HISTORCIAL SETTLEMENTS' STRUCTURE RESEARCH IN NORTH-TRANSDANUBIA, HUNGARY

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HU ISSN 1418-7108: HEJ Manuscript no.: CEA-020110-A

Abstract

It is shown through topographical investigations of historical settlements that main elements of ichnography of historical settlements thought as "unsubstantiated irregular" are, in most cases, determined by topographical features, and "being once and unreproducible" physiognomy of the settlements is partially drawn back to these characteristics. This recognition can then stimulate settlement planners to better evaluation of the historical fibre of the settlements. This conscious topographical approach can contribute to the change of attitude of practical settlement planning as may be experienced even in our days. During development of settlements, the target is no more the protection of certain monument buildings or aggregations of buildings, certain streets or squares but integrated protection of the whole constructed settlement environment and the incorporating neighbouring natural landscape, together the so-called "character protection".

This research can be classified into settlement sciences. Our investigations are focused on the structure, i.e. on street and square composition, and also on parcel system, of Hungarian settlements, among them mainly those of the northwest region (called North-Transdanubia) of the country. Methodological novelty of the research lies in combining traditional settlement science of technical character with the measures of geographical sciences. Settlement investigations of this kind can bring forth new achievements even at settlements where settlement formation effects of geomorphology and surface waters are not obvious therefore most of them were not investigated in details [11].

1 MAIN DIRECTIONS OF STRUCTURAL DEVELOPMENT OF HISTORICAL SETTLEMENTS IN HUNGARY

In Hungary, there is a certain particular contrast in settlement developments characteristic for the both great parts of the country (Transdanubia and Alföld, the western and the eastern parts of the country, respectively). Settlement structure of historical villages and towns can be divided into two main groups on the basis of their *morphological composition:* There are mainly *line-type settlements with conglomerate-like composition* characteristic for the whole Transdanubian part of the country (therefore for the Kisalföld flatland region also, the nothern region of Transdanubia), and many *cluster-type settlements with double inlot composition* characteristic for the Alföld flatland region (most of them being nearly round shaped) on the other side 1. Within both main groups, lots of subgroups can be distinguished. Certain subgroups are nowadays very difficult to recognize, owing to the settlement parts joined, annexed or built to the kernel in later times, also there are numerous examples for the great extent modification and change of the historical settlement structure, as well.

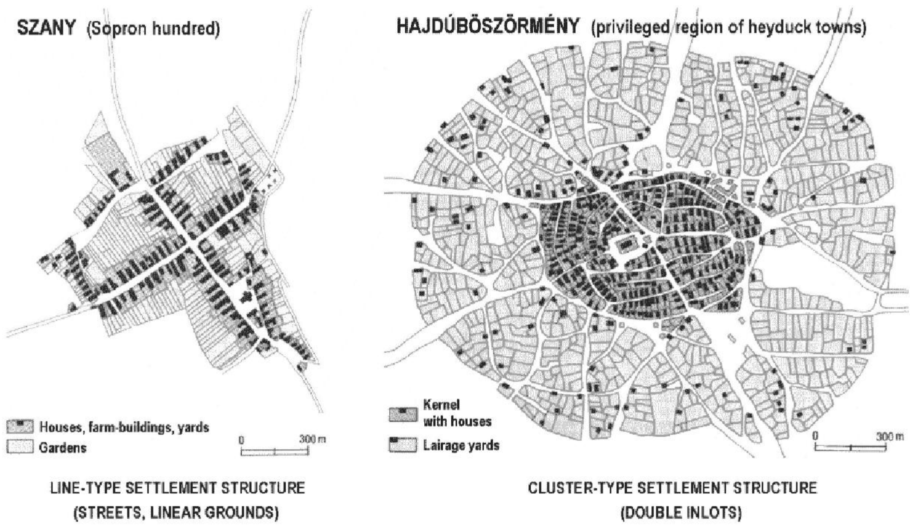

Figure 1: Representative examples characteristic for the historical settlements of the Transdanubian and Alföld regions (Szany and Hajdúböszörmény in the mid-18th century) [7].

