

# Janez Peter Grom, Petra Štukovnik: SEKTORSKA DELITEV OBRAMBNIH SISTEMOV RAPALSKE MEJE IN ODKRIVANJE OBSEGA SISTEMA UTRDB RUPNIKOVE LINIJE V PROSTORU

## SECTORAL DIVISION OF RAPALLO BORDER DEFENCE SYSTEMS AND DISCOVERING THE EXTENT OF THE RUPNIK LINE FORTIFICATION SYSTEM

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### IZVLEČEK

Raziskava je bila usmerjena v razumevanje realnega obsega in učinkov na prostor Rupnikove linije kot enega od dveh utrdbenih sistemov Rapalske meje. V ta namen so bili preverjeni dosegljivi viri in iz njih izpeljano razumevanje o sektorski delitvi elementov Rapalske meje. S terensko raziskavo na nivoju mikrolokacije je bil ocenjen realni obseg utrdbenih objektov Rupnikove linije. Na območju občine Žiri, lociranjem in evidentiranjem posameznih utrdbenih objektov Rupnikove linije in opravljenimi intervjuji je izdelana pregledna karta, ki prikazuje utrdbene objekte v prostoru. S to podlago, ki priča o dejanskem stanju in obsegu utrdbenega sistema Rupnikove linije na nivoju občine Žiri je mogoče razvijati poglobljena raziskovalna vprašanja glede vloge in vrednosti tega sistema v prostoru.

### KLJUČNE BESEDE

sektorizacija Rupnikove linije, sektorizacija Vallo Alpino, sektorizacija Rapalske meje, obseg Rupnikove linije v prostoru, umeščanje utrdb Rupnikove linije v prostor

### ABSTRACT

This study focused on improving the understanding of the actual extent and spatial impacts of the Rupnik Line as one of the two fortification systems of the Rapallo Border. To this end, the available sources were checked and the understanding about the sectoral division of the Rapallo Border's elements was derived therefrom. The field investigation done at a micro-location level revealed the real scope of the Rupnik Line fortification facilities. By identifying and recording the individual Rupnik fortification facilities in the Municipality of Žiri and by conducting interviews, we made an overview map showing the locations of these fortification structures. This basis, testifying to the actual condition and extent of the Rupnik Line fortification system at the level of the Municipality of Žiri, made it possible to develop further in-depth research questions regarding the spatial roles and values of this system.

### KEY-WORDS

Rupnik Line sectorisation, Vallo Alpino sectorisation, Rapallo Border sectorisation, Rupnik Line extent, siting of Rupnik Line fortifications

## 1. INTRODUCTION

### 1.1 Historical background

In the aftermath of the fall of the Austro-Hungarian Monarchy a political vacuum was created in Europe. As a political entity, the Austro-Hungarian Monarchy dominated the entire Central Europe, connecting the East and the West with the gate to the Adriatic Sea through Trieste, Istria and Dalmatia to Montenegro, and with its control over the Balkans supervised the connection between the Ottoman Empire and the rest of Europe. At the end of World War I in 1918, the nations of the former Austro-Hungarian Monarchy were facing disputes over irredentist claims, as they were previously non-homogeneously included into the monarchy, and the territorial claims of large neighbouring nations. In relation to the study area – the initial western border between the Austro-Hungarian Monarchy and the then Kingdom of Serbs, Croats and Slovenes (hereinafter: Kingdom of SHS) –, the Kingdom of Italy, a member of the victorious Entente, which emerged from the conflict as a superpower, started to pursue its territorial pretensions by occupying the territory even during the truce. After several unsuccessful attempts at redrafting the border at the Paris peace conference of 1919, the final agreement on the Rapallo Border was reached on 12 November 1920 (Mikša et al., 2018, p. 606, 611).

Under the treaty the Slovene ethnic territory was taken over by the Kingdom of Italy, including the islands of Srakane, Unije, Cres, Lošinj, Lastovo, Palagruža, and Zadar, while Italy officially recognised the Kingdom of SHS. For Italians, this agreement was better than the assurances Italy received in the London Pact. Italians were aware of this fact, as confirmed by the Italian negotiator of the Treaty of Rapallo Count Carlo Sforza: *“It gave Italy an Alpine frontier as perfect as under the Roman Empire”* (Troha, 2001). To establish the border on the ground both sides agreed to form a commission, *Commissione Italo - S.H.S. per la delimitazione dei confini fra il Regno d'Italia e il Regno S.H.S.*, which convened for the first time in Ljubljana. In fact, after their second meeting they started to demarcate the border on the ground, regardless of the disputes concerning the border in the mountains.

