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## **Landscape sketches: traditional and innovative approach in developing freehand drawing in landscape architecture studies**

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**Abstract:** At Corvinus University Budapest, Department of Garden Art a new approach in the landscape drawing was developed within the last two years. Despite the traditional, academic drawing, we (authors) emphasize more landscape-related topics, as well as new, intuitive approach in artistic representation. This methodological work will be published soon in a bilingual self-study booklet, called "Landscape Sketches". As landscape architecture is related to various linking fields, the booklet (with 77 exercises) seeks to combine visual education with phenomenology, aesthetics, poetry, calligraphy, illustration-techniques, contemporary map-art and land-art. This article summarizes our main pedagogical aims, methods and approach.

**Keywords:** sketching, art-education, land art, representation, teaching methodology

### **1. Introduction**

The learning of freehand drawing is exceptionally important in the study of landscape architecture since the observation of landscape, its linkage to nature, and garden history represent the most important tool in the formation of creative ideas and the system of thinking. In his book entitled *The Language of Drawing*, Edward Hill writes the following:

*“Drawing reveals and throws light upon the functioning of the creative intellect. Drawing opens up the heart to visual thoughts, melts together the spirit with observation, conjures up imagination; drawing is a form of meditation which is the whirlpool of banning the confused mess, of aspiring towards artistic ideas, and above all of landscape-forms and artistic susceptibility.”*

For the landscape designer preoccupied with human environment visual expression is as important as it is in any architectural, industrial, or artistic training. But the themes of landscape architecture are essentially more complex than the envisioning of a building or an everyday object. The atmosphere, the weather, the open spaces, the transitory spacial adventures, the space barriers, the transparencies, the cloaking offered by the vegetation, the view of panoramas, the graphic world of maps, the details of environmental architecture, the designing conception, and the emotional reflection of the scenes transmit to us very complex sight relationships and thoughts. With a view to recording all this, freehand drawing, sketching, and drafting offer a much simpler and more aesthetic possibility than the written text, virtual representation, or the now fashionable photography. Beyond this the personality and character of the designer is much better reflected through the personal universe of drawing.

We believe that drawing can be taught and learned and the road to this leads through individual experiences! One cannot develop these skills only by contemplating, reading, or looking at drawings. Our own drawing personality can improve only if it receives tasks, if it is confronted with obstacle solving problems, and if it has to sort them out with its existing drawing skills.

## **2. Materials and Methods**

The methodology of “landscape sketches” follow the creative process as well as the order of art-education beginning with first endeavors, giving new material experiences towards conscious composition.

In the first stage of education process we suggest light and easy drawing tasks, right-side-brain exercises, free expression forms (automatic handwriting, doodling, 2 minuets sketches), which bring success and attention towards students’ “visual experiences and observation-techniques”. In the second phrase more attention is paid on observation smaller details (plants, stone, buds, detail), with giving possibility for experiences new material techniques (lead pencils, few color pencils, graphite blocks, versatile pencil with different graphite refills, sharpener, black pens, tulle felt, ceramic pointed felt, thick felt, grey brush felt, cane, penholder, pen nib, oil pastel, charcoal, gioconda, pitt chalks, pastels, or charcoal). The third stage

emphasizes the depicting plants: from the realistic perennial-bed, tree-branch-gestures, foliage and canopy, until a more abstract, associative metamorphosis-interpretation. The fourth stage deals with landscape architectural analysis-sketches, open-air views, light and shade, perspective with atmosphere, and unusual spatial situation which requires more complex attention and visual vocabulary. Finally in the last stage panorama opens up, and a global view will be the target of visual representation: old maps, Google Earth images, landforms, larger views related more with landscape planning and nature protection. In this stage map and vistas can be combined with information.

### **3. Results and discussions**

*Through developing our skills of freehand drawing we can picture our environment graphically and understand it visually*

Through drawing we can study the sprouting of buds, the development of twigs, the growth structure of branches, the shade of leafy crowns, the movement of a shadow on a nearby bench, the behavior of those sitting on it, and finally the role of the resting place within the composition. There is hardly any task of landscape architecture that could not be rendered graphically: the combination of sights with maps, the fitting of the details into the whole, the denomination of the treasures of a panorama, the linking of engravings with spacial structures, the association of forests with thoughts—all of them are possible. It is this multilateral approach that urged us to elaborate “interdisciplinary” tasks.

*Drawings can redefine us again and again and create a personal image about reality*

Whenever the pencil or the pen leaves a mark on the paper a “new road” begins there. This is the movement that begins a conversation with the landscape; we ask questions and the landscape answers, it draws our attention to one of its features and conceals others. Drawing is as much about us as it is about the scene we are about to draw. The more diverse the theme of our drawing, the more natural this way of expression will become. The beauty, refinement, and strength of our drawings depend on our eye and hand, therefore, if we develop our drawing skills, the consequences will be visible not only in our sketches but also in other activities. Drawing can sometimes be annoying, failure can depress us, but let us not forget that each line is the beginning of a new experiment, of a new adventure.

*Drawing is a meditation through which we can reach another dimension*

When we are involved in a conscious process of creation it is important to establish a peaceful atmosphere. Let us empty our minds of any disturbing thoughts



or problems. Let us slow down and concentrate on what we see, on what we are going to create. Let us contemplate and analyze our creative attitude and objectives. Our receptiveness and frame of mind influences what we notice each time in the same tree trunk or rock fissure—similar to Chinese scholars pondering the Taihu stones in their gardens day after day. Their aim was the same: the inspiration from reality was a way to reach another dimension, transubstantiation and detachment being essential for creation. Several of our tasks require such a detached immersion into the process of creation. We get the feeling of new experiences if we transpose ourselves into the theme of our drawing, into the atmosphere of the space, and avoid chatting with our friends, listening to music, or eating. An absorbing task requires individual work!

*Creative thoughts derived from drawing later on can become an inspiration for our landscape designs*

Many people feel that the aim of their creative work is to draw the visible elements accurately. The aim of drawing, however, is not only the reflection of the objective world. People think they are deprived of creativity, yet this impression is contradicted by the fact that during boring telephone conversations their randomly moving pencil can create unique fanciful images! When we try to transpose our thoughts into sketches, new shapes and associations are revealed to us which can germinate new ideas. The ones who are brave enough to draw a life map based on the lines of their own palm will not find it difficult later on to attach a shape, a sketch, or scene to a certain concept.

The facsimile sketchbooks of famous architects prove that the frequently redrawn shapes and sketches receive an impetus at a certain moment and find their place in the design. The depicted stray thoughts, details, and elements of space placed in a new combination help the process of designing and contribute to revealing new ideas and problems. A new impetus can be given to our activity by leafing through the drawings of our old travel diary.

*Drawing must become the mother tongue of the landscape architecture student*

Expression through drawing must become automatic for the student, just like the knowledge of synonyms is indispensable for a poet, or the combination of tunes and dance steps is essential for a choreographer. Our drawing skills need not be developed for the sake of creating an independent work of art, but rather to make other people understand our ideas—everything we do should have an artistic quality. Such an interpretation of drawing does not take into account the students' speciality orientation since, as would-be designers who help the related professions with their ideas and plans, they will need to process and present their

landscape/space/garden experiences. This is why the leading European training courses for landscape architects deliberately include freehand drawing tasks in almost all the modules thereby contributing to the development of professional visual communication.

*Concerning the importance of sketchbooks, diaries, and the drawing lifestyle*

We know from experience that a drawing pad or a sketchbook is an indispensably important tool for our visual development. When photography was still unknown A. Dürer and J. W. Turner took the “Grand Tour” across Southern Europe with a remarkable thirst for drawing. The landscape architect must be accompanied by the same kind of impetus when he gets to know his environment. These artists filled their sketchbooks not only to record the hitherto unknown world (archeological finds, buildings, landscape details), but also in order to transfer the experience and memory of the moment into their studio. When I look at my own finished sketches I remember beyond the appearance of the scene the moment of drawing, the weather, the season, and the effects of the surroundings as well. I could speak for a long time about why I stopped at that point, what caught my eye, what impression I experienced while drawing. We should observe the sketchbooks and drawing pads of famous architects and discover what experiences they went through during the process of creation. Sketchbooks can be filled not only with exotic travels but also with the everyday experiences of landscape design. We can take our small-sized sketchbook with us every day, and we may introduce into it book titles, stray thoughts, detail drawings, names of plants, ideas, views, and traveler’s adventures—this is the way to get ourselves transferred into the drawing lifestyle.

*About the importance of getting the thoughts and concepts transposed into pictures*

Who would want to write a diary in this world of blogs? Who would use expensive slides instead of digital photography? When each shot was the result of careful consideration and composition it was the eye that had to think first and only after did the clicking follow. Today we try to cut pictures out of several shots only after taking them and we remain with nothing about the impression given by the scene or about the perception of the space. We do not keep in mind what aroused our interest during the survey of the space. The thoughts created by the view and the recording of the pictures generated by our thoughts are equally important in this profession. There must be a direct, quick, automatic connection between these two. Such a connection can be ensured by quick gesture sketches, problem drawings, and tasks that are built in sections based on drawings. This automatism cannot be acquired through concrete tasks, it can be obtained only after multifold experiences in drawing. The architect and the landscape architect offer explanations through drawing, they talk to figures and chat through pictures. A number of tasks in this guidebook (10–12) lay the stress on the skill of forging close mutual links between

the text and the picture. This approach evinces the remarkable importance of the aesthetics of handwriting, the illustration of pictures, and the strength of words.

*About testing new materials, the new possibilities resulting from the multiple use of materials, and the errors caused by rigid, over-repeated techniques*

The aim of this guidebook is the formation of independent graphic expression which indispensably involves familiarization with new techniques. Many artists stick to over-repeated materials and techniques and do not dare to experiment with methods that have been hitherto unknown to them. Our unvarying techniques do not allow us to break away from usual solutions, thus we repeat our own mistakes unconsciously. The major part of the tasks included in the guidebook and especially the second chapter aim to bring new experiences into this field. A new way of using materials does not lead to immediate success, however, the graphic mechanisms that are experienced can give a new impetus even to the old-fashioned methods. The playfulness and spontaneity derived from materials can often be included in the composition and can lend a remarkably important plasticity to details and brushwork. The exact denomination of the usage of material and dimension category described in each task aims at helping to gain new experience and this is why the above-mentioned aspects are to be observed and followed.

*The role of sketches, speed, spontaneity, the advantage of small dimensions, and the essences of views*

The quick drawings of the above-mentioned traveling artists had several advantages. To begin with, the spontaneous, gesture-like sketch can much better serve the essence of thought (similar to the synthesis of an article written in a few sentences). The reduced discussion and the observed time limit of some of the tasks contribute to making quick drawings which later on can be used as sketches or snapshots of experience. “Good work necessitates time, for the bad one even more time is necessary,” says the proverb. The speed and the narrow time limit are to be observed not because we want our drawings to remain unfinished, but because we want them to preserve their freshness, impetus, and spontaneity—the epitomizing, summarizing way of expression. When we attempt the above tasks, we will be inclined to spend more time and to elaborate on them. The predetermined shortness of the time limit may seem frightening in the beginning, but it is only through this exercise that we can reach the pedagogical objectives. This is why the observation of the time limit is of paramount importance. Another advantage of the reduced dimensions is that several quick compositions can be made. We may make several trials and in this way better train our eye to analyze views and structure compositions.

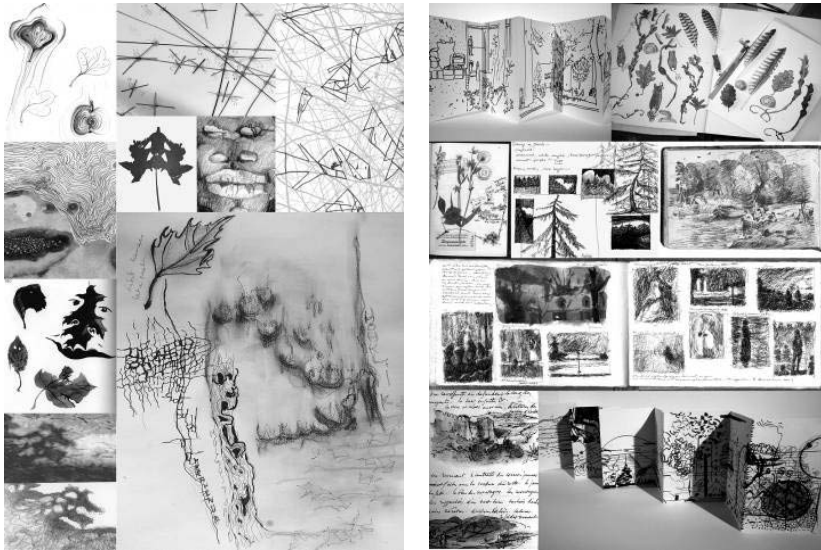
## The strength of a plein air work of art

The continental climate of Hungary with its hot summers, and long cold winters, the amount of daylight, and the traditional educational schedule regrettably shorten the training of landscape design into a 12-week cycle. The unpredictable weather of the teaching period in October and November and February through April makes outdoor work unpredictable. The aim of our guidebook is to create methods to counteract this inconvenience. The ensuing descriptions instruct anyone on how to carry out tasks on their own from the beginning of summer to its end. The most suitable period for outdoor drawing is May through June and September since the balanced temperature is most suitable. In spite of this we urge everyone to work outdoors whenever they can. Let us avoid substituting the open air with “life-like” photos. Let us not reduce the experience of drawing since in the open our senses are sharper and our empirical impressions are more intense! It is no mere chance that the impressionists passionately worked out in the open in spite of fog, frost, and hot weather! The experience of plein air helps us to encounter the adventure of space, depth, atmosphere, weather, and perspective such that we get closer to the essential questions of landscape architecture.

### *Examples of student works with short description*



Figure 1: Three series of “2 minutes, walking sketches” on the Hero’s square Budapest, as a warming-up exercise (STAGE I)



*Figure 2-3: Imaginative drawing, collecting inspiration from natural details and examples for using a “Landscape sketchbook-journal” and collecting visual ideas (STAGE II)*



*Figure 4-5-6: Examples for different scale of plant drawings: flower details with various techniques, perennial borders with characteristic plant forms and the rhythm of trench-branch systems (STAGE III)*



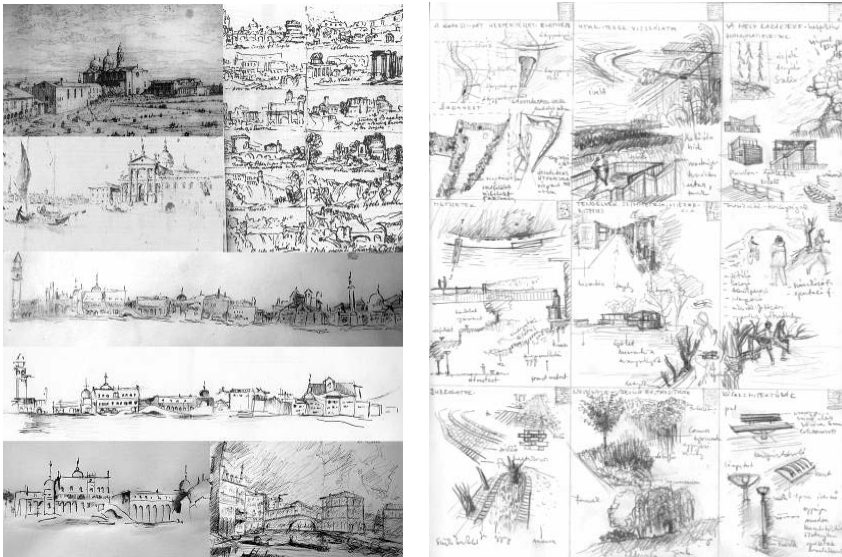


Figure 7-8: Examples for small size traditional “Vedutes”- Cityscapes from art history with student’s copies, and contemporary landscape architectural sketches in parks (STAGE IV)

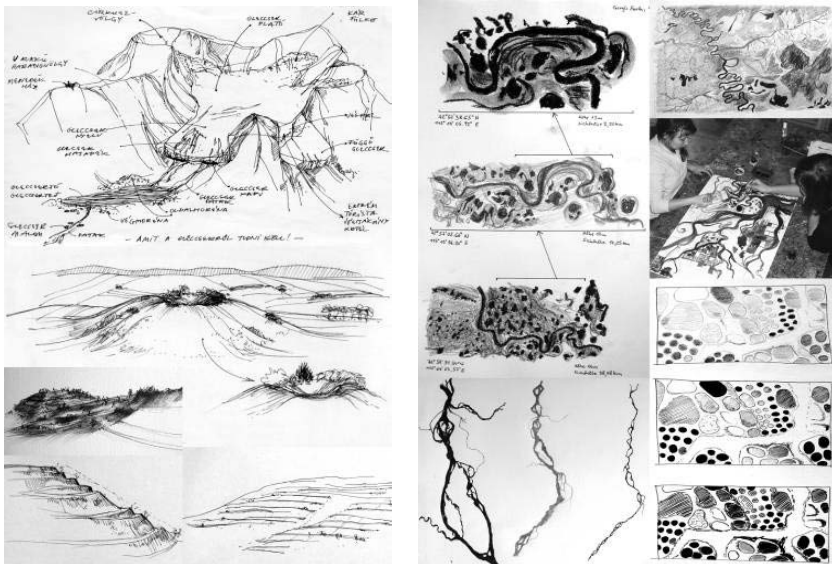
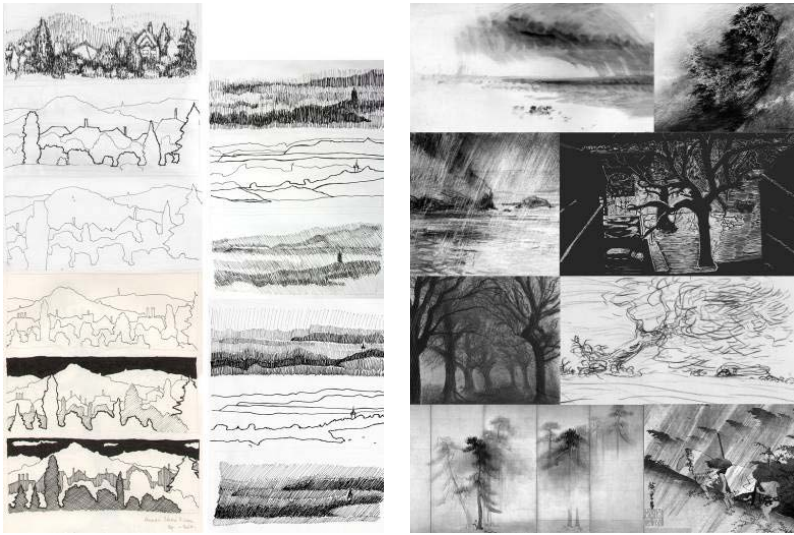
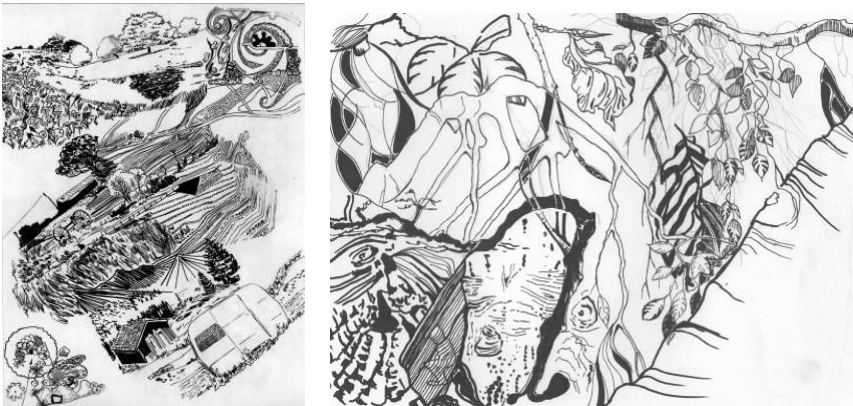


Figure 9-10: Examples for landform-drawings, which is a useful tool in expressing landscape interpretation and topographic interventions, and Google Earth form and pattern analyses for water-landscapes and traditional as well as agricultural land-use (STAGE V)



*Figure 11-12:* Landform, landscape silhouette drawings emphasizing foreground and background with various ink techniques, and weather-sketches as an important part of our landscape perceptions (STAGE V)



*Figure 13-14:* Imaginative sketches where detail of the “real” view interweave with ideas, fantasies, thoughts

## 4. Conclusion

Finally we can conclude that drawing is a basic expression tool not only for designers, but for everyone who is interested in “environment studies” and wish to get a global understanding of the surrounding settings. Sketching is not only important for its artistic values, but serves a tool of “thinking – understanding and evaluating” – process. This visual learning process can be supported with good, various exercises, proper visual questions and accurate pedagogic-modules as well as open-minded relation with linking art subjects. Aerial photograph, traditional and contemporary maps, landforms, art-historical examples, landscape painting, land art, weather sources as well as spontaneous, automatic methods can help to expand the field of representation and visual expression.

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## Use of Indicators in Relation of Tourism and Competitiveness

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**Abstract:** We applied the nowadays so fashionable concept of competitiveness for rural areas and landscapes and tourism. In the study we are looking for the regional contexts of the tourism and the competitiveness through chosen indicators. Applying the indicators for two characteristic areas of Hungary we are making suggestions for using their natural and cultural resources in a way which helps to increase their attractiveness will be used as a reference.

**Keywords:** tourism, competitiveness, Hanság, Börzsöny

### 1. Introduction

The nowadays so fashionable concept of competitiveness can be considered in the case of rural areas and landscapes as the ability of the stakeholders of the area for utilizing their landscape resources for enhancing life quality ensuring the requirements of sustainability. On the other hand nowadays tourism is the most characteristic landscape forming factor, the beautiful landscape is the most important tourist attraction. We are looking for the regional contexts of the tourism and the competitiveness in this study. Highlighting the differences and/or similarities we used indicators from the field of tourism, economy, cultural and environmental indicators.

The landscape is attractiveness. Nature is the most important attraction for a lot of country perhaps. Since the early days of tourism, the landscape has played an important role in people's decision for holiday destination. Nowadays the people can make a choice hardly because the media confronts us with an ever more varied palette of images of landscapes. And this landscapes (= tourism destinations) compete for the tourists. It depends on their competitiveness which one attracts more visitors [1]. Our aim is to define what kind of competitiveness factors imply in the case of the tourism destinations. We emphasize the factors which determine the landscape character. Finally we defined those landscape architecture tasks which ones lead to the right utilization of regional factors of competitiveness.

## **2. Materials and Methods**

The concept of competitiveness in rural development has three major aspects: 1. economic aspect (general: portion of economic sectors, features of entrepreneurs, investments, labor, business infrastructure, economic performance; primary sector: multifunctional in agriculture, productivity and diversification; tourism: tourist services, parameters of demand, employment), 2. environmental aspect (environmental quality, biodiversity, land use, natural and cultural values, green space system of the settlements, infrastructure) and 3. social aspect (population density, migration, education, employment, income, accessibility of public services, commuting, self-organizing capacity, co-operation, communication) [2,3].

The success of tourism destinations in world markets is influenced by their relative competitiveness. Crouch and Ritchie's [4] approach to destination competitiveness focused on destination image or attractiveness. Crouch and Ritchie [4] have a model that postulates that tourism destination competitiveness (TDC) is determined by four major components: "core resources and attractions", "supporting factors and resources", "destination management", and "qualifying determinants". Enright and Newton [5] argues that a proper understanding of destination competitiveness requires, in addition to destination or tourism-specific factors, the inclusion of such factors that affect the competitiveness of firms and other organizations involved in producing the tourism "product". So a destination is competitive if it can attract and satisfy potential tourists and this competitiveness is determined both by tourism-specific factors and by a much wider range of factors that influence the tourism service providers.

We have adapted the competition factors defined by Crouch and Ritchie [4] furthermore Enright and Newton [5] to the Hungarian conditions. Considering the local specialties we highlighted the factors of local and regional tourism. As second

principle for our application process we emphasized the representation of the landscape factors as a result of the importance of landscape of the surveyed areas.

We defined the new competitiveness factors for the two areas, reviewing statistic data and literary work and field survey. We grouped the specific factors according to the following main aspects: spatial characteristics, geographical situation, attractive factors, and economic factors.

The factors of spatial characteristics contain the most important data of the areas which ensure the similar background situation for the research. The aspects of geographical situation describe the regional connections and geographical conditions of the areas. According to Enright and Newton [5] we defined two further factors: attractiveness and business related factors. We listed among the attractors the townscape, landscape character, national-regional-local cultural values (castles, museums, churches of special importance, Calvary/shrine, landmarks/remnants of former land use, cultural events, national monuments, cuisine/local products), natural (information points, network of nature trails, view points/visual appear, natural values or formations of special importance, geological formations) and special (dinky lines, nature schools/visitor centers, ski-trucks, golf course, adventure parks, fields for exercises in forest, greenways) factors. We concluded among business related factors the quantity of accommodation, tourist services, cycling roads and services and the availability.

We have chosen two frontier areas for field work, which have different conditions (Fig. 1.). All of them are kept in mind as a periphery in Hungary. Börzsöny is the northernmost part of Northern-mountain ranges. It is the popular tourism destination of the metropolitans: it is close to Budapest and is rich in natural and cultural values. The situation of Hanság is quite different and similar to Börzsöny. In spite of the area is situated in the most developed region of the country, it was always considered as a periphery. During the socialism the strictly controlled and closed border region, nowadays the lack of real centre and the lack of co-operation hinders the development of the settlements. Up till the 19<sup>th</sup> century the Hanság was a vast marshland. Due to the regulation works we can find just the remnants of the former wetlands.



Figure 1: The Hanság and the Börzsöny in Hungary.

At the selection of the areas we considered certain conditions important as boarder situation, existence of natural values of high quality, protected areas of national importance, spatial scale of 20-25 settlements. The similarity of these factors ensures the similarity of the background conditions (from the point of view of economy and politics). So the differences in the competitiveness factors come up as distinctiveness inside the area.

### 3. Results and discussions

After the literature survey of factors of economic and tourism competitiveness we have defined a criteria catalogue based mostly on landscape values and conditions. We consider it an important step because landscape is a base for tourism specific competitiveness but among the competitiveness factors it has not got proper importance up till now. The landscape is not just the sum of natural and cultural elements. As the landscape concludes the natural resources and all elements of societies using and shaping these resources since centuries: the architecture, traditions, forms of land use etc. So to say the landscape is compressing all conditions related to nature-culture, transportation-availability which are basis for tourism.

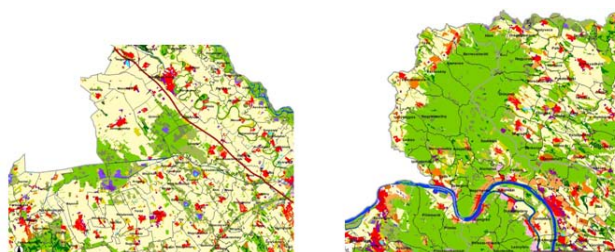


Figure 2: Main land use forms of Hanság and Börzsöny.

According to the spatial characteristic the area of Hanság is bigger and has a higher number of population. Both areas are characterized by depopulation, but in case of certain settlements we can witness outstanding growth of the population (for example Börzsöny: Kismaros és Nagymaros, Hanság: Bezi). Significant parts of both areas are under Nature park protection. (29% of Börzsöny, 30% Hanság). According to the activity of the society and the number of NGO-s Hanság is stronger, but in both of them is the number of local organizations high. In the interest of preservation of natural values and enhance tourism the settlements of Börzsöny established six regional organizations while the settlements of Hanság created 5 organizations for rural development. (Table 1.)

Table 1: Comparison of data

	Börzsöny		Hanság	
	Value	Qualification	Value	Qualification
Area	62527 ha		67047 ha	
Number of settlements	23		22	
Coverage of % National park protection	29%		≈30%	
Population number	31 570		43 404	
Population density	50 person/km <sup>2</sup>		64 person/km <sup>2</sup>	
Number of NGO-s	48	Average	85	Outstanding
Number of enterprises	144	Average	216	Outstanding
Registered economic organizations	4500	Average	6040	Outstanding
Border crossing points	9	Significant	2	Average
Regional initiatives	6	Outstanding	5	Outstanding
Capacity of public accommodation establishments	1008	Outstanding	181	Average
Tourism nights of public accommodation establishments	48607	Outstanding	11714	Average
Capacity of private accommodation establishments	761	Outstanding	203	Average
Tourism nights of private accommodation establishments	21232	Outstanding	10751	Average

Source: Compiled by the authors using KSH and TEIR databases

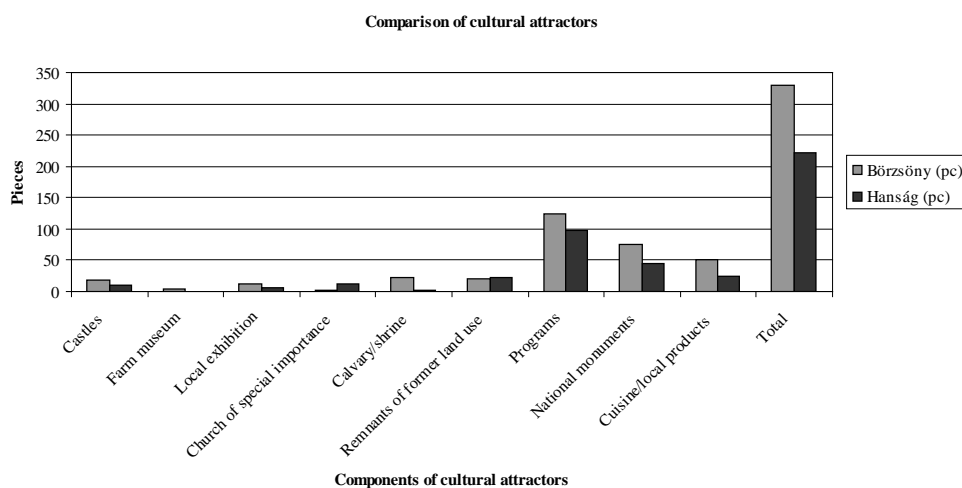
Considering the location, Börzsöny is in a much more favorable situation: it is located nearby the capital city, its 17 settlements form part of the Central-Hungarian Region. Furthermore it is connected by 9 border crossings with the neighboring Slovak Republic (two for cars and seven for pedestrians), which ensures a much more intensive social-economic relationship. Contrary to the Börzsöny Hanság is situated 130-150 km far from the capital but closed to Sopron and Győr (centre of the Western-Danubian Region) and along the Austrian border. It is connected to Austria by two border crossings (one for cars one for pedestrians). Looking at geographical conditions Börzsöny is in a more favorable situation considering the preferences of Hungarian tourists (preferring the mountainous landscapes). The geographic conditions of Hanság (plain landscape formed by the water, with remnants of landscape history) are still under evaluated and untapped from the point of view of tourism.

The attractors reveal the differences of geographic conditions, traditions and past of the two landscapes. These differences appear in the types of attractors. The settlements of Börzsöny are small and closed, the mountains hinder their spatial expansion. The most of the settlements of Hanság are characterized by spindle shaped structure; the streets contain wide green zones. In the marshy area of Hanság and Tóköz the landscape conditions were also primer in forming the settlement structure. People were looking during floods protected high grounds for churches so here the churches in spite of the average central location were built at the periphery of the settlements on high grounds. The region of Börzsöny is mostly characterized by relief with the dominant land use form of forests. The characteristic landscape elements are the geographic formations and wine cellars, castles, mines and mills. Hanság is a plain landscape varied by small canals and lakes. Originally the settlements were created on islands standing out from the marshland. In the pits of the marshland several small lakes were from which just a few remained.

From the cultural attractors the number of castles and country-seats is outstanding (19 pc). Recognizing these cultural resources the movement of "Castles in Börzsöny" was launched in 2000. The objective of this program was to get people to visit as much castles as possible with the guidance of a special leaflet. On the whole 202 cultural attractor and 124 programs await tourists. According to the Figure 2. we have revealed one third less cultural attractors in Hanság. Up till now there has not been any tourist specific cultural program-package elaborated.

Börzsöny can be characterized by really rich and varied natural attractors which serve as a base and used by tourism. The region is netted by hiking routes; the national "Blue Line" hiking trail leads across it as well. It is rich in looking out towers and geologic formations furthermore we can find here one information

point and six nature trails. The natural values of Hanság come from mostly the varied habitats of wetlands: wet meadows, marsh-meadows, muskeg, swamp-forests etc. The nature can be observed by three looking out and bird watching towers and one nature trail. Börzsöny is a much favored position from the point of view of special attractors: four dinkey lines, five nature schools, three ski-trucks, one field for exercises in forest, and two greenways are functioning in the region. In contrast to this we can find in Hanság one nature school (bird watching) and two visitor centers.



*Figure 3: Comparison of cultural attractors of Hanság and Börzsöny*

Firstly we examined the capacity of private and public accommodation establishments from the business related factors. In the region of Börzsöny there are 1769 registered accommodation establishments, where in 2008-ban 70 839 nights were spent by tourists. Although this number is half of the national average it is outstanding on regional level. In Hanság there are 384 registered accommodation establishment, where in 2008 22 465 nights were spent by tourists, which is 14% of the national average. These values are really low in both cases. The numbers show a stronger position for Hanság in the area of services (267 catering and 797 retailer unit) which is a little bit contradictory, in the region there are two small towns as well. The higher level of services is the result of greater population concentration. The settlements in Börzsöny are waiting the visitors with 180 catering and 271 other retail units, performing higher tourist results.

Both regions press cycling tourism so we analyzed the length of cycling roads (built and marked) and related services. In Börzsöny two Greenway projects



(Duna-Ipoly Zöldút/Greenway, Örökségeink Útján Zöldút/On the road of our Heritage Greenway) were realized, during which 160 km long cycling road was built or marked, which crosses 70% of the settlements. In spite of this there are just 5 suppliers (lender, repair shop) in the region. In Hanság is marked almost 160 km cycling route (mostly just marked), which is crossing 86% of the settlements, so almost the whole region can be explored by cycling. The number of suppliers related to cycling is higher here but it is not enough either.

Table 2: Comparison of the income of the self-governments

Tax types	Börzsöny		Hanság	
	Value Ft (average)	Qualification	Value Ft (average)	Qualification
Local taxes from tourism	517000	Significant	73500	Low
Local business taxes	13811000	Low	60846000	Average
Assigned taxes	48742000	Low	77700000	Average

Source: TEIR database [6]

If we compare the income of the self-governments from the two areas the data shows that enhancing tourism is a great financial pressure for the settlements of Börzsöny as they do not have so much other financial resources, their income from the local business taxes and assigned taxes which is related to the lower performance of the local industry.

#### 4. Conclusion

Both regions are rich in natural and cultural attractors, both of them have outstanding treasures of different character. Looking at the number of economic organizations and enterprises the position of settlements of Hanság is better, which presume higher number of visitors, but in reality in Börzsöny higher turnover of visitors was registered.

The stakeholders of the area of Börzsöny recognized the opportunities of the landscape potentials and several ecotourism development programs have been launched. They formed the tourism resources into a competitiveness benefit. In Hanság thanks to the nature protection efforts of the last decades and the latest habitat rehabilitation programs the area is rich in natural and cultural values. Unlike to the Börzsöny the stakeholders of Hanság still has not recognized the

potentials of landscape resources which was also hindered by the nowadays changing closed attitude of the National Park Fertő-Hanság.

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## **Sculptures in the Gardens – From the Historical Ages to the “Neo-embarrassing” Trends**

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**Abstract:** Decorating the gardens with sculptures has a big past: the mythological themed statues had spatial organizing role from the Ancient Ages and they had surplus meanings beyond their original stories. They had the biggest popularity and propaganda role understandable for everyone, the clear intangible value in the Renaissance and Baroque Era, but the deities and other mythological figures appeared also in the later centuries. We can still find them today, often sinking to the level of the kitsch, losing their extra contents.

**Keywords:** space forming, surplus meaning, intangible value, popularity

### **1. Introduction**

Figural decorations play a very important role in historical gardens, they have often space forming role: the space experience of the garden is strongly determined from the perception process of the statue, to which an underlying surplus content is usually added with a reference to the owner or to the function of the garden, clear for the visitors. These sculptures depict mostly ancient mythological figures (deities, nymphs, heroes) and animals, or other themes taken from the ancient works. Mythological themes created the possibility to refer to the owner's social position or an extremely important activity carrying an iconographic program in the gardens in the new Ages (e.g. the grottos in the Renaissance Medici-gardens in

Florence, Italy, commemorate the construction of the aqueduct by the Medicis). The sculptures and the various themes embodied in them often played a role in the propaganda already from the Ancient Ages (e.g. the personal patron of Emperor Augustus was Apollo, but we can meet also with the identification of the deity and King Louis XIV. in the whole baroque composition of Versailles). Below one of the most popular deity, Apollo will be presented in some form in gardens.

## **2. Materials and Methods**

The evolution of sculptures in the overview of arts and history

The development of the styles of Greek sculptures can be traced back to the 9-8<sup>th</sup> century B.C. In the art of the Antiquity the formal features of the statues reached from the geometrical, linear patterns and sacrificial animal figures to the depictions carrying real human personalities [1]. This development had four important periods. The sculptures of Archaic Period (7-5<sup>th</sup> century B.C.) had the first traces of portrayal ambitions, with the motives from the strengthening trade relations. The portrayal ambitions came later, with gradual development. It had four important periods: the sculptures of Archaic Period (7-5<sup>th</sup> century B.C.), the Classical Era (5-4<sup>th</sup> century B.C.) [2], the Hellenistic Period (320-30 B.C.) [3] and the so-called Roman Era (30 B.C. to 330 A.D.). With the strengthening trade relations and with the Roman military conquests, a new, fetishized reevaluation of the human body was born. The Romans transported to Rome a lot of pieces of art as booties from the subjugation of Greek areas, which were publicly exhibited on the victory celebrations. As a result the Hellenistic arts had huge impact on the Roman society, and the copy of statues started, and the propagandistic role of these statues continued to increase. It became very fashionable to the people in higher social positions to possess Greek artifacts in the Roman Era, and to exhibit them in their houses and villas. However it was not a pure copying, they sought on the consistence of the semantic of the statue with its new environment. The manufacture of copies and their sales began meeting this increasing demand [4]. Of course, the main style groups of Antiquity were not separated in later ages, its best-known example is the so-called Apollo Belvedere (Fig. 1.).

The dissolution of medieval social relations began in Italy early, at the turn of 13-14<sup>th</sup> century: the new system wanted to break with the medieval spirit. Thus, the Renaissance brought the discovery of the ancient world, it became a trend seek for the revitalism of Antiquity. The antiquities became very popular through the starting archaeological-featured interests: the ruins and statues had a big effect on garden architecture [5]. Following the “archaeological” excavations in the 15-16<sup>th</sup> century, even more Ancient sculptures were found (e.g. the Apollo of Belvedere in 1493), so the Ancient works had increasing impact on the baroque sculptors, who

began to try to assess themselves to the antique predecessors [6]. The restoration of the numerous ancient statues helped the masters to continuously work, and they could learn the ancient design and practice of carving. However the great Renaissance master, Michelangelo had a huge influence on the artists. The aim of the baroque sculpture is to represent the emotions and soul, the intense movement generated by the action, while stirring up the forms with sophisticated carving techniques. In addition it's highly important, that the sculptures interact with their environment and with the viewers. Gianlorenzo Bernini's *Apollo and Daphne* reflects perfectly all of these principles (Fig. 2.).

The French Revolution from 1789 induced profound social and political changes: this Enlightenment gave a major intellectual background to the Classicism [7]. The most significant in this period was the pursuit on reasonableness and naturalness, and the desire of knowledge of the „historical past” to the „present”. As a result the regular archaeological researches started. However the interests significantly increased to the Middle Ages and to the Eastern Cultures, parallel with the revitalization of classical ages. The national past turned into the spotlight with the decipherable past and with the development of civil societies. Sculptures in mythological themes are mostly in the context of arts (like Apollo and the muses), like at the Opera Garnier in Paris, built in Neobaroque style: its roof is decorated with the figures of *Apollo, Poetry and Music*, from Aimé Millet.

### 3. Results and discussions

The formal appearances of Apollo in the historical gardens

Apollo's wide range of personality gave an excellent basis to become to a popular personality in the arts several centuries long. Apollo was one of the twelve Olympian gods: he is the deity of poetry, the harmonious music (the lute was a symbol of the rational human judgment), the civilized arts, and fortune telling and divination (Delphoi) [8], as well as the protector of flocks and herds. He was also the god of the light (Phoebus Apollo, it means shining Apollo; he was identified with the Greek Helios and the Roman Sol deities of Sun too, however this light meant also the truth and knowledge, viz. predictions), and the god of archery. But he possessed the ability of healing too [9].

It's easy to identify the deity, walking in the gardens, about his most important attributes (Fig. 4.): his physical beauty, the lute and other stringed instruments (music), a laurel wreath, or the four horse-drawn golden chariot (Sun), and sunbeams (it's also represented the god of the Sun). To his attending belonged the nine muses, the inspirations of music, poetry, dance, and liberal arts, with whom he

also was often together in the arts [10]. His another symbol was the snake, which, according to the mythological story, came from a cavity to kill the twins and their mother: but Apollo killed the serpent, and founded the oracle of Delphoi over this cavity. Apollo had rich and varied love stories, the best known relates to his unrequited feelings rose for the nymph Daphne [11]. Daphne fled from the deities love, and finally she had help from his father, the River Peneios: as Apollo grabbed her arm, the nymph turned to laurel tree. After that the deity made the laurel his special tree: from that time the bests of arts and sports events were crowned with laurel (Fig. 2.).

The cult of Apollo in the gardens can be dated from the 1680s, because the sculptures about the deity in Versailles were made at that time, which were inspired by the significant ancient statue, the Apollo Belvedere. The statue of Apollo of Belvedere (Fig. 1.) is a Roman, 224 cm high marble copy about a Greek bronze (originally probably from the 4<sup>th</sup> century B.C.). The deity shows his youthful beauty, his eyes losts in the distance, he takes a step carefully. He raises forward his left arm, and a *chlamys* (shoulder cape) is sterner on it, and the right arm is lowered at his body. Some supplements were made by Master Montorsoli from the order of Pope Clement VII.: a left hand with bow, a right forearm and hand, which relied on the timber standing beside the deity (contrary the original composition could had arrows or Ivy-branches in his right hand; today in Vatican Museums). These supplements were removed from the statue only in 1924 [12]. This most popular ancient preview was partially or wholly copied in the gardens later (mainly with the supplements), one of the most outstanding examples is in Pavlovsk, Russia (Fig. 1.): its garden had two from this Apollo-type. This shape played primarily the role of propaganda, or it showed the owner’s patronage activities.



*Figure 1:* Apollo Belvedere (source: Spivey and Squire 2005 p. 302, Fig. 464.), its bronze copy in Pavlovsk (panoramio.com), and Apollo Served by the Nymphs group in Versailles, by Girardon, François (superstock.com)

The story of Apollo and Daphne was similarly popular [13], which became the most popular with the birth of the significant baroque master, Gianlorenzo Bernini’s work (1598-1680), *Apollo and Daphne*. He made this sculpture in 1622-

1625, and it widely validates the ambitions of the Baroque (today in Villa Borghese, Rome; Fig. 2.): this lively composition grabbed in one moment the long series of events of the persecution, the nymph's cry for help fleeing from the deity, and the transfiguration. Bernini took the moment from that process, when the startled nymph starts to turn to the laurel tree to escape from the god's embrace [14]. The light and shadow effects, achieved by the structures of shaping, play an important role in this composition: the finely polished surface of the naked bodies is in a sharp contrast with the deity's soft, but rough cape and with the rough bark of the tree, and Apollo's disheveled locks of hair are also on the contrary with the nymph's fine hair [15]. Numerous versions and copies of Bernini's work are in the historical gardens, mainly in Baroque gardens. These versions has usually weaker effects and quality than the original sculpture. This statue used to play a role in the gardens for recreations or relaxing (so-called Lustgartens).



Figure 2: Bernini, Gianlorenzo: Apollo and Daphne (source: Kelényi 1985 p. 86.), and the same theme in the baroque gardens of Großsedlitz and Belvedere (photographs from the author)

### Apollo in the ancient Roman gardens

In the gardens of the Ancient Roman Empire the sculptures were mostly about the fauna, and the religion, with full-length statues or reliefs of deities. From the view of the gardens the houses (*domus*) of Pompeii are extremely important, where often belonged a smaller or larger garden to the house. While sculptures of the smaller houses tried to imitate the statues of rich houses with miniature copies, at the larger houses opened the possibility for deluxe decorations [16]. The *Casa del Citarista* was one of the biggest residences in Pompeii, which was set up with building two big houses together. The three peristyle yards were decorated, mainly with numerous small bronze sculptures, like the *Apollo with the lute*. A similarly prominent house is the *Casa del Menandro*, where the spacious, well-helld house with big central yard was decorated with a nearly life-sized marble Apollo with griffins bird and laurel wreath.

### Apollo and the renaissance garden art

The renaissance gardens across Europe were going back to the ancient predecessors both in their orderly, geometric formal world, both in the themes of sculptures: great examples are the reinterpretings of the ancient works, not only in Italy, but also northwards from the Alps [17]. For example at the garden of the Valdstein (Wallenstein)-palace in Prague, Czech Republic, has importance. The palace of General Albrecht von Wallenstein was built as the first secular Baroque palace in the city for representation, directly at the foot of Prague castle, from 1620s. But its garden has rather more details and buildings in Renaissance and Mannerist style (e. g. great hall, the aviary, and the huge grotto wall). The garden is decorated with numerous sculptures with mythological theme, the two most often shaped figure is Hercules and Apollo. One of the Apollos is at the boundary wall from the south, in a niche: the deity traits feminine details, and he holds in his right hand a lute, his left hand is resting on a trunk, his face and posture is very similar at the opposite standing Diana, at the northwestern wall. The other statue of Apollo is in the central part of the garden, in the main axis of the great hall: the deity is one from the eight bronze sculptures, with offensive pose, with bow in his left hand and touching the quiver with his right hand. These bronze statues show fighting scenes, referring to the owner, and they were originally the works of Adrien de Vries: the sculptures stolen by the Sweden in 1648, the figures of nowadays are copies from the 1920s.