Reasons for these disparate settlement developments typical on the Transdanubian and Alföld regions, respectively, are - among others - the following features: *different kind of economy* applied in the middle ages (viz. advanced geoponical culture for the Transdanubian region, and in the contrary, dominant animal husbandry on double inlot settlements on the Alföld region), *protection aspects* (there were better defensible near-round shape settlements on the Alföld region), as well as *differentiated society structure* (there was individual-like society on the Transdanubian region while forming more solidary, collective society against the Turk conquerors on the Alföld region), and on the Transdanubian region, *effects of settlements traditions from the neighbouring countries*, as well [1].

2 ROLE OF GEOMORPHOLOGY IN DIFFERENT STRUCTURAL DEVELOPMENTS OF SETTLEMENTS ON THE TRANSDANUBIAN AND ALFÖLD REGIONS

Previous researches pointed out *manifold interrelations between natural environment and functionality of historical settlements*. Beside the determinative effects of the natural environment (e.g. bridge town, miner village, etc.), roles of geomorphology [5] and surface water systems on settlement ichnography 2 were mainly emphasized.

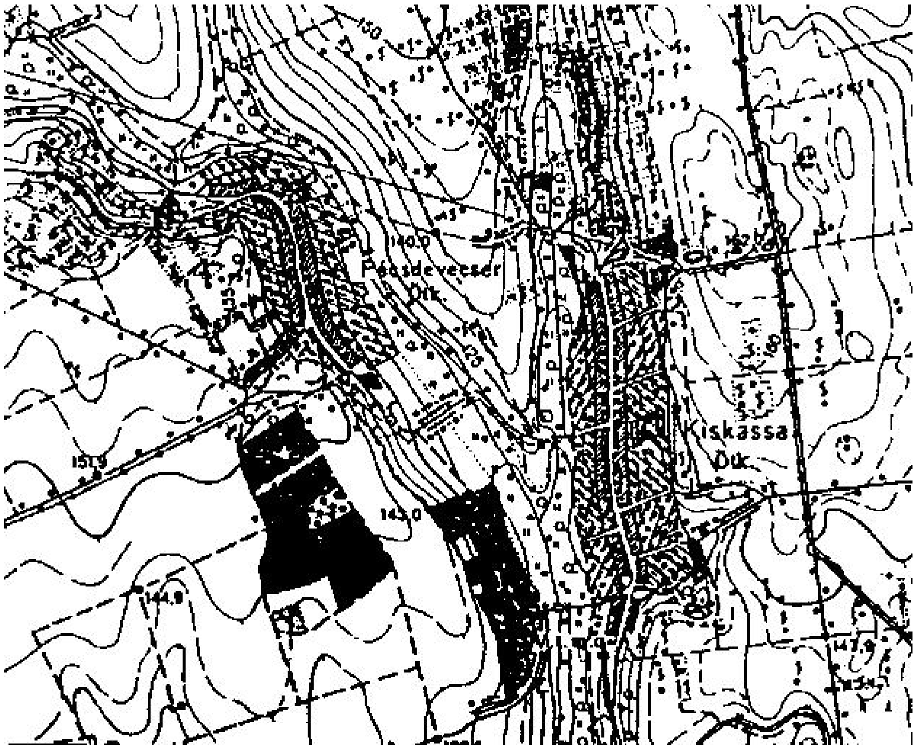

Figure 2: A sample from Suth-Transdanubian researches. The formation of villages was determined by humid valley foot and steep mountain side (Pécsdevecser and Kiskassa) [4]

First, distribution by country parts of the different varieties regarding settlement structure and morphology outlined above was investigated in relationship with geomorphology. It can be stated that *cluster- type settlements with double inlots* have been formed out on the *flatland areas of the Alföld* while *most of line- type settlements with conglomerate composition have been established on mountain-like and hilly areas of the country (i.e. on the Transdanubian region, and in the Northern Middle Mountains "Északi-középhegység"*.