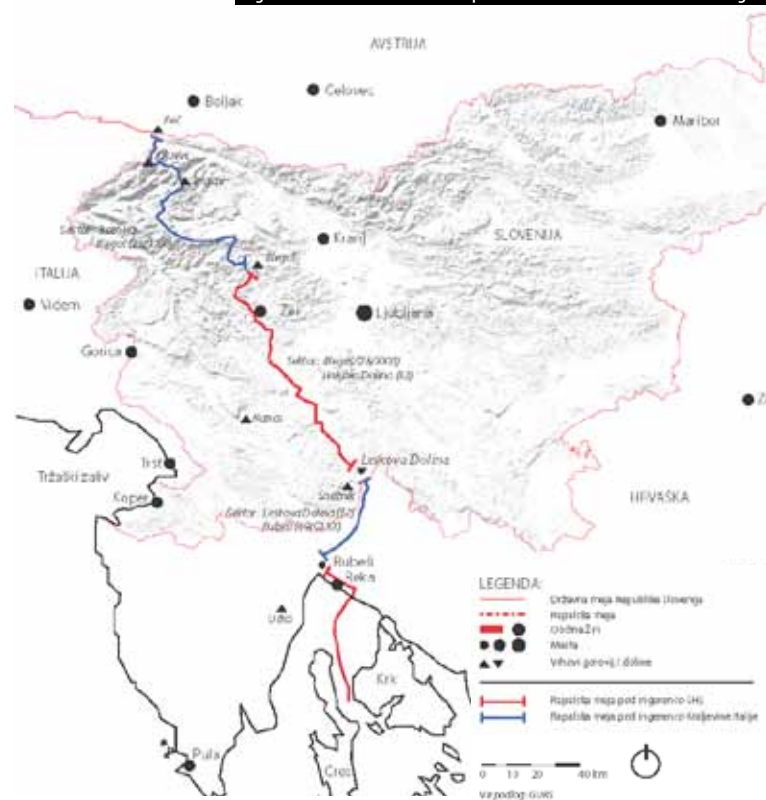
### 1.2 Definition and sectorisation of the Rapallo Border

The border ran, in general, as follows: Mangart – Triglav – Krnice pri Novakih – Špehovše – Hotedršica – Planina – Snežnik – Rijeka (Granda, Kordiš, 2004; Mikša et al., 2018, p. 612)

The Commission marked the border with four types of concrete boundary markers or *termini di confini*, also called *cippi*. In the south section towards Rijeka, there are carved stone boundary markers (Mikša et al., 2018, p. 615):

- Tripoint Boundary Marker – located at the top of the Peč mountain, signifying the tripoint between the Kingdom of Italy, the Kingdom of SHS, and Austria,
- The main boundary markers marked the beginning of each sector,
- The second-order boundary markers – stood as intermediate boundary

Figure 1: Sectorisation of the Rapallo Border with illustration of changes.



markers among the main ones,

- Special boundary markers – marked the crossing of communications with the border; on both sides of the road across the border crossing.

In the first stage, the border was marked with one tripoint boundary marker; 69 main – sectoral boundary markers and 4508 second-order boundary markers were defined. The main boundary marker, No. 70, demarcated the meeting point of the Rapallo Border with the Free State of Fiume, and thus marked the tripoint. After the annexation of the City of Rijeka to Italy on 27 January 1924, the Rapallo Border was extended by 19,410.70 m; the number of main boundary markers increased by 9, and the number of the second-order boundary markers increased by 590 (Decisioni, 1929).

The border was divided according to land cover. The following categories were defined: uncovered or *tratti scoperti*, mixed or *copertura mista*, and forested or *copertura forestale* (Žorž, 2016). The two states also reached an agreement regarding the competences for constructing and maintaining the boundary markers. The Kingdom of Italy was in charge of the sectors from the tripoint at Peč to Blegoš and from the Leskova dolina (valley) to Rubeši. The Kingdom of SHS took care of the intermediate section from Blegoš to Leskova dolina (valley) and the final part from Rubeši to the Riječina River's outflow into the Bay of Rijeka (Decisioni, 1929) (Figure 1).



the Rupnik Line can help us reconstruct these principles. Available archive sources reveal only that the Kingdom of Yugoslavia's army command was aware of the direction of any potential enemy invasions or fronts and that it secured their tactical lines accordingly (Markovič, 1995). These directions were the following: 1 – Logatec direction, from Rovte to Planina Valley, 2 – Cerknica direction, from Planina to the entire Cerknica Lake, 3 – the Bloke direction, from the rim of Cerknica Lake to SE of Prezid, and 4 – Gerovo direction, from SE of Prezid to the border post of Brlog. The directions were fortified in-depth by exploiting natural elements and by interpreting space at the level of micro-locations. They protected them by exploiting the terrain morphology and land cover. Markovič mentions 8 types of work activities that were determined in the individual sections. The first group of activities assumed the camouflaging of positions. Using natural camouflage, forests were cut down or afforestation was used. Work activity No. 6 provided for organisation of quarries. Without taking into account construction interventions in the sense of building the various facilities, specified under work activity No. 2, today both aforementioned activities brought about major spatial developments and gross changes to the landscape image. This fact was proven by the field work carried out in the Municipality of Žiri. In constructing fortifications, the Yugoslav army followed the doctrine of the French Maginot Line and thus provided for two fortified lines. The first ran in proximity of the Rapallo Border; with its valley-defence or blockhouse fortifications (machine-gun nests or light-artillery bunkers) and obstacle systems (fortified positions, anti-tank ditches, and anti-tank fortified walls) in response to early enemy deployments. The second line involved major ridgetop fortifications as well as major lowland fortifications (Jankovič- Potočnik, 2009).

Fortifications at the level of the entire system were conceptually defined, while at the micro-location level in the case of the Rupnik Line this role was left to small army corps of engineers, who introduced these structures with more precision and more efficiently by interpreting the relevant spatial features.

### 1.5 Vallo Alpino fortification

The document that emerged during the meeting with the Hungarian delegation suggests that the Italian Army formed the starting points for introducing the fortifications by taking into account the natural features of the areas.

Given the then new military doctrine that replaced the concepts of national defence in a specific zone using a system of fortified positions of the permanent fortification type (Milan, 1937), the Italian side, which started to build fortifications prior to the Kingdom of Yugoslavia, initially chose between two fortification systems according to the depth of defence from the state border. The dilemma was whether to fortify just one position, i.e. the boundary point, or to fortify and defend several strategic positions reaching inside the state territory. The publication of the Circular 200 – *Circolare 200* of July 1931 marked the start of generation of systematic fortifications of Italian positions (Bizjak, 2016).

