

TREES IN URBAN STRUCTURE OF RURAL RESIDENTIAL SUBURBS – THE CASE OF BRATISLAVA, SLOVAKIA

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Suburbanisation processes and various aspects of their manifestation belong to the most discussed topics in contemporary urban and landscape planning. One of the characteristic features of suburban residential urban structures is the homogeneity of mono-function private residential parcels and absence of public space and its diversity. These architectural and urban design characteristics predetermine the possibilities of woody plants – trees existence within the urban spatial structure. The paper describes the characteristics of urban structure of suburban residential areas as a factor creating basic spatial preconditions for tree performance and presents the results of the research in the cadastral areas of village settlements near Bratislava.

Keywords: urban trees, suburban residential structure, urban greenery

Introduction

Suburbanization is most often characterized as a process of moving city dwellers to the city suburbs or into the surrounding rural village settlements. The beginnings of this process occurred in Slovakia since the nineties of the 20th century. Apart from the seventies and eighties, when people moved into cities, in the nineties the concentration tendencies began gradually to change and the deconcentration tendencies started to manifest themselves by moving the city population to the countryside. The villages, where the processes of suburbanization exhibit themselves most sharply, are located in the hinterland of the largest Slovak towns. The process of suburbanization is linked with agglomeration tendencies, too – the nuclear town attracts into its hinterland immigrants from distant regions (Sopirová, 2011). In Slovakia, the processes of suburbanization and agglomeration are most characteristic for the villages in the hinterland of the capital Bratislava. Negative aspects of suburbanisation processes, for example conflicts with interests of landscape protection, agricultural land preservation, or changes of the character and identity of the rural landscapes and rural settlements (Štěpánková and Biňušová, 2013), etc., belong to the most discussed topics in contemporary urban and landscape planning (Štěpánková and Kristiánová, 2012). Suburbanization and agglomeration processes cause rapid growth of the rural village settlements around nuclei towns and cause significant changes of the village settlements urban structure, especially on borders, in the landscape contact areas (Sopirová, 2011). The design of the urban spatial forms of suburban residential housing often does not

meet the desires “to get closer to nature” (Vitková and Kollár, 2007).

The processes of suburban residential development also significantly affect the character of vegetation structures typical for village settlements, which are traditionally perceived as a factor in a significant way creating genius loci, or identity of „rurality” associated with village settlements. Vegetation, greenery of family private gardens, cemeteries, churches, school campuses, vegetation of historic parks and gardens, landscape greenery of surrounding countryside infiltrating into urban structure, etc., creates an essential part of the traditional heterogeneous multifunctional urban structure of rural settlement (Gécová, 2013). However, the characteristic feature of the new development of suburban residential structures is the homogeneity of mono-functional small-sized private residential parcels and the absence of public space and its diversity (Štěpánková and Kristiánová, 2012).

We presume that these characteristics of urban structure influence the characteristics of vegetation structures in rural suburban residential areas. The architectural and urban design characteristics of the rural suburban residential areas predetermine the possibilities of woody plants – trees existence within the urban spatial structure. We presume that the spatial limits of small-sized parcels of suburban residential zones, limited spatial dimensions of streets and absence of diverse public spaces markedly limit the opportunities and possibilities of woody plants – trees existence within the urban spatial structure and the use of woody plants – trees in landscape design.

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Material and methods

The relationships between spatial conditions of public and private spaces and tree existence and performance have been examined in the cadastral areas of suburban residential zones of village settlements near Bratislava, on the development axis towards Senec – Ivánka pri Dunaji, Bernolákovo, Veľký Biel, Chorvátsky Grob, and Slovenský Grob. For the purposes of the research, the aerial photographs of the area of suburban residential structures have been used. Available urban planning documents and projects of residential zones have been examined, as well as, the research on particular sites has been conducted. The research followed main steps: 1. identification of the contemporary patterns and the spatial potential of trees and tree formations existence within public spaces of suburban residential structure, 2. identification of the contemporary patterns and the spatial potential of trees and tree formations existence within private garden spaces of suburban residential structure.

Results and discussion

The results of the research of the residential suburban structures in the cadastral areas of the villages – Ivánka pri Dunaji, Bernolákovo, Veľký Biel, Chorvátsky Grob, Slovenský Grob Ivánka pri Dunaji, Bernolákovo, Veľký Biel, Chorvátsky Grob and Slovenský Grob prove the characteristic feature of suburban residential quarters – absence of diversity of public spaces and homogeneity of mono-functional small-sized private residential parcels. The urban structure is usually composed in forms of streets and private plots of family houses, and the dimensions of public space of street structure and dimensions of private parcels follow the economic and financial interest of developers towards land use (Figure 1).

