

Original scientific paper

911.37(497.11)

SPONTANEOUSLY ABANDONED SETTLEMENTS IN SERBIA – PART 1

Marko V. Milošević¹, Milovan Milivojević*, Jelena Čalić**

**Geographical institute "Jovan Cvijić" SASA, Belgrade*

Abstract: The paper presents the results of the field studies of spontaneously abandoned settlements in the Republic of Serbia. Out of 20 analysed settlements, 8 were listed as completely abandoned at the latest Census (2002), while others have been detected in the field, subsequent to the Census. The paper consists of two parts. In the first part, the spatial distribution of spontaneously abandoned settlements is analysed, as well as the components of their geographical position. Three main spatial units of the studied settlements are differentiated: (a) the area along the administrative border between central Serbia and the Autonomous province Kosovo and Metohija; (b) mountains Stara Planina and Bureš; and (c) the regions of Vlasina and Krajište. Three components of geographical position are analysed: mathematical-geographical, physio-geographical and administrative-political. Apart from these spatial components, geographical position is analysed in relation to historical circumstances that affected the genesis and evolution of the studied settlements.

Key words: abandoned settlements, depopulation areas, geographical position, Serbia

Introduction

The phenomena of rural depopulation and total abandonment of villages have been recorded throughout the world, especially in industrialized countries. Back in 1937, Toniolo stated as follows: "In lands of old civilization and dense settlement the progressive depopulation of mountainous areas, with the abandonment of fields and dwellings, is a well known phenomenon. The trend is particularly marked in the Alps, where scanty economic resources have forced the inhabitants to lead lives of hard labor and penury that are repugnant to the generation of today." (Toniolo, 1937, p. 473).

The starting hypothesis of the present study is that the unfavourable natural (mainly geomorphological) characteristics of the settlement area are one of the key factors of spontaneous abandonment; moreover, that this is one of the conditional factors of this process. During the field studies (2006-2009), monitoring and analyses were carried out simultaneously with data collection,

¹ Correspondence to: m.milosevic@gi.sanu.ac.rs

which altogether enabled us to come up to one of the main aims of this study: detection of natural criteria of (un)sustainability of some rural settlements in Serbia.

Previous research

Beginning of scientific studies of settlements in Serbia is related to the work of Jovan Cvijić: back in 1896, he brought out the “Instructions for the study of villages in Serbia and other Serbian lands”, with the main guidelines for field data collection and processing. It is important to stress that these instructions cover both natural and social elements. In his capital work “The Balkan Peninsula” (1922), Cvijić gives a complex analysis and systematics of settlements regarding their position, development and functional characteristics. After Cvijić, the authors who dealt with settlement systematics were Kojić (1961), Stamenković and Bačević (1992) with detailed typologies of villages according to various criteria, while systematics of villages in Vojvodina region according to their micro-position were carried out by Čurčić (2000, 2004).

Having in mind that understanding of depopulation processes greatly depends on factors and circumstances of settlement genesis, research of this kind must also rely on the studies such as those given by Radovanović (1970, 1991), covering the issues of genesis and development of Serbian villages. Stamenković (2004, 2007) warns of the spatial aspects of demographic decline and settlement fragmentation, especially in mountainous regions. He gives the overview of settlements with small number of inhabitants in the 1991 to 2002 inter-census period, and stresses the increase in the number of so-called “dwarf settlements” whose population is under 49. According to the 1991 Census, there were 186 settlements of this category, while in the 2002 Census, their number augmented to 337. The same author introduces the term “settlements with minimum population” for those with up to 20 inhabitants. There were 104 villages of this kind in the 2002 Census (excluding the territory of Kosovo and Metohija), 91 of which were mountain villages, and 13 lowland villages.

One of the first detailed studies of a particular abandoned settlement is the work of Velojić (2000) about the Repušnica village on Mt. Stara Planina. Martinović (2004) wrote about the abandoned village Koritnjak on Mt. Suva Planina. Martinović and Šantić (2006) have studied the village of Gabrovnica on Mt. Stara Planina (Knjaževac municipality) with only five inhabitants in the year 2006 and very probable total abandonment in the nearest future. Specific example of the Vukojevac village in Kuršumlja municipality was presented by Milivojević *et al.* (2007). Development problems of mountain villages were shown by Malobabić (1998). Some examples of planned abandonment of

settlements were presented by Gatarić and Stamenković (2006). Demographic analyses mostly lack the evaluation of environmental factors, while some papers that do treat the natural factors (e.g. Dželebdžić, Jokić, 2003) cover only the general problems of mountain areas, without the analyses of specific characteristics of particular settlements.

The processes of spontaneous abandonment of rural settlements similar to those we face nowadays in Serbia, have been present in the countries of western Europe and north America mostly in the time of the Industrial Revolution, in the 19th and early 20th century (Toniolo, 1937; Watson, 1947; Saville, 1957; Beale, 1964). Collantes and Pinilla (2004) state that in the Spanish autonomous community of Aragon (particularly the parts located in the Pyrenees) a large number of villages became completely abandoned during the 20th century. One of the most detailed analyses of mountain areas abandonment process and cessation of agricultural activities in them, was given by MacDonald *et al.* (2000) on the example of 24 locations in 12 European countries. The process of rural depopulation was delayed in the areas where the processes of industrialization and intense development took part later. Thus, Lyrintzis (1996) states that on the Crete island in Greece, depopulation of mountainous areas reached its maximum during the 1960s, while in Poland, this process was also present in the period after the World War 2 (Gawryszewski, Potrykowska, 1988).

Complex geographical approach, taking into account both social and natural factors of rural depopulation, was applied in the analysis of spontaneous abandonment of settlements in Scandinavia (Ambrosiani, 1984). Similar processes caused by the combination of social factors and extreme ecological conditions (climatic and geomorphological-pedological) were studied on the example of Nepal (Haffner, Pohle, 1993). Detailed theoretical analysis of shortcomings of one-sided studies in comparison with those which cover both natural and social elements of mountain areas was given by Forsyth (1998), giving the actual examples from several various environments and social communities.

