



# Morphological Characteristics of the Settlements

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## Abstract

Morphological characteristics of settlements are those of their features that are most conspicuous, and catch most the attention of the spectator, either when the settlement is looked at directly (i.e., when the observer is in it), or from a certain distance or, on a detailed geographical maps and plans. A most rough definition of morphological characteristics would be that they denote the "settlement outlook". Such definition contains a large number of elements, which are difficult to systematize, and many of them are not in the domain of geographical science. Only a relatively small number of elements of the total settlement outlook is of the geographers interest. Because of that modern geography is mainly concerned with the elements consisting:

1. The form of the settlement base.
2. Settlement structure.
3. Appearance of the settlement.

Here, will only the first two elements be presented.

### Form of the Settlement base

A considerable number of settlements in Vojvodina have been built in accordance to the plans. The majority of these plans had some common assumptions, recommending either square or rectangular bases, straight streets with the right-angle crossings, and the like. By analyzing topographical maps it can be seen that a quadrangle base have only one fourth of the places in the Vojvodina Province (Ćurčić, 1991). The reasons for departure from regular forms were in many cases of orohydrographic nature.

This is evident with both the border and inner settlements. In some cases deformations of the shape of the settlements base were already envisaged in the primary plans, in which settlement construction was adapted to concrete topographical conditions. In other cases the changes were brought about by the later settlement growth, which has not been in accord with the plans, or it has been imposed by the orohydrographic circumstances on the new location.

When singling out characteristic types of the shape of settlement base use was made of one of the simplest classification, that is of the one distinguishing five groups. These are the settlements with the base in the form of SQUARE, OBLONG OVAL, CROSS-LIKE (in the shape of a cross, double cross, letter T, or star-like) and OTHER or IRREGULAR forms (Ćurčić, 1988).

Table 1. Frequency of characteristic forms of the settlement base in Banat and Vojvodina

Base form	No. of settlement	%	No. of settlement	%
Irregular	71	36.4	167	32.2
Square	70	35.9	135	26.0
Oval	20	10.3	60	11.6
Oblong	19	9.7	77	14.8
Cross-like	15	7.7	80	15.4
TOTAL	195	100.0	519	100.0

### Settlements with an Irregular Base From

In Banat, 71 (36.4%) settlements have a base whose shape is not any of regular geometrical forms. Their proportion here is highest in Vojvodina,

in Bačka is also significant (34.4%), where as in Srem it is much smaller (22.0%). There is no greater regularities in their distribution. Irregular base shapes were caused mainly by two factors, one of them being of the physico-geographical and the other of social nature.

With the three fourths of these places a predominant role had the natural, i.e., orohydrologic, factor. This was determined by the relief character of this part of Vojvodina. It should be reminded here that the ratio of border settlements is the highest in Banat, amounting to even 71.6% (Ćurčić, 1994). The majority of them are situated by the border of the alluvial terrace that is better drained and thus suitable for construction, and close to it are the lower, more humid or flooded soils (alluvial plains or tectonic depressions). Such sites have excellent economic characteristics for the position of settlements, but limit their expansion. The base contours of these settlements coincide with the geomorphological boundaries. Because of that either one, two, or in some cases even three, edges of the settlement base have been deformed.

Largest deformations are observed with the settlements situated on the ridges of diluvial terraces that are from three sides surrounded by a lower terrain. A bent boundary of the loess terrace has been the reason of partial deformation of the base from in a number of villages. These deformations are mainly of a convex form and occur at the sites where the river meander eroded the terrace. At some sites, active meanders still pass by the terrace, so that the erosion process is still in progress. In other cases, by the settlement there are still visible the old abandoned meanders, some forming small lakes, whereas the others are swamps, or filled with deposits. They still make a barrier to the settlement growth. In some cases, when the meanders have already been filled with deposits, the villages grow to this side. Nevertheless, in none of the cases the old settlement of an irregular base shape has been transformed into another form. The reasons are probably that the principles of settlement construction from the time of Banat settling have not been strictly observed any more. Deformation of the base from of the settling have not been strictly observed any more. Deformation of the base form of the settlements by the contemporary meanders has also been caused by the fossilized ones, which at the end of Diluvium was covered by thick loess deposits, but the lakes or swamps are still present there.

Some other water surfaces or streams have also hindered further growth of the Banat settlements, and thus determined the nature of their base deformation. Small lakes formed at the sites of deeper land digging (these-called "jamure") have also been

the reason of base deformation. Spacious swamps have hindered free growth of some settlements. Small water streams have acted in the same way in case of several villages.