While the average relief height differences among the inner parts of settlements on the Alföld flatland region reach only half a metre, this feature ranks 2-3 metres on the Kisalföld flatland region and correspondingly, on the Transdanubian hilly settlements 5-10 metres, as great as even 50-100 metres on mountain settlements. These significant differences could contribute to the fact that *settlements with "near- ideal round shape" being more independent from relief situation and having advantageous properties could be formed out on the Alföld flatland region, in contrary to the topographically stronger determined settlements of the Kisalföld flatland region and the other mountain or hilly areas with more diversified surface* [10].

In the followings, settlement structural investigations with geomorphologic approach of two towns on the North Transdanubian region - Kapuvár and Győr - are to be presented.

3 GEOMORPHOLOGIC INVESTIGATION OF THE DEVELOPMENT OF A SETTLEMENT (KAPUVÁR) KNOWN FROM HISTORICAL MAPS

The town Kapuvár played the role of the control gate of a land protection system (in Hungarian: “gyepű”) on the western border after the time of the so-called “home conquest” at about 800-900 A.D. [3]. From 1558 it had the title of “oppidum” (market-town), then for hundreds of years it was one of the district seats in Sopron hundred. Nowadays, the town has some 10,000 residents [6].

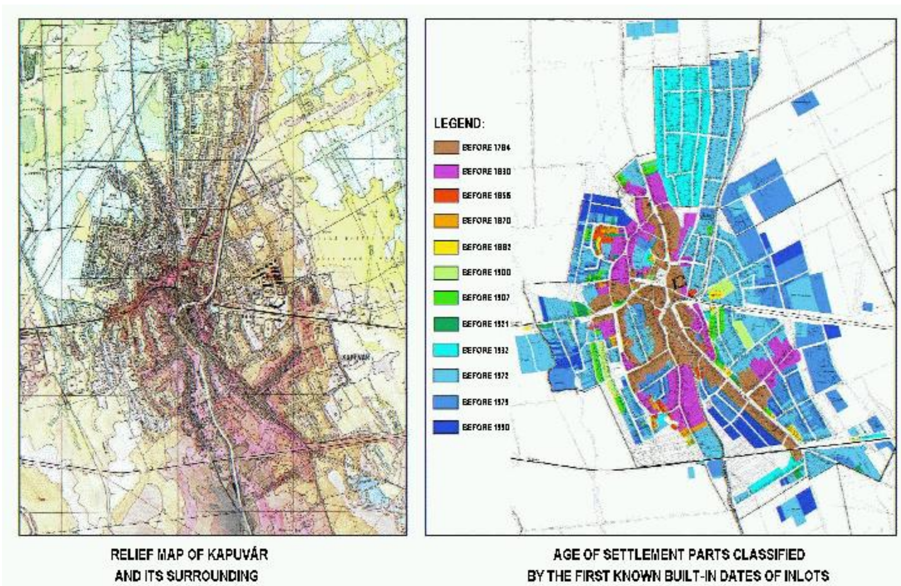

Figure 3: Kapuvár. Strong correlation between geomorphology and increase of built-in grounds at ages prior to the river regulations of the 1880´s. (Using numerous historical maps, compiled by A. Somfai).

First, during the geomorphologic investigation, an answer was searched for the question, *what kind of relationship can be proved between the relief features and settlement structure of Kapuvár*. On the coloured topographical map on the scale of 1:10,000 3, *ranges of alluvial fans of the river Kis-Rába emerging from the water-shaped flatland* are definitely observed, the first inhabitants settled down here. Upon one of the highest situated assemblages of these relief ranges was built the motte in the Bronze Age - this fortress means the ancient kernel of later settlement. Sections of the *ancient axes inside the settlements* - the road to the town of Sopron, as well as the road through Babot to the towns Pápa and Győr - *evade from their “ideal” directions* since they follow the ranges of alluvial fans having drier surface (the present line of the road to Győr is considered the result of a recent out-of-alignment modification made in the 1930´s) [11].