Methods of research

The input data obtained from field investigations and literature sources were processed using the inductive (scientific) method. The starting hypothesis is that the natural factors highly influence the process of spontaneous abandonment of villages in Serbia. The hypothesis was tested by the methods of

geomorphometrical analysis, field observations and geomorphological mapping. Cartographic sources (topographical maps 1:25.000 and administrative map of Serbia 1:300.000) and software packages Idrisi Andes and Global Mapper were used for geomorphometrical analyses. SRTM² digital elevation model was used for the inclination map. Methodology of determining the quantitative indicator of morphological isolation of settlements (coefficient of isolation; $K_i = (RRH \text{ m} / 100) \times K_r$) is actually one of the research results, and therefore explained in the second part of this article, which is to be published in the next issue of this journal.

The main data on population, taken from the publications of the Statistical Office of the Republic of Serbia (Census of Population, Households and Dwellings 2002), were updated in the field, with the data collected from the population of neighbouring villages or seasonal inhabitants of the studied villages. In data processing, the basic methods of descriptive statistics were used.

Criteria for selection of the studied settlements

According to Stamenković (2004, 2007), abandonment of settlements can be planned, spontaneous, or forced. One of the settlements listed in the 2002 Census has been subject to planned abandonment: Sakulja in Lazarevac municipality (due to coal quarrying), and therefore it is not included in this study. Forced abandonment was present in the area of Kosovo and Metohija in 1998 and 1999 (e.g. the village of Krligate in the municipality of Zubin Potok).

The study includes only the settlements which were spontaneously abandoned until the year 2009 (Tab.1). The literature references mention the spontaneous abandonment of the settlement Obornjača, situated in the municipality of Bačka Topola (Stamenković, 2004). However, Obornjača is not included into the present study, due to the fact that it was formally declared a separate settlement only in 1991, with only 2 inhabitants. Since the analysis points to a long-term evolution of the studied settlements, Obornjača was not eligible for the study.

For the reasons of safety, it was not possible to carry out the field research of spontaneously abandoned settlements in the region of Kosovo and Metohija. Moreover, the latest census data of this region date back to the year 1981.

² Shuttle Radar Topography Mission

The referent spatial unit of the settlement research was the statistical settlement area instead of the cadastral municipality (in many cases, these two units overlap spatially, but this is not a rule).

Table 1. Population in spontaneously abandoned settlements

| settlement | municipality | population (census data) | | | | | | | | field data 2006-09 | year of abandonment |
|-------------|--------------|--------------------------|------|------|------|------|------|------|---------|-----------------------|---------------------|
| | | 1948 | 1953 | 1961 | 1971 | 1981 | 1991 | 2002 | 2006-09 | | |
| Repušnica | Knjaževac | 369 | 333 | 297 | 149 | 12 | 6 | 0 | 0 | 1998 | |
| Papratna | Knjaževac | 495 | 447 | 342 | 201 | 84 | 32 | 13 | 0 | 2007 | |
| Golešnica | Aleksinac | 190 | 200 | 178 | 104 | 29 | 8 | 4 | 0 | 2009 | |
| Prača | Dimitrovgrad | 172 | 158 | 115 | 52 | 27 | 7 | 2 | 0 | 1999 | |
| Verzar | Dimitrovgrad | 360 | 302 | 211 | 135 | 75 | 32 | 9 | 0 | 200? | |
| Koritnjak | Niška Banja | 171 | 157 | 106 | 17 | 12 | 8 | 0 | 0 | 2002 | |
| Manastir | Niška Banja | 122 | 118 | 101 | 27 | 6 | 2 | 2 | 0 | 2005 | |
| Gornji Rinj | Bela Palanka | 429 | 413 | 282 | 148 | 44 | 21 | 10 | 0 | 2009 | |
| Javorje | Vlasotince | 185 | 175 | 182 | 171 | 26 | 14 | 1 | 0 | 2007 | |
| Ostrozub | Crna Trava | 246 | 239 | 218 | 75 | 33 | 9 | 1 | 0 | 2007 | |
| Kolunica | Surdulica | 276 | 278 | 239 | 142 | 26 | 24 | 7 | 0 | 2006 | |
| Pljačkovica | Vranje | 82 | 73 | 64 | 58 | 26 | 33 | 0 | 0 | 199? | |
| Đorđevac | Bujanovac | 159 | 158 | 146 | 186 | 81 | 65 | 0 | 0 | 2001 | |
| Uzovo | Bujanovac | 94 | 84 | 83 | 43 | 17 | 23 | 10 | 0 | 2009 | |
| Gare | Preševo | 290 | 282 | 238 | 220 | 90 | 110 | 0 | 0 | 1995 | |
| Vukojevac | Kuršumljija | 229 | 260 | 191 | 99 | 6 | 0 | 0 | 0 | 1985 | |
| Tačevac | Kuršumljija | 192 | 204 | 171 | 76 | 33 | 21 | 0 | 0 | 1999 | |
| Rastelica | Kuršumljija | 82 | 88 | 76 | 45 | 23 | 13 | 0 | 0 | 1999 | |
| Smilov Laz | Novi Pazar | 115 | 130 | 106 | 67 | 33 | 19 | 8 | 0 | 2005 | |
| Poda | Sjenica | 98 | 109 | 134 | 65 | 49 | 57 | 17 | 0 | 2008 | |

Sources: Census 2002 – population, households and dwellings. Population: comparative survey of population 1948-2002; data by settlements; and according to the field research.