The circulars used by the Italian side to set out the method of fortifying the Rapallo Border were the following:

- Circular 200 – *Direttive per la organizzazione difensiva permanente in montagna, emanata il 6 gennaio 1931, contiene le direttive per la realizzazione della prima generazione di fortificazioni permanenti in ambiente montano, dette opere "Tipo 200"*
- Circular 450 – *Direttive per l'organizzazione della frontiera, emanata il 27 gennaio 1936, contiene le direttive per la copertura e la sistemazione difensiva della frontiera. Comprende un corposo allegato intitolato Direttive tecniche per lo studio degli elementi delle sistemazioni difensive*
- Circular 800 – *Direttive per la organizzazione difensiva nell'interno di zone boschive alla frontiera orientale*
- Circular 7000 – *Direttive per l'organizzazione difensiva*
- Circular 13500 – came into force on 14 August 1941, after the capitulation of the Kingdom of Yugoslavia in April. This directive provided the relevant information concerning the demolition by blasting to incapacitate certain fortified positions. These demolitions relate to the fortified positions which were until April of that year part of the fortification system of the Rupnik Line.
- Circular 15000 – *Fortificazione permanente alle frontiere alpine*

The circulars specified the in-depth defence of the border in three zones: *Zona di sicurezza* or Safety Zone, *Posizione di resistenza* or Resistance Position, and *Zona di schieramento* or Deployment Zone.

The circulars laid down the various principles of spatial interpretation and the measures adopted, and then applied, by the Italian side in building the fortification system. Circular 200 specifies the construction in mountain areas. Upon establishing that the principles laid down in Circular 200 were not applicable to construction south of the alp Soriška planina due to the changed terrain and land cover morphology, Circular 800 replaced or at least upgraded the principles of introducing fortification structures. At the same time, these circulars provide general instructions regarding the organisation of a defence system in depth, i.e. transversally to the Rapallo Border, by exploiting strategical natural positions and with effective interpretation of spatial attributes. In its largest scale, i.e. regional scale, these documents reveal the clear strategy of the army, specifying to which point eastwards it is reasonable to establish the occupation situation to make the defence more rational, while exploiting terrain characteristics. The line of defence specified in such a way provides information confirming political and strategic decisions used by the Kingdom of Italy to protect the start of the Padua Plain by positioning defence positions east of the diversified terrain morphology.

Both the Italian and Yugoslav sides decided to build defence-in-depth fortifications. Based on the field investigation and the analysed information, both sides carried out detailed terrain investigations and critically estimated the suitability of individual fortifications at the micro-location level.

### 3. CASE STUDY – THE STUDY OF FORTIFIED BUILT STRUCTURES OF THE RUPNIK LINE IN THE MUNICIPALITY OF ŽIRI.

#### 3.1 About Žiri

The Municipality of Žiri offers unique study-relevant conditions both from the point of view of its spatial position, geomorphological characteristics, and its landscape image, as well due to its historical significance owing to its geographical position and spatial attributes. Žiri lies in the Žiri Basin, in the upper Poljanska Sora River valley. The village lies at 478 m at the confluence of the Sovra and Račeva streams, which used to flood regularly until flood control works were introduced. Here three historical regions meet: Gorenjska, Primorska, and Notranjska. The basin is an important crossroads between the valleys of Poljane, Logatec and Idrija, presenting a connection between the West and the North with the Ljubljana Basin. The rivers originating from the western slopes of the Western Žiri Hills flow into the Adriatic Sea; those originating from the eastern slopes flow into the Black Sea; Žiri presents an interesting divide geographically as well. From its definition in 1921 to the April War in 1941, the Rapallo Border ran partially along the border and partially in the area of the Municipality of Žiri of today. After Yugoslavia's capitulation in April in 1941, it was in the area of Žiri that the new German-Italian border turned from the Rapallo Border course eastward. These were the facts that led us to select the Municipality of Žiri to study the Rapallo Border and its fortification systems at the micro-location level.