### Apollo in the Baroque gardens

The shaping of Baroque gardens, in contrast to the earlier periods, was an integral part of the new architectural conception, they were treated as a unit, the principle of formation of the gardens were the same to the castles. According to this principle nor on the buildings or in the gardens were the statues an end in itself, but they were the part, the basic ingredients of the comprehensive program of the whole ensemble, which carried political or ideological messages too [18]. The most powerful guiding principle of propaganda is in one of the most important Baroque gardens, in Versailles, France. Louis XIV. ordered the building of Versailles from the original hunting castle [19], the work started leading by André le Nôtre in 1662: the former garden has undergone an intense restructuring, the existing axis and parterres were partly retained, and the Apollo-fountain (*Apollo wateres the horses of the chariot of Sun*) was developed. The central baroque garden, the Petit Parc was finished in 1665, but the parc enlarged from 1693 to the end of 18<sup>th</sup> century. Numerous sculptures with mythological themes were placed in the garden: 24 pieces, large marble statues have been commissioned in 1674. Apollo plays the biggest role in the themes, his central character has a strong political content: this content runs through the whole castle and the garden, Apollo



is the symbol of Louis XIV., the King of the Sun. The two prominent elements are the *Apollo-fountain* and the grotto of *Apollo Served by the nymphs*. The Apollo-fountain is in the main axis of the garden: the deity erupts with his horses from the water on the chariot of Sun, created by Jean-Baptiste Tuby in 1668-1670 [20]. The group of Apollo and the nymphs [21] was created to a grotto in one of the *bosquets* by François Girardon in 1666-1673, as a strong element of the garden (Fig. 1.). The group shows the deity with six nymphs: their appearance shows classical, antique forms, and the main figures follows the Apollo Belvedere. The live-like setting is also a Hellenistic feature, however the grouping follows already the style of Nicolas Poussin. The composition is made up from horizontal layers, symmetrical on the axis appointed by Apollo, but the relationship between the layers unfortunately is not formed.

Much simpler and more typical compositions to Versailles are in several Baroque gardens, the most popular are not only the single statues, but the pairs too, like Apollo and Daphne. A very nice example is for this latter in Großsedlitz, Germany: this garden holds the baroque structure also in nowadays. The history of the garden goes back to 1719, when Count August Christoph von Wackerbarth acquired the estate to build here his resting place with garden. The complex was enlarged and rebuilt by the order of Augustus II. the Strong from 1723, which was used by the Saxon rulers as a representative *Lustgarten* until 1756. The new plan of the garden showed a regular baroque design, situated on more terraces, where the height differences were bridged with wide stairs and cascades. [22]. The garden is decorated with numerous statues: the sandstone figures were created by the members of the Pormoser-school, which means the peak of the Saxon sculpture of the 18<sup>th</sup> century. These sculptures depicts antique deities, the Four (then-known) Continents, the Four Elements, and mythological couples in love. These eight couples were placed in the arc of the central bosquet, each of them frames the entrances: one of them shows Apollo and Daphne (Fig. 2.), this composition is in close kinship with Bernini's work. However the Saxon statue can't express so much emotion and momentum: the composition captures also here the moments of the persecution and the transformation into tree, but the lower maintenances of the arms make this composition restrained.

We can find the most examples about the single statues. A lot of sculptures with highest importance and quality, are situated at the western edge of Vienna, in Schönbrunn. The garden is considered the peak of the Austrian garden-architecture, and it still retained its Baroque features. A hunting area was at the site of the garden still in the 16<sup>th</sup> century, the constructional works began by Johann Fischer von Erlach's plan after the Turkish Invasion, from 1690. The castle was completed in 1700, and after that Maria Theresa ordered the enlarging and rebuilding of the

mansion and the garden, from 1743: in the garden the area of the Great Parterre was expanded and new, star-axes were opened. Other significant objects (e. g. Gloriette and the so-called Roman Ruins) were built later, then the parc became to opened for the public in 1779. The expanding of the garden continued in more steps from the end of the 18<sup>th</sup> century, e.g. the Palm House was built [23]. Two Apollo statues and more mythological figures are in the garden, connecting to Apollo, like his son Aesculapius and his sister Diana. One of the Apollos [24] was placed in the so-called Western Bosquet, at the *Rosarium* (rose garden) in 1779: the work of Johann Baptist Hagenauer shows the deity as a young man with arrow, with the effect of the Apollo Belvedere on it. Apollo and Diana stood in the original structure at the ends of a 140-meter-long wild rose trail, symbolizing the Sun and the Moon. The other Apollo [25] is standing on a high pedestal at the Great Parterre at the tree-wall of the bosquets, with nearly two dozen other statues (these sculptures decorated originally the corners of the parterres, but they have been moved to the bosquets). This Apollo, the work of Wilhelm Beyer, shows the deity with laurel wreaths in his two hands, and his left hand rests on his lute. This composition shows Apollos as the deity of truth-telling and the Lord of the oracle in Delphoi.

An other important Baroque garden in Vienna is the complex of Belvedere, built by the order of Prince Eugene of Savoy in 1715-1723: Apollo has several sculptures as the deity of the Sun and Arts. Also this garden was opened to the public for Maria Theresa's request in 1779 [26]. A mythological program went along the whole garden symbolizing the rising of the prince: the Lower Belvedere means the Underworld and the Earth (i.e. the statues of Pluto and Proserpina), and the Upper Belvedere represented originally the Parnassus (the residence of Apollo and the muses) and the Olympos (the residence of the deities). In the northern part of the Lower Belvedere is a sculpture with the pair of Apollo and Daphne: it captures the moment of becoming to laurel tree, by the god pursued nymph's foots are already in tranformation, but the intensity of emotion and momentum of this composition is behind Bernini's statue, or the sculpture in Großsedlitz (Fig. 2.). Two fountains are located in the heart of the garden of Upper Belvedere: the eastern Hercules-fountain suggests Prince Eugene's talent as a general. The western Apollo-fountain displays the skinning of the satyr Marsyas (Marsyas called Apollo with excessive courage to a flute competition, but Apollo won, who had a cruel revenge: he skinned the satyr alive) [28], which represents the victory of the culture over the unbridled nature, and Apollo as the leader of the muses also refers Prince Eugene's role in artistic patronage.

### Apollo sculptures in the landscape gardens

The composition elements of landscape gardens show contrary principles to the Baroque gardens: in the period of Classicism rather informal visual axes were identified in the gardens with the objects (building or sculptures), however the number of statues decreased. The strong political content was partly pushed back, the scientific valuable archaeological excavations of this era had a new emphasis, to the „pumping” of the fresh-known ancient works. In the period of landscape gardens the gardens were designed as a part of the natural environment, on more areas “cultural landscapes” were created, and they had also teaching roles, like in the Garden Empire of Wörlitz, Germany, as well in complex of Lednice-Valtice, Czech Republic.

The Garden Empire of Wörlitz was named after the first and largest landscape garden of Germany, in Wörlitz: this 112 hectares sized parc was built from the 1760s. The interceptions of the builder, Prince Leopold Friedrich III. were giving functions to the garden beside impressing the visitors: he wanted practical utilities, architectural, garden-architectural and agricultural trainings. Within this framework the biggest part of the garden, and the buildings, and also the central castle was opened for the visitors [29]. Numerous mythological figures are here, thus Apollo on several places. A small object has a very special value: the so-called *Warnungsaltar* [30] was made to the memory of Friedrich Wilhelm von Erdmannsdorf, the architect of the buildings in Wörlitz. The 1.4 m high sandstone altar on two-stepped is the earliest memorial of monument and nature conservation, from 1800. On the cylinder represented relief of Diana, Apollo and the muses warns: „*Wanderer, achte Natur und Kunst und schone ihrer Werke.*” (Wanderer, appreciate the Nature and the Arts, and preserve their works!; Fig. 3.).



Figure 3: The *Warnungsaltar* with the figure of Apollo, in Wörlitz (photographs from the author)

The Temple of the Tři Grácie (Fig. 4.) was built as a part of the cultural landscape between Lednice and Valtice: the two castles, their gardens and the

landscape around them were treated as a whole composition, enriched by many buildings in the visual axes (*eye-catcher*). Both Lednice and Valtice have a history going back to the 13<sup>th</sup> century, but they lived a significant era as the summer residence of Lichtenstein family from the 17<sup>th</sup> century, and the landscape gardens were created around the big ponds in the 18-19<sup>th</sup> century. The small building of Tři Grácie was built in the 1820s: the semicircular Kolonnade is straddling the statue of the three graces, Pallas Athena, Venus and Diana (originally in the mythological story the three graces were the incarnation of beauty, kindness and charm, and their typical depiction, turning towards each other and their arms on the shoulders each other, born in the Classical-Hellenistic Periods) [33]. Full-length statues of the muses, deities (e.g. Apollo) and scientists are in the niches behind the columns of the Kolonnade.



*Figure 4: The Temple of the Three Graces with Apollo, in the cultural landscape of Lednice-Valtice (photographs of the author)*

#### **4. Conclusion**

The statues has continuing importance from the Ancient times, they obtained specific surplus content over the time, and they referred also on the functions of the gardens. The continued existence of mythological stories had an integral part in everyday life, both in spatial structure, as well as the carried underlying meaning point of view. While the aim was even more to recall an idyllic Arcadian landscape in the 16<sup>th</sup> century (the allegorical figures, the mythological scenes represented this „longing“), a much stronger political message was in the background in the 17<sup>th</sup> century. The gardens were often decorated with the statues of main deities (Jupiter, Juno, Hermes, Diana, Apollo and Neptun were the most popular figures), but other figures, demigods and heroes (e.g. Hercules) were in the gardens, usually connecting to the deities.

Nevertheless the question arises, if such statues are placed in the gardens of nowadays, what kind of meaning can they have? Have they the same meaning? Or they are only the embodiments of the kitsch? What can perpetuate a sculpture of a

Greek deity, a medieval king, a lion symbolizing the power in a small family garden to the future generations? The intangible value ported over the centuries are unfortunately lost, or strongly reduced.

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# **The Birth of the Theory of Urban Green Systems in Britain and Hungary. Correspondence between Thomas H. Mawson and Béla Rerrich concerning Urban Design Principles**

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**Abstract:** Architectural and urban design connections between England and Hungary were particularly significant in the 19<sup>th</sup> and early 20<sup>th</sup> centuries. These connections are evident in Hungarian landscape architecture as well as in the evolution of the architecture of the capital, Budapest.

Despite these well-known correspondences, little academic attention has been given to the relationship between the English civic designer Thomas H. Mawson and Béla Rerrich, a key figure of Hungarian urban design theory.

This paper will argue that Mawson's seminal role in English urban design was also strongly influential on Rerrich's theory, informing the Hungarian urban landscape at the beginning of the 20<sup>th</sup> century.

**Keywords:** town planning, history, theory, park systems

## **1. Introduction**

The turn of the 19<sup>th</sup> century marks a significant point in European urban design history. In response to industrialisation, the role of green spaces in the urban environment gained significance changing the urban fabric both spatially and theoretically. Questions originally associated with landscape architecture transformed with the city renewal movement post 1860 into core theories of urban renewal and town planning. As Steenbergen states, the role of the park altered from being an "island of landscape in a sea of houses" to becoming an essential component of the urban structure [1].



As a result of this process, the definition of autonomous professions such as urban design, town planning and landscape architecture changed. One of the most important results was the formation of professional institutions, educational systems, professional journals and public debates about the topic. The first theoretical publications on town planning and urban green systems were published at the beginning of the 20<sup>th</sup> century all across Europe [2], [3], [4], [5]. These essential books from different European countries had various basic ideas, and yet influenced each other. This paper will examine how the different ideas were used and put in a new context in Mawson's seminal work, *Civic Art* [6].

This immensely influential time (early 20<sup>th</sup> century) was the period when the Hungarian architect Béla Rerrich went on a study tour to Western Europe and, unusually for Hungarian architects at the time, worked in Thomas Mawson's landscape architectural office from 1907 to 1908. The connections between the two countries had begun a century earlier, when the first travellers (mostly with aristocratic origins) went on their 'grand-tours', and visited the United Kingdom. Their publications and diaries about London and its parks are extremely significant resources in terms of the English influence on Hungarian landscape architecture and urban design. However, it was not usual that a professional, who trained and studied in Hungary, went to work in England. This connection between Rerrich and Mawson, the first hand experience of the Hungarian architect about the theory of the English professional will be investigated in this paper, through the comparative analysis of their main theoretical writings [6] [7] [8] [9].

## 2. Materials and Methods

This paper is based on the detailed analysis of primary sources: theoretical writings, reports, journal articles and drawings written and designed by the major theorists of town planning at the turn of the 20<sup>th</sup> century.

In order to identify the forerunners and precedents that supported the changing role of urban green spaces the plans and writings of Georges-Eugènes Haussmann, Jean-Charles Adolphe Alphand, and Frederick Law Olmsted will be briefly investigated [10], [11].

To examine the contemporary town planning context of the era when Mawson and Rerrich worked, different urban design theories will be compared, to point out the main developments and differences in the various European countries. An analysis of the writings of Camillo Sitte, Joseph Stübben, Jean-Claude Nicolas Forestier, and Thomas Mawson will shed light on the seminal role of Mawson in English town planning history, and the originality of his writings [12].

The effect of Mawson's theory and designs in the case of Hungary will be examined principally through Rerrich's theoretical writings [13].

### 3. Results and discussions

#### A. Precedents and forerunners

To understand the main novelties that evolved in town planning theory at the beginning of the 20th century, three seminal urban design programs have to be mentioned. Regent's Park and Regent's street, designed by John Nash in 1811, was the first attempt to create a connection between a newly built park and housing area and St James' park, through the existing city areas (Figure 1). Nash's layout consisted of two types of urban open spaces, which were exemplary. These were squares and crescents. Although in the design of Regent's street these had decorative roles, and were not open to the public, they became precedents for open green spaces and small recreational areas across Europe.

The urban reconstructions of Paris and Vienna are the most influential town planning examples of the second half of the 19<sup>th</sup> century (Figure 2-3). These precedents served as basis for the theorists in the following decades, and drew attention to the relation between parks and green spaces as single entities, and urban structures as a whole.

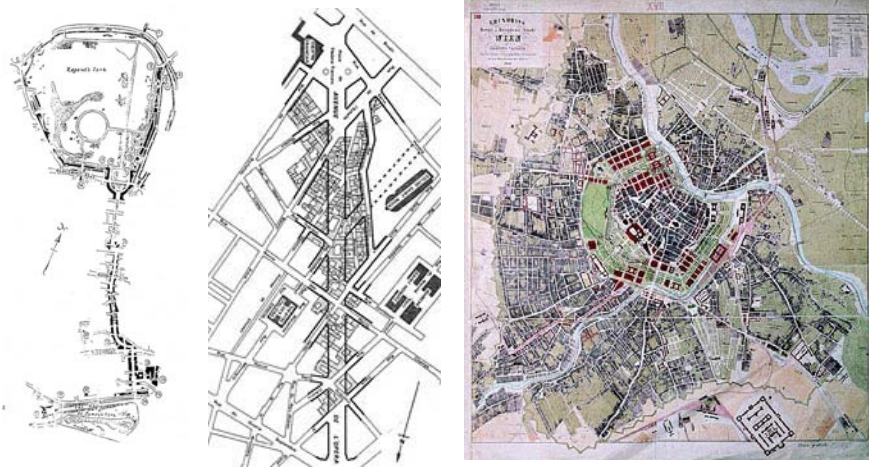


Figure 1-3: Regent's Park and Regent's street London, John Nash, 1811; Renovation of Paris, Eugéne Haussmann 1852-1871; Ringstraße, Vienna, 1857

([http://www.ecfs.org/bome/units/unit2\\_docs/RegentStreet.gif](http://www.ecfs.org/bome/units/unit2_docs/RegentStreet.gif);  
[http://www.conservapedia.com/images/b/b2/Haussmann\\_Plano\\_de\\_Paris\\_1851-1870.jpg](http://www.conservapedia.com/images/b/b2/Haussmann_Plano_de_Paris_1851-1870.jpg),  
<http://www.wien.gv.at/kultur/archiv/geschichte/ueberblick/images/ringstrasse.jpg>)

The reconstruction of Paris between 1852 and 1871, directed by Eugène Haussmann, was the first example in European urban history, when parks and green spaces became an integrated part of city planning [14]. In the case of Paris, the structure of urban green spaces was based on a general and comprehensive plan parallel to the planned street system, which made it possible to arrange the elements of this system in every part of the city according to a hierarchical structure. At the top of the hierarchy were the publicly accessible royal woodlands, the Bois de Boulogne and the Bois de Vincennes, which were at the outskirts of Paris. The second level consisted of the smaller public parks, within the structure of the city, namely the Parc Buttes-Chaumont, Parc Monceau and Parc Montsouris. Small urban spaces – designed after squares and crescents in London, but contrastingly open to everyone – served as everyday recreational facilities in densely built areas. The fourth hierarchical place of the system was the chain of connecting Boulevards. This coherent system, with its diverse levels served as a basis for the different urban spatial typologies in the theoretical writings of the 20<sup>th</sup> century.

The case of the *Ringstraße* in Vienna differs from the Paris example, though it is equally important. After removal of the disused fortification around the inner part of the city, a planning competition for the extension-plan was announced in 1857. Although no winner was declared, and a new committee incorporated the best proposals into the official extension plan, the international competition directed attention to the questions of town planning, and was simultaneously a symbol of the political and social changes taking part in Austria. It remained as the most well-known example of circular green systems until the 20<sup>th</sup> century [15]. The ring determined the physical development of the city, and instead of connecting different parts of the city, it divided the baroque city centre from the outskirts of the town [16]. At the end of the 19<sup>th</sup> century, a second green ring was proposed by German architects, Joseph Stübben and Otto Wagner. The *Gürtelstraße* remains an important recreational area for the citizens of Vienna.

Before investigating changes in the theoretical writings, another new aspect of urban design needs to be analysed. This is the idea of the *Parkway*, created by American landscape architect, Frederick Law Olmsted. Olmsted first wrote about his idea of creating connections between green spaces in 1868, when he was planning Prospect Park in Brooklyn [17]. The special significance of this article is apparent through the presentation of the works that influenced him when designing his parkways. When comparing and analysing European city structures and street systems he had been most impressed by Sir Christopher Wren's London plan, the Avenue of the Empress in Paris, and the *Unter den Linden* Avenue in Berlin, which he visited during his travels in Europe. A deep insight into these layouts, and many

other European examples helped him synthesize his knowledge to work out this unique solution.

His Park and Parkway systems, which characterise the cities he worked on, even today, were the first steps to planning integral greenway systems in the cities. His aim, to create “*routes of approach to and extension from the Park, through the suburbs*” foreshadowed park system plans of the 20<sup>th</sup> century. One of Olmsted’s most well-known parkways is the Emerald Necklace in the city of Boston, a string of connected parks, parkways and waterways (Figure 4).

Olmsted’s effect on town planning is undeniable, evident also in European and American examples. In Boston, his parkway precedent served as a basis for the Metropolitan Park system, designed by Charles Eliot, who was an apprentice of, and became the leader of Olmsted’s design firm in 1893. The extended system improved undeveloped and polluted land, into a system of interconnected green spaces. The example of the two scales of green systems in Boston spread across Europe, and became a major example for developments.

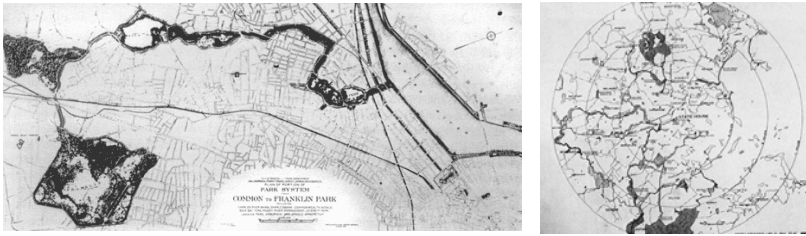


Figure 4-5: Boston, Emerald Necklace, Frederick Law Olmsted, from 1878, Boston, Charles Eliot’s diagram for the Metropolitan Park System 1899

(<http://excitablemedia.com/tcs/tcsbostonmpls2.gif>;  
[http://www.columbia.edu/itc/architecture/wright/6769\\_2002/images/week4/iv05.jpg](http://www.columbia.edu/itc/architecture/wright/6769_2002/images/week4/iv05.jpg))

### B. Town planning theory at the end of the 19<sup>th</sup> and beginning of the 20<sup>th</sup> century

The significance of these urban renovations was enormous. Not only in the case of other city competitions, but also on the emerging new profession of town planning. Different regions in Europe and in America responded with different solutions to the new questions of industrialization and the growth of the cities.

The first decisive theoretical book was written in Vienna by the architect Camillo Sitte in 1889 [18]. For Sitte, urban design was the main artistic part of architecture, and aesthetics played a major role in his way of thinking. He dealt with the psychological and physical perception of space and with the connection and relation between urban spaces, buildings and monuments [19]. In terms of the urban green spaces, artistic and aesthetic aspects are the basis for his judgements. He directed his attention to the importance of geometrical layouts instead of the

informal, 'landscape' style design. His aim, to create harmony between the style of the built environment and open spaces, became the main aim within the garden and park-reform movements at the beginning of the 20<sup>th</sup> century.

Besides this aesthetic change, another (from the point of view of town planning theory) more important aspect of his writings should be mentioned. In one of his other publications, *Grossstadtgrün*, in 1900, Sitte divided two main types of urban green spaces. The separation of decorative and 'hygienic green' space in cities became one of the most often referred to typologies in the following decades [20]. The function of the latter became the starting point of the social planning movement during the modernist period in urban design.

In Germany, publications and plans by Joseph Stübben shaped the formative years of the theory of town planning. Stübben's book *Städtebau* was the most complex architectural and town planning encyclopedia of the period [21]. In contrast with Sitte's mainly aesthetic and design standpoint, the German architect dealt with technological and engineering aspects of town planning. Stübben devised a hierarchy of urban open spaces, including streets, squares and parks, and classified these according to their function. The main advantage of his research was to summarise the results of landscape architecture within urban environments. Besides German cases, he also analysed and published English, French and Danish examples. Although he compared the function and styles of different types of urban green spaces, he did not locate these elements within a coherent system. Stübben defined the minimum average requirements of different types of open spaces in cities. As he stated, the total ratio of the city to green space has to be 1:10. For 100 ha of city, 30 ha of streets and squares and 10 ha of green spaces and 60 ha of built area has to be laid out. Stübben's effect on European city planning is easily traceable, his scales and minimum sizes of open areas appeared in many publications after the publication of his book.

The reconstruction of Paris under the direction of Haussmann was a major example in the second half of the 19<sup>th</sup> century. Parks and gardens, designed by Alphand, and the accessible squares and open spaces were also seminal, both in Europe and in the United States of America. The following generation of landscape architects in France had also made an important contribution to the evolution of the theory of town planning. The landscape architect Edouard André worked with Alphand on the plans of Paris parks, and later won the competition for designing Sefton Park in Liverpool with Lewis Hornblower. At a very early date, in 1879, after returning from the United States of America, he published his book, *L'art des jardins: Traité générale de la composition des parcs et jardins*, in which he praised American town planning, urban parks and parkways [22]. Jean-Claude Nicolas Forestier (another assistant of Alphand at the Service des Promenades et

Plantations de Paris) published his book *Grandes villes et systèmes de parcs* in 1906 [23]. Forestier was hugely influenced by the urban green system of Paris, but he also cited American examples, e.g. the park systems of Boston, New York and Chicago and other European city reconstructions and green systems, like Letchworth, Vienna, Cologne and London. Besides analysing these examples, Forestier also proposed the creation of new park systems, not just at local, but also at a regional level, and stated that these should be an objective of general plans for cities and regions.

During the formative years of the town planning profession, a number of different influences merged in different theoretical writings. Sitte and Stübgen were architects, André and Forestier were landscape architects. Sitte's aesthetic view was basically different from Stübgen's more engineering-based approach, or French professional's landscape architectural approach. Their aims and objectives were different in accordance with their professional background. That is why Thomas Mawson's book, *Civic Art* is unique, and needs to be investigated more deeply.

### *C. Key elements of Mawson's theory.*

Thomas Hayton Mawson (1861-1933), was already a successful landscape architect (and author of the seminal book, *The Art and Craft of Garden Making*) when he turned his attention away from designing private gardens to the creation of public parks. According to his autobiography, in 1908 – when the Hungarian architect Béla Rerrich worked for him – he decided to summarize his knowledge about urban green spaces in his book, *Civic Art* [24]. His original aim was to write about public parks, but he realised, that it is inseparable from questions regarding city structure as a whole [25]. His seminal role in the development of English urban design was to integrate landscape architecture into town planning.

Mawson's publication can be assessed as a summary of all the theoretical frameworks which preceded him. He used, referred to and drew conclusions from examples of the aforementioned city renovations, parkways and park systems in his book, and also adapted the theoretical writings of his contemporaries. The innovation of *Civic Art*, is that he dealt with questions of urban green spaces from the theoretical basics through to questions of construction. In his complex writings, he defined – first in England – the term 'park system', and created a coherent, hierarchical typology for the elements of urban green systems. Besides these pivotal results, he also classified types of open spaces and public places. To examine his effect on Hungarian theory, the details of his systems and typology need to be investigated.



Mawson defined the park system as “a chain of parks, gardens and open spaces connected by boulevards or parkways, or a grouping of common lands and treeplanted and open spaces, parks, or gardens, **arranged according to a comprehensive plan, and extending from the city into the open country**” [26]. In terms of the arrangement of these green areas in the city he identified two main types; the radial and the encircling. It should be mentioned, that in this case Mawson referred to the contemporary Berlin plan, designed by Eberstadt, and also made reference to his diagrams about the two systems [27]. Only a decade later Rerrich published the same diagrams in his seminal theoretical publication about urban green systems (Figure 6).

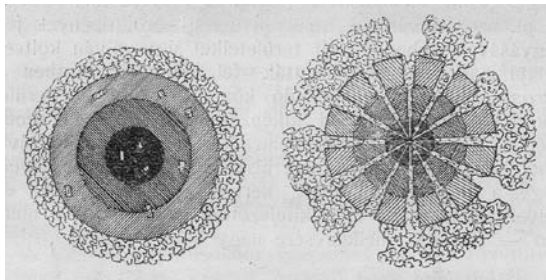


Figure 6: Possible arrangements of green spaces in cities. The diagram appeared both in Mawson’s and Rerrich’s publications (Rerrich, Béla (1919a): op.cit. 12.)

Urban green systems consist of five main elements according to Mawson’s book. These are: 1. *quadrangle and circus for magnificence and grandeur* (town squares), 2. *small recreation parks and playgrounds*, 3. *public parks*, 4. *reservations*, 5. *connecting parkways, drives and boulevards* [28]. The first two categories are more important in the inner parts of the cities, while the public parks and reservations are usually situated on the outskirts of the towns. According to this arrangement, Mawson suggested different stylistic solutions for the four types. Whilst near densely built surroundings, a more geometrical layout is adequate, in the case of large green spaces, the imitation of natural landscapes are possible. As Ponte points out: “as nature enters into the city it is gradually constrained within rigid schemes to the point of its complete petrification in the monumental square” [29].

For open spaces near town centres Mawson suggested the use of a completely ‘architectural’ and ‘formal’ style, in the case of various parks, the use of ‘English landscape’ and ‘Natural’ style is proposed. The role of the formal elements in the designs decrease as one leaves the densely built areas of the city. While in the case of the English landscape style (what Ponte calls composite), a combination of



formal and informal elements is required, e.g. formal recreation grounds need to be associated with the preservation of natural scenes, in the parks laid out in the Natural style, informal elements are the only solution, and these need to be influenced by the surrounding and traditional English landscape [30].

As Cherry states, “Mawson saw civic art as representing the aesthetics of town planning, or the comprehensive, artistic design of the cities” [x]. In contrast to his contemporaries, like Raymond Unwin or Patrick Geddes, “he did not approach city planning through social reform” [31]. His role in the formation of the English town planning is undeniable. His complex views on the city and the role of green systems in cities were a step towards contemporary urban design thinking.

#### *D. The English influence in Hungarian theory - The theoretical writings of Béla Rerrich*

Béla Rerrich (1881-1932) was trained as an architect and was working as a teaching assistant on the architectural course at the Technical University in Budapest, when he went on a two year study tour in Europe, to be taught and work as a landscape architect in Paris and England [32]. Between 1907 and 1908 he stayed in England, and worked for Mawson. Mawson described this time in his autobiography, as “one of the most interesting period[s]” of his life [33]. He was working on the plans for Marine Park and Lord Street Gardens in Southport, and was beginning work on his Civic Art book. The layout of Lord Street Gardens is one of the best examples of what he called architectural or formal style. This style informed Rerrich’s career as a landscape architect.

After his return to Budapest, Rerrich became the first teacher of garden design at the Royal Horticultural School of Hungary. His theoretical writings and his designs for public spaces across the country, meant that he was very influential in developing Hungarian urban design theory.

In 1919 he published two articles about the role of landscape architecture in the field of town planning [34]. In these publications he began to use the specialist nomenclature which is still used now, and comes from his extensive knowledge of international town planning and landscape architectural theoretical writings. He cited the two main categories of urban green spaces by Sitte, the minimum average of green spaces per cities by Stübgen, and also wrote about park systems, and the typology of open spaces. In the two latter cases, the effect of Mawson is undeniable. In Rerrich’s writings the typology consists of the same five elements as in Mawson’s system. However, although Rerrich used the typology of Mawson, in terms of styles, and design questions, he did not agree with the composite style Mawson used in his public parks. As Jámbor states, Rerrich was the founder of the formal style in Hungary, and the parks and open spaces designed by him are evidence of this [35] (Figure 7-8).



*Figure 7-8: Public parks designed by Rerrich in his formal or architectural style (www.profila.hu)*

Apart from the stylistic questions, there is another, theoretically more important difference between the goals of the two designers. As the title of Rerrich's publications shows, the main aim of his publication was to draw readers' and professionals' attention to the social role and importance of urban green spaces. As he emphasized, the decorative green category by Sitte should be removed from the cities, to be overtaken by the importance of hygienic green. Thus he enhanced the importance of accessible playgrounds, and parks designed for all societal group. The social movement in landscape architecture originated in the United States of America, in the reform park movement, and was adapted by the German theoreticians such as Leberecht Migge and Martin Wagner. The latter, in his pivotal publication introduced the term 'use value' in relation to urban green spaces [36]. Rerrich in his publication cited American park systems, as well as German theory [37].

#### **4. Conclusion**

The aim of my research was to determine the extent to which European and American theoretical writings and urban renewals influenced Thomas Mawson. I also aimed to see how he adapted these into his writings, and to trace and show the effects of Mawson's theory in the principles of designing urban green space in Hungary at the beginning of the 20th century. To this end, my method was to turn to primary sources – theoretical writings, contemporary articles and plans – and examine the connections between European and Hungarian theoretical writings.

My findings reveal that different European city renewals and theoretical writings, which had different aims and guidelines, influenced each other, and served as models. For example, the Paris reconstruction directed by Haussmann influenced not just Olmsted's parkways, but also the French theoretical writings, by Forestier. Forestier was also affected by Olmsted's park-system plans.

The theoretical writings by Thomas Mawson are especially interesting because he not only used Paris (the importance of the systematic urban space planning), Vienna (the circular green systems), and the American cities (the parkways and the importance of coherent plans) as examples, but also incorporated different findings of his contemporaries into his work (e.g. the minimum average of open space by Stübben, the importance of city aesthetic by Sitte). His book is outstanding because he wrote the most thorough book in England, using different continental and American examples, and dealt with all the questions of urban green spaces from the planning stage up to questions of construction. The major criticism of the following generation was that he did not put a special emphasis on the social role of town planning.

As Cherry states, Mawson was Olmsted for England [38]. Rerrich had the same role in Hungary. His writings directed professionals' attention to the importance of urban green spaces and the need for general, comprehensive plans for city green systems. He introduced terms, like *park-system*, or *open space* to Hungarian professional terminology. Rerrich's writings were hugely influenced by Mawson's Civic Art. He used the same definition for park-systems, and the same typology for urban open spaces. The main area where he exceeded Mawson was that for him, one of the most important points of urban green space was its social role. With this idea he made a step forward, towards the town planning goals of the modern movement, which determined town planning theory in Hungary over the next few decades.

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## Historic Cemeteries: Common Principles of Protection

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**Abstract:** Those closed cemeteries, or their sections, are called historic cemeteries which reflect their original structure, the plots and resting-places' original divisions, and the tombstones have subsisted in their original places. Cemeteries placed on the national or local list of monuments in Hungary could be listed here but just in case the protection affects their whole area or their well-defined section. There are cc.140 historic cemeteries under area protection in our Homeland. A substantial part of further unprotected historic cemeteries is exposed to risk, decay, damage, or liquidation.

**Keywords:** burial grounds, area protection, cultural heritage, landscape architecture

### 1. Introduction

A considerable quantity of cemeteries in Hungary is still being used, but a smaller quantity of them has been closed. A part of closed cemeteries is liquidated when the decay time on corpses expires. The area is used for other purposes or reopened again for burials. A small percentage of closed cemeteries have not been reused. Their vegetation frequently grows wild; their value in use is gradually decreasing. According to the local government's decision, so-called reverence parks could be formed on their territories. When forming a reverence park, the original function of veneration is revered, however, the graves are liquidated and the tombstones are freely removed, and the area is formed as a park-like site. Moreover, some

cemeteries could be preserved and showed in their original forms in case their artistic style, cultural history, architecture, and landscape architecture offer value. This small proportion of cemeteries could be considered as historic cemeteries.

## **2. Materials and Methods**

Cemeteries can also be declared protected by many principles, i.e. by nature conservation, protection of historic monuments, or veneration. Nevertheless, the number of protected graveyards being declared protected in different ways is very humble. To put it more subtly, graveyards rarely get territorial protection extended over their whole territory retaining subtleties. In many more cases a certain part of the cemetery, either tombstones or a chapel, perhaps an avenue, becomes protected. The advantage of area protection is to provide an overall picture of a given period, settlement, or social group's cemetery culture. Individual tombstones or other cemetery objects' relationship to each other, the burial order, the concept of cemetery layout, plant application, use of materials, etc. could be familiarized with us in union.

Among the different forms of conservation just the protection of historic monuments goes in every detail when trying to preserve the national graveyards territorially. There is no cemetery under nationwide protection. Though there are some graveyards under local protection because of their natural value but in case of most of them just one or another element is protected. They could also get local protection because of their architectural value but just a little part of them is protected territorially. Veneration protection refers in advance to certain famous persons' tombs thus generally insuring the security of one or two tombstones.

Among the national rules concerning the protection of historic monuments the Act LIV/1997 was the first to emphasize the conservation of graveyards, and it listed them among the specific objects of the protection of historic monuments. The Act LXIV/2001 on the Protection of the Cultural Heritage also deals with the problem of cemeteries and burial sites among the specific objects of the protection of historic monuments. There are no essential divergences concerning the articles of the acts. Neither does the No.LXXXIX/2005 modification of the Protection of the Cultural Heritage Act contain significant modifications concerning the territorial protection of cemeteries. [1]

Cemeteries placed on the national or local list of monuments in Hungary could be listed as a historic cemetery but just in case the protection affects their whole area, or their well-defined section. After surveying the Register of Listed Monuments we can state that there are altogether just a few dozen cemeteries which have got the national protection of historic monuments for their whole territory. [2] And there are cc. 100 territorially protected cemeteries on the list of local protection. [3]



### 3. Results and discussions

Historic cemeteries under territorial protection could be divided into two groups. The ones in the first group enjoy territorial protection extended over their whole territory, or over a part of their encompassed territory. Those cemeteries belong to the second group in which an ensemble of tombstones is declared protected, consequently we cannot talk about real territorial protection, and however, the protection of tombstone ensembles essentially yields the same result.

The following cemeteries belong to the first group (Fig. 1 highlighted in red), altogether 16 items:

- Baja, Jewish Cemetery
- Balassagyarmat, Jewish Cemetery
- Békéscsaba, Jewish Cemetery
- Budapest, Jewish Cemetery on Salgótarjáni Road
- Fertőszentmiklós, Cemetery
- Gyöngyös, Jewish Cemetery
- Kiskunhalas, Old Reformed Cemetery
- Kovácsvágás, Cemetery
- Lovasberény, Jewish Cemetery (Fig. 2.)
- Nagykanizsa, Jewish Cemetery
- Pápa, Jewish Cemetery
- Pilisvörösvár, Jewish Cemetery
- Székesfehérvár, Serbian Cemetery (Fig. 3.)
- Tata, Jewish Cemetery
- Tiszafüred, Jewish Cemetery
- Veszprém, Jewish Cemetery

Cemeteries belonging to the group (Fig. 1 highlighted in purple) 27 items:

- Alsópetény, Cemetery
- Balatonudvari, Cemetery
- Budapest, Kerepesi Cemetery (Fig. 4.)
- Debrecen, Cemetery on Budai Ézsaiás Road
- Hédervár, Roman Catholic Churchyard
- Hévíz – Egregy, Roman Catholic Churchyard
- Iván, Cemetery
- Kánó, Reformed Cemetery
- Karancsság, Cemetery
- Kőszeg, Cemetery

- Kunszentmárton, Cemetery
- Mihályi, Cemetery
- Miskolc – Avas, Reformed Church and Churchyard
- Nagybajom, Reformed Cemetery
- Nagycenk, Cemetery
- Nagylózs, Cemetery
- Nézsa, Cemetery
- Pécs, Roman Catholic Churchyard
- Sopron – Balf, Cemetery
- Sopron Cemetery of St. Michael
- Szatmárcseke, Reformed Cemetery
- Szirák, Cemetery
- Szőlősdárdó, Reformed Cemetery
- Telkibánya, Reformed Church and Churchyard
- Tokaj, Jewish Cemetery
- Velence, Cemetery
- Vilyvitány, Cemetery



Figure 1: Historic cemeteries in the Register of Listed Monuments.

The above listed 43 cemeteries and churchyards, also the cc. 100 territorially protected cemeteries on the list of local protection altogether cannot amount to 5 percent of all cemeteries in Hungary. Though there is a legal opportunity to protect cemeteries, territorial protection can just rarely be carried out. One of the reasons is that there is no database available which would contain the most important parameters of national cemeteries. From this shortcoming follows the fact that the list of national historic cemeteries has not hitherto been compiled. Moreover, neither the terminus techniques of *historic cemetery* itself, nor its definition appear in Hungarian technical literature or rules.

A further problem is indicated by the lack of integral guidelines based on which it would be possible to choose cases worth national protection out of national historic cemeteries. Theoretically, local protection could be a good solution as a local decree is enough to declare protection; but it is also a disadvantage of this form of protection as the cancellation of protection based on local interests is also simple. Beyond the problems of being declared protected numerable problems are caused by the exploitation of historic cemeteries, which could lay the basis primarily for the survival of non-protected but reckoned historic cemeteries.

#### **4. Conclusion**

In the following the recommended guidelines on how to declare protection for historic cemeteries will be presented. While compiling the guidelines, we took into consideration the National Office of Cultural Heritage's (Kulturális Örökségvédelmi Hivatal) principles applying the declaration for protection [4], as well as Alois Riegl [5] and Peter Goodchild's [6] writings on principles of selection for listed monuments. The point-of-view system is disclosed in the under-mentioned points:

1. Integrity – structure, composition, gravestones, the given era's stylistic characteristics
2. Uniqueness/ typicalness
3. Historical value – the cemetery's age, how the style of the given era appears
4. Artistic value – artifacts valuable from history of art and ethnographic points of view
5. Value tied to cultural history – burial places of famous persons, historical events
6. Botanical values
7. Settlement shape/ landscape value

8. Settlement ecology roles

9. Value in use – in connection with its accessibility, infrastructure, and promotion.

In connection with its value in use the question could arise: What could one use a closed cemetery for? This question can be answered by several examples of cemeteries in Western Europe, also by innumerable programs in Kerepesi Cemetery in Hungary. [7] Further burials are offered in certain cemetery plots, besides organizing guided tours, extramural courses, fine art exhibitions, drawing and photo competitions, concerts, and lectures.

The database compilation of historic cemeteries, then choosing the items worth protection out of this database, also the elaboration of historic cemeteries' exploitation plans would make it possible to protect this part of our national cultural heritage at European level.

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*Figure 2: Lovasberény, Jewish Cemetery*



*Figure 3: Kerepesi Cemetery, Budapest*



*Figure 4: Székesfehérvár, Serbian Cemetery*



## **The Importance of National Landscape Character Survey in Landscape Protection**

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**Abstract:** One of the main requirements of the European Landscape Convention is the survey of national landscapes. Although the treaty has entered into force in Hungary in 2008, this work has not started yet. The paper reviews the main problems of the current system of development control, and provides potential solution on how a national landscape character survey could help to resolve these.

**Keywords:** European Landscape Convention, impact on landscape character, planning policies, development control

### **1. Introduction**

Following on from the ratification of the European Landscape Convention, the treaty has entered into force in 2008 in Hungary. As part of the treaty, each participating country undertook to "identify its own landscapes throughout its territory", with regard to their characteristics and the forces and pressures transforming them. Although preparation of this work has started, the implementation in Hungary is still in initial phase. Before a national landscape character survey is launched, it is important to review its importance, and set the scope and clear professional objectives.



The most obvious benefit of such a project is that a character based inventory of our landscapes will be prepared. Although there are existing landscape related surveys for the country, these focus on specific fields (botany, archeology etc.), and even the most complex register of micro regions is based on a geographical approach [4]. The theoretical importance of a landscape character survey is that it provides a database through the integration of these particular aspects, establishing the key features of the landscape with an emphasis on spatial patterns and visual appearance.

Nevertheless, in order to achieve the most benefits, the survey should go beyond this theoretical level, and practical applications should also be taken into consideration from the very beginning of the process. According to Julie Martin Associates and Swanwick [6] these applications may be classified into two categories, either related to planning or to landscape conservation and management. In my paper, I focus on the planning issues, and provide an overview how a national landscape character survey could support the protection of our landscapes, if the results are applied in development control.

## **2. Materials and Methods**

The ratification of the European Landscape Convention was welcomed and its relevance discussed by several authors. Regarding the national survey of landscape character, it was the University of West Hungary, where the Western European examples were first studied [8], and a pilot project launched [9], based on the UK methodology [10]. Research at the Corvinus University of Budapest focuses on the characterization of specific landscape types [2, 3, 5], and there was also a significant GIS database development made [1] related to the topic. Nevertheless, the goals and practical applications of a projected national landscape character survey have not been discussed and established yet. In the paper, I highlight the existing problems of development control, and set forward the main considerations for the integration of landscape character considerations into the planning system. Description of the problems was informed by my planning experience. The model proposed for development control is based on the Scottish example [7], adapted to the Hungarian situation.

## **3. Results and discussions**

Due to the political and economical transition in Hungary, our landscapes were exposed to significant development pressure in the past two decades. As a result, some of them have suffered significant loss of their historical character. The reasons of these negative changes could be summarised as:

- lack of efficient landscape protection policy,
- insufficient control of development in non-designated landscapes,
- weak authorities versus strong investor lobbies,
- lack of recognised qualities of the landscapes,
- low public awareness of landscape protection.

The roots of the problems are related to the fact that the legal system does not provide sufficient level of protection of the landscapes against development. The current instruments were introduced in relation to nature protection policies. Since the treaty has come into force, declaring that each Party undertakes “to integrate landscape into its regional and town planning policies and in its cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape” (Article 5, General measures), the legal system has not been revised accordingly. As a consequence, the aspect of landscape protection is not taken into consideration from the very beginning of formulating the various policies affecting the landscape. Appearing only at a later stage, it seems to represent an obstacle, hostile to some “progressive” political measure or physical development.

The problems are even more severe in the case of non-designated landscapes. Although they may not have so outstanding values that would entitle them for a national designation, many of them have a unique character specific to a region or location. While for the designated areas there are relatively clear policies established and a strict development control applied, non-designated land is more exposed to unwanted development.

No wonder that the weakness of the authorities responsible for landscape protection is outstanding in such areas. Having only a consultative role, they are mostly observers of the processes in non-designated landscapes. As a result, the economical interest of strong investor lobbies many times prevails against landscape protection.

On the other hand, investors may complain that the decisions of the authorities are unpredictable and not necessarily supported by exact arguments. This takes us to another problem, namely the lack of recognised qualities of the landscapes. Without a national inventory of the landscapes based on a standardised methodology, the same investment proposed for similar landscape conditions may be seen and judged differently by the regional authorities concerned. This also provides a basis for the investor to enter into time consuming legal processes against the decisions made.

Finally, it is important to mention the low public awareness of the importance of landscapes. While some developments effecting natural habitats have provoked significant protests (see the case of the wetland habitat in Dunakeszi threatened by the projected car park extension of Auchan supermarket), the impacts on the

landscape seem to raise less public interest. This is mainly due to the lack of knowing and understanding the importance of the local landscape character.

As an international treaty, the European Landscape Convention provides increased support for the protection of our landscapes, and its requirement of a national survey of landscapes could be particularly useful for resolving the above mentioned problems. First of all, the results of a well-established survey would be recognised landscape character descriptions, available as standardised bases for a transparent control of the authorities. Covering the whole area of the country, it would also provide an opportunity for improved protection of non-designated land. Moreover, it is a potential tool for raising public awareness. Although the surveys should be prepared by professionals, there are various options for public participation in the process. Involvement of local communities could help them to recognise the importance of their landscapes.

In order to achieve the potential benefits for development control, relevant policies must be adjusted so that the results of the national landscape character survey are accommodated. Currently development control in Hungary exists at two levels: for individual development proposals and at the strategic level of local and regional plans. In both cases there is a requirement to assess the potential environmental impacts, although in the case of individual developments this applies only to the listed ones which are expected to have a significant impact. Impacts on the landscape are examined as part of these assessment procedures.

The problem with the recent system is the lack of explicit declaration on when development permission should be refused for the sake of landscape protection. Therefore it would be important to establish by law that any development having a significant impact on the landscape character should not be permitted unless mitigation of the impact would be possible. This would then provide a clear basis for the assessment of impacts.

Finally, let us see how the results of landscape character survey could support the relevant authorities in the process of development control. As written above, the basis of decision would be whether the development has a significant impact on landscape character. This is easier to judge if there is a study that tells what the key considerations should be for a specific landscape.

Landscape character studies prepared for the country should therefore go beyond a simple description of the character. Setting the landscape character objectives (as required by the European Landscape Convention) and listing the key sensitivities for the landscapes concerned are essential contents for practical applications of the studies. Checking the development proposal against these, the level of impact is easier to establish. If it is significant, the developer must provide

a solution to reduce this impact to an acceptable level. If this is not possible, the permission should then be refused.

#### **4. Conclusion**

The quality of the landscapes depends on the political and economical status of a country to a great extent. Regarding Hungary, landscape protection policy is currently not a main priority. Although the country has joined the European Landscape Convention, we are far from meeting some of its requirements. Professionals therefore need to use all opportunities to draw attention to the topic, convince decision makers of the importance of a reformed landscape policy, and call for urgent action in order to launch the necessary national programmes.

One of the important tasks will be the preparation of a national landscape character survey. In order to achieve its potential benefits, this requires preparatory research of landscape professionals. My paper provides important considerations for the practical application of the survey. I established that the aspects of landscape character protection are possible to integrate into the current system of development control. Nevertheless this requires that exact criteria are set for the decisions on development proposals. Authorities would be significantly supported in this work, if landscape character surveys also include information on the qualities and sensitivity of the landscapes described.

