THESES OF THE DOCTORAL DISSERTATION

entitled

DEVELOPING THE METHODOLOGICAL ASPECT OF GREEN NETWORK PLANNING –

THE EXAMPLE OF THE BUDAPEST FRINGE AREAS

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Budapest
2007

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THE PRELIMINARIES OF THE RESEARCH PROJECT

Since the change of political regime **substantial transformation** has been taking place **regarding green space** in the urban and peri-urban areas. This change is especially striking in the **fringe areas[1] of Budapest**. This is one of the reasons for selecting this urban zone as the case study area to deal with in the dissertation. Another explanation of choosing this case study area is that due to the densely built physical structures the possibility to extend the inner-city public green space is very limited. There are potentials in the rust belt of the transitional zone, but the territorial growth of green space is not expected to be noteworthy. The urban fringe and the suburban zone however, have an immense potential of growth in this respect. This is nearly as big as it was at the time of large-scale public park constructions in the cities of the 19th century Europe. Unfortunately, the processes taking place in the urban zone in question act against the public green space development. The topicality of the issue is indicated by the pressure generated by the intensions to build up the existing green space, which – unless urgent measures are taken – might easily cause the disappearance of green areas of key importance in the urban fringe.

In the **Budapest agglomeration zone** by the accelerated shrinking of the biologically active surfaces, by the re-qualification of vast expansions of land into to-be build up areas as well as by their actual building up such **dramatic processes** are taking place that seriously endanger the possibility of long term sustainable development. The **two major contributors** of this process are the – recently slightly diminishing pace of – **sub-urbanisation** and the unbroken proliferation of the **green field investments,** which are wasteful regarding land use**.**

According to the present practice the green space system exists only on the conceptual level. There are some sporadically implemented projects or project components, which – having been built upon an explicit strategy – are intended to become parts of a system in the long run. **The implemented green space investments contribute merely to the development of certain segments of the green space system. There are hardly any signs that there would be a systematic, conceptually-based green system building in the background.** System building means only realising project components, while making them work as a real system fails to be realised.

OBJECTIVES OF THE RESEARCH

When defining the aims of the dissertation I visualized an idyllic picture of the new urban renaissance, in which urban life becomes an attractive alternative and the urban community is kept together and in place by invisible bonds instead of mere

[1] In my interpretation fringe areas include the fringe districts (completed with parts of the 10th and 20th districts and exclusive of certain parts of the 11th and 2nd districts), as well as the innermost settlement ring around Budapest (exclusive of the parts of the concerned settlements situated far from Budapest).

constraints. The green space structure with unlimited access – netting every parts and parcels of land – plays an immense role in creating these bonds. This is the space structure, which determines the physical environment of people's existence in society, and strongly influences the quality of life. The green space structure is the green *network* itself, whose changes – invisible for most people – drift reality away from my visualized idyllic picture. The intention of stopping and reversing this process stand in the background of defining my research aims. Accordingly, my objectives are:

- To analyse the role, value and importance of public green spaces that urban communities have free access to as well as to find the possibility to involve other green areas into public use;
- By updating – in harmony with the green space system planning – the methodological background of green space planning to create a new green network planning methodology, which besides the ecological and settlement structure roles strongly integrates the social functions of urban green space;
- To examine multi-level hierarchy of urban green space of recreational purpose, to demonstrate its differentiatedness and to possibly expand it on the base of the analysis;
- To underline the scarce representation of the recreational role of green space in planning methodology in the urban fringe areas and to elaborate a green network strategy built upon the special conditions.

THE METHODOLOGY OF THE RESEARCH

The planning methodology of the urban green structure

According to my hypothesis the national green space and urban development planning practice does not give enough attention to the integration of social functions of green space in the fringe areas of the city. To remedy these deficiencies re-consideration of planning methodology is needed in the first step.

In order to revise the methodology first the current terminology of green space planning was surveyed, evaluated, and completed. To justify the hypothesis the social impacts of the transformed ownership structure caused by the post-socialist privatisation processes was revealed from the aspect of public, mental and physical space structure. The negative tendencies concerning the changes of space structure draw the attention to the social importance of the green space left. In the next phase I analysed some presently ongoing international research projects and planning theory works with special respect to the structure of urban green space systems as well as the role of social function of green space in mainly urban fringe areas. Then, via the examination of the practical side of urban structural planning and green space planning I justified the hypothesis, which points out that today's planning methodology is not prepared to let the varied tasks and impacts of green space systems manifested according to their real significance.