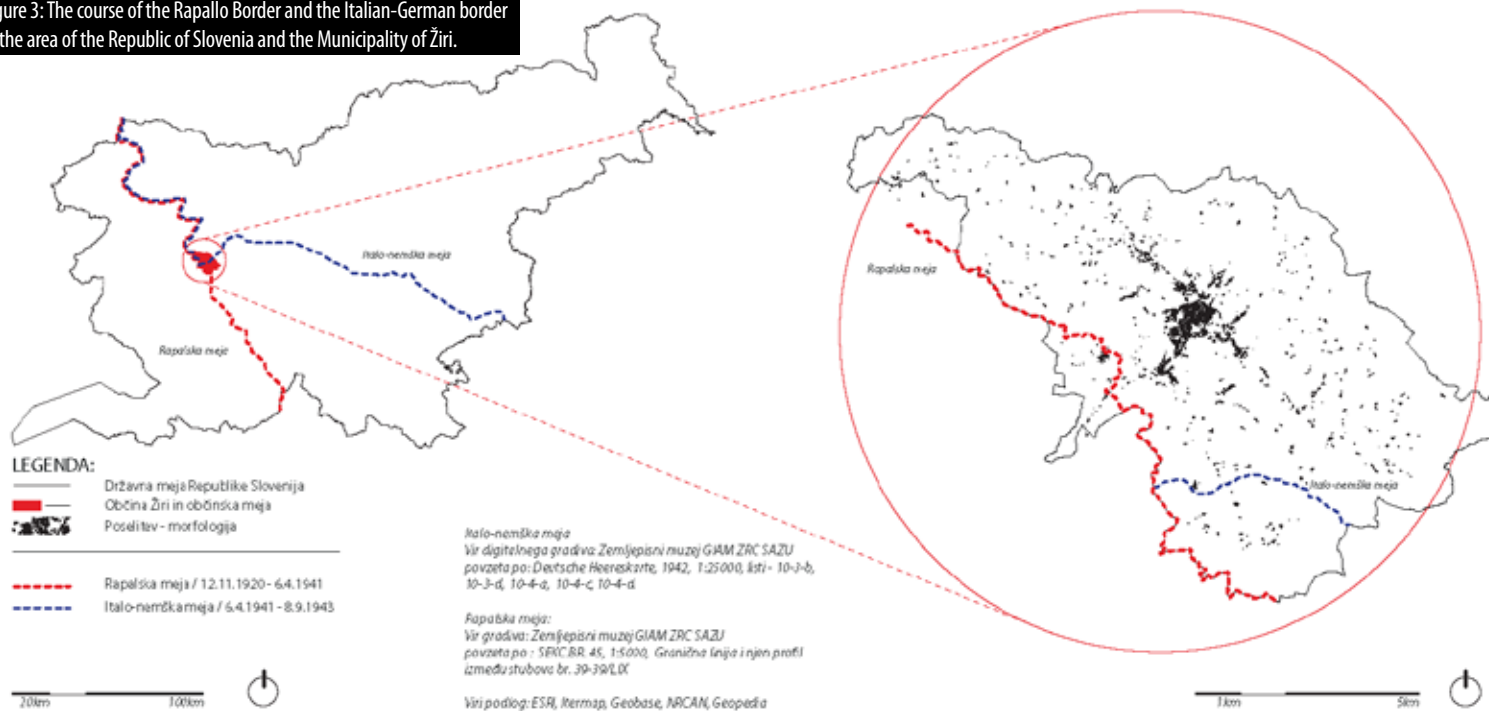
#### 3.2 The Rapallo Border and the Rupnik Line in the Municipality of Žiri.

The Rupnik Line section running across the territory of what is nowadays the Municipality of Žiri was part of section III – Škofja Loka. In the Municipality of Žiri the Rapallo Border was divided into four main sections. It extended from the north to the south, running on hilltops along the today's western border of the municipality. The sections were demarcated with the main boundary marker No. 38 at Mrzli Vrh, while the border with the second-order boundary markers was demarcated from the main boundary marker No. 39 at Breznice to boundary marker No. 40 at Vrsnik. The last two sections run from boundary marker No. 41 above the village of Ravne and from there on to boundary marker No. 42 above Lom (below Zavratac). The border extended here from the signing of the Treaty of Rapallo in 1920 to the April war in 1941 (Figure 3).

The comparison between the Rapallo Border and the existing municipal division and land plot divisions is interesting. As evident from the Digital Cadastral Map and other surveying data, the existing administrative division – inter-municipal border and plot boundaries – land allotment in the Municipality of Žiri – follows the course of the Rapallo Border.

The Kingdom of Yugoslavia's capitulation brought about a new territorial division. The state was territorially divided between the Third Reich, the Kingdom of Italy, Hungary, and Pavelić's Croatia (NDH). Previously, the border ran in the North–South direction, while after the German-Italian occupation the new division was set in the East–West direction along Slovenian terri-

Figure 3: The course of the Rapallo Border and the Italian–German border in the area of the Republic of Slovenia and the Municipality of Žiri.



tory. The former state border remained valid at the Vršič–Žiri section. From Žiri onward it ran eastward along the Polhograjski Dolomiti, across Katarina down to Šentvid and Šiška, past Črnuče toward Laze to the Sava River.

From thereon it extended on the right bank of the Sava almost up to the confluence with the Kamniška Bistrica and the Ljubljanica rivers. After crossing the latter, it reached the mountains south of Besnica, Trebeljevo, Obolno, Osredok nad Stično, Debeč, Javor, Višnji Grm, Razbore, Ježni vrh, Nove Gore, through Vodice at Gabrovka, where it left the study area. It continued its way across Krmelj, east of Tržišče, West of Bučka, through Krakovski gozd, north of Kostanjevica na Krki and Sv. Križ (Podbočje) to the rim of Gorjanci at Gadova peč (Archives of the Republic of Slovenia, AS 1625, map Nazi/Fascist Division and Occupation of Slovenia – the Ljubljana Province 1943; Carta della Provincia di Lubiana 1:100,000, 1943; Deutsche Heereskarte Jugoslawien 1:25,000, 1942) (Rozman, 2006).

In terms of inter-state political divisions, the municipality of Žiri is unique, as here we find the place where the new German-Italian border intersected the former Rapallo Border. This new border ran in the NW part along the former Rapallo Border up to Žiri, and turned eastward in Brekovice toward Martinjaška grapa south of Goropek, and then transversally across the Račeva River valley toward Martinji vrh (Karawanken-Bote, 1941) (Figure 3).

### 3.3 Objective and purpose

The purpose of this study was to examine the resources and provide an overview of the existing literature and studies concerned with the Rapallo border and the fortified positions of the Alpine Wall and the Rupnik Line fortification system. In this sense we checked the literature on the Italian-Yugoslav inter-war division related to the political events, military doctrine, technological capacity and findings, economic situation, spatial conditions, and characteristics.