Spatial distribution of spontaneously abandoned settlements

Unfavourable demographic trends affecting Serbia in the last decades encompass the spatial component as well. Natural population dynamics and migrations have led to territorial re-distribution of population. Thus, mountainous and border regions have been differentiated as typical depopulation regions of Serbia. The basic demographic characteristics of these areas are low population density (below 20 people per km²), negative rate of natural increase (below -3‰), low index of population change (below 70.0), high index of population ageing (0.8) (Malobabić, Bakić, 2003). Long-term exposure of these areas to such demographic processes has led to spontaneous abandonment of certain settlements.

According to the 2002 Census, there were 8 spontaneously abandoned villages in Serbia, as well as one with planned abandonment (Sakulja, Lazarevac municipality). During the field research, apart from checking the situation in the 8 mentioned villages, additional 12 villages have been found abandoned. The main reason for this difference is the abandonment in post-Census period (for the villages Smilov Laz, Papratna, Verzar, Gornji Rinj, Manastir, Javorje, Ostrozub, Kolunica, Uzovo, Golešnica and Poda). However, there were also the cases of certain “statistical invisibility”, resulting from the fact that data sources were based on formally registered place of residence. The example is the village of Prača in Dimitrovgrad municipality, which officially had two inhabitants at the 2002 Census, while actually the last inhabitant has left the village in the year 1999. People who lived there until 1999, had the officially registered place of residence in Prača also in 2002.

Including the field data obtained by July 2009, there are 20 spontaneously abandoned settlements in Serbia (Fig. 1). This number is relative, and not absolute, thus it should be regarded as a dynamic category. Regarding the spatial distribution of spontaneously abandoned settlements, three spatial units can be differentiated in Serbia:

- the areas along the administrative border between Central Serbia and the Autonomous province Kosovo and Metohija
- the area of Mt. Stara Planina and Mt. Burel
- the areas of Vlasina and Krajište

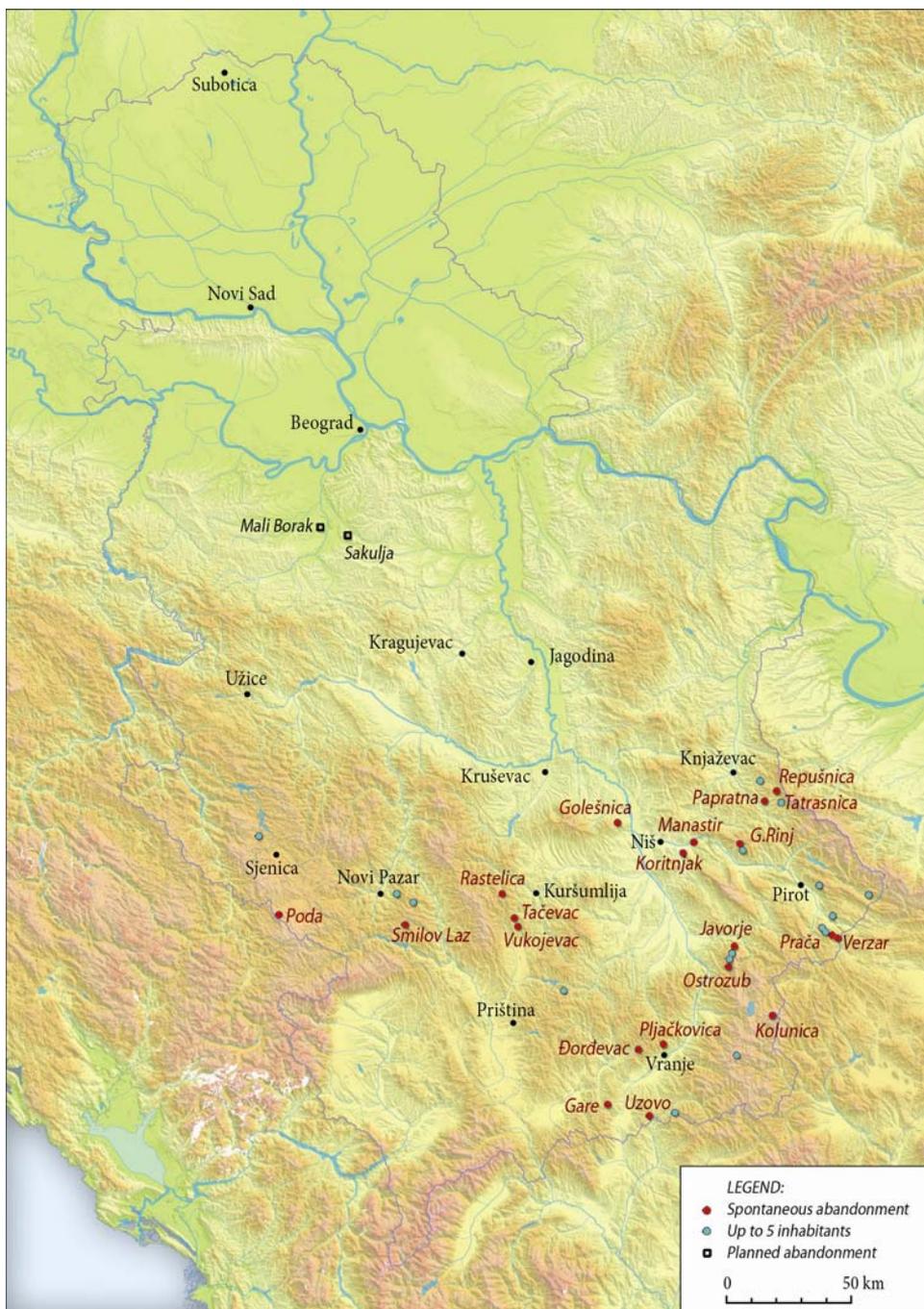


Figure 1. Map of geographical position of spontaneously abandoned settlements in Serbia

Along the *administrative border between Central Serbia and Kosovo and Metohija*, 6 villages have been spontaneously abandoned in the last two decades. These villages are Gare (Preševo municipality), Đorđevac (Bujanovac municipality), Vukojevac, Tačevac, Rastelica (Kuršumlja municipality) and Smilov Laz (Novi Pazar municipality). The village of Mala Braina (Medveđa municipality) is also situated in this zone and, having only four inhabitants, it is threatened by abandonment.