In the second part of our geomorphologic research it was analysed *what kind of relationship can be proved among relief-height zones and the progressive settling-in at Kapuvár* 3. A settlement relief map was prepared then Figure 3 showing the building-in processes was compiled on the basis of historical maps representing 12 different sections of historical ages. According to this figure, the settlement elongated by the main roads in the 18th century, then gradually widened from the 19th century. It can be stated that *there exist close correlations among settlement relief zones and the ages of first built-in ground clusters* at periods before the so-called “river regulation era” of the 1880´s (after this river regulation time limit, building-in process depends only slightly on relief) [11].

4 ROLE OF SETTLEMENT RELIEF INVESTIGATION IN DETECTING SETTLEMENT STRUCTURES NOT KNOWN FROM EARLIER HISTORICAL MAPS (GYŐR IN THE EARLY MIDDLE AGES)

4.1 CORRELATION BETWEEN RELIEF AND ASSUMED SETTLEMENT STRUCTURES IN THE EARLY MIDDLE AGES

The town Győr, erstwhile free royal privileged town with privileges, is today the most important town with 130,000 inhabitants on the northern region of Transdanubian. The town itself, lying at the crossing point of the rivers Mosoni-Danube, Rába and Rábca, has developed through the connection with the passing-place at Rába-influx. Settling down of the people, later the campsite arrangement of the Romans (and the connected town of civilians), and then - after the fall of it - the formation of settlement structure in the early middle ages having been changed till our times, as well as the phases of medieval castle erection works were affected by the nature of landscape with river-cut relief.

The early medieval town of Győr lay on the area of today’s downtown. The so-called *Old Castle* (“óvár” in Hungarian) girt with moat - *the ancient kernel of the settlement* - was built on the superelevated Chapter Hill (“Káptalandomb”) situated at the crossing-place of the rivers Rába and Mosoni-Danube. Then the so-called *Castle Foot* (“váralja”) was established on the dry lands in the neighbouring areas that was then closed round with wooden fencing composed with balk skeleton [2].

The Castle Foot might be constructed with *irregular, “striated” street structure* consisting of very narrow streets, but no map-like representation is known. Today, on the area of the erstwhile fortress, in the downtown of our times, there can be found a street system with rigid, near rectangular network. It is assumed by some researchers that construction of this *rectangular-type street-net was only started following the series of rousing fires on the basis of plans worked out by Italian artificer officers-engineers* at the time of consolidating the fortress for the Italian castle-system in the second half of the 16th century [8].

In 1998, an attempt was made by the architect Gábor Winkler for partial reconstruction of the village structure of the early middle ages. The irregular parts of streets and squares remained at some places were graphically coloured on the map of the downtown, establishing thereby connections among them [14]:536. It was also shown that the ground borders having “dubiously bevelled” situation found inside the ground system on the western side of the downtown tale about the state of settlement structure before the subsequent opening of streets [14]:540.

In historical times wars, fires and floods resulted in regular destroying and re-building of the buildings of Győr. Original settlement level is increased even by 6 metres through the rubbish deposited till today. It is now assumed that investigation of the present relief situation can contribute to demonstrating the settlement structure in the middle ages, too - in lack of numerous archaeological excavations (our presumption is that the thickest accretion caused by cultural reasons can be observed at higher places lived since the oldest times). A relief map is therefore made by the authors with half a metre level increments and then the street network assumed of the medieval times was projected on this map. *A very close relationship was proved between the street network thought by Gábor Winkler as of early medieval origin, and the marked, slightly curved hilly line of today's relief of the downtown*4.1. Additionally, inner series of ground borders not matching to the rectangular street system of our times were discovered that might be nearly perpendicular to the erstwhile longitudinal oriented streets matching to the curved hilly range [9].