The spatial characteristics of both fortification systems were targeted, as well as their reciprocity by understanding the spatial conditions and siting. The available archival documents and the relevant literature were studied. By understanding the full breadth of information we can learn how and when, at a certain moment in time, these two fortification systems could be built, why they were built the way they were, and what conditioned the decisions about such siting. These findings are the basis for further studies on the impacts on the spatial appearance during and after the construction, when the Rapallo Border was active, after the April war at the time when this area was divided between Germany in the North and the Kingdom of Italy in the South-West, and after the end of World War II, when the border between Yugoslavia and Italy moved westwards; firstly, as an area divided into administration zones A and B and later in the form of the existing fixed state borders.

The aim of this study was to check the information obtained from archive sources and the literature in the field. After the initial findings, an extensive field inventory of the fortified structures of the Rupnik Line in the Municipality of Žiri was taken, where mostly Rupnik Line facilities and the Rapallo Border boundary markers are found.



Figure 4: Until 18 September 2007 the bunker stood at the end of the street Pot na Koče. It was removed by Anica Likovič when the the road to the “Grugatova” house was built. It is now buried in the construction pit underneath the previous dirt road (author of the photograph: Zvone Kopač, 2007; source: author’s archives).

### 3.4 Methodology and tools

Data were collected at various levels. The sources were checked using the historical method. The information obtained from the various sources was checked with the analysis stemming from fieldwork. In the synthesis, the data acquired provide the basis for analysing the spatial condition. Semi-structured interviews were conducted. Most studies so far have relied on the historical research method as the basic method. This study focused on fieldwork with the purpose of testing the relevant facts underpinning our understanding of the relationship between the built structures of the fortification systems and the space at the levels of a location (area of a municipality with its impact areas) and a micro-location (level of a structure). The samples obtained in the field were analysed in the laboratory using microscopy.

Certain key texts were used in this study merely as a review of historical facts and of collected reference documents. These are accurate enough to understand the general interdependencies of the Rupnik Line and the Vallo Alpino and the demarcation lines of the Rupnik Border with space at the level of a system (regionally). It should be underlined that the studies so far provided a complex and in-depth approach to the historical aspects of one of the two fortification lines and the Rapallo Border, but never as a comprehensive system. The goals of previous studies were different, as they mostly dealt with social, political, military, and strategic aspects (Žorž, 2016, Marković, 1995, and Bizjak 2016), while professional works were mostly concerned with architectural, construction, military, and technological aspects of these structures (Jankovič Potočnik, 2009; Habrnal et al., 2005)

rather than with the systems as complex spatial entities. To date, there has not been, to our knowledge, a comprehensive work on the fortification systems of the Rapallo Border concerning space, i.e. one that would provide understanding of the correlation between the built elements of the fortification lines and the Rapallo border with space.

### 3.5 Fieldwork

The basic purpose of fieldwork has been to test the findings from the studied archival materials against field investigations. The goal was to record and photograph the directions of fortified built positions of the Rupnik Line in the Municipality of Žiri. Immediately upon starting fieldwork we found that the data available were incomplete. The fieldwork extended to seven days of intensive work, which would not have been possible without the help of the local residents.

A total of 75,93 km over steep and overgrown terrain were covered. 538 km were travelled. The field work took 86 hours. 52 new, previously unrecorded, fortification structures were uncovered. A total of 160 structures was identified; they were either preserved, preserved and overgrown, buried, or destroyed and, in many cases, found only based on witness accounts, under guidance of local inhabitants, or dug out to uncover the remains and indisputably confirm their former existence (Figure 5). Each location was assigned a position using GPS, while the points were inserted into DOF. The typology, number, and position of lines of fire were determined where possible. We identified the general directions that could be covered from these positions as well as the principle of siting the individual structures and the relationship between the nearest structures and the place of siting.

### 3.6 In situ findings

According to the course of the demarcation line, the built structures of both fortification systems were built following the defence-in-depth doctrine, as established from the sources studied. Field investigations revealed that the fortification structures of both lines were built on the Western slopes of the Eastern mountains for the Italian defence and in the Eastern slopes of the Eastern mountains for the Yugoslav defence. The defence systems were distributed in two relatively parallel lines. The Rupnik Line was investigated consistently. The Vallo Alpino was studied only from the resources available; we found that its construction faithfully followed the specifications set out in the reviewed literature and archival material.

The fortified positions of the Rupnik Line in a system of connected machine-gun nests were positioned along the eastern slope of the hills of the Sovra River valley along the entire valley course, from its widening at Žiri in the north to the narrowed down crossing at the border with the Municipality of Logatec lying to the south. In the system of the first-line of defence or the outpost position (Habernal et al. 2005) along the eastern slopes various fortified facilities, fortified machinegun positions, and strongly fortified artillery positions were strategically placed. This first-line of defence protected the expanded mouth of the SW Račeva valley, while the entire northern valley of the Sovra river downstream was defended, using the same logic as that in

the valley south of the settlement. With the approaching armed conflict, the Kingdom of Yugoslavia accelerated the fortification of its defence positions. Fortification activities started to take shape at the Bulgarian border, at the border with Albania, and at the border with the Kingdom of Italy (Žorž, 2016). In the Račeva River valley we identified several poorly built fortification structures. Their construction was very sloppy, from concrete without reinforced steel. According to France Treven (Grom, 2018b), the Yugoslav Army started to fortify this valley in its entirety, in the same sense as in the Sovra Valley. Until the beginning of the April war, however, they managed to build only foundation slabs. Until now, the first line of defence was incorrectly evaluated and its extent incorrectly estimated. Habernal, too, defines this zone as if "it started with a few groups of machine-gun and anti-tank nests, accompanied by a few typical structures that were erected at incoming communications and in the most probable attack directions in the proximity of the border with the purpose to stop enemy reconnaissance units or raise alarm during the attack of the main forces" (Habernal et al. 2005). The extent of the uncovered system confirms the falseness of this finding and testifies how even the first-line of defence served as a serious resistance line, which spatially exploited the characteristics of the locations along the entire Rapallo Line.