The area of *Mt. Stara Planina and Mt. Burel*³, above the altitude of 600 m a.s.l., has traditionally been an emigration area. The process is the most intense in Knjaževac and Dimitrovgrad municipalities. In Knjaževac, two settlements have been abandoned: Repušnica and Papratna. In Dimitrovgrad municipality, there are Prača and Verzar on Mt. Burel. Judging by the present number of inhabitants, the similar outcome can be expected in the villages of Basara (2 inhabitants) and Milojkovac (5) in Pirot municipality, Boljev Do (3), Grapa (2), Planinica (5) in Dimitrovgrad municipality, and Drvnik (5) and Tatrasnica (5) in Knjaževac municipality.

Vlasina and Krajište have been subject to excessive emigration over the last several decades. Among the spatial consequences of this process, there are three spontaneously abandoned villages: Kolunica (Surdulica municipality), Ostrožub (Crna Trava municipality) and Javorje (Vlasotince municipality). This region hosts several more villages threatened by abandonment: Barje (4 inhabitants) in Bosilegrad municipality, Bistrica (3) in Crna Trava municipality, Kozilo (5) in Vlasotince municipality, and Rajčevce (4) in Trgovište municipality.

Geographical position of spontaneously abandoned settlements

Anisotropy in qualitative and quantitative geospatial characteristics implies the need for a thorough analysis of geographical position of spontaneously abandoned settlements of Serbia. Geographical position of these settlements is both a spatial category (which is relatively constant) and historical category (which is highly changeable).

³

Mt. Burel is situated south of Dimitrovgrad, extending in meridional direction. The highest peak of this mountain is Basara (1028 m). Valley of the river Gaberska Reka divides Mt. Burel to eastern and western part and hosts the state boundary between Serbia and Bulgaria. The mountain is situated in Dimitrovgrad municipality and hosts two abandoned settlements – Verzar and Prača, with two more to face the similar outcome – Grapa and Planinica.

Spatial components of position

Relevant spatial components of position of the studied settlements are: mathematical-geographical position (geographical position in a strict sense), physio-geographical position, and administrative-political position.

Mathematical-geographical position, as an absolute component of position, is of particular importance for the process of settlement re-location. In Serbian literature, this process is called “*pomeštanje*” and explained by Kostić (1970) on the example of settlements in the basin Belopalanačka Kotlina. In this process, due to small migratory distance, the settlement is not formally abandoned, but re-located within the same statistical settlement area or cadastral municipality. One of the typical examples is Pljačkovica, situated in cadastral municipality Vranje II. The settlement was initially positioned in the source area of the Mrtvica brook, at the elevation of 1200 m a.s.l. In early 1960s, the population started to move to lower elevations (to 760 m a.s.l.) towards the area called Pržar, which is a suburb of the town of Vranje (Stamenković, 2004). Regarding the fact that the new location lies within the same statistical area, the initial settlement is not formally abandoned, although the process of spontaneous abandonment is present. The motive of re-location in this case was more favourable physio-geographical position. Similar motives of re-location were detected in other parts of Serbia (Kostić, 1970). Therefore, only the mathematical position is changed, but administrative position and population remain. Such processes can be “statistically invisible” if analysed only through census and administrative data.

In defining the *physio-geographical position*, geomorphological characteristics are particularly stressed, considering the fact that relief modifies climatic elements and hydrological characteristics. In spatial planning, two types of settlements are distinguished on the basis of physio-geographical position: mountain settlements and valley settlements (Malobabić, Maričić, 2004; Dželebdžić, Jokić, 2003; Gešev *et al.*, 1998). The basic criterion for the status of mountain settlements is the elevation above 600 m a.s.l. Geographers usually determine this position by morphogenetic characteristics of relief in a settlement, i.e. its microlocation (Cvijić, 1922; Radovanović, 1966; Stamenković, Bačević, 1992; Dinić, 2007). However, microlocation characteristics cannot show whether certain morphosculptures which host a settlement (or are situated between a settlement and a municipal centre) have a function of bonding or isolating (see terminology of Cvijić, 1922). In evaluation of locations of abandoned settlements, one should consider not only the location of buildings, but also the location of agricultural areas (Stamenković, Bačević, 1992).

The analysis of geomorphological position of 20 studied settlements and their areas showed a homogenous structure characterized by morphologically isolated spatial units – amphitheatral source areas of mountain brooks (80% of settlements) and V-profiled valleys (10 % of settlements), with continual inclinations exceeding 20%. Two villages (Gornji Rinj and Poda) are positioned at the bottoms of karst dry valleys, within a variety of surface karst forms. Hydrologically, the areas of analyzed settlements belong to the 1st order river courses, according to Shreve classification (except the villages Rastelica and Papratna), with a very unbalanced water regime. The water courses are not of permanent character and are prone to flash flooding. Physio-geographical attributes have led to the formation of humic soils (rankers) and mountain chernozem soils. Due to the described physio-geographical structure, the studied areas represent a very vulnerable ecological system. In combination with a certain degree of anthropopression, these areas are subject to excessive hillslope processes (rockfalls, landslides, erosion, flash floods), which stress their unfavourable conditions. The elevations of settlements range from 370 to 1400 m a.s.l., indicating that the hypsometry is not of particular importance. Its role is significant only in combination with slope inclinations. One of the examples is the village of Koritnjak, positioned between 580 and 630 m a.s.l., but with average slope inclinations exceeding 25% (in the statistical settlement area). Another example is Pljačkovica village close to Vranje (Fig. 2).