Having revealed the weak points of the planning process by the elaboration of a two-pillar planning system I made a proposal to remedy the deficiencies.

Green network on the urban fringe areas

After laying the foundation of the new planning system I analysed in details the hierarchy of the green space sub-system (physical, functional, mental and qualitative), which serve the social functions defined by the new methodology. A new hypothesis was set up, which suggests that the expansion of green space hierarchy is needed to sufficiently integrate the social and recreational role of the urban fringe green space system in planning.

In the first step of justifying the hypothesis by the analysis of the public green space sub-system of the concerned legal context and by examining the plans and programmes dealing with the fringe districts of Budapest I pointed out the present deficiencies of multi-level green space planning. Having taking into account the experience of Hungarian and foreign research on public space and public park use and that of the planning practice I made a proposal for the expansion of the multi-level hierarchical system of green space planning. Further analysing the research on public space and on public parks the special needs of the Budapest fringe districts regarding green networks were revealed. With the knowledge of needs in mind I examined the conditions of the target areas and on the basis of the outcomes I presented a strategy for the development of public green space systems in the Budapest urban fringe areas.

OUTCOMES, CONCLUSIONS AND PROPOSALS

The revision of the terminology

In the chapter dealing with the clarification of the terminology I refer to the exceptional complexity of term *green space system*, and I also deal with the contradictions hidden in the term itself. A **redefinition** of the term happens to promote the explicit and exact professional phrasing and the more efficient enforcement of green space planning interests. The revised term is based on the definition of green space. It merely expands its meaning and generates such extra connotation that considers the **green space system** as an „organic texture", which is in close connection with its environs i.e. the settlement/urban system.

The new definition expressly emphasizes the urban ecological and urban structural role of green space. A **„new" term** was made: the *green network* (the spatial system of public green spaces), which mainly participates in serving the social, economic and aesthetical roles of green space. **By the definition of green structures a collective term was created, which is able to integrate both the re-interpreted *green space system*** and **the *green network***. This way a new terminology is created, which places the planning methodology on new foundations.

The constriction of the public green space systems in Hungary

In this sub-chapter the psychical and physical tightening process of the **green spaces with free access** (most of which is meant by the green network) is highlighted, which was generated mainly by the post-socialist privatisation and the consequential ownership change. In spite of the fact that most of the related legal transformation has already taken place, the social impacts (the realization of the consequences) of the process is still ahead of us. The treatment of the uncertain situation, which affects basic human rights (right to free movement) is a significant social-political issue. **Some** concrete **examples** are used **to demonstrate the basic components of the process**, and a proposal is given in the interest of slowing down or even reversing it.
The outlined processes are warning us of the substantial transformation taking place in the **public green structure, which has been greatly under-considered so far in Hungary**. The social consequences of these tendencies are unforeseeable. The intensive changes are concentrated to the environs of the middle-sized towns as well as that of the larger ones. The location and scene of the processes in question expressly **require the intervention of the landscape architect profession**.

Conclusions of the related professional experience abroad

In the practice of green space planning abroad the social aspects are considered to a lot greater extent than in Hungary. The *London Strategic park project* made me realise the **necessity to consider the possibility of establishing regional parks in Hungarian green space planning as well**. While the *SAUL* international research programme draws the attention to the fact that green space development of urban areas acts as a catalyst regarding the economic development of the wider area and plays a key role in strengthening social welfare and well-being. It points out that the green space of urban fringe areas may play a leading role in this development process. The London *Green Act* project points out the importance of thinking in terms of cross-administrative-border green network strategies. The scrutinized CROW Act (Countryside and Rights of Way Act) obliges the authorities by the given deadline to prepare a **comprehensive map presenting all the public green spaces** in the country. Such a thematic map is badly **in need** in the Hungarian planning practice too.

Conclusions of the analysis of green network planning in Hungary

In this part of the dissertation I consider acts, decrees plans and programmes of national and Budapest scope and examine the effectiveness and impacts of urban ecological, urban structural as well as social recreational functions. Besides, I take my side regarding some key planning-methodological issues.
In the chapter I conclude that in the **most recent years** in the planning hierarchy a **positive change could be observed regarding the judgement of green space**. **The changes** can be detected in the construction regulations and are prompted **primarily by urban ecological and urban structural considerations**.