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## Landscape design tasks based on the *Budavidék Greenway*

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**Abstract:** The *Budavidék Greenway* is a network of routes for the use of walkers and cyclists. It consists of former cart-tracks. We regard this network as a new land-use form in an agricultural and forestry landscape. The first tasks were the identification of land-use conflicts and the development proposals linked to the use of the greenway. Our current research activities are concerned with the opportunities offered by the 'classic' greenway model. The banks of the *Békás* Brook seem appropriate to the establishment of a streamside greenway. The other possibility is on the route of a disused railway line, in the vicinity of *Biatorbágy*.

**Keywords:** land-use form, land-use conflicts, cart-tracks, classic greenway models

### 1. Introduction

In our current article we shall review the landscape design tasks related to Hungarian greenways in light of the experience gained in the course of the *Budavidék Greenway Alliance's* work, and of the research and educational work we have carried out in order to realise the aims of the greenway programme. We see the location of the *Budavidék Greenway* (the *Zsámbék Basin*) – as a model region, which – due to its diverse landscape qualities and the support it enjoys within the local community – can serve as a good model for the classification of

Hungarian greenways, and determination of the tasks appropriate to potential categories of greenways in Hungary.

The productive specialist collaboration can provide the basis for establishing the landscape design of Hungarian greenways through further research assignments. For this it is equally necessary to carry out evaluation of currently designated greenways in Hungary and the analysis of case studies on greenways outside Hungary. It is essential for the continued existence of already designated greenways and the creation of new ones that greenways be incorporated into regional planning, and later that a legal and technical regulatory system for greenways be developed.

### *Background*

By way of introduction to the landscape design tasks for Hungarian greenways, we should first review the results so far of greenway programmes completed abroad, and initiatives in Hungary.

The 'greenway' concept first arose in the United States in the 1970s as a result of the realisation of the damaging effects of excessive car use, and as an expression of the growing desire for a healthier lifestyle. The design and then construction of greenways – routes for non-motorised transport – was in response to demands from American civil organisations. The first greenway plans were developed by the Hungarian-born professor of landscape architecture Julius Fabos and his departmental associates. Greenways designed with spatial planning methods primarily ran alongside large rivers, and were multi-functional (principally for walking, cycling and horse riding). Routes suitable for non-motorised transport were also planned on many disused railway lines, also with the aim of encouraging healthy leisure activities and lifestyles. The routes were both with hard surfacing and without. And so the original greenways in the 'classic' sense were planned and constructed along river valleys and disused railway lines.

The main aim in the creation of European greenways was, as with the American versions, to form green corridors which encourage participation in a healthy lifestyle, together with a significant amount of green area development. Presentation of local natural and cultural assets, the development of tourist potential and civil participation became important parts of greenway programmes. Despite this broadening of aims, the definition of 'greenway' used by the European greenways association unambiguously refers to the creation of routes for non-motorised transport. Greenways can have hard surfacing, and sections of surfaced cycle route form part of certain greenways. The most important criteria are that the routes can be used safely, and that they extend into the centres of settlements.



The theoretical possibility for the planning of a Hungarian greenway occurred in 2001, when the South Buda Region Green Belt Pilot Project was designed at the Landscape Design Department of Szent István University. Those who worked on the project interpreted the concepts of ‘green belt’ and ‘greenway’ in the way they had come to be known in international specialist literature on the subject, and they examined the landscape design opportunities for the formation of a green belt in the region of Budapest. There was no practical follow-up to this contemporary conceptual foundation, however.

Later, the Hungarian Environmental Partnership Foundation (*Ökotárs Alapítvány*), as a non-profit civil organisation, started to concern itself with the formation of greenways in Hungary. Since 2005 members of the foundation have been initiating the creation of greenways in Hungary in accordance with guidance from Central and Eastern European Greenways (CEG). The first Hungarian greenway was the *Danube-Ipoly* Greenway, the spine of which is provided by a cycle route running between Budapest and the towns of Vác and Szob, to which smaller dirt tracks and study trails are connected at certain locations. In connection with the *Danube-Ipoly* Greenway, civil organisations have marked out the *Path of our Heritage* Greenway, on dirt trails running between meadows. In the area of the Pilis range of hills, certain forest tourist routes which are also suitable for cycling have been marked out as greenways. The first greenways marked out in Hungary have placed great emphasis on tourist developments along their routes.

This brief overview shows that the conceptual content of the term ‘greenway’ is quite rich, and indeed we could also say that the concept of ‘greenway’ has undergone a significant change from the ‘classic’ American model to the Hungarian version of greenways. An increasingly diverse range of routes are being designated as greenways, and an increasing number of possibilities are linked to them.

The process of this change in meaning is particularly striking from a landscape design perspective, as in realising the stated goal (the marking out or creation of spaces for non-motorised transport), the following are factors are relevant:

- 1) the influence of natural features on feasibility
- 2) new land-use possibilities resulting from land-use characteristics
- 3) the possible emergence of land-use conflicts
- 4) the nature of possible burdens arising
- 5) the nature of the specialist/professional background needed for realisation
- 6) the nature and extent of financing for continuous maintenance

Therefore from a landscape design perspective, we can further see greenways as valuable linear green space elements in the landscape, and the function of greenways as a new land-use form appearing in a given landscape, and as a tool for preserving landscape potential.

### *The design process for greenways*

The design process for greenways we recommend consists of the following parts:

- Demarcation of area
- Landscape analysis from the perspective of the creation of a greenway
- The selection of possible routes
- The evaluation of sections of route
- Agreement with specialist authorities and owners
- The resolution or avoidance of land-use conflicts
- Determination of route types
- Development of recreational and/or tourism proposals

### *Demarcation of the area*

The area demarcation of a planned greenway route or greenway network depends on needs which should be articulated, and on the organisation which is initiating the plan. The demarcation can occur:

1. at the request of one or more local councils
2. according to the needs of a sub region or geographical domain
3. in connection with a nationwide programme
4. at the request of a civil organisation
5. on the route of a disused railway line
6. along the valley of a river or stream
7. as a result of another type of request

The area demarcation of the *Budavidék Greenway* was carried out by the civil alliance which initiated the project, aligned to natural geographical borders. The field of demarcation is the *Zsámbék Basin*, a geographical domain which encompasses the settlements within the basin of the *Békás Brook*: The '*Budavidék*' name refers to literary references to the traditional wine-growing area.

Landscape zoning based on natural features integrates with geographical zoning determined by the Hungarian academy of sciences. With respect to regions used in statistical planning, the settlements of the *Budavidék Greenway* belong to several sub regions, but in terms of regional planning the designation of the *Zsámbék*

Basin as a geographical domain is possible, and its demarcation is supported by a strengthening awareness of the regional interdependence of the settlements included.

### *The selection of possible routes*

An important starting point for the selection of possible greenway routes is the analysis of historical maps. Former trading roads, smaller cart-tracks and the routes of railway lines are rationally chosen routes (with optimal gradients and lengths between settlements), which are suitable for use by both pedestrians and cyclists.

Sections of route can be:

- existing roads and streets with light traffic use
- existing forest roads
- existing agricultural roads
- the routes of disused railway lines
- the banks of rivers and streams
- newly-built sections, where necessary

## **Methods**

Under the direction of the Department, in the 2009/ 2010 and the 2010/2011 academic year landscape architecture students studying Co-ordinated Landscape Design outlined the landscape design tasks associated with the greenway routes around twelve settlements, according to the following methodology:

- evaluation of the results of civil initiatives up to until now
- problem identification
- determination of tasks awaiting solutions
- research work
- survey of terrain
- university departmental consultations
- consultations with local councils
- presentations for civil organisations, local councils and relevant authorities at the Buda Campus of the Corvinus University of Budapest
- submission of six-month assignment (examination and evaluation)
- development of landscape design recommendations
- preparation of summarising posters

The following subject areas needed to be worked on for development of the examination work phase:

- the concept of ‘greenway’
- natural and societal characteristics,
- regional planning schedules
- landscape and nature conservancy areas
- articulation of recommended greenway routes (features of the terrain, road surface, accompanying green areas, landmarks, outstanding viewing points)
- ecological systems and system elements worthy of protection
- cultural heritage and unique landscape assets
- land-use conflicts

We paid special attention to the determination of elements of the ecological system worthy of protection. Those of outstanding interest are the surviving natural waterside confluences of the Zsámbék Basin's principle catchment area and the *Békás* Brook, the surroundings of springs, the environs of Lake *Biai* and Lake *Kozáromi*.

Another task in addition to monuments found alongside or opening off greenway routes was the naming, cartographic depiction and evaluation of the condition of unique landscape assets. On the basis of surveys there was also a need to depict outstanding viewing points and panoramas.

Alongside recommended routes, several land-use conflicts are also observable:

- pot-holed, neglected road surfaces
- treeless agricultural areas (erosion)
- a scarcity of regenerating green areas (absence of avenues of trees)
- presence of stray dogs
- illegal tipping of refuse
- difficulty in following routes due to inadequate signage

After designation of routes, land-use conflicts could be caused by:

- the relationship between greenways and existing/ planned public roads
- varying features of terrain

In the second half of the academic years, in line with the task requirements, landscape design recommendations were to be developed in the following subject areas:

- resolution of land-use conflicts
- development opportunities for sections of greenway route (road surface, landmarks)

- designation of recreational areas, draft plans
- recommendations for tree planting along roads (locations, suggested tree species)
- graphic elements (route signage, information signs)
- possibilities for the formation of road surfaces
- junctions between greenways and public roads
- planning of study trails

Students had to develop landscape design recommendations based on the tasks expressed in the examination work phase, and develop detailed plans for some areas.

The following recommendations were put forward for the resolution of land-use conflicts:

- development of design possibilities for road surface formation for seven existing conditions
- establishment of windbreak strips of forest adjoining fields
- roadside tree planting
- acknowledgement of the greenway network in the course of design processes
- organisation of a ranger service
- marking of terrain features
- marking out of greenways on asphalt and with signs
- elimination of illegal refuse tipping

### *Recommendations for the resolution and avoidance of land-use conflicts*

In the course of the development of the plans for the *Budavidék* Greenway we have paid special attention to the surface treatment of routes outside the centres of settlements, and the problems arising from the use of greenways in relation to parallel agricultural activities. For the solution of this problem, students carried out a study in the area of Tök – one of the settlements – and have taken part in continuing meetings with the leader of one of the most important agricultural organisations.

In the study, the students articulated and depicted the main land-use conflicts. We have evaluated the regional cycle route-study plan proposal prepared for the route. The evaluation has shown that:

- 
- we cannot designate the most frequently used routes as greenways during periods of agricultural activity
  - forming a stabilised dirt track on one half of the width of the cross-section of dirt tracks is not a practical solution
  - the more intensive maintenance of sections designated as greenway could be a solution
  - on some sections an independent greenway lane could be formed
  - it is advisable to plan the planting of trees along sections that could be designated as greenway in connection with agricultural tree planting

### *Agreements with specialist authorities and owners*

For optimal selection, routes must be agreed with the following affected parties:

- land owners and managers;
- the local councils of settlements;
- specialist authorities.

This is because in most cases the greenway will be a new land use, linked to:

- the activities of farmers in the area;
- area and settlement space planning processes;
- the capacity of environmentally protected areas.

The plan for the greenway network must be finalised from an agreements perspective.

Finalisation can be influenced by:

- relations with land owners and managers;
- planned new area functions and infrastructure elements;
- agricultural practice (on the main agricultural routes) ;
- hunting activity;
- plant protection activity.

The most important part of agreements with local councils is the incorporation of greenways into the process of area and settlement space planning.

A primary task in the design regulation of greenways is determination of a usable definition in the design of greenways in Hungary, and of the legal, technical, ecological and financial conditions for formation according to desired modes of use.

As a first step I recommend determination of a usable concept of ‘greenway’ for the design of such features. A good foundation for the creation of a definition is

provided by findings from the establishment of greenways both within and outside Hungary. As a next step one must group greenways according to existing and planned uses (pedestrian, cycling, horse-riding, waterborne, and mixed use), and in combination with various land uses (built-up areas, agricultural, meadow, forest, waterside).

Related to existing and potential greenways, there is a need for sample cross-sections representing minimal and optimal solutions, and examples of recreational areas on greenways, with special regard to potential development of green areas. Based on findings from further research, the formulation of technical guidelines for greenway design may become necessary.

### *Route types*

Several types of greenway can be created on the area of the *Budavidék* Greenway. Old cart tracks form the spine of greenway routes which can be marked out around and between settlements. These greenways can primarily serve to expand the recreational opportunities for residents of the Zsámbék Basin.

The development of the following design tasks is needed for the high-quality realisation of the proposed greenways:

- the identification of land-use conflicts and of potential solutions ;
- the guaranteeing of protection of landscape assets;
- the development of the presentation of landscape assets and their development possibilities;
- the design of green space development;
- the design of rest areas;
- the design of the identity and associated graphic elements.

Alongside streams and disused railway lines there is the possibility for ‘classic’ greenways to play a role at regional or national level, and for them to be tourist resources.

A primary task in the design regulation of greenways is determination of a usable definition in the design of greenways in Hungary, and of the legal, technical, ecological and financial conditions for formation according to desired modes of use.





Figure 1: Network of routes for Budavidék Greenways

As a first step I recommend determination of a usable concept of ‘greenway’ for the design of such features. A good foundation for the creation of a definition is provided by findings from the establishment of greenways both within and outside Hungary. As a next step one must group greenways according to existing and planned uses (pedestrian, cycling, horse-riding, waterborne, and mixed use), and in combination with various land uses (built-up areas, agricultural, meadow, forest, waterside).

Related to existing and potential greenways, there is a need for sample cross-sections representing minimal and optimal solutions, and examples of recreational areas on greenways, with special regard to potential development of green areas. Based on findings from further research, the formulation of technical guidelines for greenway design may become necessary.

It is important to emphasise that for all types of greenway, wider popularisation for tourism can only occur after resolution of land-use conflicts; it is recommended that across the entire area of the greenway network there should be uniformly safe surfaces, route markings and signs at suitable intervals before routes are more intensively used.

- Design tasks linked to the tourist use of greenways;
- the marking out and design of central rest and information points (buildings);

- the provision of accommodation facilities;
- provision of organised tours and guide information;
- incorporation of local produce and the goods of local providers.

Part of the work for the Ph.D. Thesis under preparation is identification of a generally applicable design method for optimal selection and classification of routes.

## Results and Discussion

The *Budavidék* Greenway programme started as a civil initiative. As a result of civil collaboration a route proposal suitable for pedestrians and cyclists emerged, which connects the neighbouring settlements of the Zsámbék Basin. The route network has formed around traditional cart-tracks, separated from public roads with high traffic flow. As part of the civil initiative, alongside routes route marker pillars have been placed, which are of distinctive design and are reminiscent of old boundary marker stones.

The landscape design tasks carried out to further develop the *Budavidék* Greenway programme are linked to the 2001 study prepared by the Department of Landscape Planning and Regional Development at the Corvinus University of Budapest, which deals with the possibilities for the creation of a system of green corridors in the area of the Budapest Agglomeration. Numerous examples in the United States and Europe show landscape design solutions for ‘classic’ greenways; analysis of these and the opportunities specific to Hungary are necessary, as well as a design system for the establishment of a Hungarian greenways.

Due to the diverse features of the Zsámbék Basin, the appropriate roles and possibilities of certain types can be determined through the classification of proposed greenway routes across the area of the *Budavidék* Greenway.

It is essential for the continued existence of already designated greenways and the creation of new ones that greenways be incorporated into regional planning, and later that a legal and technical regulatory system for greenways be developed.

Just as with the *BudaVidék* Greenway, it is essential for the continued existence of other Hungarian greenways that they at least appear on local structure plans, and that thus, for example, the junctions between greenways and bypasses relieving traffic pressure on the centre of settlements become a design task. the creation of new greenways can be assisted if after the research and identification of routes of historical significance in the landscape they can feature at the various

levels of regional planning as valuable elements in the structure of the landscape – even as possible greenway routes.

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## Trinitarian Monastery Gardens in the 18<sup>th</sup> Century Hungary

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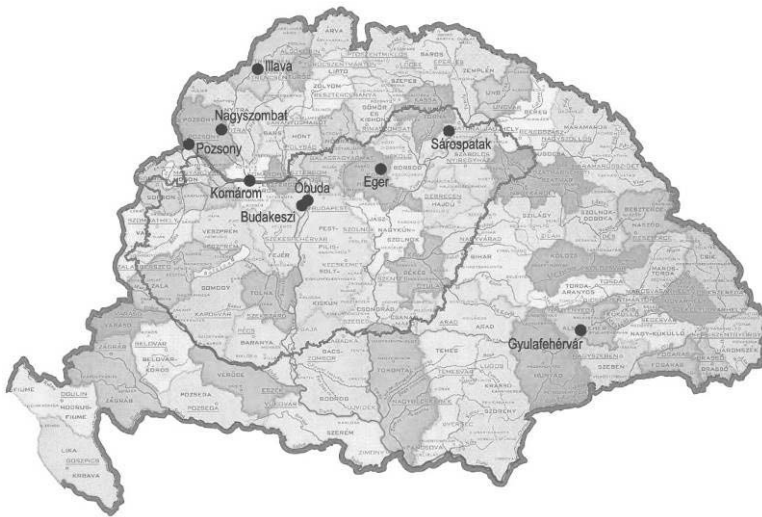
**Abstract:** The formation of Trinitarian gardens was determined by several factors: by the type of religious order (mendicant) which resulted in a modest lifestyle, as well as by their main supporters, often specifying the origin or layout of their monasteries. Generally different functions like farming and recreation were mixed in their gardens. Yet, historical sources like period depictions and descriptions seem contradictory, the clarification of which is the primary aim of the paper. The research examines their quondam monasteries in Illava (Ilava, SK), Pozsony (Bratislava, SK), Nagyszombat (Trnava, SK), Óbuda, Budakeszi, Eger, Sárospatak and Gyulafehérvár (Alba Iulia, RO).

**Keywords:** garden history, monastery gardens, historic gardens

### 1. Introduction

Monastery gardens are peculiar cultural landscapes, representing the designed and associative types of cultural landscapes all in one. These gardens had been established for functional and contemplative aims since the Middle Ages. The surrounding walls of monasteries had existed since the time of St. Pachomius (292-348 AD) and became a characteristic feature of monasteries onwards [1]. The walls certainly limited the space, therefore, it was general to mix the different functions of places, like planting an orchard in the cemetery garden. Pleasure gardens also developed this way, by the beautification of vegetable or herb gardens.

The Trinitarians, finding their way to Hungary under the Turkish Rule (*Fig. 1.*) [2], belonged to one of the most ancient type of religious orders, the mendicant orders, and as such, therefore, they depended mostly on the charity of the people. The peculiarity of Trinitarian gardens lies in that even though they are supposed to be typical modest monastery gardens, there exist some engravings which depict quite a huge area next to the buildings filled with decorative garden elements. The aim of this paper is to resolve this apparent contradiction and thus present Trinitarian garden art.



*Figure 1:* Trinitarian monasteries in Hungary, 18<sup>th</sup> c.

## 2. Materials and Methods

The National Archives of Hungary keeps many files from the time of the dissolution of the monasteries, of which the inventories include information concerning the gardens as well [3]. Besides, a series of engravings depicting the monasteries has also been essential source [4], since hardly any other imagery sources exist from the 18<sup>th</sup> century concerning these monasteries. Furthermore, site plans and maps also hold useful information regarding the monasteries [5].

The historical research of monastery gardens already has a long tradition, especially in the German-speaking countries [6]. However, Trinitarian monastery gardens are usually not mentioned specifically in either of them, hence the research has basically no antecedents in Hungary as well. Although the order was quite determining in the 18<sup>th</sup> century, and also its Baroque architecture was effective, its short existence lasting no more than 90 years made it be overlooked. Yet, works like

Ferenc Fallenbüchl's comprehensive historical description of the Hungarian activity of the order [7], and also others treating the history of certain Trinitarian monasteries [8] have provided great assistance in the research of their gardens alike.

### 3. Results and discussions

The formation of Trinitarian gardens was determined by several factors. The order belonged to the mendicant orders, which resulted in precluding luxury from their lifestyle [9]. Though all Catholic religious orders took the solemn vows of chastity, obedience and poverty, the mendicants were particularly strict concerning the last one, therefore, they lived in even straitened circumstances than for instance their monastic associates, which was highly reflected in their gardens as well. Even though the Trinitarians managed to make a large fortune during their activity in Hungary as a result of their many benefactors from the aristocracy, still most of their wealth was used for the ransom of captives and for mercy, and hardly any amount remained for the upkeep of their living circumstances, including the gardens.

The order's main mediators were the Jesuits who not only helped them in diverse ways, but also affected them in their way of life. Hence also their gardens were built according to similar principals. The Jesuits, though also made a fortune during the 18<sup>th</sup> century and were the most influential order of the time, were specialized on education, and as such, needed to demonstrate a good example to be followed with their surroundings, too [10]. Their gardens were modest and complex, mixing decorative and farming elements which resulted in aesthetically formed vegetable gardens and orchards, reflecting the Baroque axiality and geometrical design.

Nevertheless, a series of engravings with depictions of three Trinitarian monasteries seem to contradict the assumption concerning the formation of their gardens (*Figs. 1-2.*). Two of them (Pozsony and Illava) represent huge decorative gardens, while the one of Gyulafehérvár delineates an empty courtyard [11].

The diversity of the engravings would allow the supposition of their authenticity, still, the two depicted ornamental gardens give rise to a suspicion. The two monasteries were established at almost the same time: Illava in 1693, Pozsony in 1697 [12]. The building up of the monasteries also falls approximately on the same period. It is rather odd, therefore, that while the garden of Illava seems to have been designed in the spirit of the late-Renaissance and early-Baroque garden style (coordinate garden elements, simultaneous appearance of knot parterres and parterres de broderie, slightly oblong forms), the garden in Pozsony already shows the characteristics of the flourishing Baroque style: strong hierarchy, axial symmetry, especially long rectangular parterres, predominating parterres de broderie.



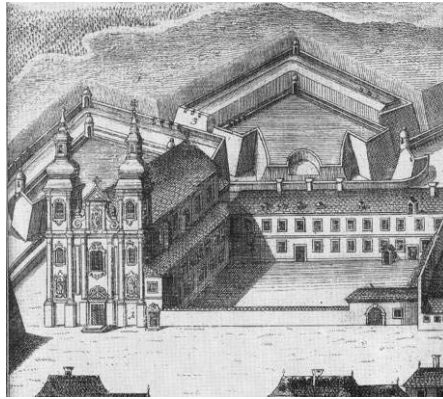


Figure 2: The monastery of Gyulafehérvár, 1739. /J. a S. Felice (1739), *Annalium Provinciae...*Vienna: S. n., between pp. 687-688./

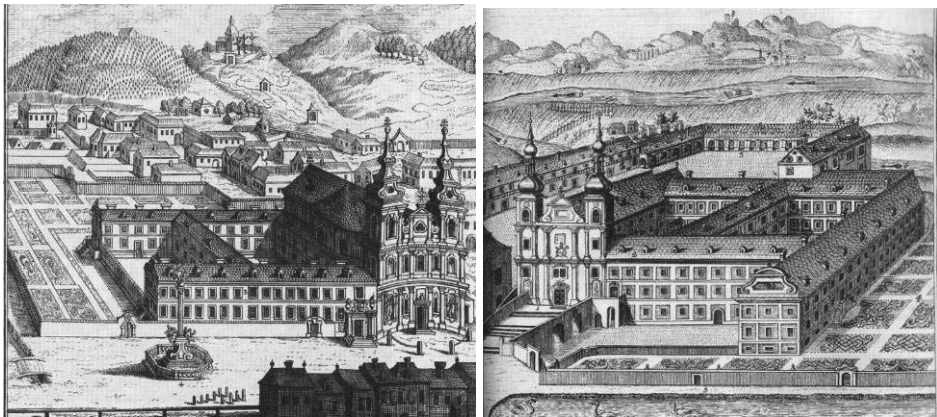


Figure 3: Ornamental gardens in the monasteries of Pozsony and Illava, 1739. /J. a S. Felice (1739), *Annalium Provinciae...* Vienna: S. n., between pp. 658-659, 779-780./

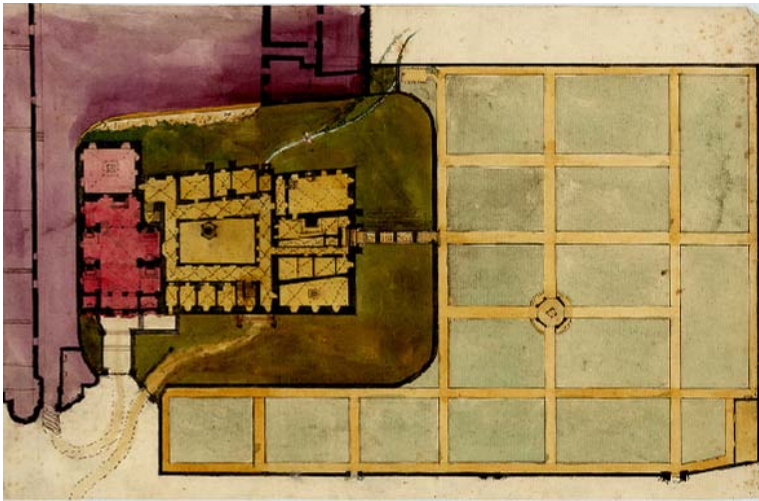
One explanation for the dissimilarity could be the different origin of the two monasteries. The monastery of Illava was built on parts of an old castle which entailed the existence of a previous garden – there existed a water system, a fishpond and an orchard already at the time of the foundation [13]. This may have hindered the stylistic development, while the monastery in Pozsony was built after demolishing everything around it, hence a more up-to-date design could be created [14].

The archival documents, however, do not verify these assumptions at all. The monastery building of Illava surrounded two quadrangles, the smaller of which contained a well. The garden next to the building consisted mainly of orchards and



shady alleys [15]. According to written sources, the garden also had diverse beds, filled with vegetables and ornamental plants alike (*in plures distinctus areolas pro implantatione Olerum, et inseminatione Viridarium Servientes*). There was also a skittle (*Pyramidarium*) used for relaxation by the monks and next to it a feeding place for snails (*Limacetum*) [16].

While the inventories can be considered trustworthy, none of the available imagery sources concerning Illava seems to be really authentic or meaningful. An 18<sup>th</sup> century plan (*Fig. 4.*), showing an earlier version of the monastery, represents the skittle with an arbour above it, which latter probably did not exist any more at the time of the dissolution, as it is not mentioned at all in the inventory. Further details of the garden, however, cannot be specified from this plan, only the geometrical design, the symmetrical beds manifest themselves.



*Figure 4:* The monastery of Illava as shown by an 18<sup>th</sup> c. map. /MOL S12  
Div IX No 0025:2/

Richter Ludovicus's plan of the enlargement and reconstruction of the building delineates orchards and a mere kitchen garden with symmetrically arranged beds (*Fig. 5.*). Both this plan and the engraving of 1739 (*Fig. 3.*), which depicts the whole area as an ornamental garden, can be regarded authentic only to a certain extent. Though the garden could change with time, still, considering that as the order was getting richer, they were very unlikely to change an already evolved ornamental garden into the mixture of vegetable and decorative elements mentioned in the inventory, the chance that these images show realized states is

little. Therefore, both depictions seem to be just imagined versions of the real garden which was, in fact, the mixture of them, laid out with orchards, vegetable and flower beds and recreational areas, like the skittle, at the same time.

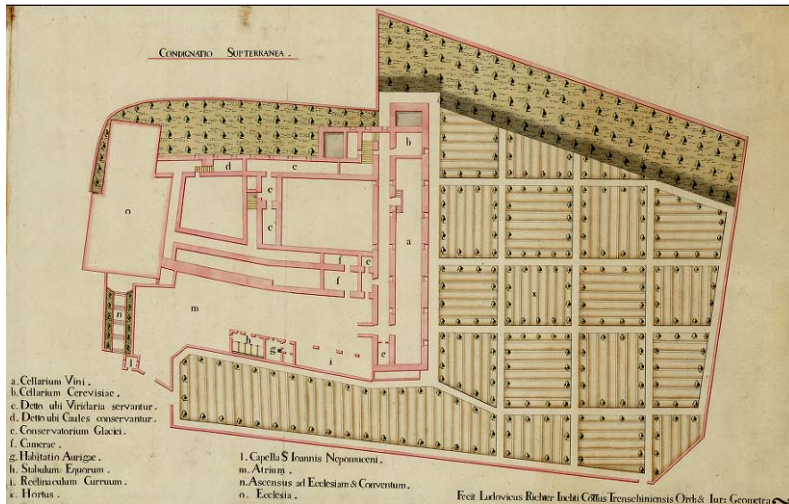


Figure 5: The monastery of Illava on Richter Ludovicus's plan, 18<sup>th</sup> c. /MOL S12 Div IX No 0025:1/

According to the inventory drawn up at the time of the dissolution, two gardens belonged directly to the monastery of Pozsony, one of them was created in the quadrangle of the building, which was rather small (*Hortus exiguus quadrangularis*). The other one lying westwards from the building was much more extensive (*area spatiosa*) and served as a vegetable garden (*oleraleum*) with diverse fruit trees [17]. This latter one was situated at the same place where the engraving depicts the parterres de broderie (Fig. 3.), but in contrast to it, pleasure gardens are not mentioned at all in the inventory. Only a publication of 1925 mentioned ornamental trees in the monastery concerning the chronicle of the frost damages in the town during the winter of 1708 [18].

All further data concerning the other Hungarian Trinitarian monasteries supports the above mentioned practice related to the gardens: they were neither merely of agricultural purpose, nor just decorative pleasure gardens. While cultivating their land, the monks also let aestheticism and amusement into these places.

A spectacular example is the monastery of Sárospatak, which was founded by the Rákóczi family in 1693, but the wartime right after made it desolate until 1728, and even a fire in 1737 further embittered their life [19]. These circumstances not only affected the buildings, but must have had influence on the gardens as well.

Yet, despite its life of vicissitudes, the monastery had a small flower garden (*Blumen Gärtl*) surrounded by the main building, with an extended kitchen garden next to it (*Fig. 6.*).

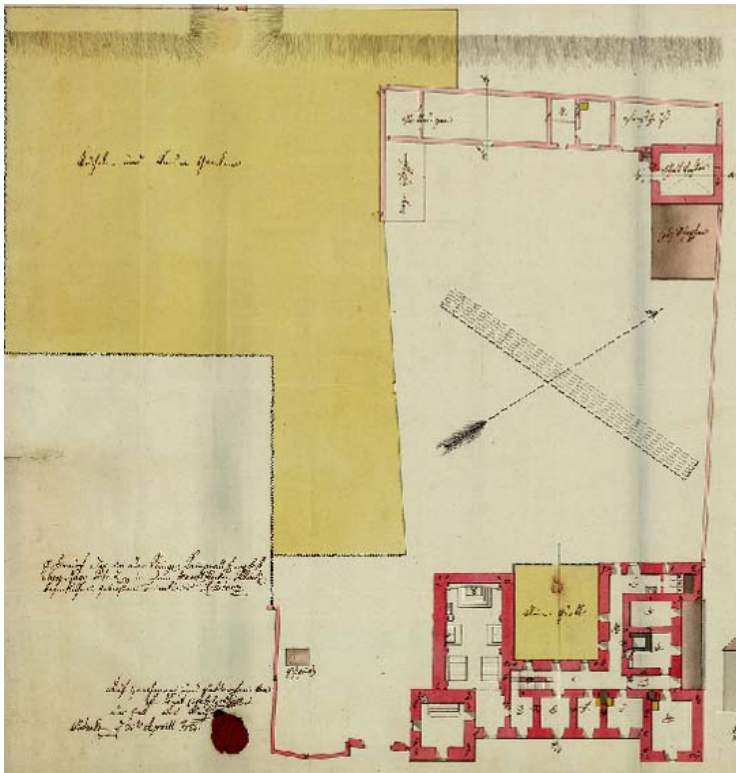


Figure 6: The monastery of Sárospatak, 1784. /MOL S12 Div IX No 0059:1-2/

The monastery of Nagyszombat, founded in 1712, was built between 1720 and 1729 in a street leading to the main square of the town [20]. It also got many donations, including cash, houses, gardens in the suburb and vineyards [21]. Though the estate was not really large, three little gardens belonged directly to the building (*Fig. 7.*). The access to the first one was by the gate of the monastery. The only data available concerning this area is about a well in the southern part. The site plan does not even call it a garden, but only as a courtyard (*Hof*). The next garden opened from this one and served as an orchard with many kinds of fruit trees [22], and there was also a trench here used for lime-burning. This part of the

estate was probably the greenest of all, since not only the site plan depicts it that way, but also pictures painted in the end of the 19<sup>th</sup> century delineate it full of trees (which were probably the remnants of the original planting) [23].

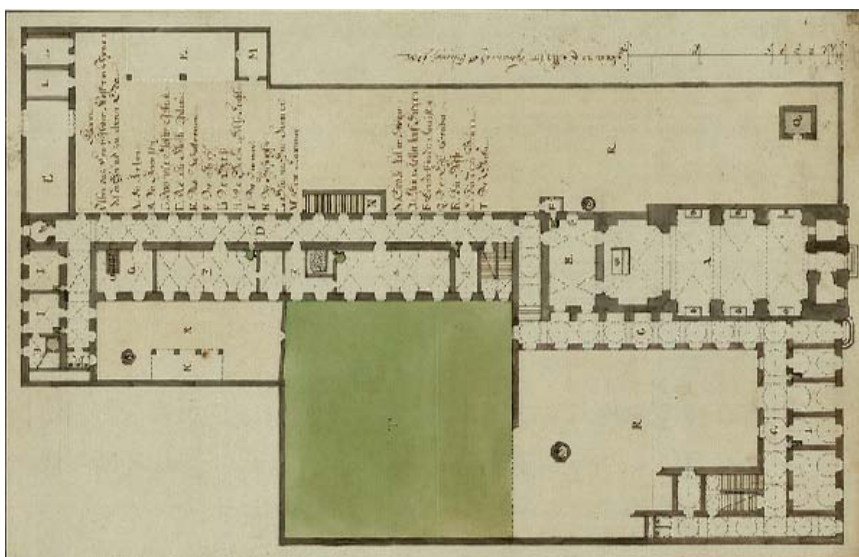


Figure 7: The monastery of Nagyszombat, 1784. /MOL S12 Div IX No 0057:1-3/

The third garden, separated with a wall, was the continuation of the other two. The inventory mentions this as a hall in which there was a four-columned small cottage and a well [24]. The site plan called the cottage a stable, which nomination, however, is a bit odd, particularly because its structure does not contain any walls but the columns. Hence the possibility of an open pavilion created for pleasure and relaxation is much more probable.

According to the inventories, the monastery in Komárom seems to have had the richest garden. Apart from the building, the estate consisted of a court, a small and a big garden. The small garden was situated in the inner yard of the building, while the big one was next to it. The latter was primarily an orchard (*hortus arboribus fructiferis*), but it also included a vineyard which was, however, damaged heavily by the earthquake of 1763 [25]. Moreover, there was also a glasshouse at that place, giving assumptions that the monastery may have had southern tropical plants, though it was already empty and damaged at the time of the dissolution. Their apiary was abandoned, too. The garden also contained a wooden summer cottage with a skittle in it, but this was also desolate [26]. And there were even two beds of herbs in the garden [27].



Figure 9: The wooden cottage of the monastery garden of Eger, 1796. /MOL S12 Div VIII No 0076/

Hardly anything is known about the construction of the monastery of Eger, founded in 1717 [28], and finished only in the 1750's [29]. The estate was situated in the suburbs and became a victim of fire in 1763, after which the reconstruction works finished only in 1771 [30]. The monastery included a garden full of fruit trees, in the middle of which did a wooden summer cottage stand [31] (*Fig. 9*).

The monastery of Óbuda-Kiscell, just as several others, stood on a hillside. It was built with the help of the Zichy family next to a chapel dedicated to Virgin Mary, originally standing in a vineyard. It was the last Hungarian Trinitarian monastery, founded in 1738, the buildings themselves evolved even later and were stopped unfinished around 1760. Their rich architecture proves the generosity of the Zichy family and other donators [32]. The estate was enlarged several times for the establishment of a garden, about which, however, we do not know much. According to an engraving of the 1770's, there was a garden with (probably vegetable) beds on the southern side of the monastery [33]. The authenticity of it can be questioned, since even the staircase in front of the church does not reflect reality. The inventory, on the other hand, mentions a garden full of fruit trees with diverse sorts and colours [34]. The monastery of Makkos-Mária, which belonged to the main monastery in Kiscell, had a sacred oak tree often visited by pilgrims. The estate was surrounded by cut hedges and included an orchard and a small grove [35].

Nevertheless, apart from their estate in the towns, the Trinitarians had possessions in the suburbs or in other close villages as well. These areas served agricultural interests, most parts of the estates were used for vineyards, but no data has been found about their function as a pleasure garden. Possessions in Pozsonypüspöki and Récese belonged to the monastery of Pozsony, the latter of which was exceptional due to an element for relaxation in the form of an arbour built above the kitchen [36]. The



several vineyards in Sárospatak, on the other hand, were rather neglected and the monks usually tried to sell them to get cash instead [37]. The Trinitarians in Nagyszombat did also possess a garden out of the town which was an orchard surrounded with walls and included a small house for the gardener, Francisco Medonszky [38]. And also the monastery of Eger had many vineries and another garden in the suburb which was merely a farming area [39].

To take care of all these gardens, the monasteries employed gardeners. They were lay brothers and got salaries annually between 30 and 40 forints. Considering that at the time of the dissolution they were about 65 years old, they must have been rather experienced [40].

#### **4. Conclusion**

Trinitarian gardens are representatives of typical monastery gardens. Though some religious orders – especially the monastic ones like the Cistercians or the Benedictines – often resemble more to palace gardens, having extended luxurious pleasure gardens, the majority of religious orders used their area for cultivation and relaxation alike. The formation of these gardens was made according to the geometrical Baroque style in the 18<sup>th</sup> century Hungary.

The Trinitarian gardens primarily included orchards and kitchen gardens which, considering some period depictions, seem to have been laid out also in geometrical forms, giving way to the aesthetic principles of the time. The monasteries of Illava and Sárospatak must have had merely ornamental parts as well, presumably as a result of their former use as castles, but it can only be assumed that based on the model of these examples, decorative garden parts could appear in other gardens as well. Recreation was particularly important for the monks, arbours and small cottages could be found in almost all of the gardens, often combined with skittles, which latter can also be found by the gardens of their main mediators, the Jesuits.

Nevertheless, as the monasteries got completely new, secular functions after their dissolution in the end of the 18<sup>th</sup> century, none of the gardens has remained for today. Therefore, as on-site examinations do not hold out promises of new results, it seems that the research needs to stop at analyzing the historical sources.

#### **Acknowledgements**

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- [13] MOL C103, 28. d. Illava 11v.



- [14] Fallenbüchl op. cit., p. 98.
- [15] Fallenbüchl op. cit., pp. 74-75.
- [16] MOL C103, 28. d. Illava 19v. Descriptio Horti ad Monasterium pertinentis.
- [17] MOL C103, 28. d. Pozsony 69v.
- [18] „... die Obst- und Zierbäume ganz kahl und leer dastanden und das Frühjahr kein Laub, keine Blüte und keine Früchte brachte!” Nádor, E., Weyde, G. (1925), Die zweihundertjährige Dreifaltigkeitskirche in Pressburg 1725-1925. Bratislava: S. n., p. 24.
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- [31] MOL C103, 29. d. Eger 37v.
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- [36] MOL C103, 28. d. Pozsony 73r.
- [37] Fallenbüchl op. cit., p. 85.

- [38] MOL C103, 28. d., Nagyszombat f8r, f29r-v
- [39] MOL C103, 29. d. Eger 37v., and *Fallenbüchl op. cit.*, p. 134.
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## **Landscape Architecture in the Lower Tisza Valley: Classification of Oxbow Lakes**

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**Abstract:** Ten oxbow lakes are located in the region of the Lower Tisza Valley. The states of the area's oxbow lakes are rather different. There are protected, highly valuable sites in terms of landscape and nature conservation, yet degraded areas utilized for economic purposes can also be found. The attributes or usage of oxbow lakes allow for a diverse system of categorisation. The examination and classification of oxbow lakes can establish the grounds for state assessment, as well as for planning the interventions of landscape rehabilitation.

**Keywords:** oxbow-lakes, Lower Tisza Valley, classification, landscape architecture

### **1. Introduction**

The active floodplain area has a high importance in many aspects, it plays an important role in preserving and subsistence of strictly threaten wetlands. Beside this, as active flood plain it preserves the rich wildlife of the area before the river regulation. As part of Tisza Valley it plays an important part in the life of ecological corridor of Tisza. But for nowadays the degradation of the valuable, semi-natural areas can be observed. In addition recreation-function and welfare exploitation of the oxbow-lake has been strengthened in XX. century, while line-fishing and fishing claim were come up, however the quantitative and qualitative

protection of oxbow-lake water were not followed by the development. Long-term sustainability of the valuable biotops is not resolved.

Oxbow lakes offer numerous favourable potentials and are exceptional natural resources. As wetlands, however, they belong to the most endangered types of sites. In the early 1990s, more and more signs implied a gradual silting, aging, and at certain places, even the contamination of oxbow lakes, as well as a degradation of the active floodplains' wetlands.

## 2. Materials and Methods

Ten oxbow lakes are located in the region of the Lower Tisza Valley. The states of the area's oxbow lakes are rather different. There are protected, highly valuable sites in terms of landscape and nature conservation, yet degraded areas utilized for economic purposes can also be found.

The background research of literature was completed with several forensics and fieldwork (eg. habitat-mapping). The establishment of the former landuse was helped by research of the literature, local history texts, historical maps and archaeological research. Pálfi [1] edited a summary book about oxbows.

### The oxbow lakes of the research area are:

- Serházzugi-oxbow
- Sulymos-oxbow II.
- Sulymos-oxbow I. (Labodár)
- Osztorai-oxbow
- Mártélyi-oxbow
- Körtvélyesi-oxbow
- Sasér-oxbow
- Atkai-oxbow
- Nagyfai-oxbow
- Gyálai-oxbow

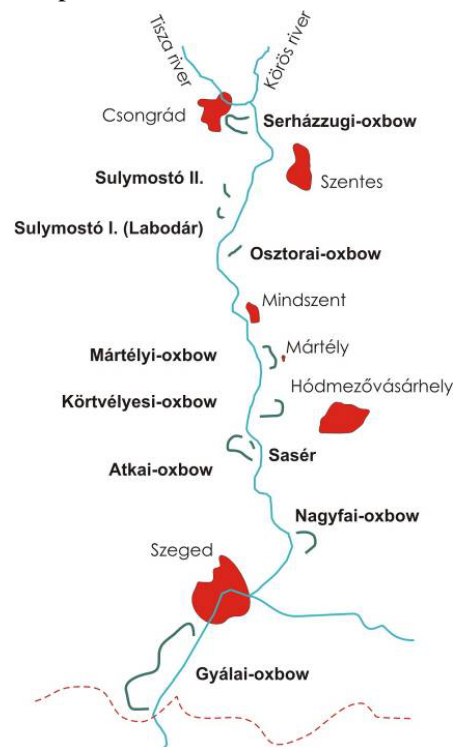


Figure 1: Map of oxbow lakes in the Lower Tisza Valley

### 3. Results and discussions

The attributes or usage of oxbow lakes allow for a diverse system of categorization [2,3,4]. The main aspects of such a classification are the following:

- evolution, location
- water recharge
- ecology, nature preservation
- the exploitation of oxbow lakes

At the same time, oxbow lakes and the landscapes adjacent to them can be classified according to regional aspects. Four units of classification can be separated:

1. the types of the oxbows' stream bed (1)
2. the types of the oxbows' water surface (2)
3. the types of the oxbows' riverine zone (3)
4. the types of landscapes related to oxbows (4)

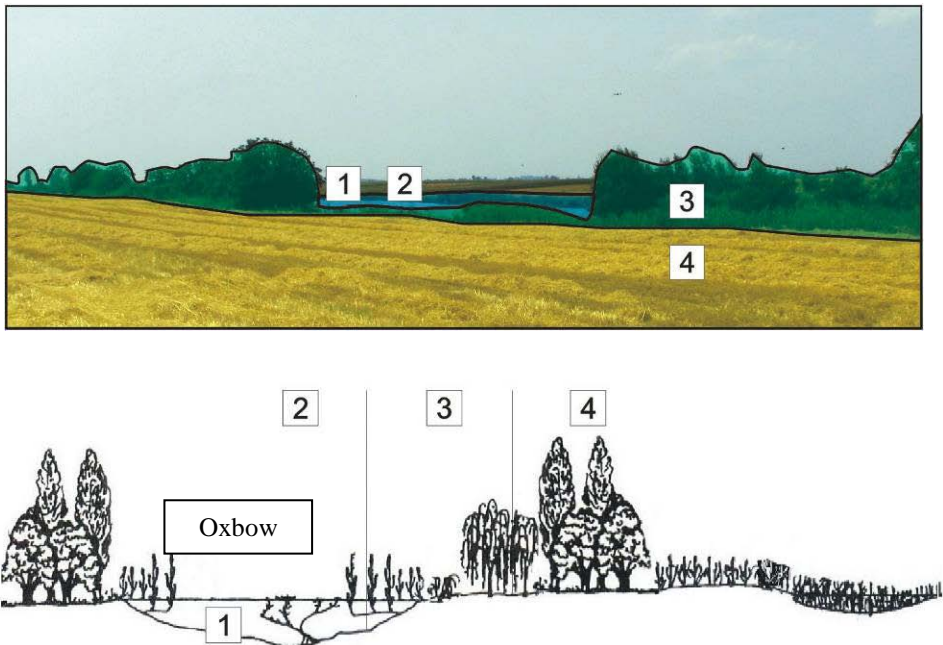


Figure 2-3: The divisions of oxbow lakes and the relating landscape

## Examples of classification:

### 1. Local types of oxbow lakes in Lower Tisza Valley

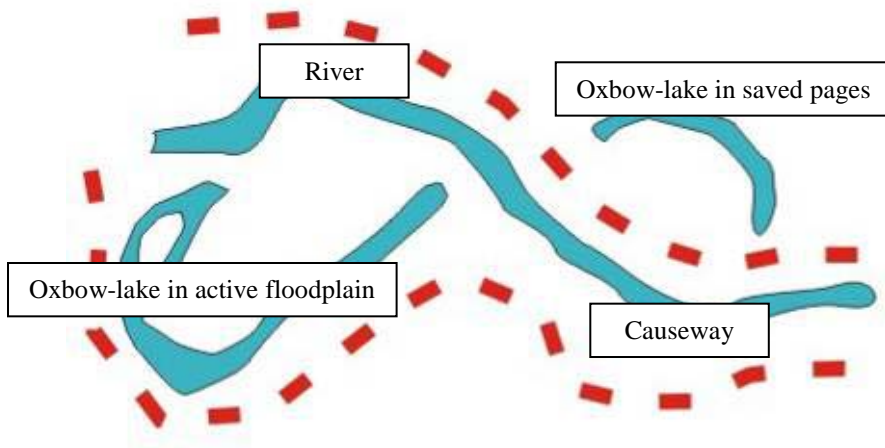


Figure 4: Local of oxbow lakes

### 2. The types of the oxbows' water recharge in Lower Tisza Valley

The water supply is a priority in case of oxbows. It affects the elutriation's measure of oxbows, the state of the oxbows' stream bed and wildlife.