Figure 2. Position of Pljačkovica in relation to Vranje: an example of extreme relative height (topographic prominence, Rh)

Table 2. Geomorphological position of settlements

| settlement | geomorphological position | | | height | |
|-------------|---------------------------|---------------------------------|-------------------|-----------|----------|
| | macro* | meso | micro | a.s.l. | relative |
| Repušnica | mountain | source area (<i>see text</i>) | valley side | 680-720 | 430 |
| Papratna | mountain | V-shaped valley | valley side | 440-500 | 280 |
| Golešnica | mountain | source area | valley side | 480-580 | 230 |
| Prača | mountain | source area | ridge | 780-815 | 330 |
| Verzar | mountain | source area | valley side | 700-825 | 300 |
| Koritnjak | mountain | source area | valley side | 580-630 | 350 |
| Manastir | mountain | source area | ridge | 370-430 | 180 |
| Gornji Rinj | mountain | karst dry valley | dry valley bottom | 800-860 | 550 |
| Javorje | mountain | source area | ridge | 750-850 | 500 |
| Ostrozub | mountain | source area | valley side | 1120-1210 | 550 |
| Kolunica | mountain | source area | valley side | 1300-1460 | 600 |
| Pljačkovica | mountain | source area | valley side | 1140-1160 | 700 |
| Đorđevac | mountain | source area | valley side | 920-1080 | 500 |
| Uzovo | mountain | source area | valley side | 520-560 | 200 |
| Gare | mountain | source area | valley side | 780-860 | 350 |
| Vukojevac | mountain | source area | ridge | 780-860 | 390 |
| Tačevac | mountain | source area | ridge | 815-875 | 420 |
| Rastelica | mountain | V-shaped valley | valley side | 890-950 | 550 |
| Smilov Laz | mountain | source area | valley side | 1200-1250 | 750 |
| Poda | mountain | karst dry valley | dry valley bottom | 1350-1400 | 350 |

*defined by morpho-structural relief elements

Administrative-political position is defined by the position of the settlement in relation to the municipal center or state boundary. The positions of the studied settlements in relation to the respective municipal centers were either periurban or peripheral. *Periurban* position means that a settlement lies within 5 km distance from the municipal centre (e.g. Pljačkovica, 3 km from the centre of Vranje; or Koritnjak, 1.3 km from Niška Banja and 9.5 km from Niš). The main characteristic of such a position is a large height difference: 350 m in the case of Koritnjak, and as much as 700 m in the case of Pljačkovica. It is very important to analyse the positions of these settlements in the context of “stages of mutually connected development of a town and a network of surrounding settlements” (Veljković *et al.*, 1995). According to this author, the town of Niš is in the transitional phase between the stages III and IV, meaning that the settlements situated closest to the town, as well as those with favourable position for

communications, are becoming more attractive and thus more populated. “Moving out from these settlements becomes highly reduced or even stops” (Veljković *et al.*, 1995). However, in the case of Koritnjak⁴, the positive developmental effect of Niška Banja and Niš is lacking. This points to the conclusion that even the favourable social and economical factors were not sufficient to overcome the natural handicap of Koritnjak for the needs of permanent residence.

As opposed to periurban position, if the settlement is located along a municipal boundary, its position is considered *peripheral* (Malobabić, 1998). Of the total number of spontaneously abandoned settlements in Serbia, 81% are positioned on municipal boundaries, and out of that number, 35% are also on the state boundary. Three abandoned settlements are located on the border between Serbia and Bulgaria: Repušnica, Verzar and Kolunica. Along the borders with Macedonia and Montenegro, there are Uzovo and Poda, respectively. Out of the total number of abandoned settlements, 6 are situated along the administrative border between central Serbia and Kosovo and Metohija. Between 1999 and 2001, 5 km wide demilitarized buffer zone called the Ground security zone was established along the administrative border. Subsequent to creation of such a security vacuum, the scarce Serbian population abandoned Tačevac (2 inhabitants in 1999) and Rastelica (3), while the Albanian population abandoned Đorđevac (6 inhabitants in 1999). Abandonment of the remaining three villages was not the consequence of this security factor (Milošević *et al.*, 2008).

Historical components of position

Geographical position can be regarded also as a historical category. Thus, it encompasses the chronological analysis of changes in relations between settlements and the social, political and economical processes and factors in their surroundings.

The present territory of Serbia is historically polarized, with Pannonian Serbia on the north and Balkanic Serbia on the south. These historical units have been subject to various cultural-civilizational, political and economical processes. Foreign military operations and forced migrations in Balkanic Serbia were physically channelled through the valleys of Morava and Nišava Rivers. This negative geostructure, presenting the contact between the western Europe and

⁴ Koritnjak has never got the installation of electric power, although the regional overhead lines are passing just above the village. For more information about Koritnjak, one should refer to Martinović (2004).

the East, had a transmission function. As stressed by Radovanović (1989), such geostructures “form a very complex system of geotectonically and physio-geographically guided directions and zones of strong centripetal and opposite divergent characteristics. They are natural geographical constants facilitating the spread of all kinds of movements; atmospheric, biological, and those most various, originating from human activities, civilizations, undulations...”.

In the 15th century, the area of Serbia fell under the occupation of the Ottoman (Turkish) Empire, which lasted until the 19th century. The occupation caused a discontinuity of social-economical, cultural and ethno-demographical development of Serbia, with destructive consequences – opening of large civilizational and historical-geographical vacuums (Radovanović, 1989). The period of the Ottoman government considerably influenced the genesis and evolution of Serbian settlements. The settlements which were formed during this period are the consequence of the interaction of natural elements and geographical environment complex, population and social-historical processes. The areas along the Nišava and Morava Rivers were the first to be struck by Turkish military actions.