In a number of cases the deformation of the settlement base from has been caused by the building of houses on the recent and fossilized riverside bars. This was the case cipher with the settlements on alluvial plains, or those erected on a diluvial terrace. Such positions have ensured v houses that were built of firmly packet mud and straw ("naboj") a longer duration, and a lower wall moistening. As these bars are usually beat, the village base has bent to the same direction. Orohydrologic factors have exerted a strongest influence on the formation of irregular base forms of four villages in the southeast part of Banat.

The only Banat village built on the ravine material is Kuštilj. The narrow narrow ravine with the steep walls on the north and the alluvial plain of the Karaš on the south, has confined the possibility of the village growth. Malo Središte is the Banat settlement at the highest altitude, and it is located at the head of a brook flowing down from the Vršac Mountains. The steep terrain and brooks hindered the growth of Sočica and Markovac.

In case of 14 Banat settlements an irregular base shape was formed as a result of construction departing from the plan principles, but without involvement of any orohydrologic determinants. Most often the village has expanded along the road, and not by constructing new streets in parallel to the existing ones. The reason for this was probably that the influence of the authorities diminished with tim, and the previous planned building has been followed by an uncontrolled one. In case of some villages that had already been deformed because of a physico-geographic factor their further deformation was thus potentiated. In some other cases they appeared because some parts or small hamlets were built by the settlement itself without observing any construction plan. Several Banat villages have been built without any plan, or the planned construction was unskillfully imitated.

In case of about ten settlements with the base already deformed because of the natural conditions for construction, the deformations have also been potentiated for some of the reasons of inconsistent planning.

#### Settlements with A square Base

These are the settlements in which planned construction has been strictly observed. Their concepts were established in the time of the Austrian colonization that is in the 18<sup>th</sup> century. These were

## Morphological Characteristics of the Settlements

neither original nor especially imaginative plans, and such plans were used from ancient times whenever it was necessary to build a settlement in a short time. The German colonization of Banat was massive, and the whole territory was under a direct jurisdiction of the Court Chamber. As a result, the influence of the authorities in planning was greater than in Bačka and Srem. Because of that, there is here the highest ratio of settlements with a square base. In Banat, such bases have 70 (35.9%) settlements, as in Bačka and Srem taken together.

Spatial distribution of square-base settlements shows certain regularities. Such settlements have been built mainly on diluvial terraces, and a significant number of them also on lower landforms. They are most frequent in the central part of Banat (in a wider sense). At the northern periphery there are only four such settlements, and in the most southern part a square form have only Ivanovo and Vojlovica. In the central part of Banat their concentration is higher in the direction between Zrenjanin and Jimbolia, where there are 22 such settlements, north of Pančevo 8, and 18 in the Vršac surroundings.

In addition to the settlements formed during the 18<sup>th</sup> century under the direct influence of Austria, some villages have been built in the same manner later on. The examples are the influence, as well as some colonist villages formed between two World Wars.

A largest number of these settlements have been built on diluvial terraces. On a lower terrain (alluvial plains and tectonic depressions) have been built only 8 villages. On the loess plateau there are 6 such villages. All other settlements are on diluvial traces. For all three landforms are characteristic almost ideal flat surfaces, which permitted strict application of the mentioned construction principles. In a number of cases there are minor deformations of the settlement base from, and they have been mainly due to the anthropogenic factor. These are the cases of non-planned construction, or additional building, or soil digging at the village border that hindered frontal spreading of the settlement. As in the previous group of settlements, there are a few examples of the effect of the orohydrologic situation. The reason is that the settlements are not close to the geomorphological boundaries, their orientation is parallel to the borders of the latter forms, or they are not situated by big meanders or swamps.

### Settlements with an Oval Base

In Banat, there are 20 (10.3%) settlements with an oval base. Their proportion is only by 1% and

3% smaller than in Bačka and Srem, respectively. These settlements are uniformly distributed over the whole territory, so that no regularity can be observed in this respect.

The base of such form of settlements in Banat has been imposed either by the natural conditions for their formation, or by construction without planning. With no any natural predisposition this happened to Padina, built on a slightly uneven surface of the loess plateau, in case of Kruščica, which was built on a slope, and in case of Plandža, which is situated at the edge of a plateau. Several settlements on loess terraces have also obtained this shape.

In several instances, only a part of the settlement contour was determined by an orohydrologic factor. With some settlements, the natural determinants have had a decisive role.

### Settlements with an Oblong Base

There are in Banat 19 (9.7%) settlements with an oblong base. The proportion is by about 10% lower than in Bačka and Srem. Almost all such settlements are at the southwestern or northern periphery of the territory.