The second-line of defence or the main zone (Habernal et al. 2005) was sited along the western slopes right below the Žirovski vrh ridgetop, from the northern border with Škofja Loka to the southern border with the Municipality of Logatec. This defence zone was segmented into three lines. The first line was composed of physical obstacles – concrete foundations with barbed wire coil. Such physical obstacles were established along the entire second-line of defence, in a width of 10 m, right below the machinegun defence positions. The fortification structures of machine-gun emplacements were typologically similar to the structures of the first-line of defence in the valley. The third-line of defence, established along the ridge, involved larger fortifications with greater fire power. Both the first- and second-line of defence continued in the same composition northward and southward beyond the municipal borders. The systems of the first-line of defence in the valley and the second-line of defence from Žirovski vrh onward were not completed. There are also large unfinished fortifications as well as concrete slabs and construction pits, where the whole defence system was supposed to be developed. The construction of the fortification structures and of the narrow gauge railway was personally followed by France Kavčič, born in 1932. In the interview he pointed the locations of these unfinished structures (Grom, 2018a).

The records are most incomplete concerning the extensive system of the first-line of defence running in the lower part of the hills immediately along the Rapallo Border.

This historical fact, in combination with fieldwork, revealed that immediately in the aftermath of the occupation of the territory in April 1941, the Italian Army, as a preventive measure and in line with Circular 13500, destroyed by blasting all the fortified facilities. Their locations were discovered, recorded, and geopositioned for the first time during our field investigation. The typology of the facilities and their role were assessed based on the remains, as many structures were completely destroyed or overgrown (Figure 5).

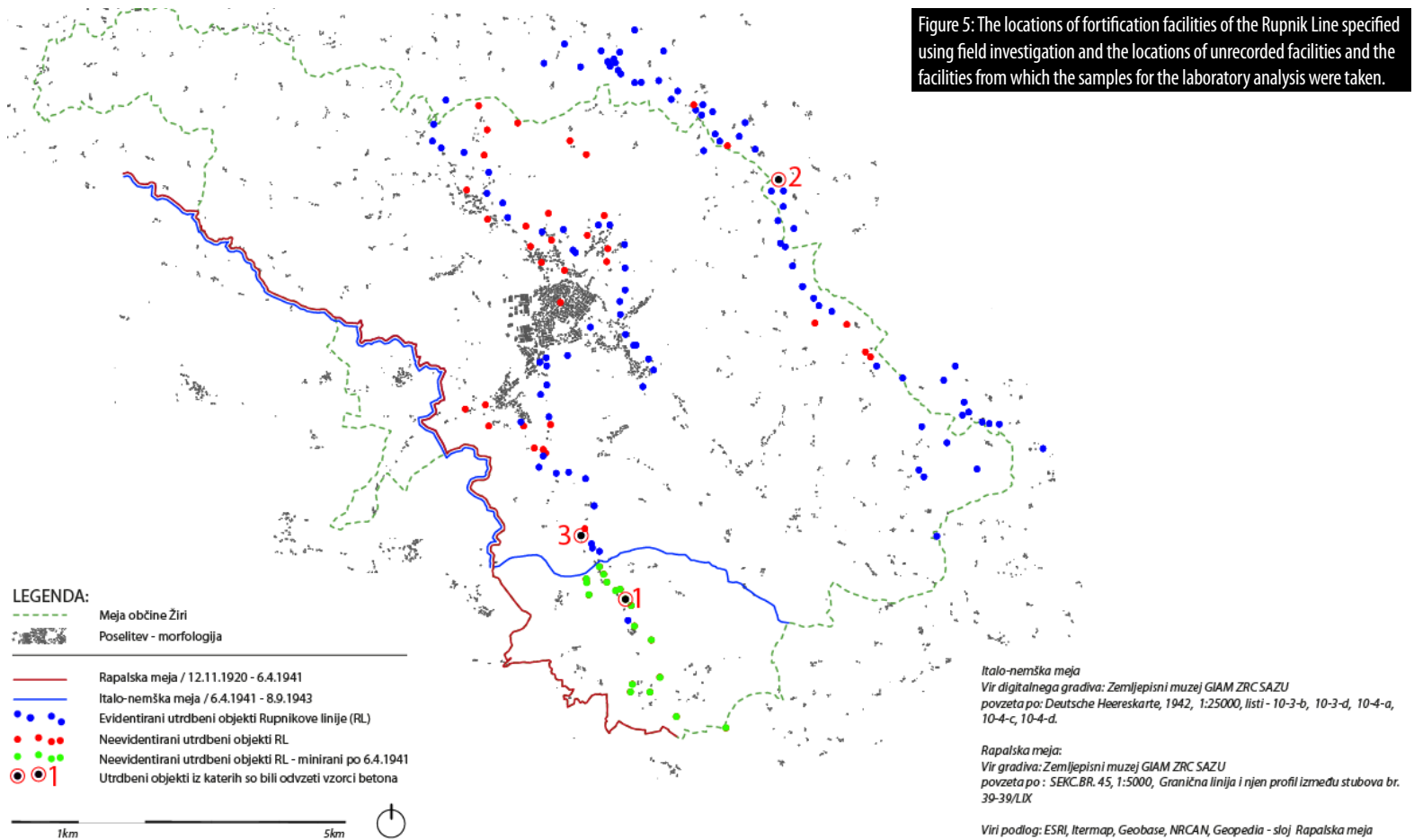


Figure 5: The locations of fortification facilities of the Rupnik Line specified using field investigation and the locations of unrecorded facilities and the facilities from which the samples for the laboratory analysis were taken.