Due to existential and material insecurity, a large number of people abandoned these areas. Part of the population migrated across the Sava and Danube Rivers (to the Hungarian and, subsequently, Austro-Hungarian monarchy), and a considerable part of the remaining population withdrew to higher mountainous areas, which became the main recipient for former inhabitants of the valleys.

New natural conditions that affected the population resulted in agricultural transformation from crop-livestock farming to half-nomadic cattle breeding. This form of cattle breeding was relatively mobile and thus adaptable to frequent Turkish military actions. It was also in accordance with the natural resources of the mountains, considering their phytocenological characteristics and the condition of natural isolation. In Serbia of that time, a large number of pigs could be fed with acorns in vast oak woods of central Serbia. As the presence of the Turkish Empire in these areas lasted for more than four centuries, newly formed settlements and restructured agriculture were not of temporary, but of permanent character. As a consequence of continual economical and inhabitation processes in mountain areas, spontaneously formed settlements were permanently introduced into the environment. Among the presently abandoned

villages that were formed in this way, typical examples are Papratna⁵, Pljačkovica, Koritnjak, Repušnica, etc.

Another historical process that influenced the development of settlements in central Serbia was a successive broadening of Serbia during the 19th century. Meridional expansion in southward direction, with typical characteristics of a frontier region, resulted in political instability and insecurity of the area. After the Congress of Berlin, ethnocentric migrations took place. These migrations confirmed and strengthened the changes in population structure which occurred in the war-affected areas during the previous period. The changes led to religious and ethnic homogenization of border areas in the whole country. Thus, this kind of migrations can be characterized as homogenizational.

Serbian-Turkish war in 1877-1878 resulted in changes of ethnic and religious structure of the areas assigned to the Principality of Serbia according to the Treaty of Berlin. The changes were additionally strengthened by unsuccessful attempt of repatriation of Albanians from the regions of Toplica and Gornja Jablanica, post-war emigration of the remaining Muslims, and finally, beginning of planned colonization of Serbs in Toplica and Vranje counties. In this period, three planned settlements were formed: Vukojevac, Tačevac and Rastelica (Fig. 3). The authorities of the Toplica county were persistent in the attempts to inhabitate the border area towards Turkey, along the right bank of the Toplica River and left bank of the Kosanica River. The purpose of these plans was the introduction of some kind of border officers, in order to prevent the illegal crossing of Albanians to Serbia (Jagodić, 2004).

After the Congress of Berlin in 1878, when the southern border of Serbia was defined, south-western part of the Vranje basin remained under the Turkish administration. The barrier character of the border caused divergent political, ethnic, economical, cultural and demographical processes. Ethnic homogenization took place in previously mixed society. In the area that remained in the Ottoman Empire, the villages Đorđevac and Gare, previously inhabited by Serbs, got the Albanian population. Serbian population from the village of Donji Stajevac (which also remained at the Turkish side of the border), moves to the village of Pljačkovica, in northwestern part of the Vranje

⁵ Primary location of Papratna was Orničeje in the valley of the Trgoviški Timok River, south of Gornja Kamenica along the present regional road Pirot-Zaječar (Velojić, Radovanović, 2007). Before the Congress of Berlin and inclusion of Pirot county to Serbian territory, Papratna was situated at the border with the Ottoman Empire.

References

- Ambrosiani, B. (1984). Settlement expansion – settlement contraction: a question of war, plague, ecology or climate? In: Morner, N.-A. & Karlen, W. (Eds.), *Climatic Changes on a Yearly to Millennial Basis – Geological, Historical and Instrumental Records* (241-247), Proceedings of the Second Nordic Symposium on Climatic Changes and Related Problems. Dordrecht: Reidel Publishing Company.
- Beale, C.L. (1964). Rural Depopulation in the United States: Some Demographic Consequences of Agricultural Adjustments. *Demography*, 1 (1), 264-272.
- Collantes, F. & Pinilla, V. (2004). Extreme Depopulation in the Spanish Rural Mountain Areas: A Case Study of Aragon in the Nineteenth and Twentieth Centuries. *Rural History*, 15 (2) 149-166.
- Ćurčić, S. (2000). *Settlements of Srem – geographical characteristics* (In Serbian). Novi Sad: Faculty of Science and Mathematics, Institute of Geography. (Ђурчић, С. (2000). *Насеља Срема – географске карактеристике*. Нови Сад: ПМФ – Институт за географију.)
- Ćurčić, S. (2004). *Settlements of Banat – geographical characteristics* (In Serbian). Novi Sad: Matica Srpska. (Ђурчић, С. (2004). *Насеља Баната – географске карактеристике*. Нови Сад: Матица српска.)
- Cvijić, J. (1896). *Instructions for the study of villages in Serbia and other Serbian lands* (In Serbian). Belgrade. (Цвијић, Ј. (1896). *Упутства за проучавање села у Србији и осталим српским земљама*. Београд.)
- Cvijić, J. (1922). *The Balkan Peninsula and South-Slavic countries* (In Serbian). Anthropogeography basics, Book One. Belgrade. (Цвијић, Ј. (1922). *Балканско полуострво и јужнословенске земље*. Основе антропогеографије, Књига прва. Београд.)
- Dinić, J. (2007). *Man and relief* (In Serbian). Belgrade: Serbian Geographical Society. (Динић, Ј. (2007). *Човек и рељеф*. Београд: Српско географско друштво.)
- Dželebdžić, O. & Jokić, V. (2003). Definition and main indicators of sustainability of mountain areas (In Serbian). In: M. Nikolić & R. Malobabić (eds.), *Sustainable development of mountain areas of Serbia*. Special Issue, Book 42 (p.29-43). Belgrade: IAUS. (Џелебџић, О. & Јокић, В. (2003). Дефинисање и основни индикатори одрживости планинских подручја. У: М. Николић & Р. Малобабић (ур.), *Одрживи развој планинских подручја Србије*. Посебно издање, Књига 42 (стр. 29-43). Београд: IAUS).
- Forsyth, T. (1998). Mountain Myths Revisited: Integrating Natural and Social Environmental Science. *Mountain Research and Development*, 18 (2), 107-116.
- Gatarić, D. & Stamenković, S.Đ. (2006). Radmanići – expatriated (depopulated) village near Banja Luka (In Serbian). *Demography – International Magazine for Demography and the Humanities*, 3, 161-172. (Гатарић, Д. & Стаменковић, С.Ђ. (2006). Радманићи – расељено сеоско насеље код Бања Луке. *Демографија – Међународни часопис за демографска и остала друштвена истраживања*, 3, 161-172.)
- Gawryszewski, A. & Potrykowska, A. (1988). Rural depopulation areas in Poland. *Geographia Polonica*, 54, 81-89.