Possible ways to water recharge:

- Precipitation
- Leaking water (e.g.: groundwaters)
- Surface water-onflow (e.g.: inland water-channel discharges)

### 3. The types of the oxbows' water surface in Lower Tisza Valley

The oxbows' water surface are usually covered with vegetation and the two ends are strongly charged, which is depends on the measure of water supply and eutrophication [4].

The types of the oxbows' water surface:

- open water surface oxbow (Figure 5.)
- covered with plants oxbow (Figure 6.)
- filling up oxbow (Figure 7.)
- filled oxbow (Figure 8.)



Figure 5: Nagyfai-oxbow



Figure 6: Atkai-oxbow



Figure 7: Mártélyi-oxbow



Figure 8: Körtvélyesi-oxbow

#### 4. The types of land use of oxbow lakes and land use in related area to oxbows in Lower Tisza Valley

There are many different ways to group the topical landscape uses and water uses. On the one hand according to the exploitation forms of the oxbows' water surface, on the other hand according to the segregation of the oxbows' and related areas' landscape using forms.

The land use of oxbow lakes were grouped according to their ages [1, 5]:

- Water management (eg. floods, inland water , drinking water, storage of irrigation water)
- Economic exploitation including industrial, agricultural, forestry (eg. fish and duck breeding, reed production,)
- Recreation (eg. bathing, , aquatics, hobby fishing)
- Landscape protection and nature protection (eg. habitat protection, reclamation area)

The types of land use in related area to oxbows:

- urban land use (Figure 9.)
- agricultural land use (Figure 10.)



- garden of economic land use (*Figure 11.*)
- forestry land use
- recreational land use (*Figure 12.*)
- land use protection
- water management land use



*Figure 9: Serházuzzi-oxbow*



*Figure 10: Gyálai-oxbow*



*Figure 11: Atkai-oxbow*



*Figure 12: Mártélyi-oxbow*

#### 4. Conclusion

The examination and classification of oxbow lakes can establish the grounds for state assessment, as well as for planning the interventions of landscape rehabilitation.

Today only the variable width active floodplain is able to fill the ecological and water management role of the previously extensive floodplains. Therefore the protection of oxbow lakes and active floodplain, (which evolved in the course of the river control), stopping the degradation of natural values in this area, the protection of wetlands, habitat reclamation and oxbow lake reclamation are very important tasks.

The rehabilitation of the oxbow lakes and floodplain habitat should be concerted action coordinating environment, conservation and water management

sciences. Our primary aim is to achieve an optimum ecological condition of the oxbow lakes and the shore-zones. Then define and plan the treatments and the long-term tasks according to the natural functions, in order to ensure the conditions for sustainable development.

## Acknowledgements

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# The Impact of Information Technology on the Appearance and Usage of the Contemporary Open Spaces

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**Abstract:** The development of Information Technology has made a significant impact on the appearance and usage of open and public spaces. The urban community spaces are not exempt from the tremendous effect of the digital technology, and Internet penetration. The design of the future open and public spaces should incorporate the new demand of the digital revolution. This research features the main elements of this demand and its existing effects, to help designing the open space designing in the future.

**Keywords:** open space transition, digital revolution, interactivity

## 1. Introduction

The Information Technology (IT) [1] has radically changed and transformed all areas of everyday life including the most common activities. Consequently, the open spaces are not exempt from this tendency and their appearance and usage have been transformed very dramatically.

Obviously the change due to IT is the most momentous in those areas, which are the primary results of human activity and lifestyle. These are the urban areas belonging to the densely built-in urban fabrics, downtowns, open spaces and public squares. This development is due to the fact that IT has been changing the features of the open spaces for many decades, there exist such urban open spaces nowadays

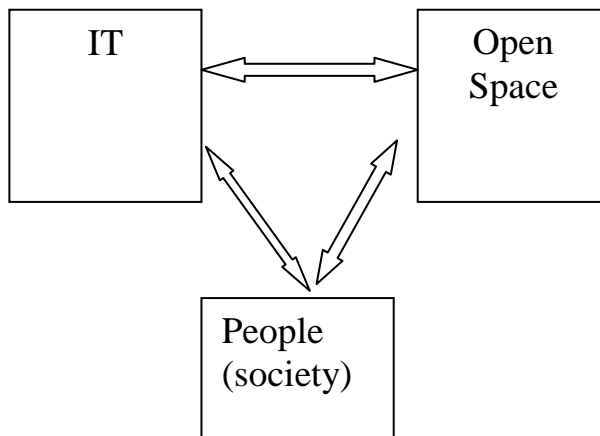
which would be almost useless and non-functioning properly without the presence IT technology. Hence we can say that the contribution of IT to the functionality of open spaces can be essential in current times.

The relationship between IT and urban spaces and the urban lifestyle is very complex and it contains multiple feedbacks. One can observe such relationships between these factors; the IT, the urban population and the environment (urban open spaces). *Fig. 1.* The lot of cross relationships complicate these interactions even further, since the connections between these factors are multilateral (for example if there appears a new establishment on a public square and it is being advertised on social websites, as well. As a result of the advertising, more and more people (usually young ones) visit the given public square, which triggers the physical development and the appearance of new establishments on the public square, that can have a new impact on the social websites etc.

We can see that these factors can interact and enhance their individual effect.

## 2. Materials and Methods

As it was mentioned above, this is a very complex interaction, since it has many actors with multiple feedbacks, consequently the analysis can be very complicated. The essence of our measuring method was to consider the most emblematic examples concerning the connection between the IT and the urban open spaces.



*Figure 1:* The main actors of this interaction

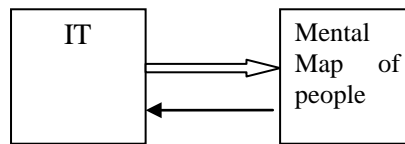
In case of a given emblematic example the entire history of it must be reconstructed from the first appearance of the IT on that site till present days. It is

very important to emphasize the examination of the interactions between these three actors, the IT, Society (S) and the physical open urban space (O) during the analysis of the story of the given site.

Emblematic example can be not only a public square, but it can mean a new functionality of the open space, a new way of usage, which is evolved only because of the effect of the IT.

And as a consequence of this, the open space will be absolutely transformed.

Our examinations were made on two main levels. On the first level the direct, immediate effects of the IT on the open spaces are examined. The first level effects basically included facade and new design elements and functional changes and light effects, which occurred due to the IT and which resulted the remarkable change of the given urban open space. The other level is the indirect or the intermediate effect, which is due to the fact that the IT changes the mental map and knowledge of the people of the given open space. *Fig. 2.*



*Figure 2:* The effect of the IT on the mental map of people

The essence of this is that that everyone has its own subjective knowledge about the given place and this knowledge comes from the collected information about it. If the greatest part of this knowledge is IT related, then it can be concluded that IT is the strongest shaping factor of the knowledge about this given place in the collective mind of the society.

### 3. Results and discussions

#### 3.1. Sound

On the first level of our examinations there will be examined the direct effect of the IT on open spaces. First of all there must be two notable examples mentioned, which show how can momentous IT developments transform radically the usage and the facade of open urban spaces.

The first example is the development of the sound technology. Prior to the Greek amphitheatre it was impossible to have audio shows for thousands of people simultaneously, due to the lack of proper sound amplification. The only possibility to hear unamplified human voice was to create specially shaped open spaces with excellent acoustics and this was achieved by people who stood on a well localized point (focus point) and talked loudly of the open space could be heard very well on the whole territory of the open space. This only functional requirement (proper acoustics) absolutely determined the facade and the appearance of the given open space. This resulted is the widely known ancient Greek theatre. *Fig. 3.*



*Figure 3: The classic Greek theatre*

On the other hand, nowadays it is possible to construct microphone systems integrated into the building elements of the given open space with the help of the development of the electronic sound systems (IT). Due to this fact today the natural acoustic features of the given urban open space are absolutely not important. Hence, it is possible to design the given place to an arbitrary shape and capacity without compromising the quality of sound. Thus Information Technology can serve as a magic “trick” to achieve perfect acoustics for any kind of open space. A very good example for this is the performance of the central part of the Millennium Park [2] in Chicago. In this case a huge plain area is covered by a steel (pergola like) net structure, whose shading function is negligible, but it contains a built in microphone system and due to it is possible to achieve a good quality sound amplification within the entire zone. *Fig. 4.*



Figure 4: The pergola like microphone system over the Millenium Park

### 3.2. Visual performances, outdoor projections

The IT related electronic projecting systems have also contributed to the appearance change of the open urban spaces. This phenomenon is relatively old, the first such electronic outdoor projection was on a billboard in 1936 during the presidential election campaign on the Times Square, New York, USA [3]. This is a remarkable example for the interaction between the society and the IT, because the the winner of this election was Theodore Roosevelt and his picture was projected electronically (!) onto this billboard. The Times Square itself, as it will be presented later, has become one of the most emblematic squares of the world as a result of the IT revolution.

After the first outdoor projection the IT has spread out in the world extremely rapidly (electronic advertisement) and radically transformed the open spaces and increased the functionality and usage possibilities to an extent unknown before. For example the possibilities of constructing drive-in movies, open space movies and projections created a new form of outdoor recreation.

### 3.3. Light art, light painting, webcam painting

The term light painting also encompasses images lit from outside the frame with hand-held light sources. The first known photographer to use this technique was Man Ray in his series “Space Writing” created in 1935.

A technique known from light art is to project images on to irregular surfaces (faces, bodies, buildings etc.), in effect “painting” them with light. A photograph or other fixed portrayal of the resulting image is then made.

Fig. 5. [4] shows an example where light art changes the appearance of a traditional building. It is important to note that in these cases the clear border between the public and the private spaces is not so clear, because of these



projecting surfaces, billboards are usually placed on private plots or on the facade of private buildings, but they can be “used”, seen, read or even heard by anybody which is a typical function of public spaces.

We can say that IT also transforms the ownership: it can make public spaces private or private spaces public. *Fig.6.*



Figure 5: Light painting on the facade of the Március. 15. Square, Budapest

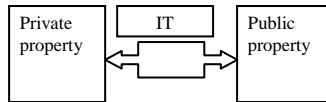


Figure 6: The effect of the IT on the ownership

### 3.4. Times Square, NY

The most important public square, which was most influenced by the IT is the Times Square in New York, USA. Times Square, nicknamed “The Crossroads of the World” and “The Great White Way”, has achieved the status of an iconic world landmark and is a symbol of New York City and the United States. It was mainly built in the early 20<sup>th</sup> century and from the classical point of view it cannot be considered a “square”, rather a traffic hub or just a road-fork. On the old photos it can be clearly seen that its traffic function was the primary use. As *Fig. 7.* shows it gains its “square” attribute only because of the momentous pedestrian traffic and due to the remarkable surrounding buildings (Times Tower, Knickerbocker Hotel). This was changed suddenly by the appearance of the first electronic billboard in 1936, and shortly after this, practically even in the 50ies the main feature of this square was determined by these electronic advertisement tools.

It is very important to note that in the traditional sense this is not a “real”, viable square. The roadways are dominant, only sidewalks are provided for the pedestrians, the square is always congested. From the ecological aspect this square is a “disaster”

hence it is completely paved and there is no plants, no trees or any type vegetation found. Only the artificial shape of the square is absolutely dominant.



*Figure 7: The Times Square at the beginning of the 20<sup>th</sup> Century*

But the essence of this square is not the buildings, because they are serving only to hold electronic billboards and advertisements. On the whole world this is the only public square, where all apartment owners must (!) put a kind of advertisement onto the facade of his/her flat. This absolutely determines the feature of this square, even the original emblematic buildings cannot be seen any more. Its only traditional function is the traffic, but nowadays the traffic has become less important. The major function of this square is the touristic and cultural attraction, which is provided by the vast number of the electronic billboards, an application of IT. *Fig. 8.*



*Figure 8: The Times Square in present days*

### 3.4. Urban traffic management (UTMC) with IT

The second level of our examination was the mediated or indirect effects of the IT related to urban open spaces. Modern urban traffic management (i.e. GPS combined track planning tools) cannot be realized without IT. UTMC systems are designed to allow the different applications used within modern traffic management systems to communicate and share information with each other. This allows previously disparate data from multiple sources such as smart phones, car parks, traffic signals, air quality monitoring stations and meteorological data, to be amalgamated into a central console or database. The idea behind UTMC is to maximise road network potential to create a more robust and intelligent system that can be used to meet current and future management requirements.

### 3.5. Effects of Internet and social media

In addition to the previous factors it is very important that real urban open spaces can appear in virtual space on the internet [5]. An example for this that the some important well-known open spaces, squares have already appeared on social websites. *Fig. 9.*



Figure 9: The site of the Times Square on a well known social homepage

This means that the urban people, who mostly spend their time in front of their computers connected to the Internet obtain their information and knowledge mainly from Internet or visiting urban open spaces in person.

But the revolutionary change did not stop here. Current websites (Web 2.0. or social web) also change the way that urban spaces is visited or perceived.

The so called flash-mob [6] is an example for this. A flash-mob activity can not be defined exactly, but it has some typical attributes:

- it is absolutely organized on Internet;
- it is an annual phenomena (sometimes its duration is only a few minutes)

- usually there are a huge number of participants
- these participants appear on a well located public space (public square, metro station etc.)
- in a well located time
- the participants start to make the same (usually strange) thing in that well located time point
- most of the participants do not know each other immediately, but there exist (usually internet mediated) connections among them.

The government and the local governments do not like such phenomena, because of the unexpectedness of such events. It can block the traffic or cause congestion. Social web has a great organizing power. This can result in a radical transformation of the social structure (recent revolution in Egypt organized on Facebook).

IT will transform open urban spaces even further. Interactivity will be more relevant, users can change the appearance of spaces with their mobile phones (light graffiti). *Fig. 10.*



*Figure 10: Cell phone controlled projections*

#### **4. Conclusion**

The development of the IT is very rapid and its effect on urban open spaces and society is very significant and it can be anticipated that on the long term it will be revolutionary. Considering the architects, designers, urban planners they have to integrate IT with the traditional functionality. Furthermore they have to design

open spaces which are flexible and interactive or at least which can be turned into flexible and interactive open spaces to serve the new demands of the urban societies.

## **Acknowledgements**

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## The significance of urban open spaces and green areas in urban property developments

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**Abstract:** Urban open spaces have increasing importance in city developments due to the urban expansion characteristic of the last decade.

Based on contemporary processes, cities and their neighborhoods can, by means of open space developments, enhance their appeal to tourists and residents alike. In this way their values can be increased significantly.

The main aims of our research are to recognize those areas that can be typical examples to examine the effect of urban open spaces on property values, analyze them to determine the rate by which value increases in those areas.

**Keywords:** green area, investor, open space, renewal, urban park, property value

### 1. Introduction

One of the life-bloods of settled areas is the persistent movement, migration, replacement and demographic fluctuation of the residents. The deurbanization [1] processes have played the main function in the development of cities since 1970. In the course of it the well-to-do residents started to move from the densely built-up and congested areas to the airier, less built-up areas offering pleasant living conditions, cleaner and healthier environment – namely, the garden-cities or the settlements of the agglomeration. Therefore, the abandoned building stock of the

cities and the cheaper flats were taken over by the less affluent residents. At the same time in the last decades a reversal of this – that is, a reurbanization process – can be felt. The city development programs are drawing the residents back in to the cities – and this is succeeding in general for many reasons, including better financial and cultural aspects and reduction of commuter traffic. Even, so the deurbanization process still makes its impact felt thanks to the poor, misguided regulation of the city development and to the impacts of the recent economic processes.

The present tendency has led to our forming the hypothesis that open space developments can stimulate the appreciation of the surrounding real estate.

## **2. Determining the aim**

Open spaces have significant importance in the life of the settlements. The areas with high green-coverage rate have ecological and environmental importance. These green spaces can improve the urban climate, abate the urban heat-island effect by their ecological-balancer function and reduce environmental damages. Through their social importance, the open spaces can help the residents in adjusting to the healthy lifestyle. By their aesthetic importance, they determine the characteristic of the settlements, ameliorating the built-up character of the cities.

In recent years, increasing attention has been paid to research regarding the evaluation of open spaces (including green areas and green spaces) and their components as well as their effect on the environment. In Hungary, no such analytical research or evaluation relating to the effects of open spaces on property values has been made so far – and this lack has been to the detriment of the development in a big city like Budapest. Certain areas of the capital that emerged in the face of this lack are poorly provided with green areas. However, the open spaces have increasingly greater roles in the sustainable city development processes because of the expansion of the city and also of the growing of the residents' number. The research method to demonstrate this hasn't emerged so far.

Based on the contemporary processes and trends, cities and their neighborhoods can, by means of open space developments, enhance their appeal to tourists and residents alike. In this way their values can be increased significantly.

Unfortunately, the actual situation shows that this opportunity to enhance parts of the city and the feedback of the adjoining areas' increased values to city development is not known or acknowledged by local leaders and planners. The research and the analysis of these problems and the share of results regarding the issue with the target audience have become opportune.

The aim of our research is to reveal all of the aspects that have to be collectively considered in the course of the planning of properties and open spaces as well as to



show those connections that can effect mutual collaboration between the two aforementioned activities to influence the city's image positively. Therefore, our purpose in exploring these questions is to get acquainted with the notions, observations and demands of the performers in the city developments and by means of these to create an Evaluation and Proposal System that can take into account the interests of designers, governments, investors and residents simultaneously and, through analyzing them, can propose regulations and optimal recommendations in relation to the developments.

### **3. Case studies**

The historical evolution of open spaces started in ancient times. Many works of research and historical descriptions give evidence of the public open spaces (e.g. Greek holy gardens and agoras, the forum in Rome) used consciously by the ancient cultures – such the Egyptian, the Mesopotamian, then the Greek and Roman – in their settlements. The significance of open spaces, as well as their importance in the settlements' evolution has been changing continually during the development of civilization. The assessment of their importance depended on the social rules of the era and also on the needs of the residents.

In the course of the modern endeavors of urban architecture, enhancing specific areas of cities through open space developments became known through the Urban Regeneration Program of Barcelona in the early 1980s. The leaders of the Spanish city (location of the Olympic Games in 1992) initiated the complex renewal of the city in the early 1980s to put an end to the suburban processes and reduce the uncontrolled sprawl [4, 5]. The urban renewal processes started with the creation and regeneration of streets, parks and greater green areas (about 1980-1986). The second stage (about 1986-1992) is featured by – on the one hand because of the Olympic Games – greater rehabilitation projects. The coast, the residential and recreational areas of the city were renewed and rehabilitated at this time. The infrastructural and strategic areas were rebuilt and renewed during the third stage (about 1992-2004) of the Urban Regeneration Program. Lots of huge public spaces were born by the new functions of these areas. The Urban Regeneration Model of Barcelona is a perfect example for all big cities regarding to both open space developments and complex urban renewals unto this day. It demonstrates the opportunities inherent to the collaboration between the city leaders and developers/investors by its extraordinary success.

Beside the local governments (or, where appropriate, the state), the private sector has also important role in open space developments. The role of the private investors has been growing significantly in recent decades because of the rapid

development of the economy and the spread of the profit-oriented lifestyle. Therefore the open space developments, which were exclusively initiated by the city's government, level at public areas. These open spaces – created in the settlements – can be rated in different categories (Figure 1) based on the self-dependent and mutual initiations of these organizations.

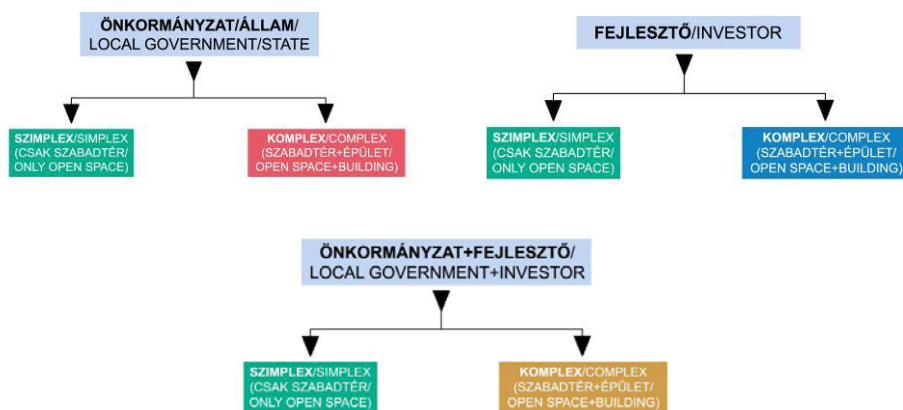


Figure 1

The first category includes the developments that were initiated by the local government (or where appropriate, the state) and created from public funds. There are two different groups in this category regarding the complexity of urban developments.

The *Simplex* group consists exclusively of the open space developments. The *Kerekerdő park*, which was created in the early 2000s by Budapest's IX. District Government on the site of a demolished residential block, falls into this category. The money for renewing the run-down rental flats was not available for the local government, therefore, they decided to create a green space which can improve the environment and potentially attract real estate investors to the area. The decision was based on an Act [3], which was framed in 1993 and permitted the demolition of such run-down rental flats. Due to the new residential property investments nearby, the park's environment is improving continually. The green area covers about 9000 m<sup>2</sup>, and includes playgrounds and leisure areas. The debris which was derived from the demolition of flats was used to fill the cellars in, and to create the hills of the green area.

In terms of our research, the park is of great significance because it is one of the few examples we have of urban open spaces that were created exclusively by the local government to improve the environment.



*Kerekerdő park*



*Millenáris*

The *Complex* group includes investments, wherein the open space and property (mostly buildings in this case) developments appeared collectively to enhance each other. The *Millenáris* in Budapest is a perfect example. This state-funded brownfield investment was created on the place of Ganz factory, which used to manufacture electrical systems. The area is a huge plot, which consists of several smaller plots and public roads. The green areas connecting directly to the buildings are public areas, but they maintained by buildings' tenants. Therefore the whole area can be used as a huge park framed by giant hall-buildings. Huge number of the old buildings and edifices are conserved and totally renewed. These are for rent, so there are a lot of programs in the park all year. The area is about 33000 m<sup>2</sup>, including a playground, a central pool, an open stage and huge lawns.

The *Millenáris* is an important sample-area in our research, because before the renewing process the environment was badly polluted by noise and powder, but today this part of the city has a green space with good feasibility and high recreational rate. The effect of this change can be demonstrated in the real estate values nearby.

The second category includes those investments were initiated exclusively by a private investor, in the hope of getting a return on the investment. These developments could be rated – like the categories aforementioned – in two groups.

The first, *Simplex* group includes the developments exclusively initiated by a private investor to create new open space(s). These areas are just semi-public spaces, because they can be rented for a predetermined fee. The private playing-fields and their immediate environment could be rated here. These areas have significant urban ecological (depending on their green coverage) and high recreational (depending on their functionality) effects.

The *Complex* group includes the developments wherein the building-investments (residential or office) have the same role as the open space developments. The open spaces created in this way can be public, semi-public or

private areas. The *Római-kert* (*Roman garden*) in the XIII. district of Budapest is an expressive example of a semi-public open space. This area is an interior garden in a residential block, which is bounded by buildings on two side of it. The area is about 4000 m<sup>2</sup> in which a leisure place and a playground were placed.

There wasn't any landscaping concept at the start of the building operation, therefore the flats could be sold more cheaply and slowly than was expected. This is the special characteristic of this open space. The investor – seeing the poor sales data – decided to have a garden plan made to the inner court, expecting from which a significant improvement with respect to the sale data of the flats. After the garden was created, sales picked up and the square meter price of the flats grew significantly as well.



*Római-kert (Roman garden) No. 1*



*Római kert (Roman garden) No. 2*

The third category contains the developments created by the cooperation between the investors and local governments and based on mutual compromise. These developments – like the two categories aforementioned – could be rated in two groups.

The *Simplex* group includes the investments in which there are/were only open space developments, but they are/were attained through the common agreement between these two organizations. Such cases typically occur when the leaders of the settlement allow the investor to accomplish his plans if he improves the areas (in most cases public spaces, streets, squares, parks) on specified level which are allotted by the local government before. The *Kopaszi gát* (*Lágymányosi bay*) created in the XI. district of Budapest is a project like this one. This area was improved through a cooperation between the local government and the owners of the plots nearby. The bay is located near a huge and nowadays only semi-used industrial area. The aim of the open space development, which was enhanced by comprehensive landscape architecture concept, was to allure investors onto the empty, previously industrial areas near the bay.



*Kopaszi gát (Lágymányosi bay)*



*Corvin Sétány (Corvin Pedestrian Street)*

The *Complex* group includes those developments in which the open space and building developments are/were present equally. The open space developments could be public space (streets, squares, parks), semi-public space, or private space improvements. In the first case the benefits of the created public space influences not only the city (as a complex, living system), but the residents which are vitalizing this system as well. A semi-public area may have the same ecological effect too, but its functionality (because it can be used by a determined community) is substantially below that of the public one.

The *Corvin Sétány (Corvin Promenade)* is a good example for such a macroscale urban renewal endeavor intended to contain open space and building developments simultaneously. The VIII. District's Local Government gave its authorization in 2006 to start the construction, but today the area is still being built. The office buildings and the shopping center were placed at the first third of the promenade. The residential buildings and the corresponding open spaces were placed in the middle of the street. The buildings of the Corvin Think-Tanks are going to be placed at the third part (at the end) of the pedestrian. These buildings are going to be rented by universities and by any companies specializing in research work. This project has also prominent significance at the national level according to its complexity and cost, not to mention the issues deriving from the collaboration between the architects, landscape architects and other professional designers.

#### **4. The structure of the Evaluation and Proposal System**

By using the aforementioned proposal system generated by the aim of the research, the process of urban development could serve the interests of the community (residents and professional constitutions) as well as serve the principles



of sustainable development and contribute to the creation of more pleasant settlements.

The proposal system connected to property and open space developments could consist of the following three sections:

1. Local Government Module
2. Developer/Investor Module
3. Public Space Developmental Contribution Module

After certain data is given to the *Local Government Module* (Figure 2) the regulation data used by the local government can contribute in the long term to sustaining the process of improvement. This system can help the city developers and designers to create the regulation plans and building regulations of the settlements. The input data provides information about the area that is to be regulated, about the attributes of the open spaces adjacent to that area (green space rate) and about the built-up and land-use data of the areas nearby. Optimal offers can be drawn by this model in reference to the data regarding the level to which the built-up area is to be regulated as well as to the limitations, interdictions and liabilities of that area.

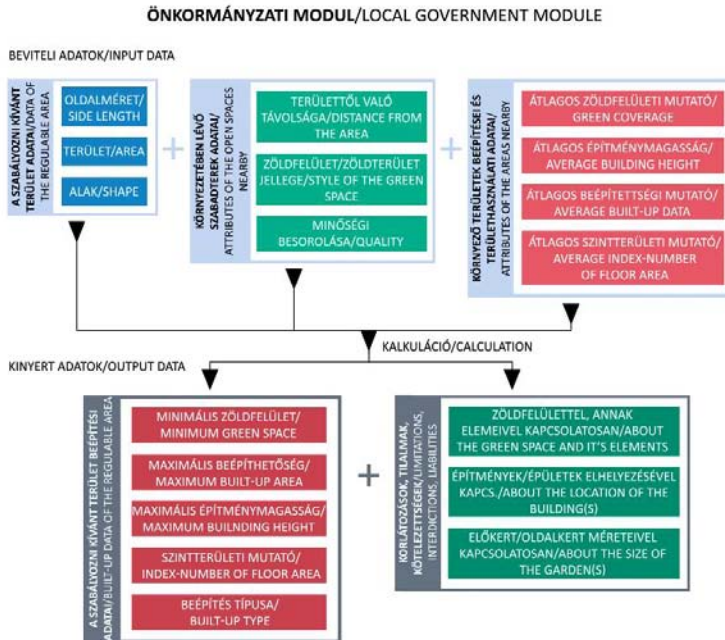


Figure 2

After providing the necessary data for the *Developer/Investor Module* (Figure 3) it will emerge what design aspects have to be used by the developer/investor in reference to the given area in order to sell the flats/offices built on the area (in this case as related to the effect on value exerted by the open spaces). It is important to mention that the calculation is predicated on the local zoning regulations in this case. The input data give information about the area that is to be developed, about the actual regulation data of this area, about the attributes of the open spaces next to this area (green space rate), about the construction and land-use data of the areas (part of the city) nearby, about the maximum cost expended to property development and about the attributes of the built properties (flats, offices).

Optimal offers are drawn by this model, in reference to the built-up data of the developable area to the referenced type of the created green space and to the location and exposure of the new properties (flats, offices).

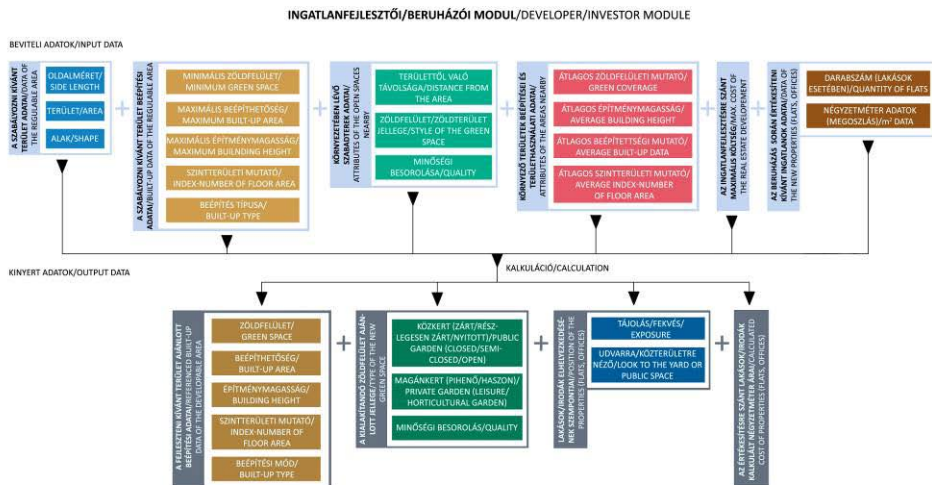


Figure 3

The *Public Space Developmental Contribution Module* (Figure 4) is based upon a compromise between the investor and the local government. If the local government makes a concession to the investor's demands in reference to the regulation data of the area that the investor wants to develop, then in exchange for that concession the local government can oblige the investor to develop and renew specific areas designated by the government. The rates of these allowances have to be determined and correlated by the data obtained from the local government



module. This module determines the rate of the development in categories. It connects the minimal cost per square meter of the development to these categories. This kind of open space renewal precept could be used by the local government to enhance the environment, with the goal of a higher resulting gain. Similar cases have also occurred in recent practice but their aims are not always to valorize the environment.

The public space developments can be classified in the following two categories:

1. *street (stage) reconstructions, renewals*
2. *square (large and public urban open spaces), or green area developments*

If the effect of the environment on value could be measured, a categorizing system has to be created in reference to the public spaces including the rates of the renewal of these spaces. The elements of these categories have to be different in the case of streets and urban spaces with determined functions.

The following two data have to be connected to the categories:

1. *The minimal cost per square meter of the development has to be determined in the case of all categories.* The scope of this cost is influenced by the rate and the quality of the development. The determination of this has to be made in reference to the comparisons with the designers and contractors and to the total labor wages and material costs.
2. *The percentage rate in proportion to the overall public space renewal has to be given in case of all categories.* The size of this rate is influenced by the relation between the area and the part of it that is slated for renewal, by the quality of the renewal and by the type, number and quality of the decorative elements.

The input data give information about the optimal regulation data calculated by the local government module, about the “allowance” data determined in the course of the agreement and about the data of the areas marked by the local government for public space development.

After the calculation (built on the percent rate of allowances), the system classifies the environmental development regarding the given area into a category, along with the type and the rate of the reconstruction.

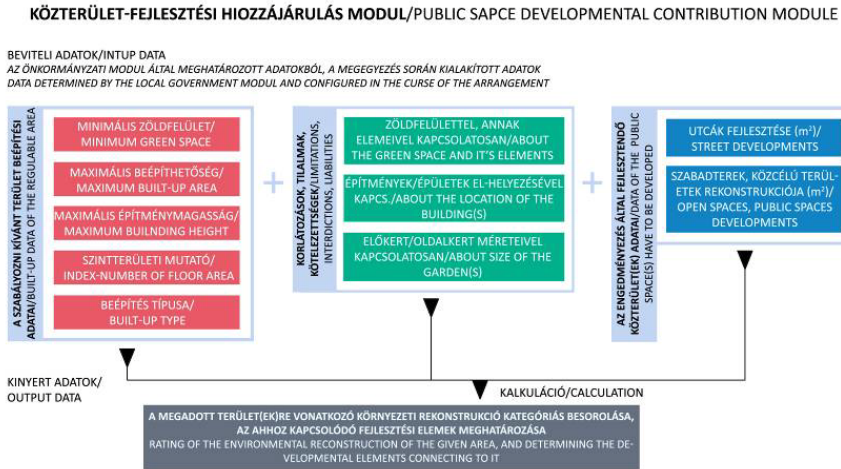


Figure 4

## 5. Summary

We paid special attention to acquainting ourselves with and analyzing the Urban Open Space Development Processes and the mutual work of professional organizations taking part in these projects. It is particularly important to map the effect of open spaces onto their environment (onto the settlement and to the residents equally), and to fix their characteristics in such an evaluative system by which their condition, quality and usage of these areas etc. can be estimated.

The creation of the proposal system in reference to the property and open space developments collectively can be started by determining the method for measuring the effect of open spaces on influencing property values and using the data yielded by these evaluations. This system is based on the mutual interrelationship (Figure 5) between the professional organizations, as well as on helping carry out the tasks connected to these relationships and on serving common interests.

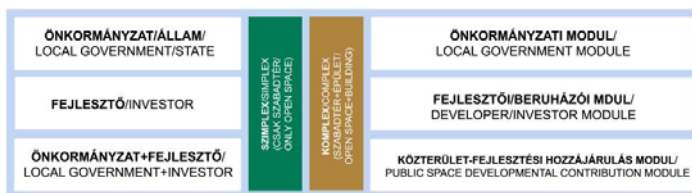


Figure 5

To integrate the issues of this and other research into urban development practice could be conducive to abating negative processes deriving from city developments and to realize the goals of sustainable development – thus creating more pleasant and more environmentally-friendly cities.

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10.1 Kutatóműhely



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## Evaluation of the Winter-hardy *Yucca* taxa among extreme conditions in landscape applications

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**Abstract:** The *Agavaceae* are mostly adapted to arid conditions; the majority are xeromorphic and succulent rosette plants of desertic regions. In Hungary, the limiting factor of application of *Yucca* taxa is not the hot summer but the humid and cold weather in winter. Despite of the fact that more than the half of the 59 recognised taxa is winter-hardy, in the practice of the planting design and horticulture in Hungary the number of the applied taxa is only 3 or 4. Our evaluation is based on the observing of bedded-out plants to rock gardens in four locations: one garden is in the Zoological and Botanical Garden of Budapest, two places are in private collections (Érd, Budakeszi) and the last one is in the Botanical Garden of ELTE. In all of these collections there were planted selected species that – according to the references – survive the temperature -10 °C.

**Keywords:** winter-hardy, frost resistant, *Yucca* species, Hungarian collection

### 1. Introduction

Earlier the yuccas (vernacular name is Palm Lily) have belong to a separate family. Then in classifications the *Agavaceae* with 2 tribes were recognized as separate members, emphasizing the ovary position in broadly circumscribed tribe *Agaveae* with inferior ovary and tribe *Yucceae* with superior ovary [1]. The Angiosperm Phylogeny Group's 2009 classification places *Agavaceae*, along with a number of other families (including *Ruscaceae*) in an expanded family of *Asparagaceae*.

The traditional infrageneric division of *Yucca* [2, 3] is as follows:

Sections:

- *Chaenocarpa* Engelm
- *Clistocarpa* Engelm
- *Yucca* (formerly *Sarcocarpa*) Engelm and
- the section *Hesperoyucca* Engelm is separated currently

*Yucca* is a genus of woody perennial shrubs and trees in the family. It is a terrestrial plant (very rarely epiphytic: *Y. lacandonica*), stems none, short or thick and arborescent, then usually more or less branched. Its species are notable for their rosettes of evergreen, with numerous sword-shaped leaves which are more or less ensiform. These leaves are nearly linear, thin or flexible maybe somewhat thicker and very rigid having horny or smooth margins, which are often desintegrate into fibres and terminal spines often present.

Characteristically there are large terminal panicles of white or whitish flowers. Ovary is superior, 3-locular [4]. Fruits are many seeded loculicidal capsules with intruding dorsal false septa, more rarely septicidal or baccate and indehiscent.

They exhibit a high water-use efficiency connected with the common occurrence of the water-conserving Crassulacean Acid Metabolism like CAM-mode of photosynthesis (present in all species of *Agave* so far studied and in some *Yucca* and *Hesperaloe*) [5].

They are native to the hot and dry (arid) parts of North America, Central America, South America, and the Caribbean. To the south, the genus is represented throughout Mexico and extends into Guatemala. *Yucca* plants have adapted to an equally vast range of climatic and ecological conditions. They are to be found in rocky deserts and badlands, in prairies and grassland, in mountainous regions, in light woodland, in coastal sands.

## 2. Materials and Methods

Yuccas are widely grown as ornamental plants in gardens [6]. In Hungary, the limiting factor of application of *Yucca* taxa is not the hot summer but the humid and cold weather in winter.

Our evaluation is based on the observing of bedded-out plants to rock gardens in four locations: one garden is in the Zoological and Botanical Garden of Budapest, two places are in private collections (Érd, Budakeszi) and the last one is in the Botanical Garden of ELTE. In all of these collections there were planted selected species that – according to the references – survive the temperature -10 °C.

The genus *Yucca* is “one of the most difficult” of USA [7] due to its complex nomenclature including many older names of uncertain application and horticultural names, as well as the variability of many taxa, which apparently often includes hybridization and introgression. According to the publication of THIEDE [8] can be

expected that the adaptation of these plants would be increase. The number of recognised taxa are 62 but the number of the current/vulgar names are 316.

### 3. Results and discussions

According to the references among the recognised taxa there are more than 40 frost resistant species and several assortments. Noticeable in *Table 1*. there are 34 taxa that tolerate colder weather than  $-18^{\circ}\text{C}$  there are 7 ones in all the four gardens like *Y. arkansana*, *Y. flaccida*, *Y. filamentosa*, *Y. glauca* var. *glauca*, *Y. glauca* var. *stricta*, *Y. gloriosa* (*Figure 1*), *Y. recurvifolia* and each of further 6 taxa can be found in three collections like *Y. angustissima* var. *angustissima*, *Y. baccata* var. *baccata*, *Y. baileyi* var. *baileyi*, *Y. constricta*, *Y. elata* var. *elata*, *Y. harrimaniae* var. *neomexicana*.



*Figure 1: Yucca gloriosa* in the collection of Érd in 2006.

Table 1. Winter-hardy *Yucca* taxa (A group) in four collection\*.

	TAXA	AUCTOR	WH	Zoo	Érd	Buda-keszi	ELTE	Σ
1	<i>Yucca angustissima</i> var. <i>angustissima</i>	Engelmann ex Trelease (1902)	A		1	1	1	3
2	<i>Yucca angustissima</i> var. <i>avia</i>	Reveal (1977)	A			1		1
3	<i>Yucca angustissima</i> var. <i>kanabensis</i>	(McKelvey) Reveal (1977)	A		1	1		2
4	<i>Yucca angustissima</i> var. <i>toftiae</i>	(Welsh) Reveal (1977)	A			1		1
5	<i>Yucca arkansana</i>	Trelease (1902)	A	1	1	1	1	4
6	<i>Yucca baccata</i> var. <i>baccata</i>	Torrey (1859)	A	1	1	1	∅	3
7	<i>Yucca baccata</i> var. <i>vespertina</i>	McKelvey (1938)	A	1			∅	1
8	<i>Yucca baileyi</i> var. <i>baileyi</i>	Wooton & Standley (1913)	A		1	1	1	3
9	<i>Yucca baileyi</i> var. <i>intermedia</i>	(McKelvey) Reveal (1977)	A	1	1	∅		2
10	<i>Yucca baileyi</i> var. <i>navajoa</i>	(Webber) Webber (1953)	A			∅		0
11	<i>Yucca constricta</i>	Buckley (1863)	A	1	1	1		3
12	<i>Yucca elata</i> var. <i>elata</i>	Engelmann (1882)	A		1	1	1	3
13	<i>Yucca elata</i> var. <i>utahensis</i>	(McKelvey) Reveal (1977)	A					0
14	<i>Yucca elata</i> var. <i>verdiensis</i>	(McKelvey) Reveal (1977)	A					0
15	<i>Yucca faxoniana</i>	(Trelease) Sargent (1905)	A	1				1
16	<i>Yucca filamentosa</i>	Linné (1753)	A	1	1	1	1	4
17	<i>Yucca flaccida</i>	Haworth (1819)	A	1	1	1	1	4
18	<i>Yucca flaccida</i> var. <i>smalliana</i>	(Fernald) D. B. Ward (2004)	A					0
19	<i>Yucca glauca</i> var. <i>glauca</i>	Nuttall (1813)	A	1	1	1	1	4
20	<i>Yucca glauca</i> var. <i>stricta</i>	(Sims) Trelease (1902)	A	1	1	1	1	4
21	<i>Yucca gloriosa</i>	Linné (1753)	A	1	1	1	1	4
22	<i>Yucca harrimaniae</i> var. <i>harrimaniae</i>	Trelease (1902)	A		1	1		2
23	<i>Yucca harrimaniae</i> var. <i>neomexicana</i>	(Wooton & Standley) Reveal (1977)	A		1	1	1	3
24	<i>Yucca harrimaniae</i> var. <i>sterilis</i>	Neese & Welsh (1985)	A			∅		0
25	<i>Yucca linearifolia</i>	Clary (1995)	A	1				1
26	<i>Yucca louisianensis</i>	Trelease (1902)	A			1		1
27	<i>Yucca pallida</i>	McKelvey (1947)	A			1		1
28	<i>Yucca recurvifolia</i>	Salisbury (1806)	A	1	1	1	1	4
29	<i>Yucca rostrata</i>	Engelmann ex Trelease (1902)	A	1	P	1		2
30	<i>Yucca rupicola</i>	Scheele (1850)	A			1		1
31	<i>Yucca schottii</i>	Engelmann (1873)	A	1	P			1
32	<i>Yucca thompsoniana</i>	Trelease (1911)	A	1	P			1
33	<i>Yucca torreyi</i>	Shafer (1908)	A	1	P	1		2
34	<i>Yucca treculiana</i>	Carrière (1858)	A	1	P			1

\*In the table there are different characters like “WH” as winter-hardiness “P” as protected or “0” with cancellation which refers the ruined species in that collection. The categories are in evidence in the column of winter hardiness. In the last column of the table the summation can be seen, the appearances of the taxa in the collections.



The table is enough extensive so you can see a little part of the entire. The recognised taxa were divided 3 parts, 3 categories of winter-hardiness:

A group - which tolerate colder weather than -18 °C in Hungarian climate condition,

B group - which tolerate colder weather than -12 °C with some protection (*Table 2.*),

C group - which tolerate below zero with a few degrees, but in winter period they need unheated greenhouse.

Some of the observed species could not be adapted to the humid cold weather; the unfavourable effect of the winter 2008/2009 appeared only to six species (*Yucca brevifolia* var. *jaegeriana*, *Y. schidigera*, *Y. aloifolia*, *Y. carnerosana* (*Figure 2*), *Y. filifera*, *Y. rigida*) in the rock garden of the ZOO.

*Table 2.* Winter-hardy *Yucca* taxa (B group) in four collection\*.

	TAXA	AUCTOR	WH	Zoo	Érd	Buda-keszi	ELTE	Σ
35	<i>Yucca brevifolia</i> var. <i>brevifolia</i>	Engelmann (1871)	B?					0
36	<i>Yucca queretaroensis</i>	Pina Lujan (1989)	B?					0
37	<i>Yucca valida</i>	Brandege (1889)	B?					0
38	<i>Yucca brevifolia</i> var. <i>jaegeriana</i>	McKelvey (1935)	B		1	ø		1
39	<i>Yucca schidigera</i>	Roezl ex Ortgies (1871)	B		1			1
40	<i>Yucca aloifolia</i>	Linné (1753)	B	1	1	1	1 (A)	3
41	<i>Yucca carnerosana</i>	(Trelease) McKelvey (1938)	B	1	1			2
42	<i>Yucca filifera</i>	Chabaud (1876)	B	1	1			2
43	<i>Yucca rigida</i>	(Engelmann) Trelease (1902)	B	1	1			2
44	<i>Yucca cernua</i>	Keith (2003)	?					
43	<i>Yucca rigida</i>	(Engelmann) Trelease (1902)	B	1	1			
44	<i>Yucca cernua</i>	Keith (2003)	?					
45	<i>Yucca jaegeriana</i>	(McKelvey) L. W. Lenz (2007)	?					

\*The appellations are the same as *Table 1.*

In the last two lines, *Yucca cernua* and *Y. jaegeriana* species' data of winter-hardiness has not known in the references yet only thinkable these species belongs to B group. These newfound species are not yet in any Hungarian collections. In the line of *Y. aloifolia* we can see "A" in brackets which refers that in that collection there are so clones which alive in outdoor and survive Hungarian climate condition

without any protection. These plants are single occurrence, their propagation is marginal so primarily they need for familiarize among the collectors.



Figure 2: The rigid, bluish green leaves with margins richly filiferous of *Yucca carnerosana* in the ZOO (2008).



Figure 3: Numerous linear green and persistent when old leaves of *Yucca linearifolia* in the ZOO (2008)

According to the references there are 45 frost resistant or from these taxa there are 34 winter-hardy species. It follows aside from species of B group in Hungarian climate condition the winter-hardy species can be competent in bedding out of rock garden, perennial bed, splay or sector between two lanes in multi-lane street. All the same in the practice of the planting design and horticulture the number of the applied taxa are only 3 or 4. The common species (*Y. filamentosa*, *Y. gloriosa*, *Y. recurvifolia*) are hardy outdoors in Central Europe and therefore widely cultivated in many selections, including variegated forms, are advantageous for several aspects like propagation, price and availability. In the Table 3. put in context can be evidence comparison of common and uncommon species.