There are three forms of the base of these settlements. Typical are linear settlements, which consist of only one row of houses or only of one street. These are the settlements built in an uncontrolled manner, and their base was formed by building houses along a road, or by a geomorphologic boundary. In the latter case an oblong settlement has been formed according to the plan, by favoring one direction of settlement expansion. In some instances, certain orographic factors, that is spreading of the village in the direction of the better drained terrain, have been involved. The examples of settlements built along a road are not so frequent.

Along the geomorphologic boundary, which is usually the borderline between diluvial terrace-lower land, were built the northern part of Mihajlovo, Ruski Krstur, Jasenovo, and Dupljaja. In these examples the inner part of the diluvial terrace is spacious enough to permit construction of a settlement of another form, however the oblong villages were formed because of economic reasons. Namely, the closeness of two geomorphologic entities was favorable as it offered farmers the possibility of a more diversified production. In case of several such villages the orographic situation has strictly determined the base shape. In case of three villages there are no noticeable effects of any of the above determinants in forming an oblong settlement base.

**Settlements with a Cross-Like Base**

A smallest number of the Banat settlements have a radially-shaped bases. There are only 15 of them, or 7.7%. As with the previous group of settlements they are most frequent on the southeastern and northern periphery of this region. Like in case of the linear-form base, similar natural and social factors have determined the cross-like form of the settlement base.

On a lower terrain, the better drained riverside bars have usually been chosen for settlements, as the houses built on such sites are safer from shallow phreatic waters.

In case of several villages, no effect of natural factors can be observed, and their streets are branched along the road leading to the neighboring villages, or to the parts of the village area. In this way, regular cross-like bases were formed.

**Structure of Settlements**

The internal organization, or structure, of a settlement has more components than the base form. Here belong the spreading direction and width of the streets, density of the street network, squares, and other unoccupied areas. Nevertheless, when establishing characteristic types, the settlement structure is usually classified on the basis of the spreading direction of its streets. In this respect it is possible to distinguish only five most characteristic types, and these are: 1. Linear, 2. Radial, 3. Grid-like, 4. Net-like, 5. Mixed.

Of 221 Banat settlements, or clearly separated parts of settlements, absolutely the highest number has the grid-like structure. This is a proof that in the settlement structure more strictly have been observed the principles of planned construction than in the determination of their base form.

**Table 2. Structure of settlements**

Settlement structure	Banat		Vojvodina	
	Number	%	Number	%
Grid-like	154	67.2	289	45.1
Radial	25	10.9	106	17.8
Net-like	21	9.2	57	9.6
Linear	29	12.7	83	13.9
TOTAL	221	100.0	596	100.0

(Total number of settlements is much larger than in Table 1 because parts of settlements with different structure were taken as separate units)

A grid-like structure have 154 of settlements (or settlement parts) in Banat, which makes about two their total number. This structure is characterized by straight and parallel streets crossing with other streets at right angles. These are at the same time the basic principles of the planned construction of settlements in Vojvodina. The settlement centre was a marketplace, usually of a square or, less frequently, of a circular form, around which were built all the public buildings. A strict observation of this construction manner is also evident in the cases where it was hindered by certain orohydrologic factors. In these cases, separate parts were often constructed, each of which had a characteristic grid-like structure with different street directions. This is a proof that the designers of Banat settlements did not stick blindly to the established construction principles, but they adapted them to the concrete terrain.

How the grid-like structure has been strictly obeyed with the Banat settlements one can also see from the fact that apart from the square settlements this structure had the majority of settlements with a base of irregular or oval form and three settlements with an oblong base. The exceptions are the settlements with a cross-like base, none of them having this structure.

Linear dispositions of streets have 29 (12.7%) of Banat settlements or of their parts. As a rule, these settlements have a linear base with which both the base form and structure was influenced by a certain determinant. These determinants were more often of a physico-geographic (riverside bars, inundation deposits, stream valleys) than of a social character (construction along the road). These villages are composed of one row of houses, one street, or a small number or parallel streets. The side streets usually do not exist, or they are simply the

## Morphological Characteristics of the Settlements

passages with no buildings. With several villages the linear base and linear structure do not coincide.

Radial structure have 25 (10.9%) settlements in Banat. To this group belong mainly the villages having one of the cross-like base forms, but without congruence of the base and the structure.

A net-like structure have 21 (9.2%) settlements in Banat, the majority of them having an irregular base form. Both the base form and structure in the majority of cases have been determined by orographic conditions for construction. This is best seen with the villages on dissected terrain, or in case of the terrain threatened by ground waters. In a number of cases such a structure have only certain parts of some settlements. In some instances such structure has been formed with visible causes. Only three villages with an oval base, either the entire or in their part, have a net-like structure. Within 21

settlements in Banat there are parts of diverse structure.

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