Gešev, G., Jordanova, M., Velev, S., Nikolov, V. & Mladenov, Č. (1998). Legislative basis for the development of territorial units in the mountain regions of Bulgaria (In Serbian). *Bulletin of the Serbian Geographical Society*, 78 (2), 35-42. (Гешев, Г., Јорданова, М., Велев, С., Николов, В. & Младенов, Ч. (1998). Законодавне основе за развој територијалних јединица у планинским регионима Бугарске. *Гласник Српског географског друштва*, 78 (2), 35-42.)

Haffner, W. & Pohle, P. (1993). Settlement Processes and the Formation of States in the High Himalayas Characterized by Tibetan Culture and Tradition. *Ancient Nepal. Journal of the Department of Archaeology*, 134, 42-56. Retrieved from: http://himalaya.socanth.cam.ac.uk/collections/journals/ancientnepal/pdf/ancient_nepal_134_05.pdf (October 10, 2009)

Jagodić, M. (2004). *Inhabitation of the Principality of Serbia 1861-1880* (In Serbian). Special Issues, Book 47. Belgrade: The Institute of History. (Јагодић, М. (2004). *Насељавање Кнежевине Србије 1861-1880.*, Посебна издања, Књига 47. Београд: Историјски институт.)

Kojić, B. (1961). Systematization of settlements in Serbia (In Serbian). *Glas SANU, tome CCL, Department of Social Sciences*, 15, 197-205. (Којић, Б. (1961). Систематизација насеља у Србији. *Глас САНУ, т. ССЛ, Одељење друштвених наука*, 15, 197-205.)

Kostić, M. (1970). *Le bassin de Bela Palanka – Etude de géographie sociale* (Résumé en Français). Special Issues, Book 23. Belgrade: Geographical Institute “Jovan Cvijić” SASA. (Костић, М. (1970). *Белопаланачка котлина, друштвеногеографска проучавања.* Посебна издања, Књига 23, Београд: Географски институт „Јован Цвијић” САНУ.)

Lyrantzis, G.A. (1996). Human impact trend in Crete: The case of Psilorites Mountain. *Environmental Conservation*, 23 (2), 140-148.

MacDonald, D., Crabtree, J.R., Wiesinger, G., Dax, T., Stamou, N., Fleury, P., Gutierrez Lazpita, J. & Gibon, A. (2000). Agricultural abandonment in mountain areas of Europe: Environmental consequences and policy response. *Journal of Environmental Management*, 59, 47-69.

Malobabić, R. (1998). Development problems of villages on municipal borders (In Serbian). *Architecture and Urbanism*, 5, 7-14. (Малобабић, Р. (1998). Развојни проблеми сеоских насеља на границама општина. *Архитектура и урбанизам*, 5, 7-14.)

Malobabić, R. & Bakić, O. (2003). Spatial-demographic changes in mountain areas of Serbia (In Serbian). In: M. Nikolić & R. Malobabić (eds.), *Sustainable development of mountain areas of Serbia*. Special Issue, Book 42 (p. 3-27). Belgrade: IAUS. (Малобабић, Р. & Бакић, О. (2003). Просторно-демографске промене на планинским подручјима Републике Србије. У: М. Николић & Р. Малобабић (ур.), *Одрживи развој планинских подручја Србије.* Посебно издање, Књига 42 (стр. 3-27). Београд: IAUS.)

Malobabić, R. & Maričić, T. (2004). Structural changes in size of settlements in Serbian mountain regions (In Serbian). *Architecture and Urbanism*, 14/15, 65-71. (Малобабић, Р. & Маричић, Т. (2004). Структурне промене величине насеља на планинском подручју Србије. *Архитектура и урбанизам*, 14/15, 65-71.)

Martinović, M. (2004). Koritnjak – abandoned rural settlement in the beginning of 2002 (In Serbian). *Bulletin of the Serbian Geographical Society*, 84 (1), 71-78. (Мартиновић, М. (2004). Коритњак – расељено сеоско насеље почетком 2002. године. *Гласник Српског географског друштва*, 84 (1), 71-78.)

Martinović, M. & Šantić, D. (2006). Gabrovnica – contribution to depopulation in Serbia (In Serbian). *Bulletin of the Serbian Geographical Society*, 86 (2), 187-194. (Мартиновић, М. & Шантић, Д. (2006). Габровница – прилог проучавању демографског одумирања насеља. *Гласник Српског географског друштва*, 86 (2), 187-194.)

Milivojević, M., Čalić, J. & Milošević, M.V. (2007). Vukojevac – an example of “deconstructed” village in Serbia (In Serbian). *Globus*, 32, 301-308. (Миливојевић, М., Čалић, Ј. & Милошевић, М. В. (2007). Вукојевац – пример „разграђеног” села Србије. *Глобус*, 32, 301-308.)

Milošević, M.V., Milivojević, M. & Čalić, J. (2008). Consequences of spontaneous abandonment of settlements in the Republic of Serbia (In Serbian). *Demografski pregled*, 28, 3-4. (Милошевић, М. В., Миливојевић, М. & Čалић, Ј. (2008). Последице спонтаног расељавања насеља на територији Републике Србије. *Демографски преглед*, 28, 3-4.)