However, owing to the deficiencies and delays of regulation the expected impacts will generate only small scale changes in the near future. It is also essential to note that the **social aspects of green surfaces hardly ever** or only indirectly **get built in the** construction **regulations in Hungary**. Within the sub-chapter after the comparative assessment, due to the timeliness of amendment related to the closely scrutinised the Budapest Urban Zoning Regulation Framework [BVKSZ] (Budapest Construction Regulation Framework [BÉK] – proposal), I propose concrete suggestions to eliminate the negative tendencies of the legal context.
Having assessed the Budapest Urban Strctural Plan [TSZT] I propose, that besides the **presentation of the planned state it is also important to show the present spatial arrangement of land use**, otherwise the plans become difficult to interpret and tend to show a far too idealistic vision for those who are less experienced in the issue. I highlight the drawbacks of the illustration technique in structural plans, which only makes a distorted visualization of green spaces possible. **In the visualization of the urban ecological and urban structural functions of green space systems I propose a categorization based on biological activity** (in different colours by land use units) to serve the interest of urban ecological balancing effect and that of the more realistic presentation of urban structure.

Green structure: green space system + green network in urban planning

I conclude, that in the urban planning process over the social issues the general integration of green space reflect a fairly bad situation in Hungary. Therefore, I suggest the initiation of reforms in the planning process, which does not expect the solution from the brand new scientific outcomes but – besides the extensive use of them – is able to reproduce our current knowledge in a more convincing and efficient manner.
In the *base-pillars*
sub-chapter the basic functions of green space are taken into account. I**n the interest of their efficient integration into planning I distinguish the following groups of functions**:

- **urban ecological-urban structural** (*green space system*)
- **social-recreational**, economic and aesthetic (*green network*)
- **of environmental protection**

I also point out that these **three groups act as the three pillars of the concerned planning fields** (landscape planning, land use regulation). **The distinguished but simultaneous involvement of the three pillars** in the planning process contribute to the birth of clearer objectives, easily comprehensible, simpler plans, and establish the conditions of a **more efficient intervention** and **enforcement of interests**.

The layout of the plans
In the sub-chapter I determine the way the new plan-structure built on the three pillars is integrated into the planning process. The new structure is presented in

