfortunately, during the topographic survey, we were unable to locate 250 m of the barrier to the south. It appears that the construction of a new local road, which was lain slightly differently here, destroyed or covered part of the wall.[58]

The longest documented barrier within the CAI is the **Ajdovski zid wall above Vrhnika** with 7,700 m. Based on the LiDAR imagery, we discovered the beginning of the Ajdovski zid wall under the Verd Railway Station in 2018.[59] Although this part was described in earlier publications, we were not able to identify it in the field until now. During the construction of the railway in the mid-19th century, the wall in this part was destroyed in the length of some 100 meters. On the slope of the Ljubljanski vrh Hill above the railway station, the archaeologists from the Institute for the Protection of the Cultural Heritage of Slovenia documented two profiles of the barrier wall in the mid-1980s.[60] The topography revealed that the wall was destroyed in several parts, mainly due to the construction of infrastructure. The route of the wall was geodetically measured,[61] but the consistency of the numbering of the towers with the map of Alfons Müllner is not reliable.[62] During the excavations of towers 52 and 45, after Müllner, Urleb mentioned the indeterminate bronze Roman coin along the south wall of tower 52, in its interior.[63] Kos managed to define it more precisely. It is the coin of Emperor Constantius II (351–361),[64] which only proves the existence of the tower in the middle of the 4th century, not its creation or destruction or its chronological relation to the barrier wall.[65] Unfortunately, the tower along the Vrhnika–Postojna highway (tower 34 according to Müllner) remains unmarked and overgrown with vegetation. With the part of the barrier wall at the site of today's highway (the so-called Dolinska pot), it was excavated by

[56] Kusetič 2014a, 68–71.
[57] Mušič 2014.
[58] Comp. Šašel, Petru 1971, board 8 and Kusetič 2014a, 69, 70.
[59] Unpublished.
[60] Vičič 1986, 285.
[61] Kusetič 2014a, picture. 3.59. Measurements with a GPS device with an accuracy of 2–5 m.
[62] See Kusetič 2014a, sl. 3.59, 3.60, notes 121, 122 and 124.
[63] Urleb 1962-64, 186.
[64] Kos 2012, 297.
[65] Kos 2015, 33.

Davorin Vuga.[66] The tower was conserved after the excavations. It was the first tower of this sort in the Alpine barriers to be conserved by archaeologists. In 2019, the archaeologists from the Institute for the Protection of the Cultural Heritage of Slovenia concluded the excavation, conservation and presentation of towers 45 and 52 within the Claustra+ project.[67]

Archaeologists under the leadership of France Leben investigated the **Brst near Martinj Hrib**[68] fortlet in 1963 and published the excavation results in 1990 in an article.[69] During a topographic survey in 2013, we determined that the first tower (in the far west of the barrier) was erected on the outer side of the barrier wall[70] or the barrier wall rests in the middle of the tower's wall.[71] Leben assumed the crossing of a Roman road through a rock cut (i.e. Skalna vrata – "Rock Gate") directly below the terrace of the fortlet,[72] where a cart track leads today, but it seems more likely that it ran along a parallel cart track 20 m to the north.[73] After reviewing the field documentation, Kos suggests that the smaller spaces along the northeastern side of the fortlet, in its interior, do not represent a guard tower,[74] but, based on the comparisons with the Arab limes in Jordan, more likely the spaces for the crew.[75] Numismatic analyses showed the highest activity inside the fortlet in the second half of the 4th century, especially during the Valentinian period. As in the Lanišče fortlet,[76] the traces of activity disappear here as early as in the end of the eighties of the 4th century, which means that the fortlet was used for a relatively short period of time. The question of the chronological relationship between the fortlet and the barrier wall also remains open. During the topographic survey, we found that the wall of the fortlet was built separately from the barrier wall, which was not reported by the excavators; however, this information has no chronological value.[77]