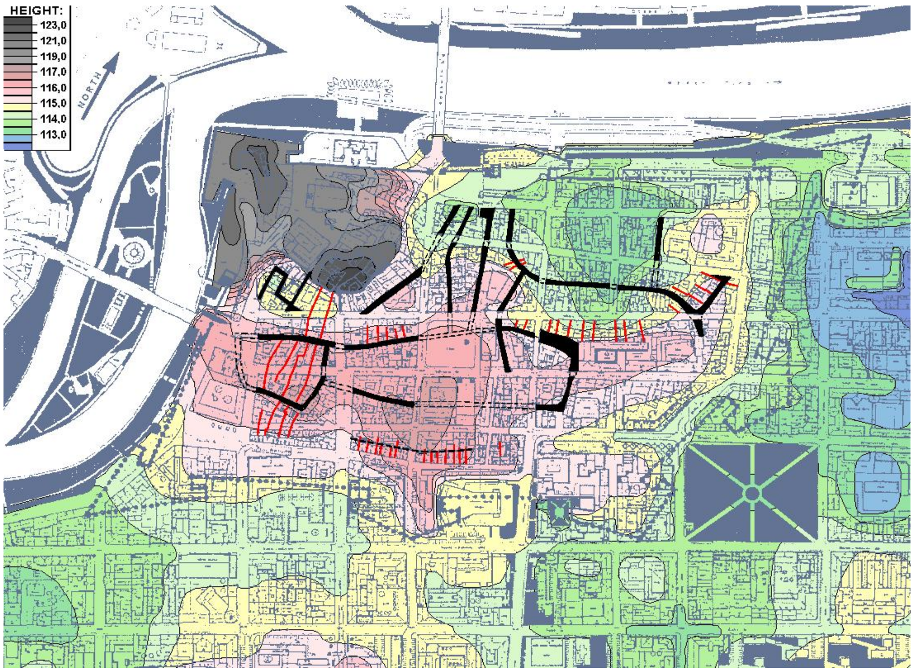

Figure 4: Town centre of Győr. Close relationship between the street network thought by Gábor Winkler as of early medieval origin, and the relief situation of our times. Witness-borders of grounds innerly situated, that were accompanied to the streets as assumed are marked by red lines [9]:24.

From the curved hilly range, extension of the village in the early medieval times can also be concluded besides its west-east orientation. Northeast part of the fortress area strengthened in the middle ages *is even in our times 2 metres lower in average in relation to the ancient hilly range*. We are of the opinion that this *could not be composed the part of the village in the early middle ages* (and its stock of buildings is even of newer origin). - Further, these assumptions can be made more precise through combined analyses of data obtained from newer archaeological excavations as well as geotechnical type borings [9].

4.2 MORE PRECISE DETERMINATION OF THE ASSUMED SETTLEMENT STRUCTURE IN THE EARLY MIDDLE AGES

For better understanding of the development of the assumed settlement structure in the early medieval times, *outer connections* of the settlement of that time *were also analysed, since they*