Table 3. Comparison of the taxa of *Yucca*

Aspects	Common species	Uncommon species
<b>Habit</b>	Not very spectacular	Extraordinary beauty
<b>Necessities of life</b>	Easy cultivation	Easy to keep, but needs good drainage
<b>Propagation</b>	Generative - mutualistic pollination system - manual pollination (artificial insemination) Vegetative - easy	Generative - mutualistic pollination system - manual pollination (artificial insemination) Vegetative - difficult
<b>Applications</b>	rock garden, perennial bed	rock garden, perennial bed, solitaire
<b>Price</b>	cheap	expensive
<b>Availability</b>	available	in short supply

#### *Characterization of some uncommon species*

Despite of preceding some poorly known species are the next:

*Y. rigida*, which has linear leaves slightly broadened in the middle, slightly canaliculate, thin, yellowish-green and glaucous, The tip of its is very pungent. *Y. rigida* belongs to group B.

*Y. thompsoniana* earlier was a subspecies of *Y. rostrata*. The plants are arborescent, stems, erect with comparatively long ascending or diffusive. The rosette frequently asymmetrical, rather small, leaves few, linear or somewhat broader towards the middle, flat or canaliculate, the margins are horny yellow or brownish colour.

*Y. linearifolia* (Figure 3.) has mostly single stem, its rosette is with somewhat flattened top. There are linear leaves, which are distally twisting slightly outwards, persistent when old, reflexing and completely covering the trunk, margins thin, horny, pale yellow, minutely denticulate, terminal spine is dark, reddish brown to black

*Y. baccata* var. *baccata* is acaulescent plant or rarely short stems, its observable assymetrical and rather open, mostly simple or clumped rosette, leaves are more erect, straight but *Y. baccata* var. *vespertina* has falcate, rather narrow, blue-green, glaucous leaves with fibres fine, wiry. Inflorescence shorter to just slightly longer than the leaves.

*Y. carnerosana* stems generally simple sometimes forming groups of stems united at the base, leaves are more than 50 cm come to that 1 m, rigid, margins richly filiferous.

*Y. treculiana* (Figure 4, 5.) is in a stem forming group of variable hight. It has rigid and concave leaves with yellowish green margin.



Figure 4: Simple stem of *Yucca treculiana* with low dry leaves owing to the frost in the ZOO (2011)



Figure 5: The teardrop flowers of *Yucca treculiana* in the ZOO (2011)

*Y. elata* var. *elata* grows come to that 4 m tall, large rosette with numerous, divergent, finally reflexing and persisting as a dry skirt on the trunk.

Many species of yucca also bear edible parts, including fruits, seeds, flowers, flowering stems, and more rarely roots. References to yucca root as food often stem from confusion with the similarly spelled but botanically unrelated yuca, also called cassava (*Manihot esculenta*). Roots of soaptree yucca (*Yucca elata*) are high in saponins and are used as a shampoo in Native American rituals [9]. Dried yucca leaves and trunk fibers have a low ignition temperature, making the plant desirable for use in starting fires via friction [10].

Yuccas have a very specialized, mutualistic pollination system, being pollinated by yucca moths (*Pronuba yuccasella*, family Prodoxidae); the insect purposefully transfers the pollen from the stamens of one plant to the stigma of another, and at the same time lays an egg in the flower; the moth larva then feeds on some of the developing seeds, always leaving enough seed to perpetuate the species [11]. In

Hungary there are not such a little month therefore on behalf of mature fruit with viable seeds need to pollinate manual.

*Y. harrimaniae* var. *neomexicana* acaulescent, forming dense to open clumps rosette. Their leaves linear narrower than var. *harrimaniae*, only 7-20 mm broad.

#### 4. Conclusion

The number of recognised taxa are 62 but the number of the current/vulgar names are 316. According to the references there are 45 frost resistant or from these taxa there are 34 winter-hardy species. In Hungary, the limiting factor of application of *Yucca* taxa is not the hot summer but the humid and cold weather in winter. Accordingly environmental circumstances can be suitable for the plants such as good drainage, sunlit places without irrigation. Species of A and B group in Hungarian climate condition can plant out but species of B group need cover for protection of precipitation in winter period.

The winter-hardy taxa which can be kept outside even during the wintertime have an increasing role in the broadening of the Hungarian ornamental plant market. They can be successfully used in rock-gardens, perennial beds and as solitaire plants at special public domains.

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## Application of High Performance Concrete Surfaces in Landscape Architecture

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**Abstract:** The exposed concrete is a very high quality unwrapping concrete. Producing qualitative exposed concrete objects is such a complex process, when the process of planning and designing can not be separated. However the concrete seems to be a very rough material for many people, but it is suited for producing pretty smooth surfaces. The formwork, the content of the concrete and the exactitude of the constructor affects most of all the quality of the exposed concrete.

**Keywords:** exposed concrete, concrete bench, concrete garden furniture, concrete surface

### 1. Introduction

Hardly could such quality exposed concrete have been seen either in Hungary or in the neighboring countries, or rather they could rarely be seen there, until the beginning of the 21<sup>st</sup> century which could have inspired the architects and landscape architects to design natural concrete surfaces. Though dozens of cases abroad proved that concrete is not just a structural material, and it could also be a surface of high aesthetic value, only few designers tried to apply visible concrete. The main reason for it, in my opinion, is that the construction industry in Eastern Europe was not, and partly is still not able to build quality concrete surfaces.



Examples of natural concrete surfaces worth mentioning in Hungary could be found since the end of the 1950s [1]. Analysing these artefacts one can immediately notice that their aesthetic value does not originate from the quality of their concrete surface but from their other architectural values. It can be stated that the quality of visible concrete surfaces produced from the 1960s till the years in the 21st century was, as a matter of fact, consistent with the higher quality structural concrete in Hungary.

Since the second half of 19<sup>th</sup> century garden architecture has been using different concrete, cast stone garden furnishings: neo-baroque statues, raised beds, railings, caps, and benches. Their shared characteristic is their surfaces, which are coarse grained surfaces in order to produce the natural effect of rubblestone. Besides having different forms, this surface quality reappears in the case of the 1970s and 1980s' prefabricated concrete garden furnishings: benches, counterfort walls, raised beds, and concrete pavements. Objects made of concrete in this era could be characterised by exposed aggregate concrete and gravel surfacing.

In recent years, the increased attention towards concrete furniture and pavement for public spaces, and exposed concrete surfaces have resulted in a very different surface quality from the above mentioned examples. Nowadays not the washed or coarse grained surfaces are popular, the implementation of which does not mean any professional challenge, but smooth concrete floors with sharp edges and impeccable corners. The aim is to make the surface of such concrete objects fully homogenous and nonporous, also their colour and texture, their edges, corners, and the different joints exact to the extent of a millimeter. Also, the aim is to make the surface reasonably lasting in the open air: it should be frost-resistant, graffiti resistant, and could be cleanable. There is a demand for such concrete objects and surfaces, the quality of which could compete with high quality rubblestones. The magnificence of concrete is inherent in its being a mineral substance which can be cast, and theoretically any form could be made of it. At the same time it is fit to produce the finest surfaces.

## **2. Materials and Methods**

I examine the opportunities of high quality surface concrete applications in open air architecture through analysing Europe's considerable visible concrete edifices and prefabricated garden furnishings which were built in the last decade [2]. Besides the Western European examples, I have gained really useful practical experience when I examined visible concrete edifices in Hungary in recent years.

I pay special attention to the opportunities of applying high density and high performance concretes in open air architecture, which have been widely available in recent years.

### 3. Discussion

During the design of exposed concrete surfaces one of the most important tasks is to define exactly the quality of the surface. On the one hand, it is vital because of the execution's building cost calculations and organisation; on the other hand, because of the implemented work's quality control.

When defining quality demands concerning visible concrete surfaces, it is an important aspect how far the object will be seen from, and how close it will be to the users.

On consideration, concrete garden furniture should have the finest quality surface. The basic requirement is to have an entirely nonporous and homogenous surface, and to have the complete colour identity of items manufactured in large amounts. The surface should be smooth; implementations similar to the washed, corroded by acid, artificially coarse grained surfaces, or surfaces similar to concrete pavements do not mean any professional challenge any more.



*Photo 1: Pannonhalma, The open air theatre stage, excerpt.*

In recent years, just some bigger projects made it possible to implement high quality concrete furniture and garden furnishing. Among others, the Pannonhalma Benedictine Archabbey's tourism development is worth mentioning; nearly 90 concrete benches were made and got built in within its framework (photos 1 and 2) [3].



*Photo 2: The surface of a slightly airholed concrete bench after being chamfered*

The colour of the benches is natural looking grey, the material of the benches is high density plastic fibre reinforced concrete, the edges are subsequently chamfered 4-5 millimeters [4]. The benches have a hollow structure, their mass is cc. 250 kilograms. Their surface has been made slightly porous and they are dispersed uniformly, but the quantity of pores is still acceptable. The designers judged the benches to be of outstanding quality, even when taking the international standards into consideration; however, they expressed their opinion that the edge forming and the nonporousness of the surface could have been much better. The bigger part of concrete benches in Pannonhalma were placed on the territory of the open air theatre built in the orchard next to the archabbey. The smaller part of the benches were placed on the territory of the Botanic Gardens and Levendulás (Lavender Garden). These latter ones were provided with wooden seating surfaces.

Other important premises where concrete garden furnishing made in Hungary could be seen are in Tettye-park and its vicinity in Pécs (photos 3 and 4) [5]. The surface of the diversely formed irregular prism objects is structured, occasionally ornamented with glass mosaic. Their measuring and size were chosen to make them usable also as benches, and at the same time make them elements for space composition offering independent aesthetic quality. Having had a closer look at their quality one can realise that they were made adopting a process technology for large-scale production unlike the craftsman quality of the benches in Pannonhalma. Their edges are chamfered, the surface has airholes in some places, and there are some flaws in manufacture at the corners. Generally speaking, their surface quality is slightly poorer than of the benches in Pannonhalma.



*Photo 3: Pécs, Tettye-park, concrete garden furnishings*



*Photo 4: The Tettye-park furnitures' roughly chamfered edges*

Generally speaking, it can be stated about the above introduced concrete garden furnishings in the two places that the quality of their surfaces is good but not excellent. To improve the quality a lot can and will be done if high density UHPC concretes gain ground. The self compacting concretes of 15-20 N/mm<sup>2</sup> flexural, and 80-100 N/mm<sup>2</sup> compressive strength make it possible to produce much thinner structures compared to forms we have got used to before (Photos 5 and 6). With self compacting concrete even sophisticated three-dimensional forms can be cast, and with a suitable formwork self compacting concretes provide a perfectly smooth and nonporous surface. The other advantage of UHPC concretes is that they absolutely block water sorption so their frost-resistance could match high quality stones, and could also last as much as the above mentioned stones.



*Photo 5: A UHPC bench, its manufacturer is Escofet*



*Photo 6: A UHPC bench's edge after being put in formwork, before being chamfered.*

In the case of cast-in-place monolithic structures' surface quality, e.g. counterfort walls, one can expect at least one category markdown compared to the surface quality of prefabricated concrete garden furniture and furnishings. It is partly the result of inaccuracies in constructing the formwork in place, and partly the result of the quality of fresh concrete taken to the building site. To produce a high quality surface one have to apply self compacting concrete which could be produced just by highly experienced concrete suppliers.

To categorise visible concrete surfaces the "Merkblatt Sichtbeton", the technical guidelines elaborated by the German Concrete Association, seems to be the best standard to choose [6]. The guideline distinguishes four different quality categories: S1-lowest, and S4-highest, which can be characterised by well-measured or precisely defined parameters. When categorising one should take into account the following parameters: texture, porousness, color identity, precision of work and formwork joint, and uniformity.

In open air architecture countefort walls, blade walls, plinth courses in the most frequented places should be at least of S2 quality, in places of high priority they should be of S3 quality. The supposed quality of prefabricated garden furnishings should be at least S3 quality, in an ideal case it should be S4. The above benches in Pannonhalma meet the quality requirements of S3, the quality of the furniture in Tettye-park alternates between the qualities of S2 and S3.

#### **4. Conclusion**

Quality concrete fabrication, and within it fabricating visible concrete is a leading technology these days, which means the first class in building industry. Quality concrete, which is a high quality building material, can be safely applied almost at any scope of both architectural and landscape architectural planning. The period between 1960 and 1990 badly deteriorated concrete's significance in its aesthetic sense. My intention has been to make all the designers and future clients acquainted with the opportunities hidden in advanced concrete architecture.

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- [4] According to the manufacturer's declaration its compressive strength is cc. 50 N/mm<sup>2</sup>
- [5] Manufacturer: Ornamentika Kft., Győr
- [6] DBV/BDZ-Merkblatt Sichtbeton, Ausgabe 2004, Deutscher Beton und Bautechnik-Verein e.V. Berlin, und Bundesverband der Deutschen Zementindustrie, Köln.





## Archducal gardens of Hungary in the 19<sup>th</sup> century

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**Abstract:** The "Hungarian branch" of the Habsburg dynasty, as one of the most significant member of the political and economical elite of Hungary in the 19<sup>th</sup> century, was well known of their commitments to garden art and botany. It is due to the effort and patronage of the family members that significant plant collections, ornamental gardens and nurseries were established at Alcsút, on the Margaret Island or in Fiume. This paper presents new details related to these archducal gardens that can be drawn from contemporary field descriptions and publication work of Archduke Joseph and his employees.

**Keywords:** Archduke Joseph, Alcsút, Fiume, Margaret Island, glasshouses, acclimatization

### 1. Introduction

In the 19<sup>th</sup> century, the second most prominent dignitary of historical Hungary was the palatine, which position was held by members of the Habsburg imperial family since 1790. In the person of Palatine Joseph, posterity can honour not only an exceptional statesman but also a bountiful supporter of Hungarian culture. The prominent role of the archduke and his successors in garden art is also well known, and their activities and results were recently summarised in a comprehensive study [1]. Their strong relation to the horticultural field, however, was not a mere coincidence and not only a part of up-to-date aristocratic education. On the

contrary, following the Habsburg family's traditions to master a specific "civil" profession beside the political vocation, Palatine Joseph and later his grandson, Archduke Joseph was encouraged to reach highly educated level in horticultural field and botanical lore [2].

The building history of the Habsburg's ornamental gardens like Buda, Alcsút, Margaret Island or Fiume is mostly well known to contemporary professionals. At the same time only a few papers deal with the presentation of the horticultural plantations operated apart from the ornamental gardens, either with the botanical collecting activities or acclimatization experiments of the owners and their head gardeners. The aim of the current paper is to present some new aspects of the archducal garden estates by describing the establishment of the horticultural plantations of the archducal gardens.

## **2. Materials and Methods**

It is a well known fact that most elements of the Habsburg legacy at Alcsút perished due to the historical events, therefore the small number of the remaining archive illustrations and other sources are of great scientific importance. The recent publications concerning the estates of the Archduke treat the details of the building history of the ensembles, presenting them mainly on archive map sources, post-cards or other written sources. Several less known archive illustration and the horticultural publication activity of the Archduke, however, are not, or just superficially mentioned and analyzed. Due to the nature of the scientific topic, the current methods are also related to the research of archive sources, and are complemented by analyzing and comparing the contemporary publications, articles, descriptions to the few number of archive visual data.

The hereinafter presented sources can be located in the nowadays poorly read professional literature from the turn of the century and in the archives of the Ferenc Entz Library (Budapest). Most of the illustrations were published in the official periodical of the Hungarian National Horticultural Society (OMKE), like the ones on the famous palm house at Alcsút [3-4], or those on the versatile horticultural elements (orchid-house, gardener's lodge, rosary, glasshouses, hotbeds) of the Margaret Island [5]. Further prominently valued archive illustrations on the archducal estates were published in the horticultural monograph (1900) of Károly Schilberszky [6], who was a contemporary lecturer at the Horticultural Institute of Budapest. Also to be highly valued, the few archive pictures and a description form 1904 on Alcsút by Jenő Füredi [7] (student of the Horticultural Institute around 1900), who spent his apprenticeship under János Hatos, the Archduke's last head gardener in Alcsút. Comparing this latter description to the site plan published in Schilberszky's monograph, it is possible to track the arrangement of the perished horticultural yard within the ornamental garden.

Besides the above mentioned sources, further valuable pieces of information are provided concerning the plant use due to a plant inventory [8] and a nursery bulletin [9] compiled by Archduke Joseph and his head gardener, János Hatos. On the design of the Alcsút palm house and its specific plant collection we can read in the 50<sup>th</sup> Jubilee Yearbook of the OMKE [10-11] while the tree planting of the roads nearby the family residence was described in a contemporary manorial report compiled by the estate manager of the archduke [12]. Moreover, dedicated to the professionals of his time, Archduke Joseph himself reported detailed taxon lists on the results of his acclimatization experiments performed in his garden at Fiume, [13-15], which gives an overview of the exotic plant applications.

### 3. Results and discussion

The castle of Alcsút was built as a residence for the archducal family at the beginning of the 1820-ies. The surroundings of the building were gradually turned into an ornamental garden due to the work of several prominent head gardeners (Károly Tost, Vilmos Jámor, Pál Zednik and János Hatos) of the era. During twenty years following the death of Palatine Joseph in 1847, the park benefited only minor development till the lordship of Archduke Joseph who mastered the estates for almost half a century (1867-1905). It is well known that under the auspices of head gardener Vilmos Jámor, important new developments were achieved: in 1869 the old lake was enlarged and reshaped and in the next year an artesian well was drilled to feed it. In 1871-72 the large palm house designed by Miklós Ybl was established next to the residential house [16].

It is less well-known, however, that a so-called “external plant nursery” (on 16 cadastral acres) and a “reserve garden” was also founded by Jámor and the horticultural establishment within the garden was essentially transformed. The productive areas occupied, since the Palatinal times, the lawns in front of the southern facade of the castle building and the orangery. The plant houses were made of wood till the 1880s when Vilmos Jámor pulled them down and built new iron-frame glasshouses to the eastern side of the orangery. On the approximately 1 acre territory of the horticultural plantation, new functional buildings were erected (Fig. 1), presented here on the basis of the contemporary publications of Füredi and Schilberszky [17].

An engine-house providing water supply was placed near the gate opening towards the Vértesboglár road. On the right side of the plantation, there was an approximately ~85 m long wooden cold-house with water pipe heating system, to the left of this building, several rows of hothouses. The longish cold-house was divided into three parts where exotic plants were grown grouped, respectively, in

different sections of *Ericas*, *Azaleas* and *Camelias*. The cold-house and the hothouses were connected by underground passages to facilitate safe transport of the plants.

Furthermore, the hothouses were also separated according to cultivation manner in the following order: a forcing house for different *Palms*, *Anthurium* and *Nepenthes* was standing closest to the engine house; after it, an orchid-house was established (cultivating orchids was one of the main specialities of the plantation) and a fern-house, followed by a mixed hothouse (where a large *Marantha*-collection was cultivated) and finally a temperate house. To the East, there was the orangery built at the same time as the castle (nowadays the only remaining built element of the whole horticultural establishment) and the palm house connected to the main building.

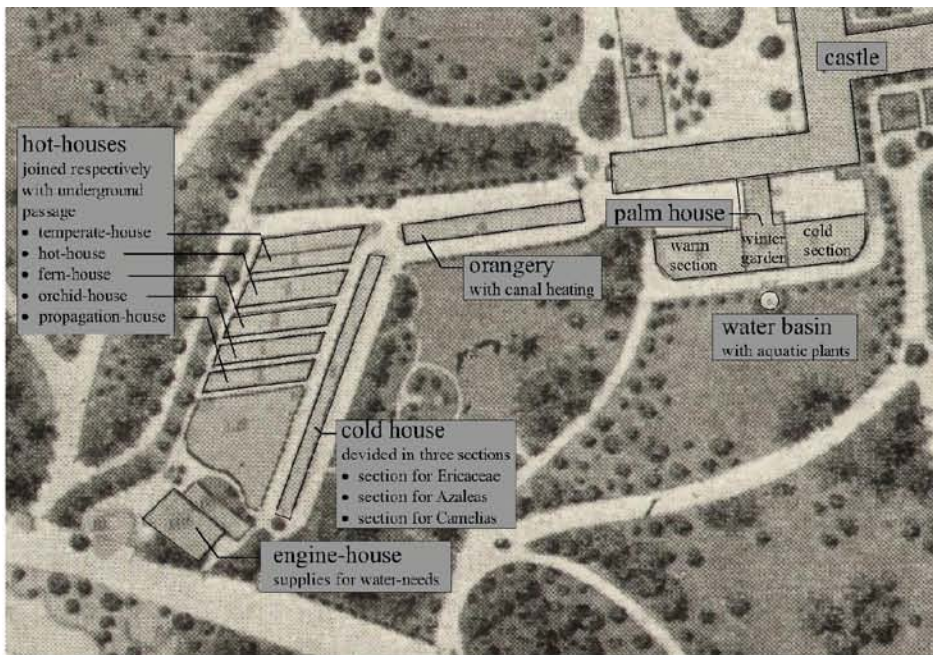


Figure 1: Arrangement of the indoor cultivation houses at Alcsút in the late 19<sup>th</sup> century

The detailed descriptions of the perished glasshouses [18] contain several plant lists or mention the remarkable taxa that were represented there. The most significant indoor plants of the collection were of the following genera: *Araucaria*, *Marantha*, *Camelia*, *Latania*, *Todea*, *Phoenix*, *Dracanea*, *Cycas*, *Crescentia*, *Musa*, *Bambusa*, *Pandanus*, and *Chamaerops*, some of them being represented by giant specimens (Fig. 2). The large variety of exotic plants can also be imagined after the plant summary presented in Table 1. [19]:

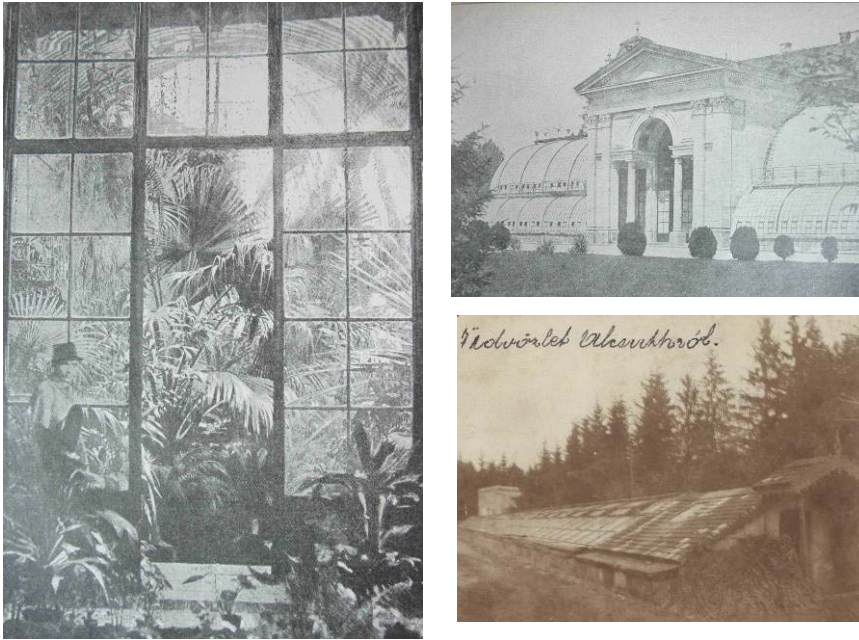


Figure 2: Inner and outer view of the palm house and a small glasshouse at Alcsút

Table 1: Representative taxonomic groups in the glasshouse collections at Alcsút

<b>Taxonomic group</b>	<b>Approx. N° of taxa</b>
Orchidaceae	272
Theaceae	240
Aroideae	102
Filicinae	97
Palmae	77
Scitamineae	40
Malastomaceae	27
Lycopodiaceae	15
Pandaneae	10
Cycadeae	9

Beside the ensemble of Alcsút, it was also Archduke Joseph's result that the ornamental gardens and nurseries of Margaret Island and the subtropical plant collection in Fiume (today Rijeka, Croatia) were developed in the second half of the 19<sup>th</sup> century. The contemporary craft highly approved the Archduke's horticultural activity not only because of the establishment of the ornamental gardens, which they "treated even vanishing compared to his merits in plant acclimatization experiments" [20].

These latter professional works were first accomplished during the development of the gardens at Fiume around 1860-1880s, where the winter was mild. After the success of the first years, the Archduke continued his experiments in his other gardens (like Alcsút or the Margaret Island), situated more to the North with more continental climate and harder winters. According to the archduke's own statement, he would love to be the first Hungarian who successfully "breeds palm trees in open air". Therefore he did not built just one glasshouse at Fiume (only for curing the damaged plants), but he was testing there the resistivity of the outdoor planted exotic taxa. The plants were brought from all around the world by maritime transport, thanks to plant hunters (like Jules Van Mol from Belgium) and seed merchants who were regularly employed in this era by fanatic botanical collectors. To give an overview on the scale of the acclimatization trials, the main exotic elements of the taxon list published by Archduke Joseph [21] are summarized in Table 2.

Table 2: Taxonomic groups of the acclimatized exotic plants in Fiume till 1885

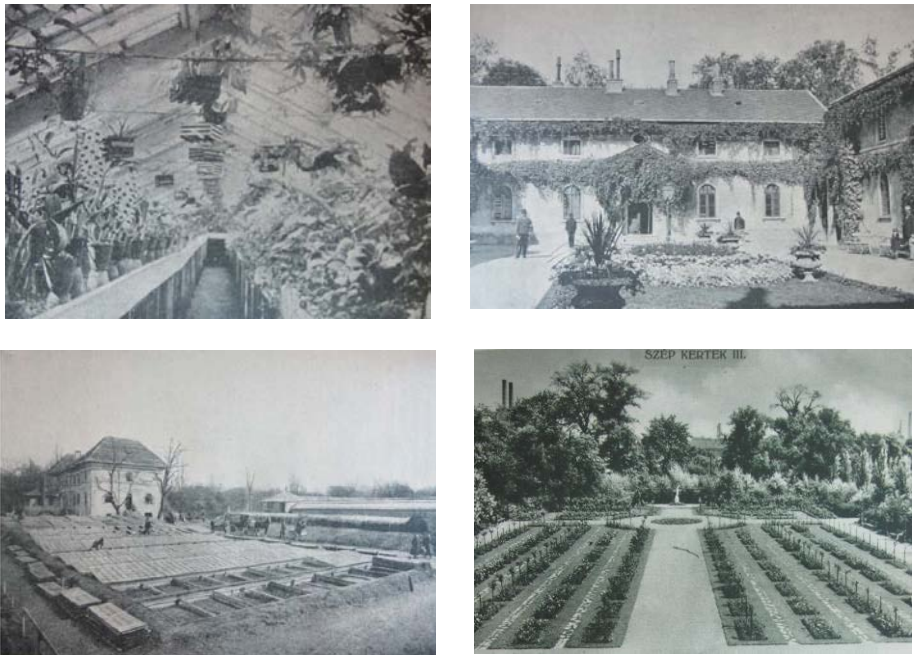
<b>Taxonomic group</b>	<b>Approx. N° of taxa</b>	<b>Acclimatized since</b>
Conifers		
Abies	15-17	~1870s
Araucaria	3	~1880s
Cedrus	8	~1870s
Cephalotaxus	3	~1860s
Cupressus	10	~1860s
Crypromeria	2	~1870s
Pinus	10	~1860s
Thuya [sic]	8	~1870s
Torreya	2	~1880s
Palms	6	~1870s
Yucca, Agave, Dracaena, Cycas	10	~1870s
Cactus	8	~1870s
Filices	7	~1870s

The above table does not contain the large number of evergreen shrubs and perennials that also took part of the trials, but worth in itself a separate study.



Evidentially most of the conifer acclimatization was successful, as the plant inventory on the garden of Alcsút, published a decade after the experiments, even contained a larger number (approx. 80) of conifer taxa.

An exotic indoor plant collection and several outdoor plantations were also created on the Margaret Island, where the local head gardener of the Archduke (György Magyar) created in three decades one of the biggest and best organized horticultural establishments of the country (Fig. 3).



*Figure 3:* Details of the horticultural establishment on Margaret Island, Budapest (orchid-house, gardener's lodge, hotbeds and rosary)

The head gardener's territory was situated in the middle of the island, surrounded by large arboreal plantation. According to contemporary description [22], the horticultural site was in a constant change except its main buildings. In the centre the main office, the head gardener's lodge, the apartment of the undergardeners and a huge cellar was built, this latter served as winter storage for ornamental plants. In front of the main building, a 600 sqm large glasshouse was standing which was used for mixed functions (propagation, forcing, conservation, etc.). To the left side of it a 1500 sqm hotbed-area was created. Apart from these



elements, separate glasshouses were built in the neighbouring areas, each for specialized plant cultivation (like palms, orchids, chrysanthos or bulbous plants).

On the whole Margaret Island the Archduke employed about 80 permanent workers (amongst them, the head gardener, one supervisor, ten undergardeners and several apprentices), but this number could be doubled in the vegetation period. The large number of workers is not that surprising if we take into account that, on the average, 120.000 pieces of *Convallaria*, other 100.000 pieces of *Tulipa*, or over 20.000 pieces of *Hyacinthus* were forced here per year, only as the part of the bulbous plantation. If we describe the island's horticultural values, we must not forget about the famous rosary of the Archduke, which was his favourite collection here with around 16.000 planted out specimens over 1400 taxa. Above that, the island's nursery also supplied several dozens of roses and other arboreal species for commercial purpose.

#### **4. Conclusion**

In many ways the Archduke's professional activity is exemplary for the posterity that could not be described or summarized in one paper. Beyond the immense work of developing Hungary's remarkable gardens over decades, we must acknowledge as his merit the acclimatization of several dozens of exotic plants, the sponsorship of the horticultural crafts and the patronage of the biggest horticultural society in the country over decades. Thanks to the Archduke's professional essays and significant publication activity, nowadays it is still possible to be informed on the results of his acclimatization experiments in Fiume, or on the planting and forcing practice of his era. It is regrettable, that no other than the Archduke's horticultural heritage was mostly damaged in Alcsút, and the actual layout of the Margaret Island no longer reflects those splendid times of the early 20<sup>th</sup> century. Certainly, today's horticultural experts owes to study more the details the Habsburg's horticultural heritage, and should find the way to preserve and manage it in the most honourable manner.

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## Relationship of the location and landscape forming at the farming orders

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**Abstract:** Special position and activity is related to each order, so the landscape forming activity is different. The position influenced their scope of activities, including their impact on the landscape. The orders, which settled in large free areas, had significant donations, their main activity was the farming, so their impact on the landscape was outstanding. In Hungary, the three main farming orders are the Benedictines, the Cistercians and the Premonstratensians. They settled down in solitary, uninhabited places, they lived for God, but for their livelihood they had to cultivate. Thanks to their farming the landscape constantly changed and formed.

**Keywords:** special position, impact of the landscape, three main farming orders, flourishing agriculture

### 1. Introduction

Religion plays a central role in the human's life. Over the centuries more and more religions and orders appeared. Religious centers, necessary buildings for the exercise of religion, and other structures have been established in order to ensure their livelihood, and they changed, formed the landscape. What they established and created in the scenery is permanent, and makes an impact in our days, so the image and character of the landscape is defined and affected. That special position and activity is related to each order. Some particular orders dealt with ministering,

teaching, grooming, but there were those, in which the arable farming was dominant. The order, beside the obligatory religious action, the arable farming was very important for them. The farming and the landscape forming are in a tight context with each other, and I going to write about this connection.

## **2. Materials and Methods**

I used a two-step method in my research. In the first step I made a historical research in this topic to deal with it thoroughly. I studied the literature of the order's history and formation, their appearance in Hungary, in particular the farming orders. I chose to I have more place for the sample area, because so I can demonstrate actually the relationship between the landscape forming and the agriculture. It was followed by the second step. The research followed in this the map collection and in the archival for the pilot places, to prove the description with visual material.

## **3. Results and discussions**

The settlement of some orders and during the following centuries, one aspect was to ensure their livelihoods. The settlement of the orders is area specific. There is a Latin proverb: "Bernadus valles, montes Benedictus amabat, oppidia Franciscus, celebres Ignatius urbes.", so Benedick liked the mountains, Bernat liked the valleys, Francis the cities, and Ignac liked the big cities [1]. The position influenced their scope of activities, including their impact, on the landscape. A great emphasis was laid on the farming, and the adapting to the conditions, and onto its maximum utilisation. The agriculture, the grape- and fruit growing, the animal farming or the fishery enjoyed priority depending on the orders or conditions. The farming orders settled in a large free areas, had significant donations, their main activity was the farming, so their impact on the landscape was outstanding. They settled down in solitary, uninhabited places, they lived for God, but for their livelihood they had to cultivate.

In Hungary, the three main farming orders are the Benedictines, the Cistercians and the Premonstratensians. Not only their farming was successful, but the landscape was also changed. And the Pauline and the Basilian should also be mentioned [2]. St. Benedict's wish was that his followers settle down on a place, and make their environment human, as a result, the Benedictines cultivated the land across Europe, drained swamps, made purposeful farming, created flourishing agriculture. St. Francis of Assisi and his brother had brotherly relationship with the nature, but they

did not want to convert it, just to live in it, praise God for it [3]. “But the servants of the Church were not only the providers of spiritual goods. They were educators, leaders of the people at farming too... They destroyed forests, dried out marshes, dug channels... Villages were generated.” – wrote Menyhért Érdújhelyi [2].

The Premonstratens settled down bleak and lonely places. Trees were destroyed, lands were dug to be able to do farming on it. As in their writing it is said, they made flourishing agriculture with hard work, each monastery was transformed in to paradise [4]. Their works were the creation of garden, draining of swamps, use the water of springs and streams, the granges were formed farther of the monasteries, and then they expanded into villages, agricultural towns [3].

The watchword of abbeys is “Cruce et aratro” at the Benedictines, that is with “a cross and with a plow”. The Benedictine monasteries established flourishing agriculture during a short time all over Europe. Townships and villages were born at the foot of monasteries [3]. The centre of the national Benedictine order is Pannonhalma, which is the earliest founded monastery. It was founded by Grand Prince Géza in 996, but that work was finished by St. Stephen [5]. The farming was on the St. Martin’s Hill and the surrounding area from 11<sup>th</sup> century, at bottom of the slope and in valleys there was arable cultivation, three-crop rotation was applied while on slopes there were vineyards [3]. For the order to be able to do farming, it also was necessary to destroy forests. On a 1680 depiction (*Figure 1*) the monastery’s building is well discernible. The depiction was made after the expulsion of the Turkish, and accurately reflects the fact, that during the occupation the area was completely deserted the nature took control of the area. The settlers broke up virgin lands again, but the growing population prompted them to make many great cultivated areas.



Figure 1: The abbey in 1680 (Benedictine monastery on St. Martin-Hill) [7]

Especially the forests' clearing was severe in the end of 18<sup>th</sup> century. The new lands were taken away from forests, pasture, fields and completely useless areas. The names show this as well: Old Pines, Forest bottom, Flat, Little Field. The grapes were replanted, and planted them to new areas. The wine-growing was the main occupation in this area. The pace of development was fast. The cultivation methods and pace were adjusted to the needs and capabilities [6]. Some houses surrounded the abbey at the foot of the mountain, and in the surroundings and in the hills there are fields. The settlement due to the presence of the order, because the viable places have strength to modulate the settlement, which would suffer from the shocks, but did not disappear, but re-populated, and they were blooming again duly for the presence of the order [6]. The appearance of a settlement means a considerable change in the landscape, as the settlement appears a new landscape element, the load of the landscape grows furthermore, the numbers of people living there were growing, their livelihoods had to be ensured, so the new land had to be taken into cultivation. The following representation is the first military survey (*Figure 2*), it was made in 1784. It can be seen how much development and transformation had been in this area. The settlement was continued to grow, in the hill the viniculture was carried on, and while in the surrounding areas there are fields, and on the not arable, steep slopes there was woods. In the Benedictine observed the development of the fishponds. The river, at the foot of the mountain, was inflated in several places.



*Figure 2:* Pannonhalma and its neighbourhood in the first military survey [8]



The second military survey was made in this area between 1846-47 (*Figure 3*). The areas of the viniculture were grown, this shows, that this area was suitable for this agriculture. The damming were continued to increase, because the number of the abbey increased constantly, so that more produced food was needed. The 1880 survey (*Figure 4*) shows that the area of the vines was reduced, but it defines the landscape still. The damming disappeared, a swampy, moorland area took shape on its place. The landscape changes show that other values came into the foreground. Today, in Pannonhalma the farming activity is minimal besides the teaching (growing herbs, lavender plantation).



Figure 3: Pannonhalma in the second military survey [9]

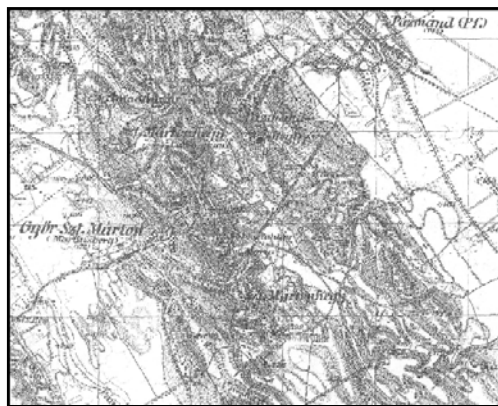


Figure 4: Pannonhalma in the third military survey [10]



The members of the Cistercian order established flourishing agriculture everywhere, contributing to the reviving of the tillage and the fruit- and grape cultivation, raising the quality [11]. The agriculture of the order was successful, because they organised the possessions better, they pre-planned the utilization of soil compared to the feudal farming. They worked themselves, and their life and their future depended on the success of their work. They made farming subunits, *grangias*. In those places, where the climatic and soil conditions allowed, vineyards were established. The gardens were created both on flatlands and the hilly country, on the hillsides they made terraces which eased the cultivation [12]. The centre of the Hungarian male Cistercian life is Zirc. King Béla III founded the abbey in 1182 [13]. From the beginning the agriculture was significant and dominant; the continuous change of the original landscape was the result of that. At first in the place there are only the monastery and the soil, that became cultivated, because the forests were fall, the lands gird the remained forest. But in the ages of 1780 the settlement appeared, it was due to the presence of the order, because the viable places have power to modulate the settlement, which suffered from the shocks but did not disappear, but were re-populated, and they were blooming again duly for the presence of the order [6]. But the abbey's donations were in Bakony, Fejér county and Mezőföld too. On each area they adapted to the local conditions, so they cultivated and shaped the landscape.

The Pauline had a lot of privileges. They had many estates; they had a flourishing farming neighbourhood of the monastery, especially before Mohács. In Bánfalva, the order had a big wood that was donated by the leaders' Sopron city, to the Pauline able to build. The forests were exterminated, marshes were drained to the monks could farm. Village was generated around the monastery [14].

#### **4. Conclusion**

Great St. Basil wrote in her book, *Life rules I*. that: "First of all /we have to choose/ farming, because it provides the food for our existence..." [15].

As you can see the orders' activity and its settlement is closely connected to each other, and through this change their impact on the landscape changed. Trough the demonstrated domestic and foreign example it can be seen, that farming and landscape forming are connected to each other, but its significance, his measure change continuously. Initially the aim was, the interest of the assurance of the self-sufficiency, the more land was feature of under cultivation, this activity in the case of the Cistercian was well organized and planned, for all works had the aim and its way. The initial changes were the biggest changes in the landscape, because, where earlier forest or barren was, the monastery was built, and they made tillages. In the

course of the centuries the landscape changed, because the habits, the values and the order it-self working was transformed, so the farming, what was the main source of living, was sidelined onto 20<sup>th</sup> century, the neighbourhood was populated duly for the processes of urbanization, and other revenue sources provided the living for the order. The agricultural landscape characteristics disappeared by today, in some places its traces can be found, the 21<sup>th</sup> century shaped and formed values and landscape took it over.

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## Unique landscape values occurring on settlement fringe

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**Abstract:** I categorize the unique landscape values according to their connection to the settlement fringe on the sample territory of Jászberény. I introduce the main types within the different categories and analyze their "new" role deriving from their peripheral situation.

**Keywords:** unique landscape value, settlement fringe, settlement expansion, settlement gate, religious relics

### 1. Introduction

Nowadays dynamic settlement expansion can be observed. Settlement expansion is one of the most threatening factors for the sustainability of unique landscape values. The construction of housing estates, industrial parks, shopping centers cause the disappearance crosses, cemeteries, tumulus. The unique landscape values do not fall under protection. The settlement fringe is the forefront of settlement expansion, thus those unique landscape values situated on the settlement fringe are at most danger. Besides being at risk of expansion these unique landscape values deserve more attention from other aspects as well. Due to their peripheral position their role widens, not only do they enrich the landscape view but they are significant elements of settlement gate view.

## 2. Materials and Methods

I have completed my study based on the examination of settlement expansion of Jászberény and on an assessment done by the Department of Landscape Protection and Reclamation [1]. Jászberény is located in central Hungary, about 100 km from Budapest, on the Zagyva River. It is the market centre in Jász-Nagykun-Szolnok county in Hungary. On the settlement fringe of Jászberény 33 unique landscape values can be found [1]. I group those, related to settlement fringe, into three groups. After the short description of each group, I analyze the role of unique landscape values situated at settlement gates according the method I have worked out. Related to the evaluation I describe how much they damaged due to the expansion of inner landscape and how much is their existence at risk after these changes done in the settlement structure.

## 3. Results and discussions

Due to settlement expansion the land use varies continuously on the settlement fringe, the establishment previously situated on the outer area becomes part of the inner landscape. The examination method of settlement fringe requires reviewing the settlement development in all cases. Through which it is possible to reveal the change of settlement fringe, the degree of change and the original position of establishment placed on the settlement fringe. I am observing the unique landscape values of settlement fringe grouped whether they were directly placed on one-time or current settlement fringe or they become part of the fringe areas due to the settlement expansion. Pursuant to that there are three different categories which are as follow:

1. Unique landscape values established on historical or current fringe.
2. Unique landscape values linked to land use typical for settlement fringe.
3. Unique landscape values ended up on the current settlement fringe.

Table 1: Unique landscape values situated on the settlement fringe of Jászberény

Unique landscape values <i>established</i> on historical or current fringe.	Unique landscape values <i>linked to</i> land use typical for settlement fringe.	Unique landscape values <i>ended up</i> on the current settlement fringe.
① Szobor utcai Kőkép (religious relic)	➡① Ravatalozó kápolna (chapel)	➡① Bató kereszt talapzata (cross)
② Kőkép utcai Kőkép (religious relic)	➡② Szerzetes nővérek sírkert (graveyard)	➡② Hűtőgépgyári horgásztó (adobe pit)

<p>3 Szent Imre herceg úti Kőkép (<b>religious relic</b>)</p>	<p>3 Nővér kereszt (<b>cross</b>)</p>	<p>3 Szt. Vendel szobor (<b>patron saint statue</b>)</p>
	<p>4 Új temetői feszület (<b>crucifix</b>)</p>	<p>4 Időjósító Szentek szobor (<b>patron saint statue</b>)</p>
	<p>5 Új temetői harangláb (<b>bell-fry</b>)</p>	<p>5 Felszabadulási emlékmű (<b>public statue</b>)</p>
	<p>6 Védett temetőkert (<b>gravestone collection</b>)</p>	<p>6 Cserőhalmi Kálvária (<b>calvary scene</b>)</p>
	<p>7 Öregkereszt (<b>cross</b>)</p>	<p>7 Új-hegyi feszület (<b>crucifix</b>)</p>
	<p>8 Muhoray kereszt (<b>cross</b>)</p>	<p>8 Szelei úti felújított feszület (<b>crucifix</b>)</p>
	<p>9 Szovjet katonai sírkert (<b>military cemetery</b>)</p>	<p>9 Ludányi kereszt (<b>cross</b>)</p>
	<p>10 Fehértői temetői harangláb (<b>bell-fry</b>)</p>	<p>10 Szent Pál halom (<b>tumulus</b>)</p>
	<p>11 Mizsei kereszt (<b>cross</b>)</p>	<p>11 Szent Pál halmi kereszt (<b>cross</b>)</p>
	<p>12 Ravatalozó emlékszobor (<b>memorial statue</b>)</p>	<p>12 Jákóhalmi úti feszület (<b>crucifix</b>)</p>
	<p>13 Szent Imre temetői kőkereszt (<b>cross</b>)</p>	<p>13 Király Gáspár kereszt (<b>cross</b>)</p>
	<p>14 Szent Imre temetői harangláb (<b>bell-fry</b>)</p>	<p>14 Gémeskút (<b>well</b>)</p>
	<p>15 Szent Imre temetői fakereszt (<b>cross</b>)</p>	
	<p>16 Sírkő gyűjtemény (<b>gravestone collection</b>)</p>	

Note: The unique landscape values' names are in Hungarian, their types are in English.

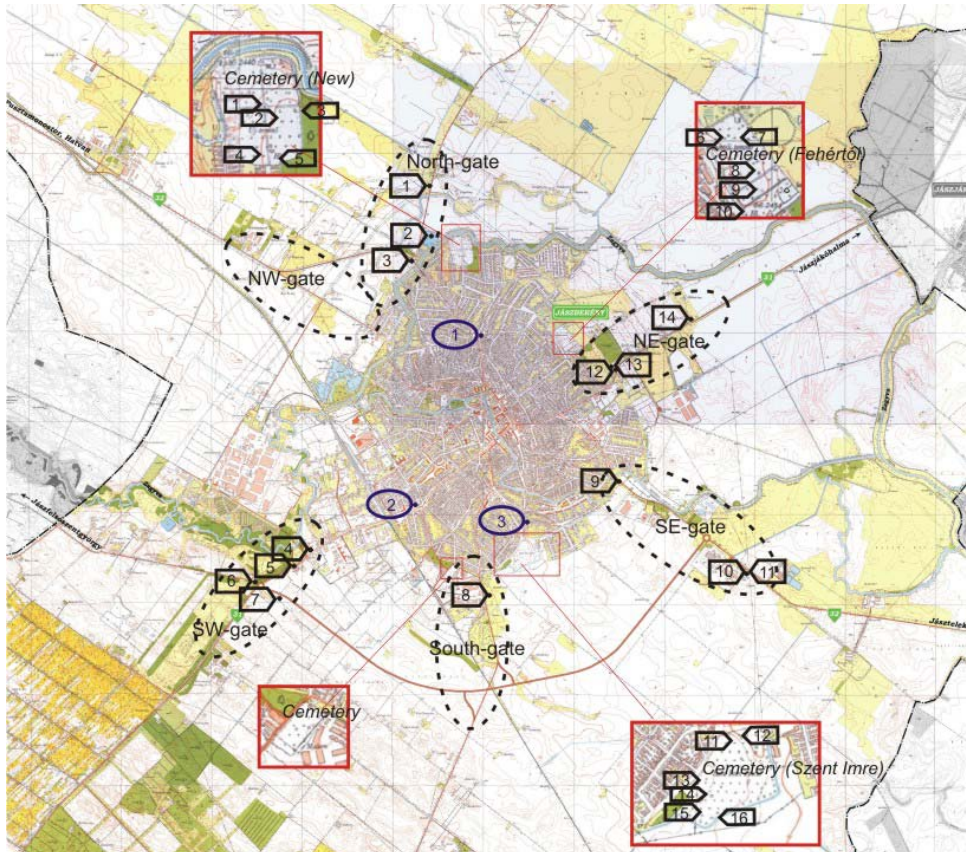


Figure 1: Examined unique landscape values situation

Unique landscape values established on historical or current fringe.