The fortlet at **Lanišče** has a fully preserved ground plan and numerous architectural details, which enables a relatively good reconstruction.[78] After reviewing Peter Petru's field documentation, Kos made some revisions to the reconstruction. He assumes that the well-prepared holders in the wall were not intended for the scaffolding during the construction of the fortlet but for the wooden construction of the living quarters inside. He sought comparisons in Jordan and Tunisia.[79] He also criticized Petru's claim that the fortlet was

[66] Vuga 1972, 148–149.
[67] The publication is under preparation within the Claustra+ project.
[68] The location also appears in the literature under the name Gradišče pri Dolenjem Logatcu.
[69] Leben, Šubic 1990.
[70] Kusetič 2014a, 79.
[71] Kos 2015, 30.
[72] Leben 1971, 91.
[73] Kos 2015, 30, picture 87.
[74] Leben, Šubic 1990, 314, 322.
[75] Kos 2015, 29.
[76] Kos 2012, 269; Kos 2014, 131; Kos 2015, 34.
[77] Kusetič 2014a, 80; Kos 2015, 30.
[78] The reconstruction of the fortlet in the field remains a unique example within the CAI system to this day.
[79] Kos 2015, 27–28.

subsequently built into the barrier wall. This is a piece of information without evidence, which could, however, incorrectly date the barrier walls. Kos argues in favour of the opposite possibility.[80] He also partially corrected Petru's ground plan for the northern barrier wall, which turns slightly northeast after two meters.[81] After 20 meters, the wall reaches a forest trail, the route of a former Roman state road. Considering the remains of the lime mortar in the section of the trail, Kos concludes that a passable tower stood at this spot.[82] We did not find a continuation of the barrier wall to the north during the topographic survey. The re-analysis of the numismatic material dates the construction of the fortlet in the seventies or eighties of the 4th century, while in the last decade of the same century, Lanišče, same as Brst near Martinj Hrib, was already abandoned.[83]

In 2013, as part of the research of the barrier at Lanišče and together with the archaeologists Rok Plesničar and Alenka Julijana Berdnik, we measured 3,700 m^2 of terrain in **Vodice near Kalce** with geophysical measurements (i.e. Zasuto mesto – "The Buried Town", HRN 10282).[84] This is the location of a Roman settlement by a water source and a Roman state road, which in continuation leads past the fortlet at Lanišče.[85] The measurements on the meadow between the macadam (supposedly Roman) road on the south and the gas line route on the north showed no archaeological remains below the surface. The anomalies are only visible on the gas line route and north of it, which is also confirmed by the finds discovered during the construction of the gas line.[86] The absence of archaeological structures in the measured area is not surprising since the lower meadow along the road is completely flooded in heavy rainfall. The high concentration of Roman finds on the meadow can be explained by the stronger water flow and partly by erosion (ceramic fragments).

The barrier on **Hrušica** consists of five sections: the ***Ad Pirum*** fort (central part of the barrier), the northern barrier wall, the southwestern barrier wall, the southeastern barrier wall and the section on Polšakovo kopišče with the southwestern passable tower. The northern barrier wall leads from the northern top of the fort from the slope of the Listnik Hill through today's macadam road towards Črni vrh on the Nivčen grič Hill and to the slope of the Javorjev grič Hill, where it ends. The southwestern barrier starts in the southeastern corner of the fort and is preserved in the length of merely 46 m. It ends before the present-day road towards Predjama. Its further course has not been determined. The southeastern barrier wall also begins at the southeastern corner of the fort. It leads into the valley to the former route of a Roman road (the so-called Ledena pot – "Ice Trail"), where the latter was controlled by a

[80] Kos 2015, 28, picture 81.
[81] Kos 2015, 28, picture 81.
[82] Kos 2015, 28.
[83] Kos 2012, 269; Kos 2014, 131; Kos 2015, 34.
[84] The internal report Zasuto mesto (»The Buried Town), HRN 10282, dated 25 July 2013, is kept by the Institute for the Protection of the Cultural Heritage of Slovenia.
[85] Frelih 2003, 26; Pflaum 2004, 118–145; Pflaum 2007, 315–332.
[86] Frelih 2003, 26.

passable (gate) tower, included in the barrier wall (southeastern passable tower). The barrier descends to the lowest point where it crosses a macadam road and then ascends to the Bršljanovec Hill, where it ends. Southwest of the fort, along the macadam road, we find a 77 m long barrier (a section on Polšakovo kopišče) with a smaller passable tower (southwestern passable tower). A Roman road ran through both of these passable towers.