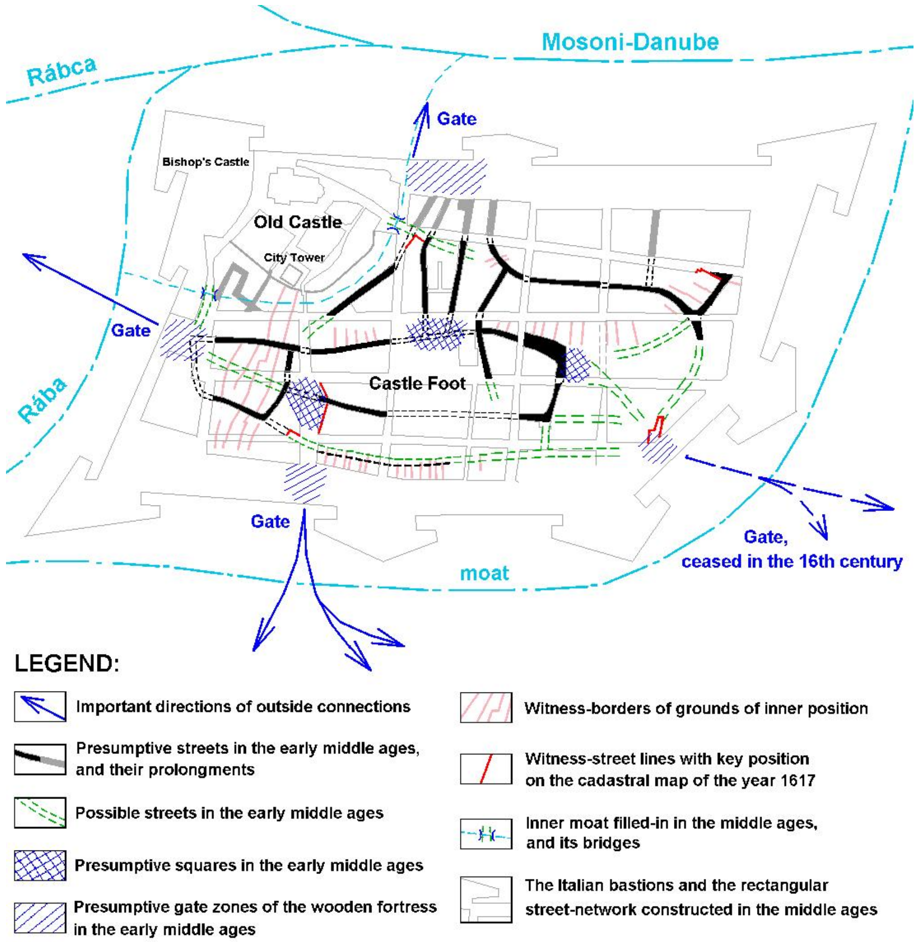

Figure 5: Győr. Outer connections, presumptive streets and possible streets of the Castle Foot in the early middle ages. Outlines of the castle with Italian bastions as constructed after strengthening in the middle ages, as well as the new system of streets are also described [9]:25.

could significantly affect the inner arrangement of the settlement, as well. Exact form or shape of wooden fortress - made with fencing composed with balk skeleton - closing around the settlement of the early middle ages is not known but it is already discovered that the outward exit directions of the four gates existed in the wooden fortress were taken into account at the times of the later consolidation and strengthening of the castle according to the Italian system. Nothing sure is known also about the street lines leading to the gates of the wooden fortress but the streets might converge into smaller or greater squares in front of the gates, similar to other European towns.

After having discovered the outer connection system of the settlement in the early medieval times, the cadastral map of the year 1614, made by 50 years later after opening the streets by artificer officers-engineers, was thoroughly investigated. On this map there are discovered newer witness-borders of ground relating to the situation of the streets and squares inside of the former settlement structure.

At the end, a more exact hypothesis is set-up for the settlement structure in the middle ages 4.2. On the hypothetical map, *besides the streets most probably existed on the basis of ruins from the medieval times, some streets that might have logically acceptable direction lines not* *proved till today are also being described and drawn.* It is considered and believed that these hypotheses maybe thought venturesome can do contribute to the success of future researches, as well.

5 THEORETICAL AND PRACTICAL SIGNIFICANCE OF TOPOGRAPHICALLY BASED SETTLEMENT INVESTIGATIONS

Geomorphologic approach can also obtain greater roles in settlement science researches with technical character in the future besides geographical sciences. In case of investigations of historical settlements, topography of the landscape surrounding the area - e.g. relief, surface waters - is proposed for analysis. With the help of examples given, attention is called for certain new methods:

A) Previously unacknowledged questions emerging during the research of historical settlements can be answered with the analysis of the correlation between *relief and settlement structure* in case of historical settlements. Relief of an inner area can easily be misinterpreted during the inspection of the spot owing to the dense building-up. On the basis of historical considerations of some settlements, the author is of the opinion that important new results can be achieved at investigations of historical settlement structures - which compose also a part of settlement science having technical character - through *detailed map analysis of settlement relief.* Attention must be drawn here to the fact that it is very actual to investigate relief relations of the Transdanubian settlements having more diversified topography than that of the Alföld region, because these Transdanubian settlements have been investigated only to a smaller extent related to those of the Alföld region.