Laboratory microscopic analysis of the concrete samples 1 and 3 confirmed that the discovered ruins belong, in fact, to the fortification structures of the Rupnik Line. These two samples were taken from one of the preserved fortified structures of the Rupnik Line and from one of the partially-blast structures, respectively. Sample 2 was taken from a fortification structure from the second-line of defence under the Žirovski vrh ridgetop. The samples, i.e. thin sections for microscopic examination, were appropriately prepared at the Faculty of Natural Sciences and Engineering of the University of Ljubljana, then they were stained using alizarin red to reveal mineral deposition (calcite, dolomite) (Figure 6).

The microscopic analysis of the samples was done using an optical microscope using transmitted light. Generally, it was found that samples 1 and 3 were homogeneous. The aggregate–binder–pore ratio was estimated according to Terry and Chilingar Ag:V:P= 40:57:3 (Chilingar, 1955). Large aggregate grains prevail in the sample. The grain size is between 0.5 mm to a few centimetres. All aggregate grains are angular. The mineralogical investigation of the aggregates showed that they are mostly composed of sparite



Figure 6: Macroscopic image of the samples.



Figure 7: Sample 1 (left) and sample 3 (right). a 50× magnification, PPT.

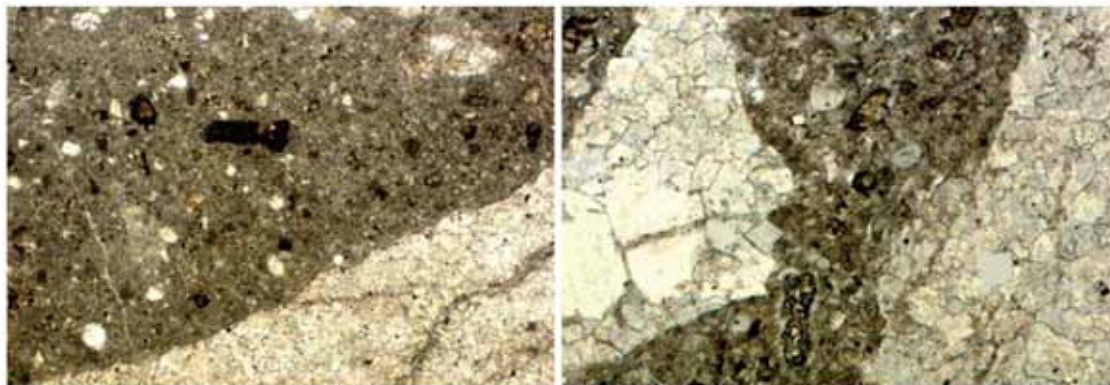
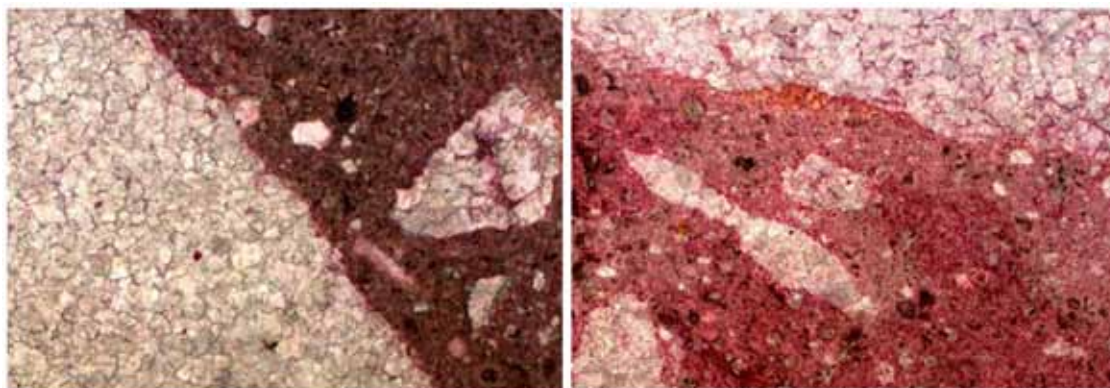


Figure 8: Sample 1 (left) and sample 3 (right). 50 x magnification, PPT, coloured part of the sample.



dolomite crystals. The binder revealed a larger proportion of unaggregated grains of cement clinker (Figures 7 and 8). In general, samples 1 and 3 seem similar. They have the same aggregate source, in both cases the proportion of unaggregated grains (Figures 7 and 8) is large, and there is a similar type of mineralogical changes in the aggregates. (Štukovnik, 2018)

Due to their inaccessibility some facilities were not identified during field work, but only after inserting all the information using ESRI ArcGIS, where by understanding the original logics of the builders gaps in the land surveillance coverage were identified. This information led to other structures, which were overlooked in the first field investigations. These fortification structures were preserved and used to a certain degree during the German occupation. Nevertheless, a certain number of structures on the ground under the then German control was recorded for the first time in this field investigation.