The Slovenian-German archaeological excavations (the National Museum in Ljubljana and the University of Munich) at Hrušica, in the ***Ad Pirum*** fort, took place between 1971 and 1973. The German part of the excavations was published in 1981,[87] while the Slovenian part remains largely unpublished. The findings of the excavations at Hrušica after 1979 were published by Drago Svoljšak.[88] These include the following probing locations:

- The *Ad Pirum* fort, part of the western fort wall (1989, 1990 and 1993): Svoljšak interpreted the stronger foundations on this part of the wall as a consequence of the proximity of the western tower of the fort and the double tower. The same situation is expected to be in the eastern wall.
- The *Ad Pirum* fort, the inside of the Stara pošta ("Old Post") inn, formerly the Lanthieri Palace (1992): in addition to the modern-day structures, extremely modest remains of the western wall of the fort were discovered.
- The intersection of the roads Kalce–Col and Bukovje–Črni Vrh, west of the *Ad Pirum* fort (1996): in the cross-section area of the probe, archaeologists were able to identify four roadways; two Roman and two younger. The youngest road dates from the period 1935–37, when the Italian army surfaced the terrain west of the fort for logistical purposes along the Rapallo border. Since then, the terrain in front of the western wall of the fort has been less steep.
- The *Ad Pirum* fort, SW Tower and part of the southern wall (1997): two construction phases were identified; the fort wall with a southern sally port and a square tower were built in the first stage. The tower was destroyed in a fire and was replaced by a pentagonal tower built in the second construction phase. Svoljšak sees two events in the archaeological record that are dated mainly by two groups of coins. He links the older one to the battle between Constantine II and Magnentius in 352 and the younger one to the restoration works during the Valentinian era. Kos assumes the opposite, namely that due to unclear stratigraphy, all coins probably have to be connected with the construction of the pentagonal tower.[89]

By re-evaluating the coin finds, Kos corrected some interpretations and datings at the Hrušica barrier.[90] He performed a remarkable task with the monographic presentation of

[87] Ulbert 1981.

[88] Svoljšak 2015. The excavations were commissioned by the Institute for the Protection of the Cultural Heritage of Slovenia, the Nova Gorica Regional Unit, and the work was carried out by the team from the National Museum of Slovenia.

[89] Kos 2012, 288; Kos 2014, 128.

[90] Kos 2012; Kos 2014.

Hrušica,[91] where he attempted to connect the cultural layers with archaeological material. The interior of the *Ad Pirum* fort and the two passable towers are in fact one of the few examples of defined archaeological stratigraphy in Alpine barriers. He established that archaeological finds only provide the time frames for more intensive settlements, but cannot serve as evidence for the construction of the wall. Unfortunately, due to insufficient stratigraphic data, most of the small archaeological material cannot be linked to individual cultural layers, so they are slightly less telling.[92] A review of the rare well-documented finds does not quite fit Ulrike Giesler's timeline,[93] which was already corrected by Philipp M. Pröttel.[94] However, we can more precisely date the genesis of the barrier based on numismatic finds. Among the coin finds that he could reliably associate with cultural layers and architectural elements, Kos more accurately dated the construction, renovation and abandonment of the fort wall and the two passable towers.[95] It is safe to say that the wall was built no later than in the year 312/313, while in the middle or second half of the 4t^{h} century, some parts of the barrier were demolished and rebuilt (southwestern fort tower, eastern fort wall, southwestern passable tower). Honorius' coins minted after 394 still flowed into the fort. Honorius' coins minted between 408 and 423 (type *Gloria Romanorum* 11) are no longer represented, so fresh money was no longer flowing in the fort in the second decade.[96]