1. The research of contemporary patterns and the spatial potential of



Figure 1 Typical urban structure of rural residential suburbs in Chorvátsky Grob – Čierna Voda: homogeneity of mono-functional small-sized private residential parcels and absence of public space and its diversity limit spatial possibilities of tree existence
Source: Google Earth



Figure 2 Typical street of rural residential suburbs in Chorvátsky Grob – Čierna Voda, its parameters allow only traffic access
Photograph: Kristiánová, 2014

trees and tree formations existence within public spaces of suburban residential structure shows, that in public space the possibilities for the use of trees, or their spatial formations, as tree alleys or groups of trees, are limited. In most of the cases, the public space is reduced only for the needs of communication function. Prevailing typological form of public space is street, and its parameters, usually 6 m wide corridor, most often allow only

traffic access, without the possibility of accompanying greenery, also in respect to restrictions put by technical infrastructure, which uses the street corridor, too. In some cases trees of small dimensions, with limited spatial parameters (height, size of crown), in tree row or tree alley formations are applicable (Figure 2).

Specific conditions of public space of suburban environment create only very limited possibilities



Figure 3 The spatial conditions of urban structure limit the size of trees. Chorvátsky Grob – Čierna Voda
Photograph: Kristiánová, 2014



Figure 4 Density of the low-rise residential structure does not allow the woody plants to exceed the height of the roofs of the family houses. Chorvátsky Grob – Čierna Voda
Photograph: Kristiánová, 2014

for the trees and their spatial formations utilization and for the woody plant species and cultivars choice. Lack of typological diversity of public spaces means the lack of public greenery in urban structure. Only few cases in the examined area are found, which bring diversification into public spaces – for example by integration of commercial services – shopping centres, or by use of different concepts of residential housing with common green public spaces, what gives spatial opportunities for existence of sizeable solitaire trees or tree groups performance. In examined area, for example the project Triangel offers an artificial pond as a „central relaxing zone“, fulfilling aesthetic-relaxation function, and in the same time catch-water and hydro-melioration function for the whole residential area.

2. The research of the contemporary patterns and spatial potential of trees and tree formations existence in private garden spaces of suburban residential structure shows that in private space of the private gardens the possibilities for the use of trees are limited, too. Index of built up area of the small-area parcels (ranging from 450 m² to 650 m², mostly around 500 m²) is high, from 0.35 to 0.55 in average, again giving only limited spatial conditions for sizeable solitaire trees or tree groups performance. Only small-sized trees or trees kept small by pruning have been found in the private gardens of the examined area. The height of trees does not exceed the height of roofs of the family houses (Figure 3 and 4).

The research of residential suburbs in hinterland of Bratislava proved the assumption, that the spatial limits of small-sized parcels of suburban residential zones, limited spatial dimensions of streets and absence of diverse public spaces markedly limit the opportunities and possibilities of woody plants – trees

existence within the urban spatial structure and the use of woody plants – trees in landscape design. The urban structure of examined rural suburban residential areas does not give spatial conditions for existence of sizeable solitaire trees or sizeable tree groups performance both in public, as well as private space. Only trees of small dimensions, with limited spatial parameters, or trees of managed size are applicable. Sizeable trees, so typical for traditional heterogeneous multifunctional urban structure of rural settlements – in public spaces around churches, central social spaces or village squares (Bašová, 2004), cannot find their place in suburban residential structures.

The research focused on spatial aspects of tree performance within urban structure of rural residential suburbs, but there are other interesting aspects. While for the private family gardens of traditional historical urban structure of village settlements is still typical their production use (Supuka, Feriancová and Tóth, 2013), represented for example by various fruit trees associated with identity of village settlements, the private gardens of residential suburbs fulfil mostly recreation, relaxation and aesthetic functions, what is reflected in assortment of woody plants – introduced, exotic, or evergreen are very popular.

Conclusion

Vegetation structures represent an important element, able to enhance aesthetic, architectural, cultural and ecological qualities of village settlements. Urban structure creates basic specific preconditions for utilization of trees as spatial elements in urban structure and creates specific requirements for utilization of tree species and their cultivars. The processes of suburban residential development significantly affect the character

of vegetation structures typical for village settlements. According to the research results, it appears that creation of multifunctional heterogeneous environment, or application of various residential urban planning schemes, which are able to bring spatial differentiation into both public and private premises of urban structure, in the same time means better spatial conditions for trees existence and performance within urban structure.

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