Radovanović, M. (1966). *Relation of natural conditions and social factors in spatial planning and organization*. Unpublished. (Радовановић, М. (1966). *Односи природних услова и друштвених фактора у области просторног планирања и организације*. Материјал са предавања на постдипломском курсу Архитектонског факултета. Необјављено.)

Radovanović, M. (1970). Importance of historical-geographical factors for genesis and systematics of settlements in Serbia (In Serbian). *Collection of Papers – Geographical Institute of the Faculty of Science and Mathematics in Belgrade*, 17, 81-100. (Радовановић, М. (1970). Значај историјско-географских фактора за генезу и систематизацију насеља у Србији. *Зборник радова Географског завода ПМФ Београд*, 17, 81-100.)

Radovanović, M. (1989). Geographical space and social-historical space (In Serbian). In: V. Đukić (ed.), *Yugoslavian geospace* (9-16). Belgrade: Center for Marxism, University of Belgrade. (Радовановић, М. (1989). Географски простор и друштвено-историјски процес. У: В. Ђукић (ур.), *Југословенски геопростор* (9-16). Београд: Центар за марксизам Универзитета у Београду.)

Radovanović, M. (1991). Anthropogeographic and demographic bases of development of population rate in Serbia – Development of population rate to World War II (In Serbian). *Journal of the Geographical Institute “Jovan Cvijić” SASA*, 43, 57-91. (Радовановић, М. (1991). Антропогеографске и демографске основе развоја насељености у Србији – Развој насељености до другог светског рата. *Зборник радова Географског института „Јован Цвијић” САНУ*, 43, 57-91.)

Rudić, V. (1992). *Population of Prokuplje*. Special Issue, Book 37. Belgrade: Ethnographic Institute SASA. (Рудић, В. (1992). *Становништво Прокупља*. Посебно издање, Књига 37, Београд: Етнографски институт САНУ.)

Saville, J. (1957). *Rural depopulation in England and Wales, 1851-1951*. London: Routledge, The International Library of Sociology.

Simić, V. (1951). *Historical development of our mining*. Belgrade: Committee for energy and extraction industry of FNRJ Government. (Симић, В. (1951). *Историјски развој нашег рударства*. Београд: Савет за енергетику и екстрактивну индустрију Владе ФНРЈ.)

Stamenković, S. (2004). Some actual questions of the spatial organization of the network of settlements and the relevant demography problems in Serbia (In Serbian). *Demography – International Magazine for Demography and the Humanities*, 1, 115-134. (Стаменковић, С. (2004). Нека актуелна питања просторне организације мреже насеља и релевантни демографски проблеми у Србији. *Демографија, међународни часопис за демографска и остала друштвена истраживања*, 1, 115-134.)

Stamenković, S. (2007). Study of spatial organization of settlement network in Serbia and European recommendations (In Serbian). In: M. Todorović (ed.), *Proceedings of the First Congress of Serbian Geographers*, 1 (97-106). Belgrade: Serbian Geographical Society, Belgrade: Geographical Institute “Jovan Cvijić” SASA, Belgrade: Faculty of Geography, Novi Sad: Department of Geography, Tourism and Hotel Management. (Стаменковић, С. (2007). Проучавање просторне организације мреже насеља Србије и европске препоруке. У: М. Тодоровић (ур.), *Зборник радова Првог конгреса српских географа*, 1 (97-106). Београд: Српско географско друштво, Београд: Географски институт „Јован Цвијић” САНУ, Београд: Географски факултет, Нови Сад: Департман за географију, туризам и хотелијерство.)

Stamenković, S. & Bačević, M. (1992). *Geography of settlements* (In Serbian). Belgrade: Faculty of Geography. (Стаменковић, С. & Бачевић, М. (1992). *Географија насеља*. Београд: Географски факултет.)

Statistical Office of the Republic of Serbia. (2003). Population: comparative survey of population 1948-2002; Data by settlements. In: *Population, households and dwellings in 2002* (book 9). Belgrade: Statistical Office of the Republic of Serbia. (Републички завод за статистику. (2003). Упоредни преглед броја становника 1948-2002. У: *Попис становништва, домаћинства и станова у 2002. години* (св. 9). Београд: Републички завод за статистику.)

Toniolo, A.R. (1937). Studies of Depopulation in the Mountains of Italy. *Geographical Review*, 27 (3), 473-477.

Velojić, M. (2000). *Repušnica – the village that exists no more* (In Serbian). Belgrade: Serbian Geographical Society, Minićevo: Homeland Society of Timočani – Torlaci. (Велојић, М. (2000). *Репушница – село којег више нема*. Београд: Српско географско друштво, Минићево: Завичајно друштво Тимочана-Торлака).

Velojić, M. & Radovanović, O. (2007). *Zaglavak* (In Serbian). Population of Mt.Stara Planina, Book 2. Zaječar: Research society “Kraljevica”. (Велојић, М. & Радовановић, О. (2007). *Заглавак*. Становништво Старе планине, Књига 2. Зајечар: Истарживачко друштво „Краљевица”).

Veljković, A., Jovanović, R. & Tošić, B. (1995). *Towns of Serbia – the centres of development in the network of settlements* (In Serbian, English Summary). Special Issues, Book 44. Belgrade: Geographical Institute “Jovan Cvijić” SASA. (Вељковић, А., Јовановић, Р. & Тошић, Б. (1995). *Градови Србије – центри развоја у мрежи насеља*. Посебна издања, Књига 44. Београд: Географски институт „Јован Цвијић” САНУ).

Watson, J.W. (1947). Rural Depopulation in Southwestern Ontario. *Annals of the Association of American Geographers*, 37 (3), 145-154.