Archaeological excavations of the Hrušica southeastern barrier wall on the Bršljanovec Hill in 1974 showed that a smaller fortlet cannot be found at the top, as was assumed by Šašel and Leben,[97] but rather two towers. A poorly constructed wall was leaning on the inner (western) side of the barrier wall between the towers, based on which Petru assumed two construction phases.[98] Based on the field documentation, Kos concludes that the southeastern passable tower was built simultaneously as the southeastern barrier wall.[99] The archaeological record indicates two fires and the tower was abandoned after the second one. According to the find of Honorius' coin in the upper charred layer, Ulbert assumes that it was abandoned after the events of 394,[100] but Kos suggests being cautious with the interpretation.101[101]

For the southwestern passable tower of the Hrušica barrier, Kos notes that based on archaeological excavations (especially coin finds), only *terminus ante quem* of the construction of the tower (337–340) and *terminus post quem* of the destruction of the tower (364–378) can

[91] Kos 2015.
[92] Kos 2014, 124; Kos 2015.
[93] Giesler 1981, 112, 113, 119.
[94] Pröttel 1996, 136–137.
[95] Kos 2012; Kos 2015.
[96] Kos 2012, 296, 300.
[97] Leben, Šašel 1971, 95.
[98] Kos 2015, 107–108.
[99] Kos 2015, 104.
[100] Ulbert 1981, 35.
[101] Kos 2014, 129.

be reliably determined. The existence of the older architecture (of the tower), as predicted by Petru in his reports, cannot be confirmed.[102]

During the topographic surveys, a new tower 8a was discovered on the northern barrier wall and tower 11a on the southeastern barrier wall. In 2011 and 2013, geodetic surveying images of the *Ad Pirum* fort were made. The younger version is more accurate.[103] The barrier was also measured using remote laser scanning (LiDAR). The latter proved the effectiveness of the method used even in the most overgrown parts of the course of the Alpine barriers.[104]

Veronika Pflaum's doctoral dissertation comprises three content sections: a partial presentation of the Vodice near Kalce site, a report on the excavations at Hrušica – the youngest ancient traces at Hrušica and the question of the 5th century. After reviewing the reports on the excavations at Hrušica, based on reliable data, she aimed at drawing or at least indicating some conclusions: a multiphase settlement of Hrušica, which will need to be more precisely dated and its extent and type determined. The youngest layers make it possible to create an assumption about the way the fort was decaying. Based on archaeological remains, it will be possible to reconstruct some of the objects, while the excavations on the Bršljanovec Hill provide a rough appearance of the wall at the fort. Concerning the question of whether Hrušica was inhabited in the 5th century, the author proposes three theses: 1. The fort at Hrušica was destroyed and abandoned in 394 during the conflict between Theodosius I and Eugenius; 2. The fort was abandoned in 401 on the first march of the Visigoths; 3. The fort was abandoned at the end of the 4th century or in the first years of the 5th century and was used to a lesser extent in the 5th century as well.[105] Due to the circumstances of the creation of the work, the choice of material was arbitrary and does not represent a complete whole.

Unfortunately, there are no reliable archaeological data in the available documentation that would explain the chronological relationships between the barrier walls and the fort. The archaeological context of the finds also remains relatively unclear, since we can associate them with architectural elements and cultural layers only in rare cases. Most of the Slovenian part of the archaeological excavations remains to be published, however.

The alleged course of the long barrier wall at **Nova Oselica** has not been archaeologically proven. A field survey of the remains of the wall described by Rajko Brank[106] has shown that they do not have the architectural features of the CAI remains,[107] except for the location of **Vrata** above Cerkno. On the ridge, a natural pass to Cerkljansko, the archaeologists from the National Museum of Slovenia recently confirmed a new section of the *claustra Alpium*

[102] Kos 2015, 109–112.
[103] See Kusetič 2014a, picture 3.75; Kos 2015, pictures 96, 97 and 100.
[104] Rutar, Vinazza, Nadbath 2012, appendix 3; Kusetič 2014a, pictures 3.84–3.87; Kos 2015, picture 254.
[105] Pflaum 2004.
[106] Brank 1979.
[107] Kusetič 2014a, 109.