- were directly placed to the settlement fringe;
- the position of settlement fringe is an important aspect;
- their primary function is to indicate the border of the inner landscape.

In case of Jászberény the so called ‘Kőképek’ (religious relics), which were erected in 1699 belong to this category. It was constructed for commemorating the glorious liberalization from the Turkish invasion, which indicates the boundary of the inner landscape. Thus in 1699 Jászberény spread until this point [2]. Their present positions (Fig.1.) depict clearly the two-decade expansion of the settlement. It can be tracked down that the settlement was more intensely built in to the Northern direction while to the South barely any establishments pass the ‘Kőképek’.

### Unique landscape values linked to land use typical for settlement fringe

- periphery land use defines their location;
- according to that when placing them the position of the settlement fringe is to be taken into account indirectly;
- the topmost examples are the unique landscape values in the cemetery situated on the fringe areas.

Jászberény has four cemeteries (*Fig.1.*) all of which are situated on the settlement fringe. The unique landscape values in this category are burying and religious remembrances.

### Unique landscape values ended up on the current settlement fringe

- when placing them the position of settlement fringe is not an aspect,
- their primary function is not being border mark;
- most of them become part of the fringe areas due to the settlement expansion;
- their function widened due to their periphery position (e.g. important elements of the settlement gate).

I introduce an evaluation system of the unique landscape values, situated on the current settlement fringe near the vehicular settlement gates, in respect of their function in the landscape vision.

The evaluation is objective only in that case if each value is monitored according to the same aspects and I get numerical data in the end. In order to that they are comparable and an average idea could be drawn about the settlement gates. The defined factors of the evaluation aspects are as follow:

Evaluation could be done by taking into account whether the settlement expansion determines their importance or not. The expansion has a determinant effect on the unique landscape values if the newly constructed objects cover them or they are pulled down due to construction. Pursuant to the land use of their direct environment could be evaluated. It could be positively valued if the original territory use is adopted in their direct environment. Since it proves that the expansion has no negative impact on them. Should there be a measure of changes regarding the land use, there could be an examination on how much is there existence is at risk by the present land use. I evaluate the unique landscape values territorial expansion, which depicts the dominance of remembrance at the settlement gate sceneries. Furthermore I look at the distance between the boarder of the inner territory and the road, which could be connected with the human presence



intensity. The closer they are to the inner territory boarder and to the road, the more important elements they are of the settlement gate. Supposedly this type of situation of theirs helps their sustainability due to the intense human presence. Visibility should almost be handled as an absolute ground for refusal, as the predominance of the unique landscape values being covered is limited at the settlement gate scenery. Besides that their culture –historical importance is limited as well. Favorable and unfavorable scenery element in the surroundings of the unique landscape values could strengthen or weaken their role at settlement gates. In this case the unfavorable scenery elements are mainly the high voltage cables, illegal waste landfills, abandoned buildings, build-ups. While the favorable scenery elements are mainly the green surface elements. The state of the unique landscape values determines effectiveness of their role at settlement gates. The dying unique landscape values are unfavorable elements of the settlement gate scenery. I introduce the examined factors and their scoring which are shown in the *Table 2*.

*Table 2:* The examined factors and their scoring

	3 points – dominant element	2 points – determinative element	1 point – less dominant, the negative effect of expansion is felt
Land use	Original	Changed but its existence is not at risk	Changed and its existence is at risk
Territorial extension	large	lined	point wise
Distance from inner landscape	within 50 meters	within 50 - 200 meters	within 200 -1000 meters
Distance from road	within 7 meters	within 7-15 meters	within 15-50 meters
Visibility	Visible for arrivals and departures.	Visible for arrivals or departures, overlaid.	It is invisible, overlaid.
Direct surrounding	Favouralbe visual elements are dominant	Favourable and unfavourable visual elements are balanced.	Unfavourable visual elements are dominant.
State	Good, looked-after	Sufficient	Dying, damaged

I have examined six settlement gates according to the direction of possible approach (*Fig. 1.*). It could be reached on road number 32 from North-West and South-East, and on road 31 from North-East and South-West. Besides these the town could be approached from the direction of Jászárokszallás and Farnos. For a

long time the settlement could be reach from North-West direction only through the road crossing Hatvan. The road number 32 is a new possibility with which the road from Hatvan lost its settlement gate role. No unique landscape value could be found in this settlement gate, which is mainly due to the inner land expansion and the construction of the new road section. In case of Jászberény there are 14 values near the settlement gates (*Fig 1.*). Most of the unique landscape values (10) falls into the religious relic category. Not only is the predominance of religious relics significant at the settlement gates but also within the territory as well. That is because religion plays an important role in the life of Jászág. From denomination point of view it is one of the most uniformed territories of the Plain Region [3]. The religious relics generally depict the human movements. Primarily, they were erected at the significant point of the settlement, along roads, at more important crossings [4]. Most usually crucifixes and crosses are found at the settlement gates. Besides those, statues of patron saints could be seen as well. At the settlement gates of Jászberény near the main roads besides of religious relics four other types of relics can be found.

I rank the 14 unique landscape values situated at the settlement gates according to the 7 criteria. I evaluate them from 1 to 3 points and calculate an average out of their points. The evaluation is as follows:

3 points: the element is dominant in the landscape,

2 points: the element is determinative,

1 point: the less dominant element, at risk in case of expansion.

I introduce the defined criteria system of the unique landscape values in *Table 3.*

*Table 3:* The defined criteria system of the unique landscape values

	Age	Land use	Territorial extension	Distance (road- inner landscape average)	Visibility	Direct Surrounding	State	Total → average
<b>SW-gate (Nr. 31 road)</b>								
Új-hegyi feszület ( <b>crucifix</b> )	1870	3	1	1	2	2	2	11 → 1,8
Felszabadulási emlékmű ( <b>public statue</b> )	1970	2	1	2	2	2	3	12 → 2
Időjósító Szentek ( <b>patron saint statue</b> )	1745	2	1	2	2	1	3	11 → 1,8
Cserőhalmi	1790	3	1	2	3	3	1	13 → 2,2

Kálvária (Calvary scene)									
<b>South-gate (from Farnos )</b>									
Szelei fesz. (crucifix)	1900	1	1	3	2	1	3	11→1,8	
<b>SE-gate(Nr. 32 road)</b>									
Szent Pál halmi kereszt (cross)	1808	3	1	1,5	2	2	1	10,5→1,7 5	
Szent Pál halom (tumulus)	?	1	3	1,5	2	2	2	11,5→1,9	
Ludányi kereszt (cross)	1814	3	1	3	2	1	1	11→1,8	
<b>NE-gate (Nr. 31 road)</b>									
Gémeskút (well)	Over 100 years	3	1	2	2	2	2	12→2	
Jákóhalmi úti feszület (crucifix)	2010	3	1	3	2	1	3	13→2,2	
Király Gáspár kereszt (cross)	1903	1	1	2	1	1	1	7→1,1	
<b>North-gate (from Jászárokszállás)</b>									
Bató kereszt talapzata (cross)	1794	3	1	2,5	2	2	2	12,5→2,1	
Hűtőgépgyári horgásztó (adobe pit-lake)	1960	2	3	3	2	2	2	14→2,3	
Szent Vendel szobor (patron saint statue)	1866	3	1	3	2	2	3	14→2,3	

It could be seen from *Table 3* that none of the unique landscape value can prevail fully. There are two main reasons behind that fact. One is that the appearance of industrial territories are revealing at all gates except for the Northern gate. A result of which is that most of the unique landscape values have been built-in to the industrial areas, territories of commercial establishments or a plant was established around them. The other reason is that these unique landscape values are 'lost' due to overlaying or distance. Dominance is affected negatively as they all

have point wise appearance except for two landscape values. Having ranked them it could be seen that the state of landscape values vary.

It could be stated that scenery importance of those unique landscape values, which were effected by the settlement expansion and went under significant environmental changes (1st quality category), could be strengthen by drastic interventions (liquidation of industrial area for instance). As the role of such unique landscape values can not be strengthen, drawing attention to them, preserving their state and protecting the are highly important The cross of Király Gáspár is among those. The role and scenery significance of the rest of the unique landscape values situated at the settlement gates of Jászberény could be strengthen by conservation and environment arrangement.

#### **4. Conclusion**

From the evaluation result the following conclusion can be drawn: up to the present the settlement development ignored the location of the unique landscape values in several cases with that their landscape dominance decreased significantly. At the same time their preservation, reconstruction and maintenance are the proof of maintaining the traditions and cultural heritage protection. The evaluation tries to reveal that certain unique landscape values could be handled together due to their uniform characteristics and location. Their special location make it possible to expand their role (they could become element of the settlement gate), which could strengthen the significance of preserving them.

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## Rehabilitation, maintenance and management of arboretums

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**Abstract:** Several historic gardens survived in the Carpathian Basin, a significant portion of which originates from the Hungarian landscape period characterized by an intention to incorporate various rare representatives of woody plants into the garden composition. In the recent past, a number of these gardens received financial support through applications for their revitalization or reconstruction. In most cases, these applications have unfortunately only targeted one part of the garden. Although, historic authenticity appeared as one of the criteria, a long-term mentality has to deal with the entire park and only a holistic approach can result in an efficient rehabilitation and subsequent management.

**Keywords:** dendrological garden, historical garden, landscape revitalization, Hungarian garden art

### 1. Introduction (preliminaries)

There are several extant historic gardens in the Carpathian Basin a considerable portion of which were created in a period of Hungary's landscape gardens when special importance was ascribed to a varying number of diverse rare woody plants in the fabric of the garden. Using Raymund Rapaics's term we collectively designate these garden arboretums or dendrological gardens.

In recent years several of these gardens have won grants in competitions for revitalization and sometimes reconstruction. These competitive grants have, however, contributed to the revival of only a segment of the given gardens in most cases: they supported the solution of certain partial problems e.g. the revitalization of the plant stock or water network, with a view to ecological and natural conservation aspects. Although historical authenticity was also among the criteria of participating in these competitions, the amounts acquired fell short of financing comprehensive long-term planning (covering space layout, road network, built elements, etc.). Each arboretum is a complex system, so effective rehabilitation, maintenance and running can only be achieved on the basis of comprehensive, detailed and thoroughly elaborated plans.

We took part in the renewing work of several arboretums in Hungary and abroad in the past five years financed from EU and government resources: plant rehabilitation of the Kámon Arboretum (HU), rehabilitation of the Zabola Arboretum (Zăbala, RO), the rehabilitation study for the Görgényszentimre Arboretum (Gurghiu, RO), partial rehabilitation of the Buda Arboretum (HU), plant rehabilitation of the Alcsút Arboretum, etc.

It was an important aspect of the planning phase to harmonize the complex approach of the planners with the rigid and often professionally narrow-minded criteria of the callers of the competition.

## **2. Materials and Methods**

Brief description of the case studies

### **2.1. Rehabilitation of the Parade Ground of the Buda Arboretum**

A salient example of the rehabilitation of Hungarian dendrological gardens is the (partial) renewal of the Buda Arboretum. In 2009 the National Development Agency invited tenders for The Preservation and Restoration of Plant Collections and Protected Historic Gardens. Within the project entitled “Development and reconstruction of the special habitats of the Buda Arboretum” the sub-project “Historical reconstruction of the Parade Ground” brought the resuscitation of the garden section within reach. However, it became obvious already during the planning phase prior to the attainment of the garden architectural permits that full garden reconstruction was impossible. The main reason was that the competition specification had ignored the renewal of built elements (except for the rubble and curbs of the paths). The weaknesses of the competition announcement were quickly realized: it was restricted to the rehabilitation of the habitats of botanical and dendrological values. The call overlooked that a rehabilitation or reconstruction required a broader vision and a complex approach, and the reconstruction of vegetation was inseparable from the renewal of the path network, spatial layout and other compositional elements. This particularly applies to historic gardens – and



the Parade Ground has been under protection as a historic site since 2005 – where the overall layout and the design of pathways are organically interrelated with the plant collections, their habitus, and their aesthetic value as solitary plants or clusters. The planners (Budapest Corvinus University, Faculty of Landscape Architecture, Department of Garden and Open Space Design, planners Dr. Péter István Balogh, Luca Csepely-Knorr, Teodóra Szabó, Máté Sárospataki) were expected to design the most complete garden reconstruction possible in view of the circumstances. The permission plans were completed in 2009. It is to reconstruct Rerrich's space design of the Parade Ground in full, based on garden historical researches. (Fig. 1.)

The construction plans of the Parade Ground were completed in late 2010. They covered the reconstruction of a delimited area which allows for the continuation of rehabilitation – with future grants to be acquired – with as little damage caused to the completed garden section as possible. (Fig. 2.) To have an easily workable compact planning surface with solid boundaries (e.g. pavement curb), we took the inner border of the concrete passageway bounding the Parade Ground on the northwest and west sides. Inside the planning area all paths have rubble paving, as verified by historical researches. Further difficulty was caused by compliance with the material allocations and budgetary items specified by the competition call, and by the cumbersome process of negotiations about the removal of old evergreen taxa in poor condition.

Work on the Parade Ground began in summer 2011. We hope that the renewed kernel of our university garden will be a worthy highlight of our institution when it is ready and decades later as well, with a competent maintenance and management policy.

## 2.2. Plant rehabilitation of the Alcsút Arboretum

The Alcsút Arboretum (cad. no. 078) on the outskirts of Alcsútdoboz in Fejér county – the park of a country house – is owned by the Hungarian state. The proprietary rights are vested with the board of the Duna-Ipoly National Park (hereafter DINPI). The reconstruction of the park badly in need of renewal has been urged by the Office for the Conservation of Cultural Legacy with licenses of monument protection. The maintenance and rehabilitation of the historic garden is the interest of the public.

For the reconstruction of the plant collection and the revitalization of the ornamental pond of the Arboretum, DINPI submitted a project with the title “Reconstruction of the aquatic and non-aquatic habitats in the Alcsút Arboretum (country house park) in response to the announcement of a competition (code no. KEOP – 7.3.1.3. “The Preservation and Reconstruction of Plant Collections and

Protected Historic Gardens”). The two-part project won support from the caller in the preparatory phase of the two-round competition.

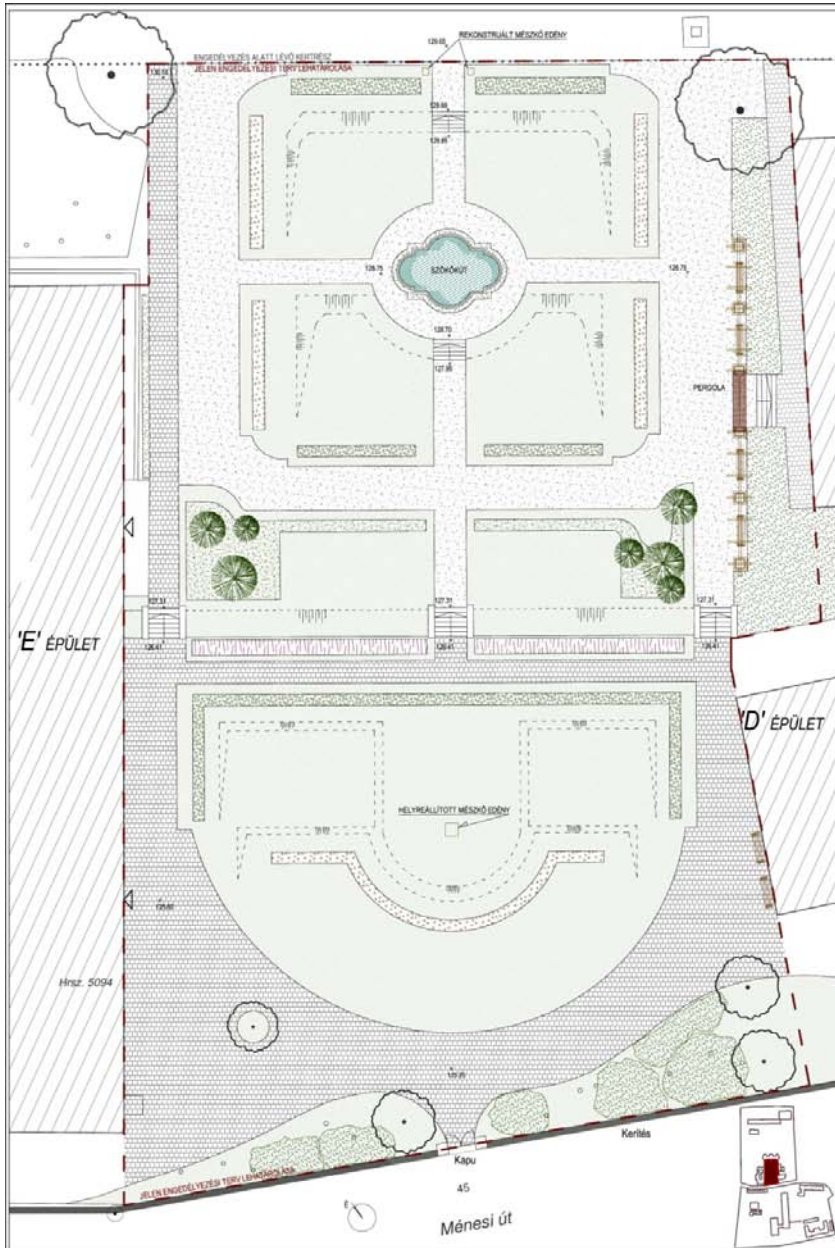


Figure 1: Permission Plan of the Parade Ground

Item 1 of the project is aimed at the reconstruction of the lake and the retaining wall, in order to prevent further siltation and to improve the quality of the water. The protected embankment is to be renewed and the pond basin dredged. Item 2 of the project is targeted at the protection of the aged original vegetation, the replacement of proliferating but undesirable species so as to bring the fabric closer to the original landscape garden design, and the elimination of invasive species without using chemicals. It is imperative to carry out some reconstruction by felling trees and introducing new specimens. DINPI has no surveys or plans concerning these two phases of reconstruction. It commissioned the Lépték Terv Landscape Architectural Company (head designers: Albert Fekete and Károly Örsi) to carry out surveying and planning for the acquisition of permits in the preparatory phase.

During planning care had to be taken to coordinate the biological and aesthetic viewpoints. The Alcsút landscape garden is the cradle of Hungarian ornamental gardening where several exotic species had been introduced first to be propagated for further use in the Hungarian garden culture. The improvement of the vegetation of the park is also expected to boost its touristic appeal. It is important to make investment that ensures the survival of the historically peculiar plant stock. During planning based on the available historical sources and researches, the stock was surveyed and assessed, and the findings used mainly for tree protection: the trees to be felled for the protection of the valuable specimens were selected. The plan of reconstruction as part of the plant stock rehabilitation was completed in 2010. The work is underway at present.

### 2.3. Rehabilitation of the Görgényszentimre Arboretum

The landscape garden at the foot of Várhegy (Castle Hill) behind the country house of Görgényszentimre is one of the best preserved manorial parks and arboretums in Transylvania thanks to the forestry school that was run there after 1893. The landscape garden arranged along the curving promenades goes back earliest to the flower, fruit and vegetable gardens also mentioned in late 17<sup>th</sup> century inventories, which were created in the Rákóczi and Apafi periods behind the 17<sup>th</sup> century country house featuring in written and pictorial sources.

The former arrangement of the arboretum containing several tree and shrub species is known from local pastor Ferenc Székely's monograph of the locality written in 1871. He claims that the heyday of the landscape garden of Baron Leopold with statues of mythological figures was in the 1840s, but from the second half of the 19<sup>th</sup> century the arboretum character came gradually to predominate.



Figure 2: Construction Plan of the central part of the Parade Ground

The Görgényszentimre Arboretum is the property of the Maros County Museum. The institution commissioned specialists to make the rehabilitation plan (Fig. 3.) of the park (the project was jointly elaborated with Arhing SRL of Marosvásárhely in 2010/2011, leading designers: Iolanda Szekeres, architecture, Albert Fekete, landscape architecture. It is of signal importance that proposals for complex rehabilitation are expected instead of partial plans for the renewal of the plant stock or other components.

### **3. Results and discussions**

#### Ideology of the rehabilitation of arboretums, general viewpoints

There are several possible interpretations and assessments of an arboretum. In view of the character of an arboretum, a main criterion is the biological value and diversity. Also an important criterion is the historical value of the park (on a par with its ornamental or stylistic value). Another aspect to be considered is the social and recreational-touristic demand increasing amidst the urbanized conditions of living all over the country, since arboretums also function as public gardens.

The attitude to rehabilitation must integrate all the principles that take into account the aspects of nature conservation and monument protection, as well as the requirements of the users. This attitude is not new: let it suffice to cite the Arnold Arboretum in Boston, whose designers – Charles Sprague Sargent and Frederick Law Olmsted – followed two basic principles in creating the garden in the late 1870s: to disseminate scientific knowledge and to create aesthetic quality [1], besides integrating the arboretum into the network of green surfaces of the settlement, with direct connection to the adjacent green units, thus satisfying the requirements of recreation by creating a “green corridor” as it were.

The garden historical value is of course an important factor of landscape architecture. The specialists of historic gardens have the task to explore, assess and classify the historical values, but it is mistaken to claim that the assessment of the garden historical value is all landscape architecture is supposed to do in an arboretum. We cannot preserve most of our historic and natural treasures in the Europe of the 21<sup>st</sup> century, unless an adequate strategy is worked out for rehabilitation, maintenance and development.





In the light of the above-said, the two basic theses that rehabilitation of arboretums must start with in general are:

- 1) Assessment of the individual features and values of the site: an arboretum as a collection abounding in trees has particular significance. Added to that is historicity [2] that enhances its value. These basic features must not be impaired during rehabilitation.
- 2) Weighing the necessary and feasible developments: importance must be ascribed to the aspects of renewal that can promote the future modes of garden use, thus determining the conditions of the garden's survival.

In this way, the development strategy has to be based on the following considerations:

- complete preservation and development of the dendrological values as well as of the stylistic elements of the arboretum or historic garden,
- promotion of environmental education and frames of knowledge dissemination,
- reinforcement of the public garden or park character, development of recreational-touristic functions,
- satisfying the operator's special requirements, preservation of collections of valuable species.

#### Summary of the principles of treatment

- Historical survey and analysis are the essential precursors to all forms of treatment of historic parks and gardens.
- A management policy is desirable at every site.
- Presentation should be regarded as an aspect of care.
- The historical priorities for historic landscapes are (in order):
  - protection of original fabric,
  - recording original fabric,
  - repairs to conserve the design.
- An emphasis on retaining original fabric usually implies a policy of maintenance, while returning a site to the original design intentions often implies restoration.
- The original fabric of a garden should be protected for as long as feasible.
- Surviving original fabric should be recorded sufficiently fully so that a future restoration can be accurate.
- Because the fabric of gardens is generally more ephemeral than buildings, the "conserve as found" philosophy is limited to those gardens which are intended to be preserved as historical documents.



- Maintenance is essential to avoid rapid deteriorating of the garden's feature.
- Maintenance plans are desirable.
- Repairs are acceptable provided that they are an accurate copy of the original.
- A record should be undertaken before and after any repair.
- The desirability of retaining the original design intentions eventually can imply reconstruction which can conflict with the aim of retaining the original fabric.
- A plan of cyclical replacement is desirable if the design intentions are to be reflected indefinitely.
- The reasons for, and process of, any reconstruction should be fully recorded.

#### 4. Conclusion

It is impossible to act upon rigid rules and criteria when historic gardens have to be "re-designed". The special characteristic of historicity and the individual values must be harmonized with current uses and potential functions. The interdependence and mutual reinforcement of these factors must provide the basis for the long-term conception that ought not to stop with the execution of the rehabilitation plan but ought to contain the terms of continuous conservation and maintenance. This requires an attitude on the side of the planners and primarily of the clients that ascribes first priority to a clear and well-organized environment.

#### Acknowledgements

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- [1] *"a visitor driving through the Arboretum will be able to obtain a general idea of the arborescent vegetation of the north temperate zone ... it is hoped that such an arrangement, while avoiding the stiff and formal lines of the conventional botanic garden, will facilitate the comprehensive study of the collections, both in their scientific and picturesque aspect."* In: Zaitzevsky, C. (1992), Frederick Law Olmsted and the Boston Park System. Cambridge, Massachusetts and London, p. 62.
- [2] The Florence Charter, article 1, of ICOMOS-IFLA International Committee for Historic Gardens says: *"A historic garden is an architectural and horticultural composition of interest to the public from the historical or artistic point of view"*. As such, it is to be considered as a monument.



## The Evolution of English Picturesque Landscape Garden to Urban Public Park

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**Abstract:** From the very late 17<sup>th</sup> century to the early 19<sup>th</sup>, the English garden design style and the landscape garden movement became the most emblematic cultural achievement of England, and have also motivated the development of urban planning and public policy. The natural garden style became the symbol of the liberal philosophy and the enlightened way of thinking. By the last third of the 18<sup>th</sup> century, the continent has gained upon the great exemplar England. It was a German philosopher, who has written for the first time about the necessity of urban public parks as a tool in strengthening the national feeling and social cohesion, and in solving the social and environmental problems of industrially developed cities. The opening of royal gardens and hunting parks in Paris, Berlin or London were far from being enough for the social demands at that time.

**Keywords:** landscape garden movement, urban park, classical picturesque garden, deer park, municipal park, romantic picturesque garden

### 1. Introduction

The English landscape garden style is the child of Enlightenment. The natural space forming in the gardens and the liberation of nature from the restrictions of Baroque architectural forms are the ideas of philosophers, poets, artists and scientists of the early 18<sup>th</sup> century. The wish to create the ideal, Arcadian landscape was the idea of these professionals and their enthusiasm has diffused amongst the

highly educated Whig society. Their liberal way of thinking and their independence from the royal court were reflected in the love of free growing nature.

However, from the late 18th century the culture of ideal landscapes also appeared as a practical tool in social coherence in order to realise the great ideas of the French Revolution. This is the reason why we have to call the English landscape garden a movement and not only a style, which attracted and reformed the gardens, landscapes and even the urban structure of Britain and the Continent,. The idea of social coherence added a new content to the garden design theory and resulted in the birth of the first public gardens and parks in England and on the Continent as well.

## **2. Materials and Methods**

The history of garden art, the professional literature of English landscape garden movement have many keynote, important theoretical publications, which offer the possibility to analyze the development of landscape gardens to urban parks step by step. The birth of English garden, the classical and romantic picturesque garden style is well published not only in the British but in the continental and the American literature as well. Among others, the publications and books of Nicolaus Pevsner, Miles Hadfield, John Dixon Hunt, Charles Quest-Ritson, David Jacques, Tom Turner and Timothy Mowl dealt very detailed with the social background of the so-called landscape garden movement. [1] [5] [6]. Besides the British Island, the continental development proved to be very important where contemporary writers, like the German philosopher, C.L. Hirschfeld [2] called the attention to the social aspects of the industrial and urban development of the 18<sup>th</sup> century and suggested the establishment of public parks in the urban fabric. The German professional literature, first of all the publications of Dieter *Hennebo* in the 1970s underlined the importance of multifunctional public parks. The research of Dorothee Nehring was the very first to introduce the German born Henrik Nebbien's work, among them the City Park of Budapest as one of the first public parks on the continent [4].

## **3. Results and discussions**

From the end of 17th century, the wealthy Whig families laid a stress on spiritual and educational development, besides the growing economical and political independence from the royal court. The regularly organised grand tours to Italy proved to be flourishing as study tours and also as collection tours. Many landscape paintings of the famous landscape painters have been saved and transported to the castles of the English noble society of England. The treasures of

ancient and renaissance architecture of Italy inspired the most talented members of the high society to develop their own estates and to create the ideal landscape. Lord Burlington, an amateur architect and talented artist, William Kent met in Italy and their friendship proved to be flourishing according to the first epoch of landscape garden movement.

The early 18<sup>th</sup> century brought an intensive development of estates with the so-called enclosure, when common lands have been confiscated to have larger deer parks and pastures. As a result of growing pasturelands, the woodlands disappeared. The few, only remained forests became highly estimated. The love of Nature played an important role in the very first landscape garden of Sir William Temple, who heard and read about the most natural landscape forms of Chinese gardens. However, no paintings or decorated books of the Chinese garden culture were on the market, but only the masterpieces of Chinese decorative art, paintings and porcelains. Temple, a fanatic collector of porcelains, learnt the natural space forming from the decorations of these masterpieces.



*Figure 1:* The Moor Park in the late 18<sup>th</sup> century with Baroque parterres and fine serpentine water forms in the side-garden. The landscape is dominated by deer parks

The other example of the irregular or the so-called serpentine form garden design is also linked to a nice forest. Charles Howard, 3rd Earl of Carlisle, a wealthy British statesman and member of the peerage of England, in 1699 commissioned a new Baroque mansion, Castle Howard, in Yorkshire, England to the design of Sir John Vanbrugh. He rejected the regular way of opening up the wood with Baroque vues, and established instead a natural form space system and garden ways along the Wray Wood of Castle Howard. The 70 hectares large wood kept its wild and natural character, because only small architectural elements have been fitted in the clearings, while the emblematic Temple of four winds planned by

Vanbrugh was constructed on the corner of the forest so as not to compete with Nature, but to amend it. Stephen Switzer, the philosopher of the early 18<sup>th</sup> century called the design of Wray Wood the most natural and polite space forming.

The irregular and serpentine form gardens designed by amateurs, by poets, like Alexander Pope or scientists, like Addison, or statesmen and architects, like Lord Carlisle and Vanbrugh, were only the first steps in the landscape garden movement. The gardens of the new philosophy gave freedom to the vegetation and the strict formal structures. However, the almost half a century long first period of English garden movement did not bring too many new garden creations. Only some wealthy and highly educated Whig landlords started reconstruction projects on their home estates.

The most talented designer of the first, the so-called classical picturesque garden period, William Kent, was originally a coach painter, then a painter and scene-painter. Kent learned the classical landscape painting in Italy, then arrived home to England to utilise and improve his new knowledge in a three-dimensional design technique. His most well known masterpieces are Claremont, Euston, Rousham and Stowe, where he worked as a garden designer and an architect as well. His garden designs are three-dimensional paintings, theatrical scenes in Nature, created with Nature therefore I would call Kent's gardens the "scenescape" gardens. All separated and interlinked garden scenes tell about mythological or classical stories. His gardens are for contemplation and thinking, for enjoying life and harmony with Nature.

Kent's designs are deeply integrated in the landscape and so is his architecture. His building and all his built garden elements are composed on classical architectural studies in a fine harmony with the traditional, strong English architectural forms. Kent's buildings are deeply rooted in the English landscape, but also refer to the history of architecture with many direct and hidden references.



*Figure 2: The garden scene of the Venus vale with water ponds, cascades and wooden space walls in the Rousham garden designed by William Kent (early 18<sup>th</sup> century).*

The independent life from the royal court demanded not only strong economical background but also the wish to fulfil the cultural, social organising roles traditionally represented by the royal court. Besides the classical quotations telling about the stories and heroes of mythology and about the everlasting human values, the national commitment is also reflected in the gardens. The temple of British worthies in the Stowe garden is a gallery of spiritual and royal giants who played an important role in the political and cultural development of England. Among the busts there are only a very few royal personalities, like Queen Elisabeth or King William III, but there are poets like Milton, Pope and Shakespeare, there are scientists, like Bacon, Newton. We can admire the statue of Captain Drake and the Palladian architecture of Inigo Jones. The gallery of Stowe is more than a portraits gallery; it is the first sign of national or patriotic philosophy.



*Figure 3:* The Temple of British Worthies (W. Kent, early 18<sup>th</sup> century) is the gallery of spiritual and royal giants of national importance. (Photo made by Imre Jámbor)

The classical picturesque gardens are not easy to understand. They have a well-framed cultural program and message, therefore they can be fully taken in only by learned people who are educated in ancient mythology and classical arts – otherwise small touristic books helped visitors to understand and read the words of the architectural citations fitted or hidden in the garden in the open air stage-scenes. The guidebooks of Stowe and the Leasows, the garden of the poet Shenstone, offered the physical and spiritual way to walk around the garden and understand its ideal landscape. The classical picturesque gardens belonged to the learned, accomplished, most polite high-class members.

By the mid-18<sup>th</sup> century, the few classical picturesque gardens of the Whig aristocrats' became well known and also desired assets. These gardens were expensive to build and to maintain. The economical aspects did not play an important role in their development. They were luxurious, magnificent creations of the new garden art talking about spirit, human values, culture and about wealth, in

a very sophisticated way. The turn arrived with the figure of Lancelot Brown who started as the talented student of Kent. However, he was much more a gardener than a three-dimensional painter was. He became the most important master of garden design of his time. His special design method reflected the practical way of thinking, the knowledge of economical and ecological aspects of garden design. He was famous for his design method, which started with a walk around the estate to study the landscape, the ecological systems and the farm economical possibilities. He insisted on Kent's design school as his gardens kept the picturesque idea. But he added the economical sustainability as a special aspect of garden design, which resulted in a new phenomenon in the English garden movement, namely the landscape park. The estates developed by Brown, became financially manageable, they produced significant profit out of farming and silviculture, out of huge deer parks and orchards. Brown's design and management system was easy to learn and follow. The main tools were the meandering beltways along the surrounding forests, which produced timber and fruit and small game. The serpentine form water together with the clump form and discrete plantations used to be the consistent and compulsory elements of the Brownian landscape park. Besides Stowe, probably Petworth and Bowood could be mentioned as the largest scaled creations out of the almost 200 Brownian parks.



*Figure 4:* The Petworth garden, one of Brown's first masterpieces, is a huge and rich deer park with serpentine form water bodies, clumps and undulating landscape [7]

The ideal landscape offered by Brown did not demand the knowledge of classical culture to understand it. The refined artistic design theory of Kent's gardens was over. The classical architectural elements remained simple stress points and eyecatcher for the visitors walking around without having a special meaning or intellectual program. Brown has moved a big step into the direction of popularity and self-evidence. The fact that Brown was appointed in 1764 a royal gardener by George III, made the Brownian gardens even more popular and demanded. The profitable deer-park system of the landscape parks opened the market for the less wealthy society and the royalist Tory estate owners had their old



gardens renewed by Brown or his followers or other talented gardeners. In this way, a large quantity of landscape gardens were developed in the second half of the 18th century, which has reformed the completely English rural landscape.

Owing to the urban and industrial development, the London urban environment and the concentrated population needed more open space in the urban fabric. From the mid 17th century, some royal gardens were opened for public use, at least for the high and mid level society, but they did not prove to be enough for the urban population. Besides the half-open royal parks, many privately developed pleasure gardens could be found mainly in London to offer some open air recreation possibility for the residents.



*Figure 5: The Marylebone garden, one of the most well known pleasure gardens of London (18<sup>th</sup>-19<sup>th</sup> c.)*

The social strain cried for remedy. The turn happened not in England, but on the continent, almost parallel with the Great French Revolution. The ideology of freedom, equality and fraternity has inspired the garden theory as it can be seen in Hirschfeld's works. Christian Cay Lorenz Hirschfeld was a Danish philosopher who was confident in the huge embellishing power of Nature. He considered the landscape parks as possible social melting pots for every social class to meet and get to know each other. [2] The ideology of Hirschfeld impressed many gardeners in the German regions, among others Ludwig Sckell, the talented main gardener of the Schwetzingen gardens. Sckell studied garden design directly in England, but he was a fanatic of Hirschfeld's theory. In 1789 Prince Karl, the Prussian monarch asked Sckell to develop the military recreation area along the Isar river into a Volksgarten. The park was formed in a very Brownian style but it has been developed and supplemented with practical functions so as to supply a wide variety of open-air amusement for all public classes. The Englischer Park was directly planned for the purposes of a city park, but the order came from the monarch. After

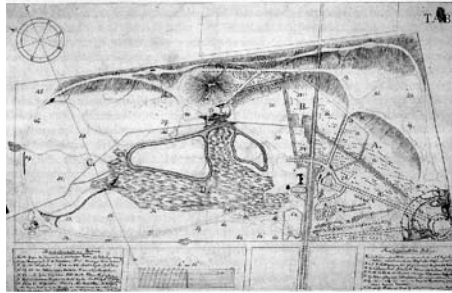
the French Revolution, the idea to give more space and freedom to the people was more than an obvious step from an open-minded monarch. The park was very important in its urban context as well, because it served as a green link to the traditional, historical town centre and the principal gardens.



*Figure 6: The Englischer Garten in München is an urban park opened by the monarch for public recreational use (Source: [3])*

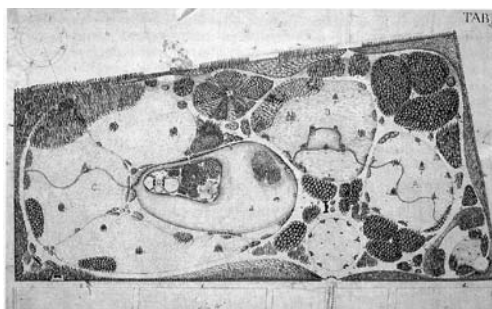
By the turn of the 18<sup>th</sup>-19<sup>th</sup> century there were opened royal gardens and parks given as urban recreational open-air areas to the public society of the large industrialised and urbanised cities. However, the very first real public park, the so-called municipal park was developed in Hungary in the capital, Pest-Buda, as it was called at that time.

The peri-urban landscapes lying at the eastern border of Pest used to be a royal hunting field in the medieval times, and later remained abandoned. By the mid 18th century, the reclamation of the waste site became necessary and the necessary plantation was started by the municipality of Pest with acacias and mulberry trees. Attempts were made later to develop the area into a privately sponsored pleasure garden, but this project proved to be unsuccessful. By the end of the 18th century, the city of Pest regained the ownership, and the newly reformed Embellishment Commission under the leadership of Joseph Palatine accepted the wish of the residents and decided to develop an urban park, the so-called Volksgarten, or City Park (Városliget in Hungarian).



*Figure 7:* The site of the City Park in Pest before the construction of the very first municipal park (Drawing by H. Nebbien, 1813 [4])

In 1813, the Commission organized a competition, which was won by Heinrich Nebbien, a German landscape designer, and manager, who educated himself in landscape gardens of England. Nebbien developed his plan between 1813 and 1816. His plan was born in the spirit of Brown's landscape parks but he also integrated the social ideas of Hirschfeld. The large grass meadows with the circular beltway and the serpentine form waters, together with the clump formed plantation, reflect a strong emphasis of the English landscape parks. Owing to the low budget of the council, he offered his honorary for the construction together with many citizens who were enthusiastic about the urban public park. Unfortunately, the collected money was not enough, therefore the construction was not fully finished. In spite of this fact, the Városliget, with its grandiose classical and romantic picturesque character was the very first municipal park, and it is going to have its 200 years birthday in 2013.



*Figure 8:* The City Park designed by H. Nebbien in a classical-romantic landscape park form [4]

Nebbien added the national aspect and the functionality to the concept of the renewal of the park and its adaptation to the public use. The main entrance opened at the end of the avenue leading out of the city to the periphery. Owing to the typical dense and levelled plantation, the park gate became a strong architectural and landscape architectural element. The sustainability of the urban park was also an idea, which had its origin in the Brownian design theory. But this economical aspect was combined with the ideas of a social supply in Nebbien's plan. The multifunctional park offered various recreational possibilities at that time. Besides opportunities for riding and walking or simply enjoying nature, there were dance halls and sport arenas for athletes.



*Figure 9: Nebbien's plan for the main entrance and the Rondo with the concave form looking to the park from the avenue [4]*

With Hirschfeld's theory in his mind Nebbien intended to develop the public park as an educational and cultural scene, therefore he designed statues, heroic monuments of the national history – some similarity with the British worthies – in a fine classical architectural form. The garden ways and park roads were designed in a separated system as Hirschfeld offered it: alleys and hedges with a nice concave space form divided the riding path and the walking path.



*Figure 10: Nebbien's plan for the separated way system with concave green space walls [4]*

In spite of many efforts for collecting money for the development of the park, the budget proved to be very low and the construction remained unfinished. The most important landscape elements were finished, like the elegant Rondo and the

islands together with the beltways. The plantation developed a lot as well. Not only Nebbien was enthusiastic about the city park, but also the inhabitants of Pest loved the park very much. Soon it became the most well known amusement and recreation place that was mentioned in many poems and songs.



*Figure 11: The City park with its romantic landscape (late 19<sup>th</sup> century)*

We have started our grandiose tour following the main steps of the development of the English garden movement from the Continent, from Italy to England, than back to the Continent. Turning back to the cradle of the landscape gardens and parks, we have to admit that owing to the more open space recreation possibilities given for the London citizens in the form of pleasure gardens and opened royal parks, the time for the development of a typical urban park came much later. Moreover, not even in London, but in another industrially developed city, Liverpool, where by the middle of the 19<sup>th</sup> century the first English public park was born on the plans of Paxton. Paxton's work proved to be much more important than to remain an urban park. It has won an international reputation by F.L. Olmstead, the creator of the word 'landscape architecture', who imported the landscape park idea to America.

How the American park design developed and affected the European, which is another story.

#### **4. Conclusion**

The history of urban public parks started with the liberation of Nature and the birth of English garden art. The English term 'park' originally meant a deer park.

The 18<sup>th</sup> century English landscape garden movement inspired by the new liberal

philosophy and the love of classical arts transformed the deer parks of the aristocratic society into picturesque gardens or later into landscape parks. In the meantime, gardens and parks became a necessity for the recreation of the urban population in the form of urban parks in the early 19th century. From the very first classical picturesque gardens, the design theory developed with involving the economical aspect into the concept and making the English garden an economically manageable estate. The romantic picturesque gardens arrived at the strengthening middle society of the industrialised world, and last the urban parks became the social melting pots where people could gather to enjoy nature, fresh air and sunshine.

First some royal or principal deer parks have been turned into urban parks on the continent, later new public parks have been created integrating new public functions and simplified architectural forms into the romantic landscape garden concept, so as to supply the increasingly populous urban society with sufficient recreational possibilities and gardens that are easy to understand. The very first strictly public park, the municipal park of Pest-Buda, the City Park is going to be 200 years old in this decade. The overloaded and low-maintained park waits for the renewal, which should recall some elements of the once worldwide famous Nebbien's concept both in its philosophy and in form.

## **Acknowledgements**

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## Green spaces born in the city edge of all times 3<sup>rd</sup> district of Budapest (Óbuda–Békásmegyer)

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**Abstract:** The dynamically developing settlements sprawl continuously. After the breakdown of city walls of roman era and of the middle ages the sprawl was continuous and unimpeded. The arable land, meadows, forests became built up land. The only exceptions are cemeteries, mines, and lowlands. The valuable tree coverage of closed cemeteries can become city parks afterwards. Green space of various use appears in abandoned clay mines, which are not allowed to be built up since the mines are refilled. The use of the more hundred hectares large abandoned mines is diverse today. The most intensive use appeared in the former Újlaki I. Brick Factory, where the nine-hole Academy Golf Course was established.

**Keywords:** city edge, green space, Óbuda, garden, cemetery, clay mine, stone mine, beach, spa, castle garden

### 1. Introduction

Óbuda–Békásmegyer is the 3<sup>rd</sup> district of Budapest. It is situated on the northern part of the capital city on the right side of the Danube. The area is 39,69 km<sup>2</sup> since 1950. The length of the Danube is 8 km in the district. The most important green area is the Hajógyári Island (108 ha) and the Kiscelli Park Forest (15 ha).



Table 1. Population change in Óbuda

Year	Population
1732	1 562
1945	50 000
1960	60 000
2010	130 000

Highlights from the history of the 3<sup>rd</sup> district:

- Aquincum, the capital of the province of Pannonia inferior was founded in Óbuda 2000 years ago,
- The city was a royal centre since 1148
- Óbuda was Queens's city in the 14th-16th century.
- The city was completely destroyed in the Turkish time.
- After the Turkish time Óbuda became the possession of Zichy family
- The city was the "pilot site" of silk industry in the age of II. József.
- The wine culture was destroyed by phylloxera in the 1870-ies and 80-ies,
- In 1871 Buda became a council ordered city.
- Building of factories in the 19th century (Goldberger, shipyard, brick factory).
- Dynamic development since the middle of the 20th century (*Table 1.*).

### Aquincum gardens

The excavation area in Aquincum Museum is the complex of the ruinfield and old tree groups. The center of Aquincum Civilian City serves as museum (*Figure 1.*).



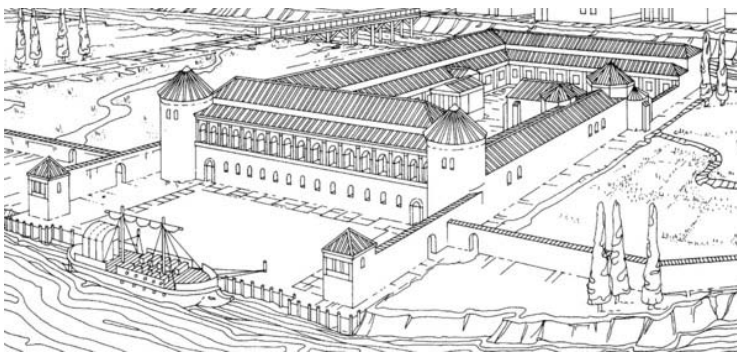
Figure 1: Amphitheatre of the castrum and the Military City

The amphitheatre was built in the middle of the 2nd century. The fifteen meter wide auditorium was made for 6-7000 persons. The arena is 53,5 by 45,5 m large. The amphitheatre of the Civilian City is next to the busy Szentendrei road today (*Figure 2/a.*). The soil dug out during the excavations was taken around the amphitheatre and Celtis allee was designed on it (*Figure 2/b.*).

The governor's palace in Aquincum Military City was built on the Danube's island (*Figure 3.*) Shipyard hall was built on the territory of the former governor's palace in the 1950-ies. The mosaics were removed. The installation of the governor's palace was planned in the beginning of 1990-ies, but the base walls could not be defended against the fluctuations of the Danube's water level. A golf course is working on one part of the archeological site (*Figure 4.*).



*Figure 2/a: Amphitheatre of the Civilian City, 2/b: Celtis allee (Source: the author's photograph)*



*Figure 3: The reconstructed image of the governor's palace (Hajnóczi, 1987)*



Figure 4: The former location of Governor's Palace (Source: Google Earth, 2009)

### Gardens of the Middle Ages

The Klarissa Cloister was built in the 14th century (Figure 5.). The founder was Elisabeth, the wife of the king Károly Róbert. On the western side of the cloister's church was a cloistress gallery of 20 by 20 meters. The ruins of the former Klarissa Cloister is situated in the school's yard today (Figure 6.).