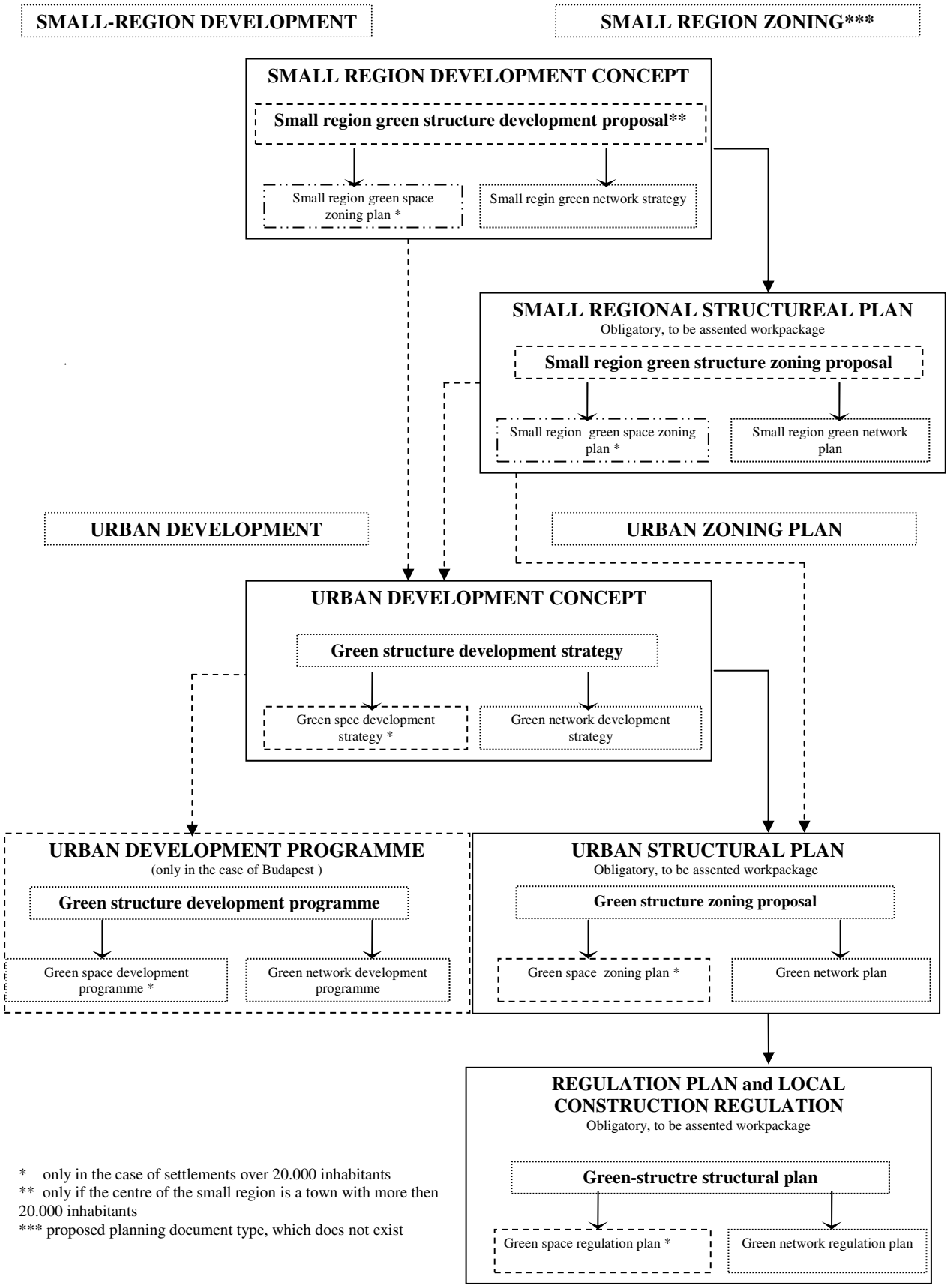

Figure 1. Green network planning in the urban and small regional planning process

Figure 1. After this step **I set the basic structure of the new work-packages of planning:**
in the plan of the new *green space system* (to judge the tasks to be done in a more reliable way) the presentation of **separated examination and planning sheets are necessary**. The urban ecological conditioning effect of the vegetation depends on the structure and intensity of the green spaces present in the proximity of the built elements of the urban environment. Therefore, the **base of the planning sheets** is determined by the **value of the biological activity** calculated on the basis of the ecological conditioning effect. Therefore, the planning sheets coloured according to the values of the biological activity excellently illustrate not only the urban ecological features but also the green space structure, which determines the urban structure itself. Both **the protected and to-be-protected natural values are indicated with different patterns** this way assuring the interests of protecting biological diversity in the planning process.

The ***green network plan*** also **consists of several planning sheets**. It contains the ***green network planning sheet*** and the ***sheets of the green network supply***. On the sheets of green network supply the everyday and occasional accessibility of green network should be presented. **On the green network planning sheets the present and the proposed green network components are equally to be shown. The proposed elements are illustrated in a colour other than green** (e.g. red)**.** This way the planning sheet makes the present structure of the green network, as well as the need for acquisition and re-qualification of land to reach the proposed state easily readable. **The colouring of the current elements of the green network are to be changed according to the degree of building-up, type and intensity of use. The restricted use – in line with the type and degree of the restrictions – is indicated by the tone of the colours**. The linear components are to be grouped according to the state of development and (the qualitative and quantitative features of) the landscape.

The proposal of the cross-administrative-border planning cooperation

I highlight the conflicts between the middle-sized and larger urban settlements and their neighbouring areas caused by the planning documents which are differently detailed and prepared in distinct depth. To avoid these conflicts I made the following proposal: for urban settlements with over 20 000 inhabitants and their neighbouring settlements a common cross-administrative-border green network strategy should be worked out. The scene of the planning cooperation can be determined on the level of the small regions. I propose to introduce on this level a new zoning plan type, the regulation plan, which is based on the development concept of the small region. One component of this is the small region green network plan. (Figure 1.) **Based on the common strategic and structural plan a green network strategy is to be elaborated for each settlement segment or district. These strategies form the foundation** of the ***green network plans***, which appear in the zoning plans. This type of plans **need to consider and illustrate** a **1km buffer zone towards the neighbouring administrative units.** Due to the special situation of the capital city

and the agglomeration zone another level and document (the region) are recommended as the spatial planning unit of public green system planning: this is the Budapest Agglomeration Zoning Plan. Therefore, besides the *national and regional ecological network zone* the establishment of a new *regional green network zone* category is indispensable. [2]

Spatial hierarchy

In this chapter I conclude that **in the green network development strategy of the urban fringe areas there is no planning procedure** – ready to serve weekend and occasional recreational activities – **which would be able to treat the different land use categories** (green space, forest) **uniformly**, a green network category standing beyond urban parks.