Iuliarum barrier system, based on a LiDAR image, field research and archival documents.[108] The remains were already mentioned in shorter notes by the archaeologist Nada Osmuk in the 1980s. No extensive research was conducted at the time and aggressive environmental interventions almost completely destroyed the wall.

A team from the National Museum of Slovenia, together with the archaeologist Miha Mlinar, conducted a topographic survey of the barrier at **Zarakovec**. It was determined that the central part of the barrier wall was completely destroyed. The southern part was documented up to the local macadam road, while on the north, modest remains near the hamlet of an abandoned homestead that ended in a rocky slope were documented.[109]

Experts associate several archaeological locations with CAI, but we cannot claim with certainty that they were directly integrated into the system. The argumentation mainly refers to modest archaeological finds from the 4th century or simply the proximity to other barriers. However, no linear barrier walls are documented at these locations. These are either elevated, slightly remote points or concentrated settlements – places that were fortified during this time.

Archaeological excavations on **Solin** have been underway since 2007 and in 2010, conservation work on the wall began as well. Probing was conducted under the leadership of Ranko Starac (Maritime and Historical Museum of the Croatian Littoral of Rijeka), while the last research in 2017 was carried out together with the Croatian Conservation Institute.[110] The Solin Hill above Kostrena, a few kilometres east of Rijeka, was fortified by a 2 m wide wall in the late Roman times. The wall does not go all the way around, but only protects the southern, more easily accessible part of the hill. On the other sides, access is naturally secured.[111] The southern and western sides offered a good view of the coast and the main road towards *Tarsatica*, while on the northern and eastern sides, there was a good view of the hinterland, the alleged route of the Roman road that bypassed *Tarsatica* and led to Grobniško polje (Grobnik Field). Any possible connections with the Alpine barrier system will only be clarified by further archaeological research.

The **Gradina above Pasjak** fortlet was explored by Ranko Starac, who published only a modest part of the results in a summarized form.[112] He excavated 200 m of the wall and made a few test probings inside the fortlet. After the excavations were completed, the discovered part of the wall was also conserved. The fortlet is considered within the framework of the Alpine barriers, but with some reservations.[113] There is no evidence of it being inhabited for a

[108] Unpublished.
[109] Unpublished.
[110] Starac 2017.
[111] Višnjić 2016, 20–21.
[112] Starac 1993; Starac 1996; Starac 2004; Starac 2009; Starac 2011.
[113] Kusetič 2014a, 47.

longer period of time and the question of chronology also remains open. Starac cites various stratigraphic data of the find of a set of 12 coins, the youngest of which was minted in 270,[114] which significantly influences the answer to the question of the establishment or abandonment (demolition) of the fortlet after that year.[115] However, its considerable distance from the barrier walls and the lack of linear defence leave the questions about the role of the fortlet in the *claustra Alpium Iuliarum* system open.[116]

The Ajdovski zid wall was built above the fortified settlement of ***Nauportus*** (anc.) (present-day Vrhnika).[117] Given the immediate vicinity, we can expect a connection at least between the fortified *Nauportus* (today the Gradišče on Vrhnika fallow) and the barrier wall, but not in a narrower military sense since the command and supply centre cannot be stationed in front of a defence line by any criteria.[118] A smaller fortlet of Turnovšče is located between the Ajdovski zid wall and *Nauportus*, along the main route of the *Emona–Aquileia* Roman road.[119] Archaeological research shows that both the fortification of the city and the establishment of the Turnovšče fortlet can be dated to the second half of the 3rd century; they were probably in use in the 4th century, but there were no major activities. Their connection is more likely than the connection with the Ajdovski zid wall.