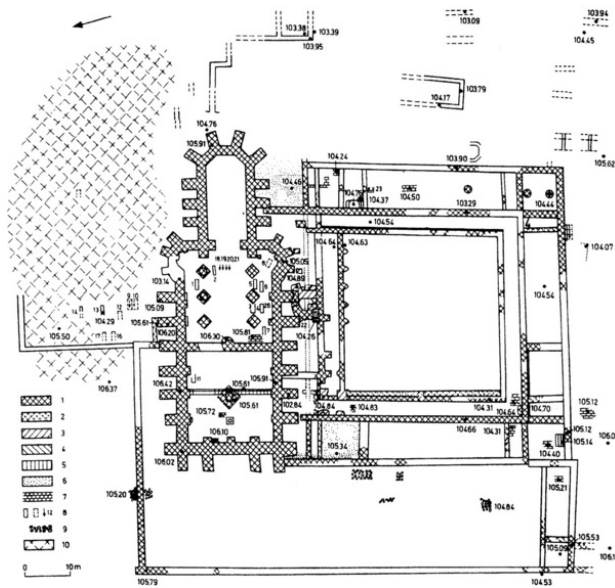


Figure 5: The Klarissa Cloister and the base of the church (Bertalan, 1995)



Figure 6: The schoolyard (Source: The author's photograph)

### Garden of the Kiscelli Castle

The first chapel was built by Péter Zichy in 1723 on the hillside, to place the copy of the grace-statue from Mariacell. The Trinitarian Cloister and Church started to be built thanks to Miklós Zichy on the Kiscelli-hill in 1744 (Figure 7.). The former garden is a park forest of extensive maintenance and use of recreational purposes today (Figure 8.).

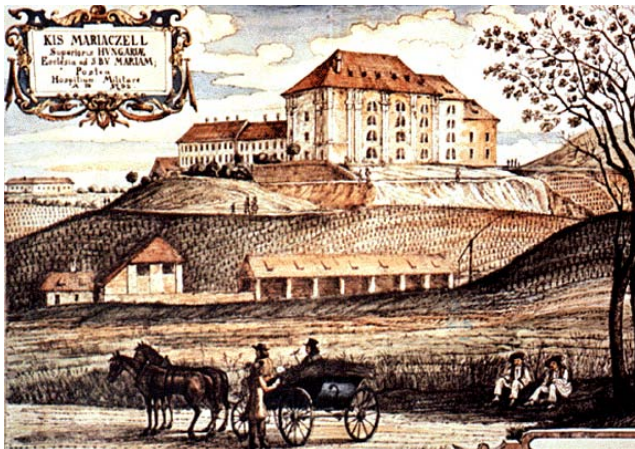


Figure 7: Vineyards covered the surroundings of the Kiscelli Castle till the end of the 19th century





Figure 8: Kiscelli Park Forest (Nr.1.) (Source: GoogleEarth 2006)

## Cemeteries

In the Roman era the sarcophaguses were placed along the road leading out of the city, and later on the burial place was next to the hillside. The gardens of the churches and cloisters or their surroundings were used as cemeteries in the middle ages. In the 18th century the cemeteries were situated next to city centre. The cemeteries of the 19th century were opened at the side of Tábor Hill, along the Aranyhegyi creek and on the side of the József Hill. In all case the cemeteries were located on the city edge. Those which were large and remained are significant elements of the green network. The Jewish cemetery was build next to the Danube. In this site marine barracks were constructed (Figure 9.)



Figure 9: Jewish cemetery in the Laktanya street. (1908. and 2000.)  
Sources: Budapest és környékének áttekintő topográfiai várostérképe  
(Kogutowitz Manó), orthophotograph FÖMI2000

The cemetery at the Tábor Hill was opened in 1890. The double horse chestnut line along the former alley is healthy even today. Recreational park, planetarium and housing do exist at the former cemetery site, which was closed in 1950. (Figure 10.).



Figure 10: Friendship Family and Recreational Park on the abandoned cemetery of Tábor Hill.

Source: <http://www.nonprofitobuda.hu/telephelyek/baratsag-csaladi-es-szabadido-park/>

### Clay mine-pits

There was a huge change after the clay mine was opened:

- The water flow direction changed
- The sand walls slipped and skidded
- The waste material dunes were not stable
- The noise of the mine was significant,
- New areas were used for mining purpose.

Clay mines and brick factories were on the seven percent of the 3<sup>rd</sup> District (Figure 11.). The former factories are built up and the mine areas are filled and covered by green vegetation today.

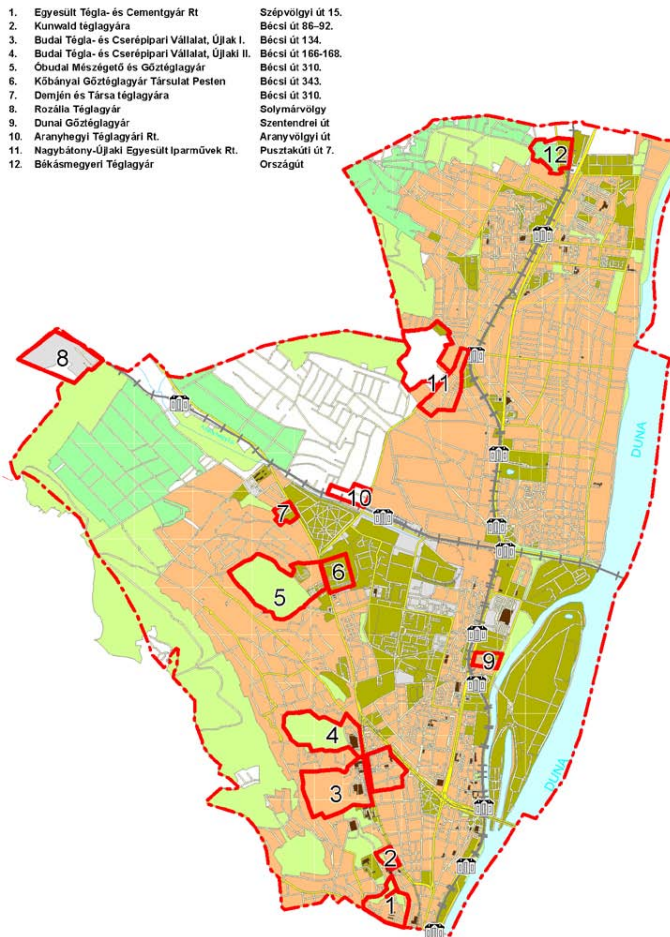


Figure 11: Clay mines and brick factories in the 3<sup>rd</sup> district  
Data source: FÖMI, HM Térképészeti Kft, GeoX Kft, 2008

Housing estates, secondary school, shopping centre and golf course was built at the former site of the Újlaki Brick Factory (Figure 12.).





Figure 12: Újlaki Brick Factory (Source: Utca Rendje, 1943; Very high resolution satellite image, GoogleEarth, 2006)

### Stone mines

The citizens usually mined stone at the closest location to the construction site. The Romans did already use the Ezüst Hill stone mine. Even today the remains of stone mining activity are visible at Mátyás Hill and Péter Hill too. The limestone mine was closed in the beginning of the 1940-ies. Views opening from the mine yards, which are at five different levels, are special and diverse. The largest green space is a former mining site in the densely built up family house area (Figure 13.).

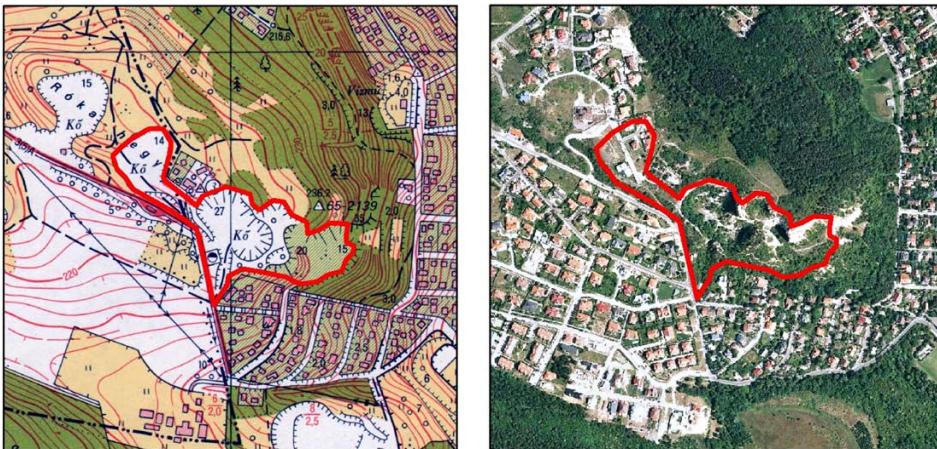


Figure 13: The former mining site (source: topographic map, FÖMI 1998, very high resolution satellite image, Google Earth 2009)

## Gótés Lake

The swampy meadow came to its end in 1977. The former wells and sources were filled up and covered by concrete. The Gótés Lake (Newt Lake) is a result of a mismanaged landfill. The water breaking up could not be blocked. After the dredging, the lake became the most popular green space of the housing area (Figure 14. and 15).

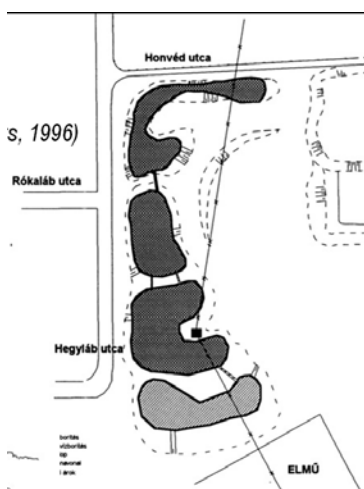


Figure 14: The rehabilitation of Gótés Lake (Zacsó Balázs, 1996)



Figure 15: The shape of the lake and the plantation has natural visual effects.

## Óbudai Island

The history of Óbudai Island is definitely linked to the life of the city. The heydays of the island were in the 2<sup>nd</sup> century, when the governor's palace was located there. It became well known again when the first Hungarian shipyard was built with István Széchenyi's support. "9<sup>th</sup> of May" park was opened in former arable lands in

1975. The first phase of 34 hectares was followed by further 40 hectares of park. The park serves primarily weekend recreational needs (Figure 16).



Figure 16: II. Military Survey (1861) and very high resolution satellite images (2009)  
Source: Google Earth

## Beaches

Budapest is one of the richest capitals of healing water on the world. Even the Romans did utilise the sources. The Csillag Hill Beach, the Római Beach and the Pünkösöd Beach were all built on these sources. The Ringer family started to build the spa in 1895 on these Roman sources. In 1949 it became part of the capital city, and was reconstructed and renovated many times (Figure 17). Today's Római Beach was developed on an arable land. (Figure 18).

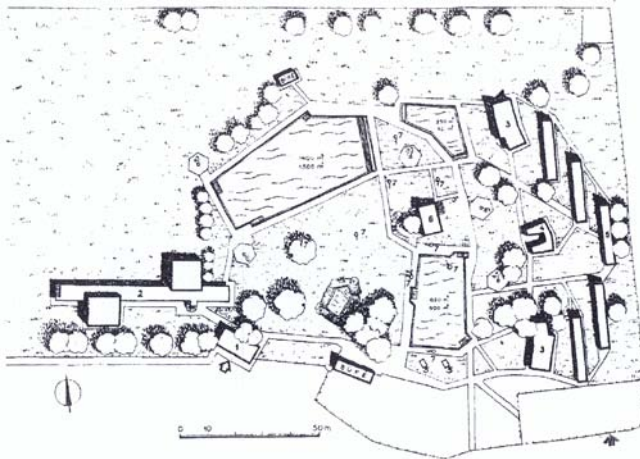


Figure 17: The garden of Római Beach (Budapest fürdői, 1971)



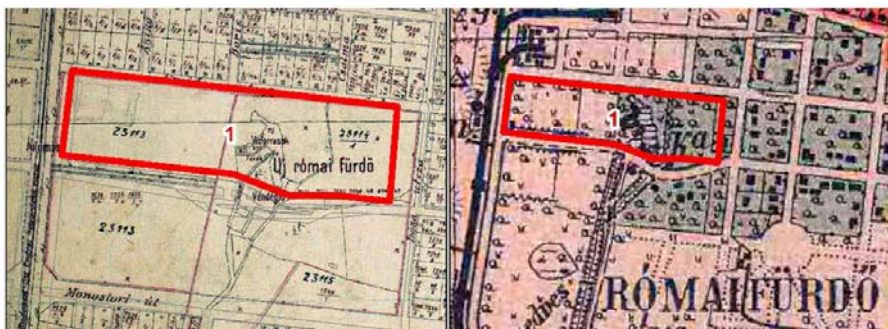


Figure 18: The built up land was continuously increasing from the beginning of the 20<sup>th</sup> century till 1926. (Source: Budapest közigazgatási térképsorozata 1908-1948)

## 2. Conclusions

The city edge is such a battlefield that is represented by constructions and increase of built up area. Built up land appears mostly on arable land and in forests. The battle is provoked definitely by the settlement with activities sprawling outside of the city. The traditional landscape providing agricultural support is not competitive. The city edge is such a revolving stage, where the use of the land is continuously changing. Sometimes even rearrangement of a former function is possible. The rearrangement is influenced by recreational use, environmental aspects, and the displacement or disappearance of factories. The land use change can be beneficial, in case it increases the biologically active area and decreases the effects of ecologically improper activities.

The city edge is unfortunately such a “no one’s land” that attracts all kinds of illegal activities. It is possible to put down your waste, to cause environmental damage, to live illegally, to grow animals, and make crime. The dynamically developing settlements sprawl continuously. Cemeteries, gardens, mines, beaches at the city edge, do become part of the green space system. The support of built up land or green space development in closed cemeteries, mines etc. reflects the aspects of the actual city government. In all case today’s green spaces were born at the former city edge.

## Acknowledgements

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## Symbols and Allusions in Early Landscape Gardens

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**Abstract:** Historic gardens hide the marks of the times that had created them. Not only are they green surfaces for recreation, but their proper restoration and disclosing of their inner substance may lead us to a more profound knowledge and understanding of past periods. This is especially true for Early Landscape Gardens, attempting to manifest ideas of the Enlightenment. There was a prominent secret society the Freemasonry played important role in this period. Symbolism of the society influenced the garden art, and the society's signs and symbols first appeared as decoration on the Lodges' documents and equipment, then also emerging in Landscape Gardens.

**Keywords:** freemasonry, landscape garden, garden art, enlightenment

### 1. Introduction

The Age of the Enlightenment and within that the birth of Early Landscape Gardens is one of the most productive and exciting times in garden history. None of the other periods can be typified so much by their garden art. Landscape Gardens created anew or transformed from Baroque gardens spread along with a new way of thinking that highlights the individual and the idea of progress through one's personal merit rather than privileges. Against the neatly cut alleys of the Baroque garden, here each lively component develops according to its own nature and contributes to the whole.

In this period, there was a secret society playing an important role. Its objectives were strongly related to those of the Enlightenment. This society is Freemasonry, whose history goes back to Medieval guilds, but from the 18th century it can be described more as an intellectual community, whose members no longer work on actual constructions, but rather build themselves and thereby construct society. Among its members, we find several significant figures of the period: progressive thinkers, noblemen, persons of no rank and artists alike. It's enough to mention Goethe, Mozart, Haydn, etc.

Lodge members included a large number of creators and holders of Landscape Gardens. For instance, William Kent, the grand master of picturesque English Parks, was a Lodge member, just like the owners of Stowe, Rousham and Holkham Hall. Alexander Pope, the lord of Twickenham, Lord Burlington, the creator of Chiswick, so much in love with architecture. On the continent we can mention Vicomte de Girardin, the creator of Landscape Garden at Ermenonville, Comte d'Albon, the owner of Landscape Garden in Franconville-la-Garenne, the Leopold III Frederick Franz, the enlightened Duke, who turned Anhalt-Dessau into a model state, and designed the famous Garden of Wörlitz.

## 2. Materials and Methods

In Western Europe several foundation works mention the Masonic influence on Garden Art. First of all I have to mention the most chief foundation study, "The Art and Architecture of Freemasonry" by James Stevens Curl. Curl's work investigate thoroughly how the society's signs and symbols reaching back to Ancient times' legends of origin and first appearing as decoration on the Lodges' documents and equipment, then also emerging in Landscape Gardens.

European Garden History works mention the Masonic connection, like "*Landschaftgarten*" by Adrian von Buttlar. In Germany there is a garden, Schwetzingen nominated for the list of World Heritage sites in 1999 precisely for its Freemasonic allusions. In Austria Géza Hajós dealt with this topic in connection with the gardens around Vienna. In Hungary Géza Galavics mentioned Masonic connection in his study about Hungarian Landscape Gardens.

In Hungary, just like in Europe, a number of creators or owners of Landscape Gardens were Lodge members. Since very little built structures survived in our Parks, the Freemasonic connections are often hard to prove. But carefully historical research can help us to understand the messages of the gardens of this period. To avoid sensational hypotheses, always necessary to study the



biography of the holder and creator of the garden, and only personal Masonic connection, and several parallel coincident can prove the Masonic influence.

### **3. Results and discussions**

Perhaps it is somewhat strange that during the centuries of rationality, these progressive and cultured persons would find their purpose in a society surrounded by legends and mysticism. There was still a need for the transcendental, which was satisfied in the Lodges by rituals recalling the world of the Medieval guilds and the cultures of disappearing civilizations, which were being discovered at the time. The society was established with a fine purpose, as its members worked on building up society by building up themselves. They believed in progress through knowledge and self-building. In a highly absolutist world, the society gave no value to noble privileges. Here, one could only rise higher through his own merits. This self-building process is signified by their most basic symbol, the stone that always appears in a double form. The unworked stone always appears with the cube, the finished stone. The Landscape Garden has become a similar symbol, as what else is an English park, than constructed nature.

The society's symbolism spread into the gardens. Through the allusions, legible only for the initiated, it sent messages to the strollers. In most cases, the constructions, sculptures and the garden's iconographic programme carried special meaning, often made obvious through decorations or inscriptions. These symbolic constructions later became parts of the English Garden's toolkit, and today we consider them typical Landscape Garden elements.

Pantheon-like constructions in Landscape Gardens carried Freemasonic meaning, referring to Solomon's temple, the perfect building. The divine Solomon's temple realized the laws and proportions of nature in architecture, thus symbolizing moral perfection. In 18th century England, it was Shafesbury who introduced the idea of Solomon's temple as a moral construction. Its references were the Renaissance engravings of Jean de Tournes from 1554 and Martin Von Heemkert from 1557, who presented Solomon's temple as a Pantheon-like building. This kind of representation spread along with the idea [1]. Pantheon-like garden temples appeared in the early Landscape Garden first in England, in Chiswick, Stourhead, and later on the continent [2]. In the Biblical description, the two columns, Jachin and Boaz, standing in front of the temple's entrance refer to Solomon's temple [3]. The columns that show up in the Lodges and on Freemason publications, appearing in the gardens generally mark the starting point of theme paths, or were employed around mausoleums.



Figure 1-2: Pantheon-like garden temple in Stourhead and Wörlitz

The application of Egyptian constructions or decorations may also refer to Freemasonry. This was the time of heightened interest in disappearing civilizations and in archaeology. The carved stone constructions of Egyptian sites and their clean geometric forms were easily related to Freemasonry, not to mention the mystery of hieroglyphs, unsolved for centuries. Travel accounts were published one after the other. Richard Pococke published his study in 1743, entitled “*Observation on Egypt*”. Then in 1757 appeared “*Travels in Egypt and Nubia*” the work of F. L. Norden. In 1803 a Freemason, Quatremère de Quincy analysed Egyptian architecture related to Karnak and Thebes in his study called “*De L’Architecture Égyptienne...*” Interest in the Egyptian sun cult was increased by the idea of sunlight as spiritual light within Enlightenment. The Egyptian architecture and body of beliefs integrate into the symbolism of the Lodges [4].

The most typical forms of Egyptian references were the application of pyramids, sphinxes and obelisks, first only in the Lodges and their documents, then in Landscape Gardens. Obelisks represent the connection between earth and the universe, and symbolize continuity, strength and immortality. Obelisks are often employed at cross-roads, especially on the continent, but we can also find them in the already mentioned estates of Pope and Burlington. William Kent erected an obelisk in Holkham Hall, while pyramids or pyramid-like constructions were built in the parks of Twickenham, Chiswick, Stowe, Rousham, Studley Royal, Castle Hill and Castle Howard. In Castle Howard the gate structure is also crowned by a pyramid, designed by Vanbrugh, just like the obelisk standing along the road that leads to the park.



*Figure 3: Obelisk and sphinx in Blenheim*



*Figure 4: The British worthies in Stowe*

In Stowe, a pyramid stands in the middle of the temple erected for the English worthies. Inside its oval chamber, he placed the bust of Mercury. Mercury is identical with the Greek mythology's Hermes, the great messenger god, another important figure in the Lodges' legends of origin [5]. Mercury was respected as the protector of travellers, and as a messenger between the gods and men. It is not surprising therefore to find the presence of a Hermes-cult in the Lodges that considered themselves the keepers of divine knowledge. Hermes, just like Mercury, is present in the Landscape Gardens of Rousham and Chiswick.



*Figure 5: Mercury in Rousham*

Another interesting example of Freemasonic symbolism manifested in a garden is in Schwetzingen, Elector Carl Theodor prince's summer residence, which was submitted for the tentative list of World Heritage sites in 1999 precisely for its Freemasonic allusions. This garden bears the marks of two distinct eras. Its central, regular Baroque part is surrounded by Landscape Garden areas. The garden's style evolved according to its lord's changing mentalities. The park's layout is very expressive. In the front court, instead of the usual square parterres, we find a central circular one. The circle symbolizes a perfect community among Freemasons. Around the circle, the Landscape Garden's channels draw the compasses that defines this perfect form. The circular parterre can already be discovered on the first garden plans designed by Ludwig Petri. From 1762 Nicolas de Pigage (1723-96) takes over the design work and creates the garden's entire architectural and sculptural scene. In the last third of the prince-electors life, the park's landscape part is designed by Ludwig Skell (1750-1823) [6].



*Figure 6: Mercury temple and ...*



*Figure 7: ... sculpture of Geometria in Schwetzingen*

In the Baroque garden, the main axes is defined by the sculptures of two deer. Allegedly, these animals strayed into the ornamental garden from the game reserve



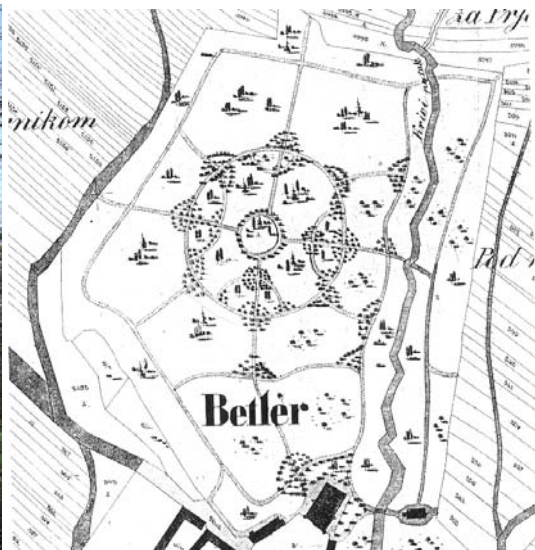
and were killed at this point. The garden's iconographic programme presents the opposition between wild nature and the civilized world.

The civilized world being placed south of the main axes with the Minerva temple and a hidden niche within it. North of the main axes lies the boundless nature with Pans and bath-houses for affectionate rendezvous. The garden also celebrated the arts. The central basin is decorated with the fountain of Arion to honour poetry, while in the north garden the temple of Apollo venerates theatre and drama. Here light appears again associated with spiritual light. Pigage created the temple of Mercury standing next to the pond, then as a sign of openness towards eastern cultures, he designed a Mosque. To show the increased interest in the Nature with the temple of botany, and Roman water castle was built to honor antique world. Although Schwetzingen was submitted only for the tentative list of World Heritage List, its collective value is still compelling [7].

In Hungary, just like in Europe, a number of creators or owners of Landscape Parks were Lodge members. To name a few, Lajos Batthyány, who founded the castle park of Körmend was a Freemason, just like Gedeon Ráday the proprietor of Pécel, György Festetics the lord of Keszthely and László Orczy the founder of Orczy garden. Since very little dokument survived about Landscape Gardens, the Freemasonic connections are often hard to prove.



*Figure 8: Pyramid in Körmend*



*Figure 9: The layout of Landscape Garden in Betlér*

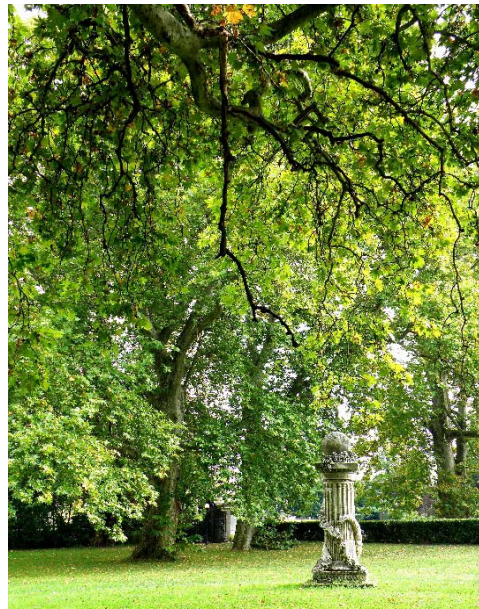
Nevertheless, Freemasonic allusions are sure to be found in the Andrassy castle park of Betlér. The layout carries the perfect form of the circle, and the formal

elements of the pavilion standing in the park can undoubtedly be tied to the society. The octagonal pavilion's openings are six-pointed star-shaped, triangular, and octagonal. On the inside, the illusionist painting depicts a profane temple [8].

We find a similar chapel in Hédervár, near the castle of another Freemason, Mihály Viczay. The Freemasonic connections of this structure, however are not yet proved. In front of the castle, there is a column with a ribbon festoon ornament and a sphere – the perfect form – on top of it, clearly a Freemasonic allusion. The entrance of the castle is guarded by sphinxes and the park's centaur sculpture depicts a scene of a woman being kidnapped. This can be related to Schwetzingen's Pan Sculpture and the Galatea basin's kidnapping episode. Both refer to the idea of the primitive, instinctive savage snatching the woman of a civilized world.



*Figure 10: Centaur sculpture*



*Figure 11: A column with a ribbon festoon ornament and a sphere – the perfect form – on top of it*

Similar to European examples, monuments erected in honour of certain personalities in Hungarian gardens may carry Freemasonic allusions. In England, a monument stands for Alexander Pope, while on the continent, Salomon Gessner (1730-1788) Swiss German poet is honoured. We find Salomon Gessner memorials in the garden of Ferenc Széchenyi in Sopronhórpács as well as in Lajos

Batthyány's castle park in Körmend. Both owners were Freemasons. And there is a so called 'Gessner house' in Csákvár [9].

In Hungary, Ferenc Kazinczy had a similar role to that of the already mentioned Alexander Pope. Kazinczy – with his extended social network – was a key figure of both Freemasonry and the spreading of Landscape Gardens. He was also the one who translated the work of Gessner into Hungarian. The Lodge member Ferenc Gyulai erected a memorial to Kazinczy's visit in his garden in Dédács.

Among the lords of Transylvanian estates, we should highlight György Bánffy, the owner of Bonchida and Sámuel Bruckenthal the proprietor of the castle of Felek, Sámuel Teleki the founder of the castle in Sáromberke, and Antal Josika the lord of the castle of Szurdok. They were all members of the society and can be tied to a significant piece of garden art. Several of our prominent historic gardens are connected to the personalities of the Freemasonic social network.

#### **4. Conclusion**

Comparing the history of the gardens' origins and the Freemasonic past of their creators is certainly a worthwhile study. A thorough knowledge of the movement's symbols can help us clarify the wider cultural and intellectual context of these gardens, as well as lead the researcher to new, undiscovered territories.

#### **Acknowledgements**

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## Ethnicity and Landscape

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**Abstract:** In this work we make a summary on the possibilities and limits of assigning a landscape evaluation form to a specific ethnic group in case their still live on the examined area or already left it. We make a review on the types of the landscape elements that because of their evaluation can be connected to a given ethnic group. We examine the possible forms of the landscape transformation force of the different ethnic groups. Apart from literary works we make our conclusions with the help of studying some Szekler and Saxon villages in Romania as pilot areas.

**Keywords:** special ways of land use, special ways of plot arrangement, landscape perception, interdisciplinary study, "Szekler landscape", "Saxon landscape"

### 1. Introduction

The roots of this study go back to 2005, when the Department of Landscape Ecology of the Technische Universität München and the Department of Landscape Planning and Regional Development of the Corvinus University of Budapest started the Firtos Project [1]. In the frames of this project several studies were made on the Firtos micro-region located in the south-western part of Harghita County in connection with land use, water management, rural tourism, architecture, possible forms of the agriculture, botany etc. Also some diploma work was written

as well during this project, for example on the wildlife, on water and wastewater management and on micro-regional development.

As an impact of our field trips in the Firtos micro-region evaluated from this project the ETHLAS Group from 2008. Several participants became a member of this group we met according to the Firtos Project, but we have new members representing other disciplines as well. As first steps the ETHLAS Group defined what we mean ethnic group and ethnic landscape [2].

“Ethnic Landscapes are areas that are perceived by one or several ethnic groups in a particular, often characteristic way. This perception is often connected to the characteristics of the area, which are the result of activities and interactions of human and natural factors.”

As a final aim the group would like to run a project of comparing the evaluation and the specialities of Szekler, Saxon and Romanian villages located in Romania. This work created at the Department of Landscape Planning and Regional Development of the Corvinus University of Budapest comparing a Szekler and a Saxon village located in Transylvania is a kind of pre-study to help to create the proper method and avoid the main problems of a following project.

Last, but not least during a common landscape evaluation research in the Hungarian part of Burgenland highlighted some problems we probably have to take into account working on this project as well.

Our first questions were the followings we try to answer this time:

- Q1: Do the different ethnic groups have landscape evaluation force? If yes, how does it appear in the landscape?
- Q2: How to examine these forces? What are the possibilities and limits of the examination?
- Q3: How to separate the force of different ethnic groups speaking the same mother language?

## **2. Materials and Methods**

To this pre-study we had to choose a Szekler and a Saxon village located in Transylvania. According to the opinion of the participants of the ETHLAS Group [3] we wanted to choose villages with as similar natural and social givens as it was possible. We choose a Szekler village from the Firtos micro-region located at the south-western border of Harghita County called Kőrispatak (Crişeni) and a Saxon village from the southern border of Mures County called Trappold (Apold).

As both villages are located at the border of counties, they have a peripheral place in the settlement structure. Their relief givens are quite similar: they are situated in valleys of 200 m with hills of 600 m around. There are 60-70% semi-natural vegetation and approximately 10% arable land around the villages in each case.

None of the settlements have a thousand inhabitants. Kőrispatak is a bit smaller with 700 inhabitants than Trappold which population is above 850 people [4]. Trappold looks back a bit longer history, as it was mentioned in a diocese brief in 1309 [5], before 250 years of the first written mention of Kőrispatak in 1566 [6]. The presence of Gipsy inhabitants is also a common point of the history of the two villages.

The main difference is the fact that while still Szeklers living at Kőrispatak, Saxons already left Trappold till 1990's and Romanians moved in instead [4].

The viewpoints we took into account in this work:

1. The type of the relation between the given ethnic group and the landscape: we created two main groups according to the presence (for example the Szeklers in Transylvania or the Hungarians in Burgenland) or the lack (for example the Saxons in Transylvania or the Szeklers in Burgenland) of the given ethnic group at the given landscape.
2. We sorted the landscape elements according to their permanence in time. The more or less "permanent" elements became the settlement structure, the plot arrangement and the architecture of the historical part of the settlements, and the extensive forms of land use. The new parts, the new plots, the new buildings of the settlements and the intensive forms of land use creating the group of the so called "temporary" elements.
3. We separated four levels of the analysis: settlement structure, land use, plot arrangement and architecture.

Our main data sources were the different kind of maps (historical ones and satellite views, national and regional maps as well), monographs, information from inhabitants and experts, and first of all field work.

### **3. Results and discussions**

In the followings we share the main results of our analyses on the four levels we mentioned above: at first the settlement structure, than we are focusing on the land use around the villages and the plot arrangement inside the settlements, finally we have a look at the architectural elements that have an impact on the settlement character.

#### *Settlement structure*

We mentioned that both of the examined villages are situated in valleys with medium-high hills around. As you can see in Figure 1., according to the relief

givens and the river that runs through it, Kőrispatak basically has a longitudinal shape with a high street at the northern side of River Küsmöd, and with more little crooked streets south from it. Though if one goes through the village, can have the impression as it would have only one street.

On the other hand, Trappold has higher human impact with a much more compact shape, with its fortress church in the centre. Around the fortress church there is a longitudinal main square, and the more or less equal streets diverge from there. It can be seen that this village was a carefully planned one. None of the structures have major changes in the 20<sup>th</sup> century.

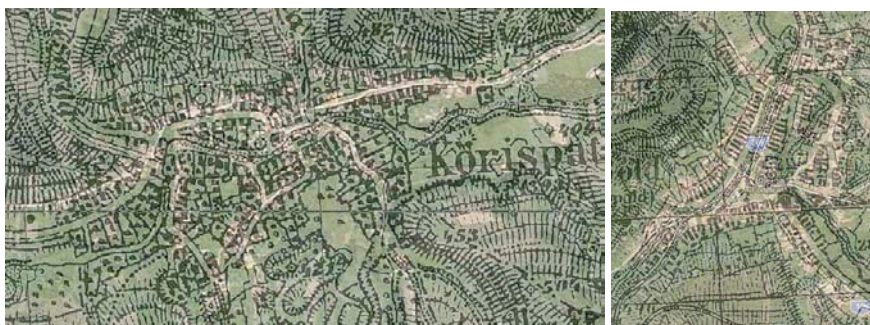


Figure 1: Settlement structure of Kőrispatak (left) and Trappold (right).  
(Source: mixture of the III. Military map and the GoogleMap by Adrienn Egyed)

### *Land use*

This level was the hardest to analyse because of more reasons. On one hand, the climate has a major effect on this level and that overwhelms the ethnic specialities. On the other hand we only have literature of the specialities of the Saxons those left Trappold decades ago. The fact that we saw on our field work and that may be possible to see at Figure 2. is that the land use is more efficient at the Szekler example, for example they run up a special kind of corn called ‘alakor’ for creating straw hat that is a special product of the village.



Figure 2: Land use of Kőrispatak (left) and Trappold (right). (Source: Adrienn Egyed)

At Kőrispatak the specialities evaluated for a long time, while at Trappold the Romanian inhabitants live only since a few decades at this location, there are more plots of lands out of use and some question marks may still appear in the landscape.

### *Plot arrangement*

The looseness of the Szekler villages and the compactness of the Saxon ones can be seen also at the plot arrangement. A Szekler house can be located several ways on the given plot according to the relief givens and the importance of the road: it can be built in a freestanding style, next to the sideways border or next to the border in the front as well. It is usually perpendicular to the street, but this is also not a so strict rule, there can be find exceptions as well. The garners are usually parallel to the street, but with the other farm buildings they can be located also in a very various way.

In contrast to it, according to the Saxon style, the plot arrangement has its strict rules, too. The house stands perpendicular to the street with no front garden. The garners are parallel to the street in every case creating a wall to the front and to the backyard as well, as they stand next to each other.



Figure 3: Plot arrangement of Kőrispatak (left) and Trappold (right). (Source: Adrienn Egyed)

Controversy to the Szekler traditions, on a Saxon plot it was possible to build a second house in order to live more generations on one plot. Instead of that Szeklers divided their plots. Figure 3 shows this difference: the Szekler Kőrispatak with the various, sleazy plot arrangement creates the impression of an irregular settlement structure despite of the dominance of the high street, while the Saxon Trappold shows a more strict settlement structure with the similar plot arrangement than in the reality.

### Architecture

Traditional Szekler and Saxon houses of Kőrispatak and Trappold can be seen in Figure 4. The most typical Szekler house is made up three rooms and has a terrace in the middle of the longitudinal axis. The front room has two little windows looking to the street. Saxon houses are usually wider and have three windows looking to the street.

Apart from the house the typical gates of the two ethnicities have to be mentioned. These gates also show the different basic habit of the Szeklers and the Saxons. There are three different type of the traditional Szekler gate depending on the richness and the lifestyle of the given family. Even the biggest and most decorated Szekler gate has some tracery, while the Saxon gates hide everything inside.



Figure 4: Traditional houses of Kőrispatak (left) and Trappold (right). (Source: Adrienn Egyed)

The materials that were used are also different in the Szekler and in the Saxon example and also reflect the looseness and the closeness character of the villages and the ethnicities. Szeklers used much more adobe and wood than Saxons, who preferred stone and brick. If we take the example of the gates, the Szekler gates made entirely of wood were much more tracery and close-to the nature, than Saxon gates made of a mixture of tracery wood and solid stone.

All in all it can be seen that the Szekler Kőrispatak seems to be more accommodated to the natural givens on all the levels we examined, so even the 100% man-made elements fit perfectly in the landscape. In the case of the Saxon Trappold the human effects appear generally in a stronger way and reflect the dominance of the humans on the landscape. The only exception is the level of the land use, but it is in relation to the Romanian inhabitants of nowadays and not to the Saxon ethnicity that already left the area.



## 4. Conclusion

In this work we focused on three main questions:

Q1: Do the different ethnic groups have landscape evaluation force? If yes, how does it appear in the landscape?

Ethnicities definitely have a special landscape transformation force. This force is the strongest on the lowest level (architecture). On higher level even the similar elements can create a different settlement character because of the different arrangement. The given micro-climate has a stronger force on the land use than the ethnicities, though the connection to the given land appears in the rate of the maintenance of the landscape, the structure of the products and the special products that may appear.

Q2: How to examine these forces? What are the possibilities and limits of the examination?

The hardest task is to examine the landscape transformation force of an ethnicity that already left the given area. The examination of „permanent” landscape elements can help a lot during the research.

Q3: How to separate the force of different ethnic groups speaking the same mother language?

It is also very hard to separate the force of different ethnic groups speaking the same mother language. Linguistic and folklore studies can help to fill the gaps of results of the usual methods.

### *Outlook*

We can declare that it is needed to continue the research on the connection of ethnicities and landscape. The help of other disciplines is also essential to complete the usual landscape architectural methods. In order to examine the land use pilot settlements are needed with various natural givens, because the similar micro-climates can overwhelm easily the specialities. Romania is a perfect place for these researches, because of the several ethnicities living next to each other.

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## **Impression of the global climate change on the ornamental plant usage in Hungary**

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**Abstract:** The climate modeling, which has adequate spatial and temporal resolution, shows that the future climate of the Carpathian Basin will be much more arid and hot than nowadays. The currently used and taught assortment of the ligneous ornamental plants should be urgently revised. It is aimed in my research to collect the species which will probably be introduced in the future. They can be gathered from the Hungarian botanical gardens and research centers and from the spatially analogous territories. The collected taxa should be examined with GIS software if they will really suffer our future climate.

**Keywords:** dendrology, ornamental plant, adaptation, climate modeling, distributional range, Mediterranean pines

### **1. Introduction**

A few years ago the fact of the global climate change was disputed. Nevertheless, the existence of the climate change is acknowledged by the academic level nowadays. The question is just about the extent of anthropogenic origin. Even though the landscape may play a role in mitigation (land use regulation, afforestation), small-scale open space and garden design, however, may help especially in adaptation [6]. The debate on the origin of climate change is irrelevant from this perspective.

The landscape architecture can contribute to adaptation with a number of tools, including the green roofs, green facades, landscaping, attainment of dense tree stratum and land cover, the development of complex stands, sustainable management of surface rainwater and use of drought-resistant plants [7, 8]. Researches focus on the latter.

The climate modeling, which started around 1946-54, now produces surprisingly accurate results, including spatial and temporal resolution. Accordingly, regional models have also been made for the area of the Carpathian Basin [7, 11, 12]. These are based on the IPCC SRES scenarios, named A2 and B2, and cover the period until 2100. By the end of the century the average temperature of the summer season rise 3.7 to 5.1 °C [2], while the maximum temperature rise 4.0 to 5.4 °C. The frequency of extreme rainfall indices are expected to increase during the warmer half of the year, while the average rainfall decreases in summer and autumn [1]. Such a level of drying is cannot be tolerated by the plants commercially available in Hungary or included the dendrological curriculum of the landscape architect students. It is therefore necessary to get to know our future climate at least 30-40 years into the future, because so much time is needed for the selection, cognition, propagation and raise of trees to be in their prime 30-40 years later [4]. Annuals and perennial plants can spread rapidly, so my research has been concentrated to the ligneous plants.

## **2. Materials and Methods**

According to the predictions for the period 2011-2040, spatially analogous territories can be found in South Romania, North Bulgaria, Serbia, Macedonia and North Greece [10]. It is therefore necessary to know the assortment of ornamental plants of these regions. The expectable alteration of the Hungarian ornamental plant assortment can be inferred from the comparison to the assortment of the spatially analogous territories. This requires the establishment of an international research team. Sapientia-Hungarian University of Transylvania and Corvinus University of Budapest started cooperation, as a first step. We should turn not just the southeastern direction, but the north, because the actual climate of Hungary will be shifted towards the territory of Poland in the next 30 years [9]. Thus, we could provide proposal for our Polish landscape architect colleagues to enlarge, transform their assortment of ornamental plants.

It is not necessary to travel to distant lands for the sake of recognize the new species, because some of the indigenous research centers and botanical gardens have a great deal of experience about the introduction of species require warm temperature. Among these, the arboretum of Pécs, Badacsonytomaj and Sopron (old plantations), the botanical garden of Somogyvámos (juvenile plantation), the private arboretum of Csákvár, the garden of the International Dendrological

Research Institute, Budakeszi, and the new plantation in the old arboretum of Pannonhalma should be emphasized (*Fig. 1*). Most of the accumulated experiences are unpublished or, at least, they cannot reach the practicing landscape architects [3]. It is aimed by me to collect, systematize, reconcile with the landscape architecture demands, and spread this knowledge. Therefore, in the course of my former research, I collected more than two hundred taxa little-known in Hungary, but verified in the Hungarian climate. Of course, an insignificant part of them are commercially available.



*Figure 1:* There are a numerous of rare, frost-sensitive, old trees planted in the Folly Arboretum of Badacsonytomaj, Hungary. In the foreground *Pinus armandii* can be seen. The photo was taken by the author in July, 2010.

The plants taking part in my research are often referred as warm-like or frost-sensitive. These attributes are not synonyms; however, for the most of the taxa, they are acceptable. The demand of warm temperature will clearly be appreciable as benefit, whilst the frost-sensitivity will present a problem only in the first few decades. The axiom of sustainability is often asserted nowadays, which, for the

garden designer, should mean the reinterpretation of the concept of intensive maintenance. From the point of view of the frost-sensitive plants this means that the cost of the watering should rearrange to defend the plants from the wintery frost. The heap of the stem, the frost and light protection of the trunk, the shelter of the crown from the pressure of the winter moisture, and the cover of the whole plant from the frost are such instruments of garden maintenance, which are, in case of the young plants, easily and cheaply realizable (Fig. 2).



Figure 2: The shelter of the trunk and the binding of the crown of a recently planted *Pinus pinea* in Pannonhalma, Hungary. The photo was taken by the author in January, 2011.

In the vegetation period just a few respects must be considered furthermore: the frost-sensitive plants call for another way of watering, fertilizing and pruning than others. The frost-sensitivity, which causes a little, but resolvable problem in the beginning, does not indicate trouble later. However, these plants will suffer our future climate better than the ones introduced nowadays [4].

The perceptions explained previously were verified only by experimental methods. A more exact and expressive vision of the change of our ornamental plant



assortment will be provided by modeling the future distribution of the species. In 2010, at the Corvinus University of Budapest a new research started to determine the species, which will probably be spread in our country. The research is built upon the data of existing climate models. It examines the period of 2011-2100. The software used for the research is ESRI ArcGis, a geographic information system application.

Although the current distributional range of plants can be determined well, a description of the plant demand, with an exact formula, is necessary to demarcate the future area. It is not available for us, however, is not so much important in the respect of landscape architecture. The range of the future introduction is rather interesting. It can, from a climatic point of view, be mapped with the potential distributional range.

The method of the research can be dissociated to some main steps. Firstly, the environmental (climatic) demands of the examined plant are queried from the actual distributional range and the climate data records of the reference period (1961-1990). This time deviation (20-60 years) is not significant, because of the slow change of the climate in the past decades. On the other hand the trees, which possess the distributional range nowadays, germinated decades before. The map of the area can be originated from several source; for the yet accomplished research the Euforgen digital area database have been used. In the next step the future time period is selected, which the introduction area of plant should be scanned in. The period of 2011-2040 was modeled in the research accomplished yet. Finally, those regions are filtered, which is overlapped by the demands of the plant. The result of filtering can be displayed in a map [5].

The aim of our research is, beyond the others described before, to determine the parameters, which approximate the demands of plants most of all. Though the microclimatic and soil conditions are not examined, the range, in which the plant can be introduced, can be determined well. The reason for this is that the parameters beyond the macroclimatic factors can be influenced easily with the instruments of landscape architecture. Maybe the high trees with special soil demand can cause some problems.

### **3. Results and discussions**

The results of the recently started research are spectacular; however the selected period (2011-2040) is nearest to the reference period. The periods chosen afterwards (2041-2070, 2071-2100) will probably show a more expressive shift. It is, however, necessary to be noted, that for the later periods the selection of the

parameters, which describe the demands of plant well and give a range large enough to interpret, is more difficult.

The yet accomplished research has suggested that the various indices of aridity do not give suitably interpretable results. The future maps based on Pálfi Index (Fig. 3) and Ellenberg Index show such a large territory, that they are undesirable to scrutinize further. The formula considering the temperature and precipitation data of the twelve months of the year is too strict. This is why it covers an insignificantly little area. Between the two utmost points two methods were tested. One of them does not examine the moisture, just the temperature of the twelve months is taken into consideration. The second method considers, besides the monthly temperature data, the rainfall of the vegetation period. On account of the express relation between the distributional range of plants and the precipitation and the claim to display a satisfactorily large territory, it can be declared, that from among the tested methods the most adequate is the one, which calculates upon the rainfall of the vegetation period (Fig. 4).



Figure 3: The distributional range (deep-gray), the potential distributional range (middle-gray), and the range where the examined taxon (*Pinus pinaster*) could be introduced in the period of 2011-2040 (light-gray) according to the Pálfi Index. The map was created by the author with the help of the Euforgen digital area database.



Figure 4: The distributional range (deep-gray), the potential distributional range (light-gray), and the range where the examined taxon (*Pinus pinaster*) could be introduced in the period of 2011-2040 (middle-gray) according to the most adequate formula. The map was created by the author with the help of the Euforgen digital area database.

The selection of species is not too simple. In the long run it is an explicit aim, that continually more species to be initiated into the research. For the present the research of the Mediterranean trees and shrubs of Europe has been started, the selected taxa are shown in *Table 1*.