In the *Spatial elements*
sub-chapter I analyse the current categories of green network hierarchy, then I make a proposal for the establishment of a new, more differentiated system with 6 categories instead of the 3+1 presently in use (Chart 1.). On the basis of the Hungarian research outcomes and my own research results **I determine the size-range of the six categories** and justify the rightfulness of spatially differentiating the new categories. The first five types can only integrate one land use category (green space) while the sixth one**, the *regional park* type can do it with many of them** (forest, green space, agricultural land (meadow), water management area).

Chart 1. Proposal for Budapest's Public Open Space Hierarchy

OPEN SPACE CATEGORISATION	*SIZE GUIDELINE*	*DISTANCE FROM HOMES TO OPEN SPACES*	*DISTANCE REFINED TO TAKE INTO ACCOUNT BARRIERS TO ACCESS*	LAND USE CATEGORY
Regional Parks	Over 150 ha	6 km		forest, public green space, agricultural land (meadow), water management area
Metropolitan Parks	30 – 150 ha	2.5 km		public green space
District Parks	10 – 30 ha	1 km		
Local Parks	3 – 10 ha	500 m	350 m	
Small Local Parks	1 – 3 ha	400 m	280 m	
Pocket Parks	300 m^2 – 1 ha	300 m	200 m	

I also determine four new types of the ***green space with restricted public use*** and grade them according to their role played in the green network. In the illustrated part of the green network plan these four categories appear in four distinct tones of green.

[2] The same new zone is to be marked out in the Zoning Plan of Balaton Holiday Resort Area.

In the *linear elements* sub-chapter
I point out that the **physical connection between the separated parts of the regional parks** is to be **created primarily by establishing greenways of recreational purpose**. The **revitalization and recreational purpose development of water currents** play a leading part in the establishment of these greenways in the fringe areas of Budapest. Further examining the linear green network elements and analysing the present bicycle track network I suggest that in the future the related infrastructural **development should include** bicycle **tracks running independently from the major road infrastructure** besides the ones running parallel with them. The construction of bicycle tracks disconnected from the major road networks should be started **along the water currents**, while the next step is **to build the transversal network connections**. I further propose the establishment of a bicycle ring linking the determinant green network elements. I draw the attention to the fact that **when building the green network in the fringe areas** (regional parks) there is a need for the creation of a varied spatial structure similar to the green spaces. In this structure ***green fields of recreational use*** and **elements** of the scenery **situated outside the area** play a role of key importance.

Functional hierarchy

In the dissertaion I determine the functional tasks belonging to the levels of the new hierarchical system of public parks. I also create the term of ***agricultural recreational park*** and **suggest that it should be worked out.**

The functional structure
sub-chapter – analysing public park research conducted by Nagy (1997) – I conclude that there is a close relation between the accessibility time and the functional role of the public parks. Presuming an ideal functional operation and physical standards I set up **a theoretical approach diagram for various levels of green network supply**.
In connection with the **forest development** planned in the capital city I point out that **the existing differences between the Buda and Pest sides will expectedly sustain**. The only foreseeable change is that after the proposed planting program the quantitative difference will be replaced with difference of qualitative nature. **The diminishing difference in the quality of forests can be achieved via the intensive specific functional development of the Pest side forest areas, which indirectly serve the protection of the inner-city as well as the nearly intact forests and greens.**
Studying the outcomes of the public opinion poll conducted in Budapest and its agglomeration it can be concluded that in the proximity of the garden city areas:

- **there is a demand** for expanded public **green areas sufficient for outings**
- **there is a strong need** for easily accessible public gardens, **local public parks** (playgrounds) playing a key part in everyday recreational activities
- **there is no** such a high **demand** for middle-sized **or larger public parks** (district parks, city parks)

Proposals for the establishment of regional parks

On the basis of my research I define a new green structure element or rather level namely the *regional park.* I also determine the major tasks and criteria of planning and establishing *regional parks*, in which I make a distinction between the circles of *obligatory* and *optional but recommended* planning tasks.