Although the fortified city of ***Castra*** (anc.) (present-day Ajdovščina) is not directly connected with the barrier walls, it certainly played an important role, as it is located approximately 17 km in the hinterland of Hrušica, one of the most important fortified points on the main state road *Emona*–Hrušica–*Aquileia*.[120] The proximity allows for the possibility that it had both the commanding and supply functions,[121] but research shows far fewer archaeological finds directly related to the military.[122] The research by Nada Osmuk should be particularly emphasized. Through several stages of archaeological research (1989–1991), she was able to determine the exact ground plan of the city wall, and she also explored the burial ground along the western wall on the outer side. The possible course of a Roman road through the city was not determined,[123] and archaeologists will probably write more about it in the context of the latest excavations. Unfortunately, the results of older research of the interior of the city have not yet been properly published as well.[124] Only the Mediterranean fine

[114] Starac 2004, 29; Starac 2009, 286; Starac 2011, 221.
[115] See Kos 2012, 286; Kos 2014, 127.
[116] Kos 2012, 286; Kusetič 2014a, 47–48.
[117] Šašel 1971; Horvat 1990.
[118] Saria 1939, 145; Kos 2015, 36.
[119] Slabe 1979, 123–144; Horvat 1990, 77–78.
[120] With reservations Kos 2017, 301.
[121] Petru 1971b, 98–99; Osmuk 1997.
[122] Over the past year, extensive archaeological excavations have been carried out in the city centre due to the renovation of the old city centre. A part of the excavation results will be published in a publication that is being prepared within the Claustra+ project.
[123] Osmuk 1997, 121, 128, 129.
[124] See Osmuk 1997; Svoljšak 2013, 56–76.

ceramics are properly analysed.[125] Based on the analysis of the coin finds, Kos provided a more accurate dating.[126]He dates the construction of the wall in the seventies or eighties of the 3rd century. The coins from the first three decades indicate a continuity of settlement in the 5th century,[127] which is also confirmed by the ceramic finds.[128]

The barrier wall in the Zila Valley in the Austrian Carinthia in **Rattendorf** (Slov. Rotna ves) cannot be associated with CAI, since it exhibits completely different architectural features than the CAI barrier walls. Hans Dolenz dated it in the 2nd century.[129] The assumptions about the existence of the barrier walls between **Železna vrata** ("Iron Gate") in Croatia, **Snežnik** and the **Babno polje** Field in Slovenia and in the town of **Špeter Slovenov** (San Pietro di Natisone) in Italy are based solely on unverified references from older authors. They are not archaeologically proven, and given the terrain configuration, they are not even expected to be found at these sites.[130]

THE BARRIER SYSTEM AS A POTENTIAL OF CULTURAL TOURISM

Within the strategic project of cross-border cooperation Slovenia–Italy 2007–2013, Archaeological Parks of the Northern Adriatic (PArSJAd), in which the National Museum of Slovenia and the Institute for the Protection of the Cultural Heritage of Slovenia also participated, in addition to the already mentioned professional activities (remote laser scanning of Hrušica, geodetic measurements of the *Ad Pirum* fort, publishing of the publication,[131] analysis of the mortar on the fort wall, 3D digital reconstruction of the fort), interesting tourist contents were also arranged at Hrušica. In cooperation with the Institute for the Protection of the Cultural Heritage of Slovenia, the National Museum of Slovenia has arranged the *Ad Pirum* Archaeological Park. The museum room at the Stara pošta ("Old Post") Inn was renovated. An archaeological trail, equipped with interpretive and didactic boards, was set up inside the *Ad Pirum* fort and along the southern barrier walls. A plan for the management of the monument was drawn up, and the lectures were carried out for potential investors and managers of the monument. A travelling photographic exhibition, *Archaeological Parks of Slovenia. Without Censorship*, was also designed, which highlights the problem of archaeological parks in our country.