Field investigations revealed that the builders interpreted the spatial morphology, understood land cover, and were well familiar with site-specific natural features. The structures were sited so that by dual overlapping of the fields of vision they strategically covered the lines of access to Žiri and the “gate” to the Ljubljana Basin from the North to the South and from the Eastern directions, which connected the Italian positions through the Rapallo border crossings in several points. To understand land cover was of crucial significance for accurate adjustments of line-of-sights and for

covering or camouflaging the positions to keep hidden from the enemy. Camouflaging was listed as the first among the 8 activities to be done by the working groups in the field (Markovič, 2016). For this purpose, forests were cut in some places, elsewhere the slopes were afforested.

Using witness accounts of older residents, this field investigation allowed us to identify and determine the positions of the dams that were generally believed to be exclusively flood control measures. It became evident that these structures were, in fact, designed and introduced as anti-tank reinforced concrete walls, which crossed all valleys with border crossings and the Sovra river valley leading to the Ljubljana Basin. This was found out in an interview with Pavla Treven (Grom, 2018c). All the crossings and valley mouths with obstacle systems for armoured vehicles and other machinery were protected with an increased number of fortified, strategically placed structures.

In 1927 (Slovenec, 1926) Žiri was affected by the worst flood in its history (Figure 9). It was found that all the fortification structures of the first-line of defence of the Rupnik Line were strategically positioned above the 100-year return period limit. According to the testimony of local inhabitants, the anti-tank walls identified in the field also served as flood-control works.

Due to the lack of protection, many fortification facilities of the Rapallo Border were destroyed over the last decades. In Žiri some fortified facilities were identified that were either moved, destroyed and even tipped or built

underneath (Figure 4). The reason for the destruction of these structures was the expansion of transport infrastructure. In some cases the inhabitants used the structures that were built on private land for other purposes, i.e. basements, storage of produce, or they partially destroyed them and built vineyard cottages or other facilities in their place. With the help of local residents, the locations where these structures once stood were identified, photographic materials were also obtained. These structures are of interest from the spatial aspect, as they mostly controlled the streets and the main road through Žiri and were spatially exposed. On the other hand, the fortification structures outside settlements were covered, masked, and positioned in dominating height points and covered other outdoor locations.

#### 4. CONCLUSIONS

The study was done at the level of the Municipality of Žiri, the built elements of the Rupnik Line were recorded. We found that the sources available fail to provide comprehensive conclusions as they are incomplete, highly deficient, or even faulty. In the sources available, only the Rapallo Border is well sign-posted and recorded, while the border crossing points are consistently recorded and described. It was found that the fortification structures are often faultily described, the typologies are incorrect, and their spatial positions are only roughly determined. Many of the structures were officially not recorded. They are absent not only from the original cartography and documents, which can be ascribed to the way that these structures were built, but also from further investigations, which were without any exception based on incomplete archival documents.

Based on the findings of this study we conclude that, in a similar way, the Rupnik fortification system along the entire line of the Rapallo Border has been underestimated, as elsewhere the inventory of these facilities is even more incomplete. The accuracy of the information on fortified built positions of the Alpine Wall is put under question. The estimates concerning the Kingdom of Yugoslavia's readiness for war before the April war and its capitulation are put under question as well. The study recorded the situation and the location of each identified structure, thus providing the basis for comprehensive and relevant further investigations in various areas of interest.

The basis for analysing the strategic and tactical capacity of the fortification system of the Kingdom of Yugoslavia in the Western Front is provided. Further, the basis for a comprehensive treatment of the socio-economic conditions in the mid-war period in Žiri was also provided, as the study revealed that the town and the entire settlement of the area was under significantly stricter military control, and that people lived in much less uncertain conditions in terms of security, than previously estimated. A concrete basis for the economic justification of the Rapallo Border fortification systems is given. Its uniqueness is now unrecognised, while tourist services cover only a small, generally well-known part of this fortified system. Only by establishing a comprehensive picture of the system will it be possible to register these facilities into the heritage inventory and set up protection under the Institute for the Protection of Cultural Heritage, thus preventing (even recent systematic) destruction of these facilities.



Figure 9: The flood of 26 Sept. 1926 in Žiri (photo by: Štefan Mlakar, 1926, source: Slovenec, 1926).

A complete picture, which would allow for relevant treatment of spatial relationships, will be created only by investigating the positions of fortified built structures of the Alpine Wall, which stand, with their siting and purpose, in relation with the elements of the Rupnik Line in the Municipality of Žiri. To this purpose it will be necessary to make an inventory of all fortification structures of the Alpine Wall in the neighbouring municipalities of Idrija, Logatec, and Škofja Loka, for which it will be established that they have a spatial relationship with the fortification structures of the Rupnik defence system in the Municipality of Žiri. By determining the locations and understanding the typology of the structures and their characteristics, we will identify the relationships to the siting locations and the wider impact area. We will be able to establish real and relevant findings only after we acquire and interpret all this information.

The question of the extent and situation of the fortification systems in other sections of the Rapallo border remains open. The Rapallo Border in the Municipality of Žiri covers approx. 11.5 km out of 189 km of the total length of the demarcation line, without the Maribor sector VI to the north; thus, this investigation addresses 4% of the total border length. The work done in Žiri was consistent and a precedent was set, testifying to the general lack of clarity regarding the key historical facts significant for Slovenians and regarding this unique but, as it is, almost completely unexploited spatial content. The case study set a model based on which it is possible to build further studies focusing on the overall complex picture of the fortification systems of the Rapallo Line, mutual spatial impacts, and other related fields of research.

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