B) In historical settlements with engineering reconstructed structure, determination of former settlement structure can considerable be supported by irregular remains of streets and squares to be sometimes found in the road system after regularization, and even the so-called "witness lines of parcel boundaries" being situated at an inner and hence less disturbed position of the parcel system.

The methods described are highly proposed for application in connection with pragmatism of historical development of any expanded settlement in our modern times trying to keep value conservation in the foreground, as well as in consideration of further development of a settlement structure system 5. Reasons lie partly in possible preservation of formations with historical significance found, but on the other side, in order to change or improve 5 the structure of our settlements in such a way that reflects our understanding of history - even in case an appreciative change seems to be inevitable.

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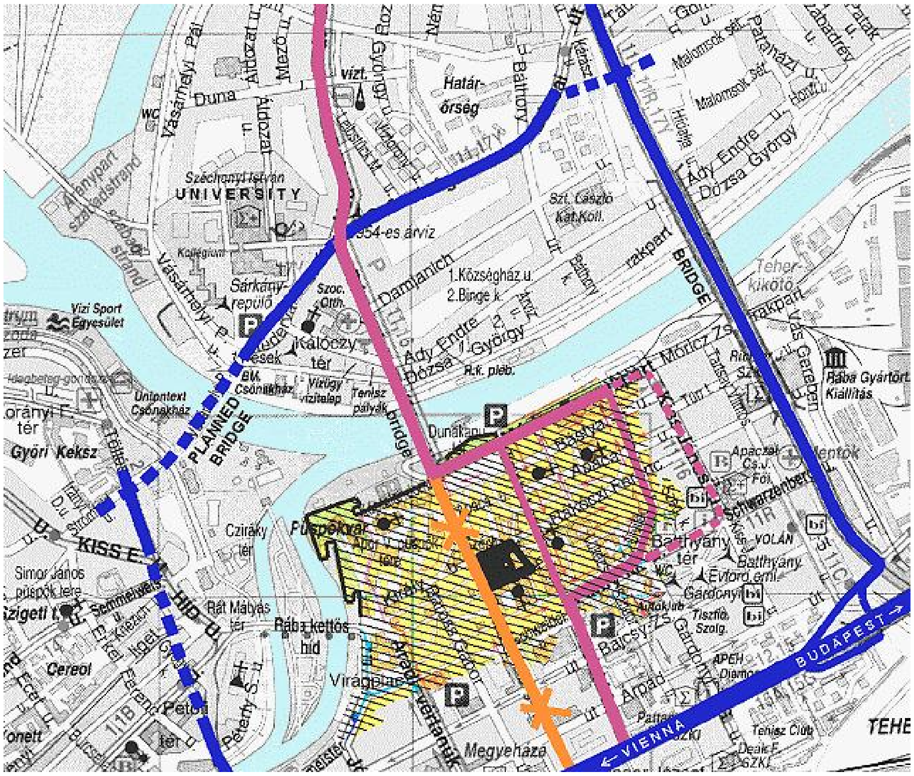

Figure 6: Győr. Traffic reduction in the historical kernel of the town centre. Present and planned attempts (violet). Long-term plan of a boulevard (blue) by pulling down some buildings and rebuilding a former highway bridge, which has been pulled down in 1969 (compiled by A. Somfai).

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Figure 7: New villa park on the hillside at Várgesztes, 1999 The plan is intuitively drawn on the richness of the Hungarian settements' structures and also deals with the topographical features of the area [12]:154.

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