In the framework of the international project of the European territorial cooperation Slovenia–Croatia 2007–2013, Stone Bulwarks of the Roman Empire (Claustra), the partners

[125] Pröttel 1996, 138–140.
[126] Kos 2012, 285.
[127] Kos 2012, 286, board 13.
[128] Pflaum 2004, 147.
[129] Dolenz 1952, 175–177.
[130] Argued by Ciglenečki 2015, 400–401.
[131] Kos 2015.

from Slovenia[132] and Croatia,[133] in addition to the aforementioned research tasks (topographic surveys of CAI,[134] geophysical measurements,[135] probing,[136] aerial laser scanning, the creation of a professional database,[137] the development of a management plan and a conservation plan,[138] as well as 3D digital the reconstructions of the Jelenje, Pokojišče and Novi Pot barriers[139]), also prepared non-technical contents: a documentary,[140] a guide to CAI,[141] a website with an interactive map,[142] a travelling exhibition, popular and professional lectures for the interested public. The Benete and Novi Pot barriers were marked on the ground. If the content of the PArSJAd project focused more on the physical arrangement and presentation and interpretation content of the cultural heritage site of one CAI site, the Claustra project focused on digital and printed contents with an emphasis on the barrier system as a whole.

In 2014, the Croatian Conservation Institute and the Municipality of Rijeka opened an archaeological park within the remains of the *Tarsatica Principia*. The local community of Rakitna, with the help of associates with European funds, arranged the Roman wall (Rimski zid)–Rakitna Forest and the Archaeological Educational Trail.[143]

Between 2017 and 2020, the international project Cross-Border Destination of Cultural and Green Tourism (Claustra+) was taking place as part of the cross-border program Interreg Slovenia–Croatia 2014–2020.[144] We completed the collection of 3D virtual reconstructions and entirely redesigned the website. We added an app and updated the guide.[145]We also included the natural heritage in this project, as it is intertwined and complementary with the cultural one. We made a study of the natural landscape in the Late Roman times in the CAI area. We raised a Roman garden and created a travelling exhibition about the plant life in the area. We combined these two areas in the culinary arts that we included in the workshops as an added value.

We arranged a few archaeological trails in the field, and we also offered some itineraries available on the website on the interactive map. We will be complementing these

[132] National Museum of Slovenia, Institute for the Protection of the Cultural Heritage of Slovenia.
[133] Croatian Conservation Institute, Primorje-Gorski Kotar County, Žmergo Association.
[134] The results are presented within the professional database kept by the National Museum of Slovenia and the Institute for the Protection of the Cultural Heritage of Slovenia.
[135] Mušič 2014.
[136] The publication of the results is being prepared by the Croatian Conservation Institute.
[137] Kept in the archive by the National Museum of Slovenia and the Institute for the Protection of the Cultural Heritage of Slovenia
[138] The plans were made in accordance with the Croatian and Slovenian legislations (comparison) and are kept by the Institute for the Protection of the Cultural Heritage of Slovenia.
[139] Accessible at: www.claustra.org.
[140] Accessible at: www.claustra.org.
[141] Lah 2015.
[142] www.claustra.org.
[143] Accessible at: http://www.rakitna.si/ucna-pot/nastanek-poti.
[144] Basic information on the project and project partners is accessible at www.claustra.org.
[145] Lah, Zanier, Kusetič 2019.

contents in the future. Parts of the barrier walls were cleaned and the locals were included in the activity as well. The most endangered parts of the remains were also conserved and presented. Archeostereoscopes were installed for the first time in Slovenia. In addition, through fieldwork and the use of LiDAR imagery, we discovered some new parts of the barrier walls.

The advantage of this project lies in the greater reach of the results, which are also much broadly based. In the framework of the project, on 31 May 2019, the project partners and other stakeholders signed a Consortium Agreement on the establishment and operation of the partnership for the preservation and revitalization of the CAI barrier system. Together with the group Open Claustra, CAI experts and stakeholders are brought together. Through its various activities, the partnership encourages the preservation and revitalization of the heritage of the CAI system as a whole and contributes to its recognition as one of the most important monuments of Slovenia and Croatia with outstanding significance in the context of the entire world history. Its main goals and strengths are the encouragement, coordination, long-term care and support in the development and implementation of activities and projects in the field of the Late Roman barrier system *claustra Alpium Iuliarum* as well as bringing together and coordinating the stakeholders of this exceptional heritage.