In the fringe areas of Budapest regarding the present structure of green network elements and development potentials five zones are marked as areas potentially suitable for establishing regional parks (Figure 2.) I analysed to what extent these areas meet the criteria of becoming regional parks. I conclude in the dissertation that zone "A" is the most sufficient for the establishment of a regional park (73%). Zone "D" fairly lags behind but still meets the criteria to some extent (46%). While zones "B" (27%) "C" (19%) and "E" (27%) are in the initial stage of becoming regional parks.

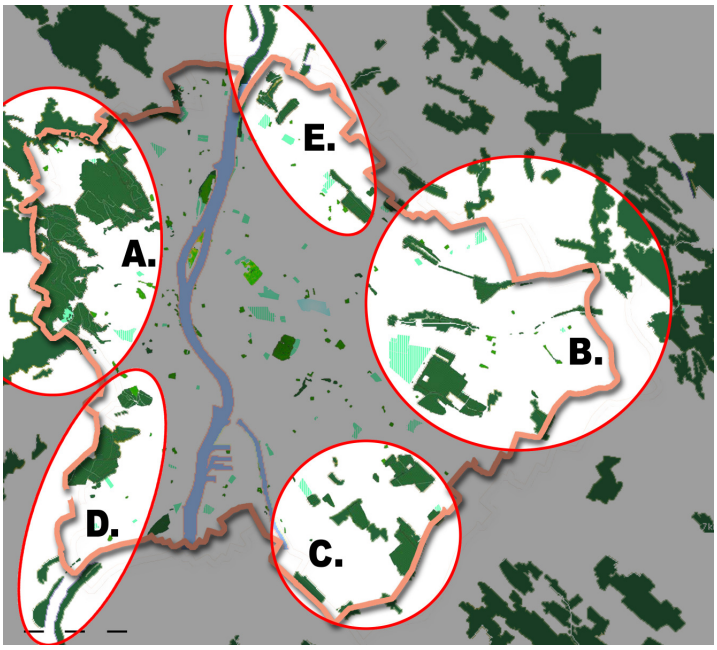

Figure 2. Zones suitable for becoming regional parks in the fringe areas of Budapest

In the case regional parks gain priority in development **I primarily recommend Zone „A"** and – in order to balance the green network supply of the Pest and Buda sides – **Zone „B" to be transformed into regional parks**.

NEW SCIENTIFIC ACHIEVEMENTS

1. **<u>The definition of terms and phrases in urban zoning and green space zoning</u>: I re-defined the term of *green space system, and* defined *the terms of green network and green structure***. I separated and defined the terms of green corridor and greenway, which are understood by the term of green corridor in the Hungarian terminology.

2. **<u>The methodological development of green space planning</u>**: Instead of the complex interpretation of the green space system – in the interest of the social role of green spaces – in the urban planning methodology (based on urban ecological and urban structural functions) I made a proposal for the **separated yet parallel use the terms: *green space system and green network*** (decisively meaning social-recreational functions).

3. **Differentiated development of urban zoning methodology**: I integrated the revised green space planning methodology into the national urban planning process. For the case of towns with more than 20 000 inhabitants and their neighbouring settlements I made a proposal for the obligatory introduction of **common comprehensive small region level green space strategy and plan**. The settlements or the districts are obliged to prepare their green network plans on the basis of this common strategy. These plans are to include the 1 km buffer zone bordering the neighbouring settlements or districts, (gravitation zone of the regional public parks).

4. **Further differentiation of the green space – green network hierarchy: I analysed the present categories of the public green space (green network) hierarchy, then I proposed the elaboration of a new, more differentiated system –** 6 categories instead of the 3+1 categories**.** Based on Hungarian research outcomes and my own research results I determined the size-range of **the six categories, and the functional tasks belonging to each level** and I justified the rightfulness of spatial differentiation of the six categories.

5. **The development of the green network system of Budapest**: In connection with the proposed **forest development** planned in the capital city I pointed out that **the existing differences between the Buda and Pest sides will sustain** the only expected difference is that the distinctions will be of qualitative nature. I concluded that the differences in quality and the overburdened state of the Buda side are only possible to diminish via the intensive and specific development of the Pest side forests.

6. **The definition of a new park type**: I created a **new** – universally applicable in the urban fringe areas – **park type, *the regional park***. **I determined** its basic attributes, the aspects of planning as well as **the main criteria of its establishment.**

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