We have also added development guidelines and an interpretation plan to official documents from the previous projects (management plan and conservation plan). In doing so, we have provided the core content for the stakeholders who are engaged in the CAI in any way. We have organized several trainings for the stakeholders, with the largest participation on the part of tourist organizations and educational institutions. Thus we have educated the staff responsible for the protection, education, promotion and marketing of cultural heritage. It also reaches the widest circle of people.

With these activities, we have set a solid framework for the study, protection, promotion and marketing of CAI as an outstanding cultural heritage. Content is available for all target groups, and we have expanded the knowledge of CAI, its potential and importance, to organizations that reach the widest crowds of people. Individuals and organizations are interested and motivated to maintain and complement the contents. Many activities will also remain traditional (Roman days, cleaning of the remains, workshops, etc.). In this way, we can conclude the research – protection – promotion – marketing – research circle. A major step has thus been made in a few years, as we now have a solid base to connect with major cultural monuments of this type in Europe (Rhine and Danube limes, etc.).

A major problem of most projects is sustainability. After the end of a project, when co-financing is terminated, the latter is very difficult to obtain.[146] In the course of the projects, we have gained experience and now we have completed the last step in the project

[146] Kos 2019.

implementation as well as we could. The project was planned to be ongoing. The group Open Claustra and the Consortium are legally regulated and unite the professional and lay publics of the entire area. Communication and regular meetings are ensured, and each is in charge of a specific area. We are all accessible via the website www.claustra.org. In addition, all further results of both future projects and research will be applied through the project results.

CONCLUSION

The main emphases of the recent research are therefore the following:

- topographic survey of Alpine barriers – assessment of the situation and search for new sections,
- GPS measurements of the CAI system and the digitization of its route,
- review and analysis of field documentation and publications,
- evaluation of coin finds in their original archaeological context and critical appraisal of interpretations,
- treatment of the CAI system in a broader historical and archaeological contexts,
- creation of expert bases for the protection and management of the monument,
- exploiting tourism potential.

The architectural image, the method of construction, the layout of the CAI and the narrow chronological range of archaeological finds indicate that the barrier system was built at once in a relatively short period of time. Only some CAI points indicate that they were restored (for example at Hrušica). Kos offered the explanation of the construction development of Alpine barriers based primarily on coin finds, which is also confirmed by other archaeological material.[147] Architectural elements do not seem to have a chronological value.[148] Unfortunately, direct evidence of the time of the construction of the barrier walls is still missing.

Although the defence function of the CAI system has so far always been emphasized, which we do not dispute, it is more likely that the system had a greater significance with regards to controlling the area. Individual barriers were not able to prevent the passage of smaller military groups, and their capability of defence against a large army is also questionable. However, they were able to effectively control and direct the flow of people and goods. Good comparisons can be found at the outer borders of the Empire, in the provinces of Britannia, Germania and Tripolitania.[149]

In the absence of archaeological finds in almost all the towers that were researched, the question arises about the presence of the army along the barrier walls. Not only were they

[147] Kos 2012; Kos 2015.
[148] Kusetič 2014a, 104–107; Kos 2015, 33.
[149] Kos 2015, 35.

certainly not permanently inhabited, but it is also questionable whether the system was ever fully operational.[150] The archaeological record only shows greater activity in the fortlets and the fort, which does not apply to the Gradina above Pasjak fortlet. As expected, we thus do not have any evidence of the supply points in the hinterland. So far, the only possible logistical points seem to be the fortified cities of *Tarsatica* and *Castra*, which could supply the barrier lines in their vicinity.[151] Kos argues that the barrier system was built due to civil wars and not because of the fear of the invasion of the neighbouring peoples.[152]

Still, a number of questions remain open. Was the system ever fully operational? How numerous could the army stationed there be and could it stop enemy attacks? What were the logistic arrangement, strategy and tactics? We should also consider the possibility that the system never performed its function.[153]

[150] Kos 2015, 35.
[151] Kos 2015, 36.
[152] Kos 2015, 37.
[153] Kos 2015, 36.

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