Table 1: The selected taxa for the research

<i>Abies borisii-regis</i>	<i>Phillyrea latifolia</i>	<i>Quercus canariensis</i>
<i>Abies bornmuelleriana</i>	<i>Pinus brutia</i>	<i>Quercus coccifera</i>
<i>Abies cilicica</i>	<i>Pinus eldarica</i>	<i>Quercus faginea</i>
<i>Abies pardei</i>	<i>Pinus halepensis</i>	<i>Quercus × hispanica</i>
<i>Acer heldreichii</i>	<i>Pinus peuce</i>	<i>Quercus ilex</i>
<i>Acer sempervirens</i>	<i>Pinus pinaster</i>	<i>Quercus rotundifolia</i>
<i>Juniperus oxycedrus</i>	<i>Pinus pinea</i>	<i>Quercus trojana</i>
<i>Juniperus thurifera</i>	<i>Pistacia terebinthus</i>	<i>Rhamnus alaternus</i>
<i>Phillyrea angustifolia</i>	<i>Prunus lusitanica</i>	<i>Ulex europaeus</i>

The maps of *Quercus suber*, *Pinus nigra* (reference), *Pinus pinea*, *Pinus pinaster*, *Pinus halepensis* and *Pinus brutia* are finished yet. I allege *Pinus brutia* among them to explain the results of the research (Fig. 5). The continuous distributional range that can be found in the Euforgen digital area database is displayed with a dark-gray color. On the basis of this it is attempted to determine the climatic demands of the species with the help of the meteorological data records (monthly temperature and precipitation) of the reference period (1961-90). The light-gray colored territory shows the range which the plant could be potentially distributed to. It is much larger than the real area of the taxon. The middle-gray color shows the range where the pine can be introduced in the period 2011-2040. It can be seen that this area is shifted to the north direction, and, in the example of *Pinus brutia*, a large part of Hungary is included. It means that the future climate of, for example, Budapest, Hungary is as sufferable for this taxon as its original distributional range was in the reference period. This pine species is just one of the several, which could be introduced in the future climate of Hungary. The names of these taxa are almost unknown to the landscape architects of the country.



Figure 5: The range of distribution and potential introduction of *Pinus brutia*. The various regions are described in the text. The map was created by the author with the help of the Euforgen digital area database.

## 4. Conclusion

The landscape architects of Hungary should awake to the realization of the necessity of transformation, refresh of the ligneous ornamental plant assortment taught and used nowadays.

It is undeniable that the climate change is in the better position is this race. If we do all, what the adaptation to the climate change requires us, as urgently, as possible: it is late. We should grow familiar with our future climate, which is well determined by the regional climate models (several scenarios were taken into consideration, the special and temporal resolution is good enough). We must adapt to the more arid and hot future climate of Hungary. It is obvious that partially it means we must forget some of the ornamental plants used nowadays and become acquainted with the new, Mediterranean, drought-tolerant species. The intensive garden maintenance is ostrich policy, which is not worthy of the landscape architecture. A profession, that is proud of its intensive connection with the nature...

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## **Spontaneous vegetation in a possible green network in the West of Bucharest**

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**Abstract:** In this paper we will present an analysis of spontaneous vegetation in Militari neighborhood in the West of Bucharest, comprised in the study of a possible implementation of a green network. The study is founded on the idea of reintegrating in the urban network the old Militari greenhouse area by using territorial resources. The area is in a process of continuous urban progress, but after the desabilitation of the Greenhouses a part of the field has gained a Wasteland character; the important mass of spontaneous vegetation growing there can be a starting point for creating a type of park design.

**Keywords:** ruderal plants, segetal plants, analysis, Militari

### **1. Introduction**

Bucharest is confronted with a serious problem where its 'green lungs' are concerned, its green network being rather scarce on the whole, while this Capital's Westside is one of the most barren areas. In the context of alleviating this problem, we chose to study the option of reintegrating the land from the former Militari greenhouses in the green network - we did this in our hopes of returning this land to the city, reborn from its own ashes. This land included in the Westside has been subjected to constant fragmentation due to real estate interests, and as such its surface area has been considerably reduced over time.

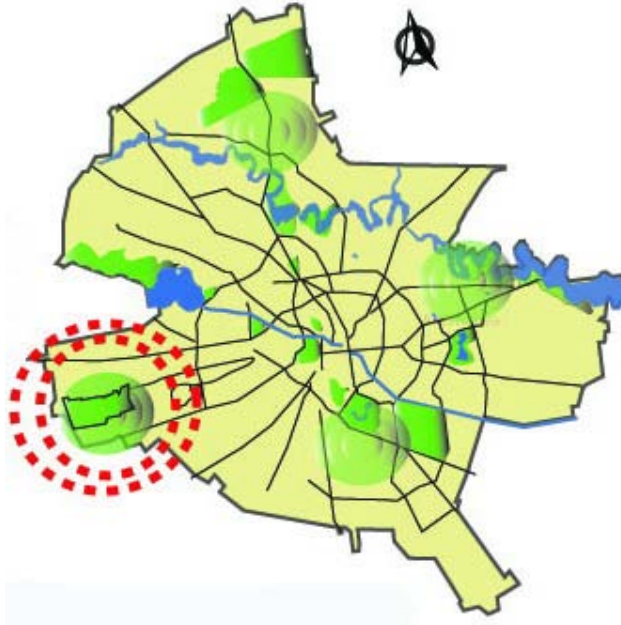
## 2. Materials and Methods

The methods we used in studying/analysing the West of Bucharest and specially the site of Militari Green Houses, the spontaneous vegetation there and the possibility of integrating a green network in this part of the capital are:

- visits and analyses of the site;
- study of documents: books, reviews, internet sites, images;
- systemisation of analyses.

## 3. Results and discussions

The site of Militari former greenhouses (*Fig. 1, 2*) is in a process of continuous urban progress, but after the desabilitation of the Greenhouses a part of the field has gained a Wasteland character. Following our various analyses of the site corresponding to the former Militari greenhouses, we concluded that the most relevant aspect revealed by the land is vegetation.



*Figure 1:* The green system of Bucharest – the big urban parks and the site of the Militari former greenhouses where we propose another green pole for the city



Figure 2: The Militari former greenhouses site

We have classified existent vegetation into the following categories: ruderal species; segetal species; ornamental species from residential areas; ligneous species as wind and sound curtains; ornamental species from commercial and industrial enclosures; species from the Pasteur Institute premises and the greenhouses; species from the cemetery.

The first two of these, ruderal and segetal vegetation, prevail. They are considered the spontaneous vegetation on site.

### **Ruderal Vegetation**

The name “ruderal” derives from the Latin “rudus” meaning rubble or ruins. On site, this type of vegetation develops on abandoned wastelands, on lands directly or indirectly affected by human activity, or on roadsides. [1] On the land of the former Militari greenhouses we encounter both ligneous and herbaceous ruderal vegetation.

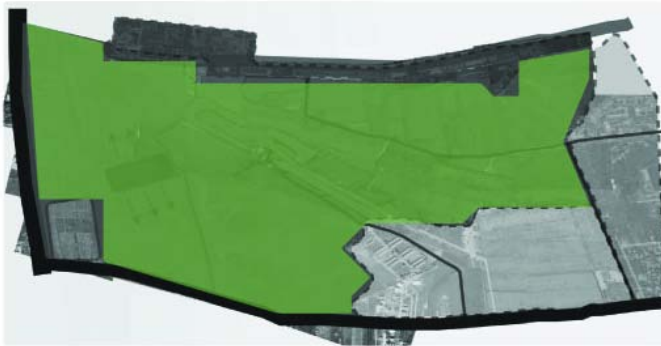
We have the following examples of ligneous ruderal vegetation:

- *Juglans regia* (walnut tree) – a tree about 30 metres high;
- *Ailanthus altissima* (tree of heaven) – a tree about 20 metres high. A highly invasive species which develops spontaneously on disturbed lands or to secure coastlands;
- *Crataegus monogyna* (common hawthorn) – a shrub about 5 metres tall, with thorny branches;
- *Rosa canina* (dog rose) – a thorny shrub, about 3 metres tall. It is frequently found in a wide range of habitats, from plains to mountainsides, in meadows, shrubberies, woods. The fruit is edible and has medicinal properties [2], [3].

The examples of herbaceous ruderal species we found prevailing on site are:

- *Plantago major* (greater plantain) – frequently found in ruderal sites or meadows. Medicinal herb;
- *Matricaria perforata* or *Tripleurospermum inodorum* (scentless wild chamomile, mayweed, Balder's brow) – as opposed to German chamomile (*Matricaria recutita*), this species has no scent. It is a weed growing in straw cereal cultures and ruderal places.
- *Achillea millefolium* (yarrow) – perennial plant growing in meadows and ruderal areas, used as medicinal herb;
- *Alopecurus pratensis* (foxtail grass) – perennial plant, frequently found in moist meadows from hilly areas; fodder plant;
- *Cirsium arvense* (creeping thistle) – perennial plant. Hard-to-combat weed, found in cultures or ruderal areas from plains to mountainsides [2], [3].

Ruderal vegetation covers almost the entire area of the Militari former greenhouses and it is composed mainly from herbaceous and small plants. This category of vegetation also includes various species of invading shrubs and trees.



*Figure 3: Militari former greenhouses site – the ruderal vegetation grows in almost the entire area*



*Figure 4:* Militari former greenhouses site – ruderal species: *Populus alba*, *Rosa canina* and *Crataegus monogyna*



*Figure 5:* Militari former greenhouses site – prevailing ruderal species: *Juglans regia* and *Rosa canina*

## **Segetal Vegetation**

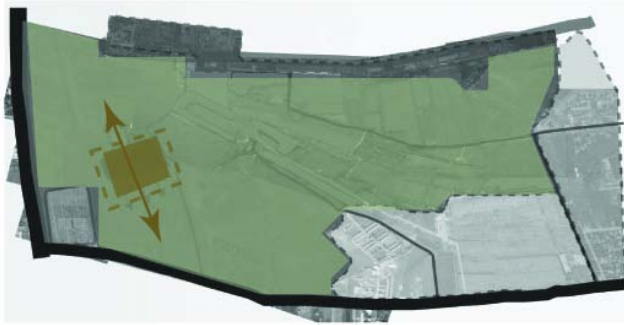
The name “segetal” derives from the Latin “segetis” meaning crop. This type of vegetation develops on agricultural land. The plants grow either near the ploughed fields or right inside them, side by side with the cultivated plants [1], [4].

The prevailing segetal species found on the site of the former Militari greenhouses are:

- *Taraxacum officinale* (dandelion) – perennial plant, about 40 centimetres high. It grows in meadows, ruderal areas, but is also a weed when growing in crops. Its young leaves are edible, and the entire plant is a medicinal herb;
- *Camelina sativa* (wild flax, German sesame, Siberian oilseed) – spontaneous annual plant. Can be found near crops.
- *Xanthium strumarium* (cocklebur) – annual plant. Is a ruderal and segetal weed.
- *Poa pratensis* (common meadow-grass) – perennial plant, about 50 centimetres tall. Is a very good fodder plant. Grows especially in both dry and moist meadows.
- *Cichorium intybus* (chicory) – perennial plant, about 1 metre tall. Grows from lowlands up to the mountainous areas, in meadows, pastures, ruderal places. Has medicinal properties and edible leaves.
- *Amaranthus retroflexus* (common tumbleweed) – annual plant. A weed in corn, crops etc but also in ruderal areas;
- *Rubus caesius* (dewberry) – thorny shrub with creeping stems, about 80 centimetres long. Found from lowlands up to mountainsides, within meadows, woods and sometimes as a crop weed. Bears edible fruit.
- *Sinapis arvensis* (wild mustard) – annual plant, about 60 centimetres tall. A toxic weed dangerous to animals, it is found in crops, and ruderal areas [2], [3].

On the site of the Militari former greenhouses segetal vegetation grows mainly on a smaller plot, on the farming lands, where it grows more rapidly and can become even invading. It has the tendency to extend to the entire area.





*Figure 6:* Militari former greenhouses site – the segetal vegetation grows mainly in the brown colored area – farming lands, but tends to extend to the entire site



*Figure 7:* Militari former greenhouses site – segetal species: *Alopecurus pratensis* and *Cirsium arvense* and ruderal species: *Ailanthus altissima*

It is this spontaneous vegetation that has managed to survive through the numerous changes brought on by local urban development, and to imprint its specific character on the studied area. This vegetation is represented by various ruderal and segetal species. The land of the former Militari greenhouses has been

constantly declining but, on the upside, it has allowed nature to flourish uninhibitedly.

Therefore, these two types of vegetation, ruderal and segetal, form the basis for our solution to implement park facilities that will then become integrated in Bucharest's green network. The presence of these species across the spacious site directed us to suggest designing a layout for the park using minimum intervention over the vegetation. This would ensure maintaining local character and creating a different value than other important city parks. We suggest the park's specific features be designed around French landscape architect Gilles Clément's theory of mobile gardens, allowing a considerable amount of land to freely transform over time according to nature itself. Landscape experts would therefore maintain a minimum role [5], [6], [7]. This area would then come to represent both an enjoyable leisure space as well as a study lab aimed at educating about plant evolution.

#### **4. Conclusion**

We wish that the space we imagined be considered an alternative to other city parks in Bucharest, and become as attractive to the public at large, being integrated in the Capital's greater green network.

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## **The sustainable and harmonious landscape in ancient Chinese philosophy and its parametrization with current GIS models. Characterization of Yin-Yang properties in Geographical Information Systems**

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**Abstract:** The modeling of urban and natural environment is essential for both the landscape design experts and for the general public, as well. Since ancient times the landscape and its beauty has made a great influence on people and their philosophies. This resulted in such prominent examples as the ancient Chinese yin-yang theory which is still used in contemporary architecture and planning not only in China but world-wide as well. The current tendency is to incorporate public participation into the professional planning methodology. The traditional sense of harmony and beauty can be expressed with the modern technology. Since the GIS systems can work with different attributes and parameters of the landscape related entities, it is desired to find models that describe a harmonious or sustainable landscape and find parametrization that can be used to enhance and develop areas of having unfavourable conditions. The traditional GIS softwares were based on the discrete binary logic (yes/no) whereas the yin-yang theory of harmony based on two dynamically changing opposite entities (yin and yang) and uses continuous values that are complementary to each other. The contemporary architecture (Meggyesi 2009) and science also has utilized the yin-yang model to enhance the spatial comfort. As our models get more realistic and interactive, sensor webs promise to animate and constantly update our models to provide a living and adaptive view of our built environments. Sensor inputs can in a sense act as a glue between the different tools because of their ability to inform living models. Sensors would include such inputs as weather, traffic movement, the way that wind affect the built environment, the movement and impact of pollution, as well as the many things that citizens as sensors can inform. The bringing in of these dynamic inputs inform our models, and the need for deep analysis to understand the complexity of these

inputs calls for a whole new level of computing capabilities in order to better inform design and the management of our world.

**Keywords:** landscape parametrization, dynamic change, GIS

## Introduction

The well known yin and yang symbol, the entity of two entwining symmetric black and white semicircles used to describe how seemingly polar and contradictory forces can result in a harmonious state that represents permanent change and constant equilibrium. It has inspired not only philosophers and artists, but it has influenced the modern computational geoscience as well [3].

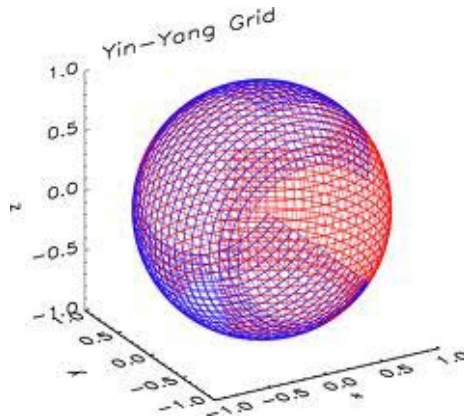


Figure 1: Yin yang grid in geospatial model

In the geoscience model - Yin-Yang grid is composed of two identical component grids that are combined in a complement way to cover a spherical surface with partial overlap on their boundaries. Each component grid is a low-latitude part of the latitude-longitude grid.

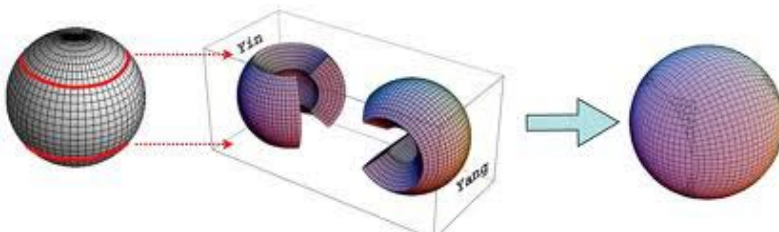


Figure 2: The combination of the two identical components



Figure 3: Taijitsu, the ancient yin yang symbol

The ancient symbol shown on Figure 3. originated from the Chinese culture around 1250 B.C. According to this *yin and yang* are complementary opposites that interact within a greater whole, as part of a dynamic system. Everything has both *yin and yang* aspects , but as a total they result in the eternal completeness – the whole circle.

There is a perception (especially in the West) that *yin and yang* correspond to evil and good. However, Taoist philosophy generally omits good/bad distinctions and other dichotomous moral judgments, in preference to the idea of balance.

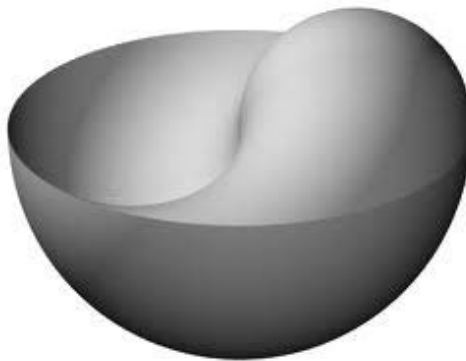


Figure 4: Yin Yang in 3D

[www.cs.berkeley.edu](http://www.cs.berkeley.edu)

Eventhough *yin and yang* are opposites, they never disturb each other, moreover each of them requires its asymmetric pair for existence. They are equal in magnitude, hence are equal in importance as well.



Figure 5: Yin yang mountain

Source: [www. travel.webshots.com](http://www.travel.webshots.com)

According to the ancient Chinese wisdom the following properties represent *yin and yang*:

#### *Yin and yang in nature*

Yin and yang can be perceived as:

- Intrinsic natural entities: light and shadow
- Winter or summer
- Cold or warm
- Male and female (that can create an offspring)
- Natural reproduction of plants (i.e. a seed will sprout from the earth and grow upwards towards the sky – an intrinsically yang movement. Then, when it reaches its full potential height, it will fall to complete a dynamic cycle of growth and decay)
- Wave of water in the ocean- high and low point of waves

The concept of yin and yang originates from observing the nature.

*Yin* originally means the shady, Northern part of the mountain, while *yang* means the sunny (Southern) part. Similarly *yin and yang* can be also related to the sides of a river (*Nota bene*: the river has also two sides , yin and yang). Later these were generalized to arbitrary opposite concepts as well. In Chinese geographich and place names one can still find ancient words that correspond to yin and yang. In geographical context “*yang*” means southern (sunny) side, while “*yin*” corresponds



to the northern, shady one. Similarly the city called “Louyang” means the city on the southern part of the Lou river.



Figure 6: The yin (water) and yang (mountain)

### The traditional Chinese landscape paintings

The beauty of Chinese landscape can be rooted back to BaGua or “eight symbols” system reflecting the dualistic philosophy of ‘yin’ and ‘yang’, and it goes back to 10<sup>th</sup> century BCE. This system has been adopted by the Chinese culture and it is still very popular, even in modern days in China (see Figure 8.).

The original meaning of *yang* (Southern, high, sunny) can be associated with elevation, positivity, power and light. The opposite complementary of the previous is *yin* (Northern, low, wet, dark) represented by the lakes, water and low points of the landscape.

The traditional Chinese landscape painting, the so called *shansuihua* means water and mountain (yin and yang). Chinese paintings are usually displayed in

faded color, mainly using ink and water, with light coloring. Their strokes are softer, more graceful, and suggestive. Water washes on the existing brush strokes of ink produces softer and subtle effect.

Lake is separated from water, as the mountain is being separated from Earth, showing the special significance of mountains and lakes or rivers.



Figure 7: Chinese Landscape painting *shanshuihua*

### **Yin yang in fractal geometry**

The fractals- objects with a self-similar property - (shapes with a rough or fragmented structure that can be split into parts, each of which is approximately a reduced-size copy of the whole), are also related to the *yin and yang*. The following figure shows such a fractal.



Figure 8: yin and yang fractal

[www.fractalsoup.net/.../fractals/ying-yang.png](http://www.fractalsoup.net/.../fractals/ying-yang.png)

## Yin and yang in contemporary arts



Figure 9: Prize winner in 2007, the Chengdu Contemporary Art Centre in Sichuan (China). The largest standalone structure

Chinese people have always valued the traditional beauty of *yin and yang* and it is still considered as a contemporary value. *Figure 9.* shows the Chengdu Art Centre in China designed by Zaha Hadid is a 200,000 sq m complex that includes three huge auditoriums, an art museum, an exhibition centre, a conference centre, a learning centre, bars, restaurants and shops, all housed within a single sculptural form.

The building, which Hadid won in a design competition in 2007, is also the largest standalone structure ever designed.



Figure 10: Yin and yang sculpture on the beach

tgffsw.blu.livefilestore.com

### *Yin Yang – a duality principle and its effect on landscape design*

As the world famous French Geographer and Japanologist Augustin Berque (1992) has written: “the notion of landscape in the Asian art could not have been evolved without the principle of duality. This culture is based on the ***yin yang concept*** which describes things and objects **with the use of its opposite form**”.

Since the Chinese phylosophy and landscape art is based on the dinamically changing equilibrium and balance of *yin and yang*, in urban and design and architecture these principles still can be found.

The aesthetics of a city is a combination of many sensory stimuli as well a visual one. The monotonious flat structures and surfaces of buildings and roofs of the same levels can be nicely complemented with high structures (towers, temples, lookout towers, skyscreapers) which can be used as landmarkes to show central location and can be used to accomodate large crowds ( city centre towers, Eiffel tower). Currently almost every large city is seeking to build such a specific landmark to be famous and to attract tourists.

This vertical expansion was to symbolize power and to control a territory and space. Every religion (western or Asian cultures) used height to express sacral importance. Gothic churches, pagodas, Indian stupas are also examples of this tradition. The *yin and yang* principle – i.e. making harmonious structures with oppositely changing dynamic entities – inspite of its simplicity and age is still used by contemporary architects. Tamás Meggyesi, one of the most prominent architects in Hungary in his book called *Morphology of Urban Architecture (Város ÉPÍTÉSZETI alaktan, 2009)* has analyzed the urban space in structural – morphological context and emphasized the importance of dichotomous, dinamically changing entities (open or closed space, linear or centralized road systems, etc.) which can be considered as an extension of the ancient *yin yang* philosophy.

## The yin yang principle and GIS

GIS is a relatively new science and it is used for capturing, storing, checking, integrating, manipulating, analysing and displaying data related to positions on the Earth's surface. Since the original meaning of *yin and yang* has spatial implications (high-low, Southern- Northern, sunny- shady) it is plausible to use current technology and GIS to characterize certain regions in terms of *yin -yang* aspects.

Chinese government has proposed a strategic development plan named as Harmonious Society, which contains the requirement to apply Chinese traditional theory to contemporary urban construction. The first step is to develop the model and define properties which contribute to the yin and yang characteristics. Some geospatial parameters are the following:

### Methods:

- Altitude
  - Slope
  - Exposure
  - Average height of the grid cell
  - Standard deviation of the heights (variability of the elevation)
  - Distance from industrial zone or main road
  - Green area proportion
  - Soil fertility
  - Yearly precipitation
  - Air quality
  - Existence or closeness to water ( see, river, lake, pond, artificial objects, fountains, etc.)
  - Cultivated / natural landscape
  - Wind
  - Earthquake danger
  - Flood danger
  - Noise level
- These attributes are quite diverse and a careful expert knowledge is necessary to find the appropriate range and scale that can be used for GIS analysis. Furthermore, the weights that correspond to the importance factors have to be determined as well (100 means the highest impact, 0 means no impact at all).

The Chinese research [13] used 24 different parameters and 11 indices. They could divide the downtown of Nanjin city in to three zones: the area of low total score (yin) and a average area (both yin and yang) and a high total score area (yang). This result was a clear indication for the future development programs and plans.

## Conclusions:

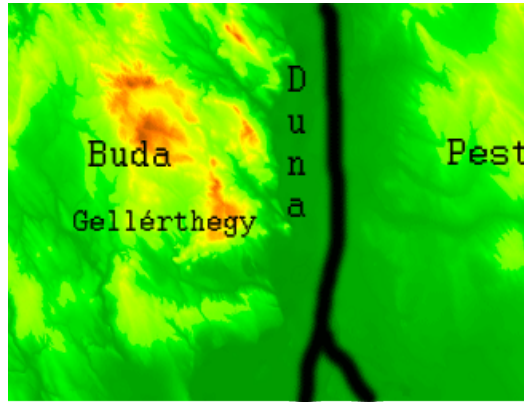


Figure 11: Yin yang distribution of Budapest

Since the object of the project is rather complex, a harmonious area has geospatial and socio economic attributes, so an interdisciplinary approach is necessary to find the appropriate parameters that describe a harmonious space.

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## Streamline Garden and Open Space Design

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**Abstract:** While analysing the works of landscape design in the past 30 years, there are 3 mainstreams to be defined. One of them is the geometric garden type with well- defined forms and practical implements. The second line: the free-form gardens are created with natural landscape forms and character; they have strong emotional effects and try to create an idyllic landscape. The third distinct trend is the attractive or scenery gardens with strange, amazing or surprising formal world, tools and materials. Geometrical gardens belong typically to urban built environment; the other two trends absolutely deny this order.

**Keywords:** geometrical gardens, free-form gardens, attractive gardens

### 1. Introduction

Artworks of present times are what we can consider as a contemporary creation. This present is obviously not just a moment, a given day, not even the present year, or the past decade. We can only schematize how long the contemporary period lasts and where it had started in the past. The period of contemporary arts in fine arts or in music lasts from the 19-20<sup>th</sup> century until today, and this era is considered as a block. What in Hungarian music starts with Bartók, it starts with Rerrich in Hungarian garden arts. Both names both epochs mark a significant turning point

and take an immense step forward. What starts beyond this point, has a crucial effect on the present, this is where the roots of today's art are indeed to be sought.

Today's art works are primarily shaped by generations living and creating together and influencing each other – masters and disciples, so in a narrow sense, we can consider contemporary, or even more as contemporary present, the works born during one generation's time, through common interaction. The artistic experiences, aspirations and works of these approximately 25-30 years deeply influence each other and determine the new works. This time of a generation is at the same time an effervescent, moving period of contemporary arts. Thus, if we were to picture the presence in motion of garden arts, we should be looking at the creations of the past 25-30 years. This starts around the eighties, and lasts until today.

## **2. Materials and Methods**

The examination material is composed of realized and significant creations of European garden and open space design, about 350-380 works altogether. The choice of works is based on the number and quality of publications treating them. By the formal and content analysis and comparison of the creations, we can reveal their identical or very similar characteristics, which can serve as a basis to set up a typological order. The parameters of the comparison: the adequacy of form and function, the primacy of purpose or form, the intellectual and conceptual content, the shaping of the layout plan, the space composition, the application of plants, the architecture of pavement and water, characteristics of material use and unique characteristics.

## **3. Results and discussions**

As a result of the examination and the comparative analysis we can establish that the style trends of contemporary garden arts and open space design show a quite complex picture. Even at the level of the simple observer, we can discover a number of trends and there are groups of quite resembling characteristics and similar nature to discern amongst the multitude of artworks. Three, strongly distinguishable groups of creations with similar ambitions are certainly to be discerned.

### 3.1. Geometrical gardens

The notion geometrical garden is a still free umbrella notion in the literature of landscape architecture. Besides architectonic garden, as a general denomination for a garden type, which gives the primacy to the form, the expression planimetric garden is used for labeling the style in garden arts evolved after the turn of the century. Though the word *geometrical* is a synonym of the latter, their meanings do not coincide completely, this is why this word is apt to epitomize contemporary gardens of such character. The word *planimetric* refers to the regular, structured nature of the garden as a whole; however, the expression *geometrical* puts a stress on the geometry itself, so it might designate gardens where the complex of the structure of the layout plan, the geometrical forms and geometrical elements become per se esthetical values, which gives the main core of the garden composition [1].

A common characteristic to geometrical gardens is that they are conceived in terms of a simple and decorative geometric order of the layout plan. They have an aversion to any kind of complicated, complex form and mass. Squares, rectangles and triangles dominate them. Circles, if at all, appear very seldom and at the most as an inner figure. A generally used instrument to highlight planimetric surfaces and layout forms is repetition. Surfaces of the same layout shape and material align in a regular rhythm and a picturesque lineup beyond numbers, usually along a straight line or in a zigzag, but never in a bow. Energetic structural lines, as well as circles, are strange to this world, appearing only as ornaments.

To create this planimetric world, planes are necessary. Contemporary geometrical gardens typically use the horizontal level; bodies, masses only play a secondary role in the composition. Amongst geometrical gardens, there are three subgroups with different characteristics to distinguish as follows:

#### 3.1.1 Minimalist geometrical gardens

The expression “Minimal Art” was introduced by R. Wollheim to designate the sculptural and painting trends born in the 1960’s in the USA (1965). The representatives of this trend strive, scientifically and with mathematical precision, to elaborate plastic structures, while they consciously exclude personal and emotional content. The artworks are usually created mechanically, often based on mathematical formulas. The structure is reduced to abstract, geometrical elements, and made up by groups of smooth, homogeneous surfaces and shapes, with repetitions and variations.

We can consider minimalist gardens those creations of garden arts, referring to their spiritual kinship with the trend of fine arts called “Minimal Art” and born in the 1960’s, where geometry appears in its simplest and clearest form, at a minimal

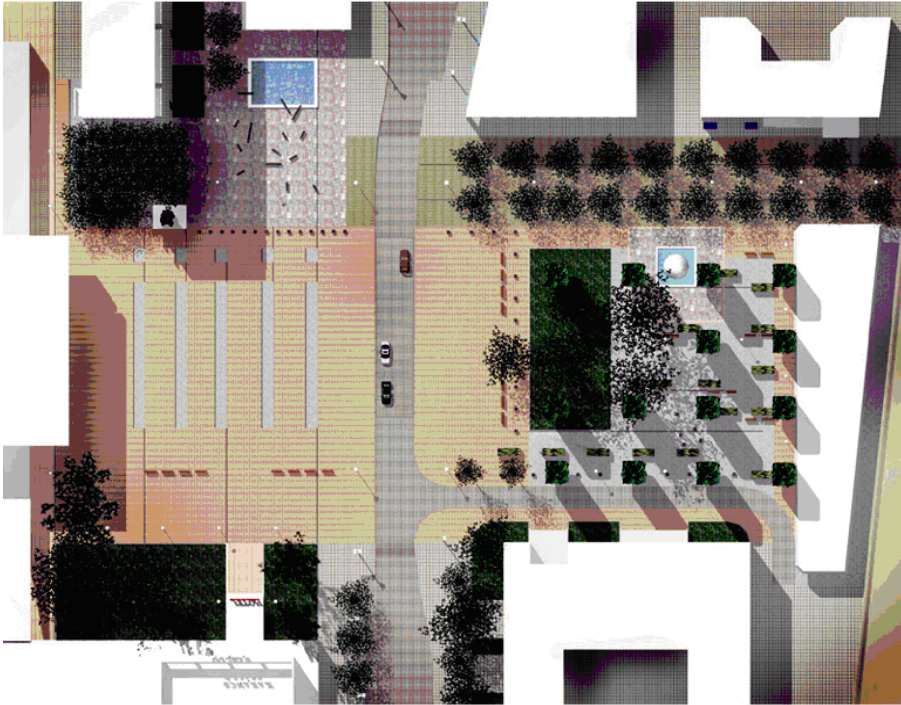
level, adding nothing to the layout form and the arrangement itself. Here, the theme and subject of the creation is the simple geometrical form itself. The composition is aligned on a completely flat surface, along straight lines, just like a set of equally important elements, randomly appearing in the network of a Cartesian coordinate system. Although in Europe already earlier, in Hungary, the first significant gardens of minimalist geometry appeared in 2000. One of the most important creations representing this trend is the public park and square ensemble of Elisabeth Square in Budapest. The entire layout-plan is composed of ensembles of regular square and rectangular shapes. The single layout shapes are in themselves homogeneous and material. There is no partition, no further decoration, or, at the most, sporadically, a pattern of the material itself. The single layout shapes are reiterated in a regular rhythm in random quantities, but always following the main spatial lines of the garden.



Figure 1: Landscape architectural idea plan of Elisabeth Square in Budapest by Péter István Balogh, Zsuzsa Bogner and Tamás Sándor

The reconstructed main square in Salgótarján is of a similar minimalist geometry (fig. 2). The rehabilitation plan, keeping the values of classic modern

square design, sought a solution in accordance with today's space-forming principles and space-usage demands. The Main Square of nearly 1, 3 ha catches one's attention by its lean orthogonal architecture.



*Figure 2: Salgótarján. Main Square. Design: Balázs Almási, 2005*

### **3.1.2. Chaotic geometrical gardens**

Chaotic geometrical gardens show features related to minimalist gardens, but they deny their clear structure; their intention is almost the creation of opposites. These gardens too, make use of simple geometrical elements, but what they create is a perturbed set full of surprises and unusual associations, which sometimes lack close formal relations and have a rather complicated layout. Instead of the orthogonal order of minimalist gardens, here, a special disorganization prevails, and the lack of order gets in a way exalted and illustrated. These chaotic square compositions usually quit regular, organized structures, at the same time remaining clearly geometrical; and due to this contradictory dichotomy, surprising, interesting effects and gestures arise.



A nice and typical example of chaotic geometrical gardens is the Interpolis Garden in Tillburg, the Netherlands designed by Abe Bonnema, 1998. The garden – like other minimalist gardens – makes use of a few simple basic elements: homogeneous lawn, reddish crashed stone and grey carved slate paving, water surfaces emerging from the plane with scattered tree groups. The special character results from the applied basic shapes and the geometry of the arrangement. There are no squares or rectangles, trapezoids and triangles dominate the picture. There are no parallel lines, everything is diverging and converging. Sporadically, oblique surfaces step out from the plane, the pool frames diverge, lines commence and remain incomplete, and all is overwritten by the spontaneously and randomly appearing ensemble of trees. Still, the picture is organic and definite, through the consistency of the composition's chaotic geometry.

Another creation that we can mention as a garden of chaotic geometry is the ensemble of the Millenarian Park in Budapest (fig. 3.). The core of the composition is here once again the decoration in plane, only, instead of squares and rectangles as usual basic elements, triangles and trapezoids are on the carpet. Although the partition of the layout plan follows broken lines and zigzag edges, as if it were consciously avoiding parallels, this perturbation is just what that lends uniformity to this capricious view.



*Figure 3:* Millenarian Park in Budapest. Fragmented shapes. Design: Új Irány Landscape Architects – Dominika Tihanyi and Co.

### 3.1.3. Nostalgic (historicizing) geometrical gardens

The third group of geometrical gardens ornaments the base plane's geometrical structure and metric shapes, striving to create a variety of forms. A certain part of these gardens are historicizing, they evoke historical shapes and patterns from the times of Renaissance or even Moorish gardens. What creates a relation and makes up a common group is exactly this nostalgic decorating mood, which tries to fill up the planimetric level repeatedly with exciting and attractive content. Amongst contemporary European gardens, we can find many creations with such a nostalgic geometry. A typical example is for instance the DNA- and healing garden in Dumfriesshire, Southern Scotland (Charles Jencks, 2000) with symbolic references.

Budapest's example for nostalgic geometrical gardens is the Infopark in Lágymányos district. This is a public park, which presents the typical characteristics of this trend. In the case of this garden, we are likely to discover the strongest influence of Renaissance design. The garden is composed of several square or rectangular units arranged side by side. The single garden parts are visibly detached from each other; there is no organic relation between them regarding neither their shapes, nor their functions. Therefore, the units appear independently, forming a closed inner system of shapes. They are exchangeable and interchangeable without harming the composition as a whole, just like the elements of a Renaissance parterre. The dominant basic shape is the square, which appears in numerous varieties, as well as an incorporating layout-shape, as well as a planting order, an ornament or pavement-pattern (fig. 4).



Figure 4: Infopark, Budapest. Garden details. Design: Gábor Karádi.

### **3.2. Free-form gardens**

Amongst contemporary gardens, there is a range of landscape gardens, which are marked by an unbound and loose form and a natural, diversified application of plants. Unlike geometrical gardens, in these free-form gardens, plant facades take over a major role. The goal is not the perspicuity of the surfaces, but spatial partition and the creation of visual axis' or space-ensembles structured in depth according to the given function. The essence of the garden, here too, is the creation of an effective and attractive view, although not in the plane, but by the usage of vertical masses and facades.

Another essential difference vis-à-vis geometrical gardens is that free-form gardens lack all kind of geometry in the layout plan and even its tools: repetition, or regular rhythm. Here, all is unique and unrepeatable; the plant groups appear not as a uniform mass or as a homogeneous surface but as sets of individuals with character. While every form of geometrical gardens adapts in its character to the urban environment, completes and reinforces it, the group of free-form gardens creates some kind of contrast in an urban environment by establishing free natural forms [2]. We can distinguish between two groups of free-form gardens:

#### **3.2.1. Romanticizing gardens**

The denomination “romanticizing” reflects the spiritual kinship of these gardens with the gardens of the romantic era, though it does not mean that they historicize, that is, bring back the forms of romantic gardens. In many periods of garden history – from ancient Persians through the picturesque gardens of the 18<sup>th</sup> century until our days – there had always been an intention to create some kind of an idyll in the garden, to create an environment or milieu for the solitary observer, which revokes life in Paradise, sometimes in philosophical depth, sometimes in a playful way.

The formal design and the plant application always follow in these gardens the models in nature, but in a clear, stylized or concentrated manner. Thus, the formed and designed character is always detectable in the garden view and there is no intention to hide it either.

Such a romanticizing structure is seen in the Jubilee Garden in Siófok's town center. This public garden is characterized by a carefully elaborated, perspicuous terrain structure; it is composed, besides the vegetation planted in picturesque groups along the facades, of trees and shrubs, of loose groups of perennial beds. The idyllic atmosphere of a garden separated from urban environment is reinforced

by the nostalgic open music pavilion, whose major value consists of its statuesque appearance, but it also serves as a meeting point (fig. 5).



*Figure 5: Siófok, Jubilee Park. Terrain structure. Design: Imre Jám bor and Co.*

### **3.2.2. Naturalistic gardens**

The other group of free-form contemporary gardens, although they take into account the function of use, they subordinate it to the garden's natural development, its spatial-temporal transformations and spontaneity. With naturalistic gardens, the main composer is nature itself. The designer, considering the properties of the area, only carries out the most necessary interventions, in a way preparing the creation of the garden. He counts on the fact that as a result of the succession development starting in the abandoned area, gradually various plant ensembles will appear, grow up, become strong and consequently a dynamically changing spatial structure and vista will appear on the area, for which the elapsed time plays an especially important role (fig. 6).





*Figure 6:* Wienerberg Park, Wien. Naturalistic garden in the heart of the city.  
Design: Wilfried Kirchner, Maja Kirchner, 1996

### **3.3. Attractive, scenery-gardens**

The gardens of the third group of contemporary gardens have in common that, although with different tools, materials and forms, on areas with different functions, but they always aim at creating special, attractive or exciting, unusual sceneries:

#### **3.3.1. Artistic gardens**

Artistic gardens undertake the presentation of artistic content using the tools of garden design. They are spatial compositions created with an artwork's ambitiousness. They make use of sculptural tools and reveal a certain visual sensitivity. In every case, there is a symbolic content or idea hidden behind them. They typically turn to contrasts and opposites, a powerful imaging and Land-Art (fig. 7).



*Figure 7:* Garden of the Exxon Mobil Headquarters in Paris, France.  
Design: Kathryn Gustafson

### 3.3.2. The “bizarre”

These compositions usually strive to exert an effect of surprise, even astonishment on the observer. Their toolkit is similar to that of the artistic gardens’ group, but they use it in a more extreme and exaggerated manner. Capricious and surprising forms characterize them, as well as the enhanced usage of contrasts and opposites. They employ particular materials, shapes and associations, for example the sculpture of Gabriele G. Kiefer in Wolfsburg, Germany or the Superficial reflecting mirror sculpture by Michel de Broin (fig. 8)



*Figure 8:* Superficial, sculpture in Vosges, Alsace, France. Design: Michel de Broin



## 4. Conclusion

Geometrical gardens belong typically to urban built environment with their rational, strictly defined structure and forms. They represent the abstraction of nature, even in the case of chaotic geometric gardens. The other two trends absolutely deny this order. The ecological garden concept is based directly on the rules of ecology, while romanticized gardens are emotionally bound up with Nature and try to recall the Elysium or Paradise. These naturally formed gardens seem either to deny the strict urban structure or to counterpoint the built environment. Attractive gardens have no ideological meaning, they are for themselves – mere attractions, sceneries or gags.

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## Evaluation following the grassland restoration of Egyek-Pusztakócs according to Skylark (*Alauda arvensis*)

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**Abstract:** Egyek-Pusztakócs is the location of the longest (since 1976) and largest (over 5000 ha) habitat restoration project in Hungary so far. In the second phase about 700 hectares arable land was restored to grassland between 2004-2008. We have conducted observations and point counts of Skylark (*Alauda arvensis*) to monitor the effects of grassland reconstruction on arable lands between 2004–2008. In the first year of grassland restoration the grassland reconstruction correlated with a decline in the abundance of Skylarks, likely due to high weed cover in the spring following grassland restoration. But since the second year of grassland restoration, the strenght has increased significantly. We experienced that the year 2008 differs significantly from all the other years. In conclusion, we found evidence for the grassland reconstruction leading to an increased Skylark's population.

**Keywords:** Farmland Bird Index, grassland restoration, Hortobágy, Hungary, landscape-level rehabilitation

### 1. Introduction

The grasslands, engendered by the relatively small amount of precipitation and the extreme temperature fluctuation between summer and winter, spread principally on the northern and southern temperate zones. These territories have always been used by mankind for cultivation and stock-raising, among which some

regions' animal husbandry dates back such a long time, that its effects on the territory are almost invisible [1]. In Europe, primarily the plain, flat territories were cultivated, which are principally to be found in Eastern- and Western Europe.

The first popular extensive cultivation method did not lead to the dramatical decrease of biodiversity, to the contrary: at some places it even assisted to its growth. The plants and arthropods, all at least in some way adapted to the changed conditions, reach a high number of species especially on the less fertile lands used for stock-raising [2, 3]. Because of the intensification of agriculture, which appeared in the 1600's and then gained speed in the 20<sup>th</sup> century, the species linked to the agrarian landscape had to endure a constantly growing degree of negative impact. Primarily because of the increased demand of food due to the ever growing human population, the majority of semi-natural grasslands is intensively used for cultivation (plains) or have quitted (hills and highlands) [4, 5]. As a result to all this, the majority of the habitats was transformed and the biodiversity has decreased dramatically [6, 7]. A significant part of the remaining grasslands (in industrialized countries) is under anthropogenic influence and has been degraded and fragmented, until it only served as a habitat to broadly tolerant, widely spread species.

The environmental effects of extensive and intensive cultivation methods differ remarkably from each other. During the process of extensive land use, no or only a small amount of fertilizers and chemicals is used, and the use of fossil energy sources is limited [8, 9]. A significantly higher level of biodiversity characterises these habitats. Contrarily to this, the intensive land use includes the broad utilization of chemicals, the exaggerated fertilization of the soil and the modernization of agricultural methods.

In Western Europe, many studies have been made concerning the effect of extensive and intensive agriculture on birds. The strength of bird species linked to agrarian landscapes has drastically decreased due to the agriculture becoming more intensive and profit-oriented. In Great-Britain, a strength-increase of 80% has been indicated at three species: the Tree Sparrow (*Passer montanus*), the Grey Partridge (*Perdix perdix*) and the Corn Bunting (*Emberzia calandra*) [10, 11]. On the whole, the division of the previously mosaic land structure and the impoverishment of the vegetation implied the impoverishment of bird species. [12]. The most striking in the agricultural areas is that songbirds that feed on seeds have been forced back, which may be due to the change in the cultivation of arable fields and, respectively, the disappearance of these areas. Conclusions of surveys agree that the extensive way of farming is much more favourable for the survival of natural wildlife, especially in those areas where the landscape has a typically mosaic-like structure. However, to understand the effects of the given management methods on bird

populations, we need to recognize the key factors that influence the breeding, foraging and other habits of birds in the agricultural areas [13].

To monitor the changes taking place in the landscape and the given regions, indices and indicators of various quality and quantity are the most suitable. From among the three main groups of landscape indicators (ecological, socio-economic and landscape aesthetic), it is the ecological indices that react the quickest to the changes taking place in the landscape. Respecting the influencing factors at the landscape level, we have very little knowledge, in spite of that most of the farm management activities happen at this level. This includes birds, by the investigation of which the ecological state and functioning of a given habitat, as well as the changes at landscape level and the land use can be judged [14].

The Skylark (*Alauda arvensis*) for breeding primarily prefers sites covered well by vegetation in lowland areas. For that reason, in addition to the natural grassy steppes, agricultural areas also provide favourable breeding conditions for the species. In Hungary, the largest populations of the species live in the Central Region (Kiskunság) and the eastern part of the Great Plain (Hortobágy, Tiszántúl) [15]. If we examine its distribution and population density, we find similarity with the extension of grasslands to a great extent [14]. Since the 1970's a decrease in its population has been experienced throughout Europe [16, 17]. There are three reasons for that: the use of biocides [18], the substitution of spring by winter cereal [19], and the reduction of long-term fallow [20]. Several studies showed that on adjacent, extensively and intensively managed areas, the population density of the Skylark shifts towards the extensive area to a larger or smaller extent [21, 22].

The biggest grassy regions in Hungary can be found in the Central Region (Kiskunság) and the eastern part of the Great Plain (Hortobágy, Tiszántúl). The majority of the originally vast grasslands have been altered [23], therefore it became necessary to reconstruct the still remaining natural-like habitats as soon as possible [24]. The oldest habitat reconstruction and rehabilitation project in Hungary at the landscape level (ongoing since 1976), covering at the same time the biggest area (more than 5000 ha) takes place in the Egyek-Pusztakócs marshland area in the Hortobágy. The hydrological rehabilitation of the marshland system began in 1976. Its first phase was completed by 1982 in Fekete-rét. In 1996-97 the flooding canal system, joining the Bögő-lapos, the Kis-Jusztus marsh, the Meggyes- and Hagymás-lapos and finally the Csattag-marsh, reached completion [25]. The most important element of the second phase of the long-term landscape rehabilitation programme is the grassland reconstruction started in 2004, in course of which loess steppes and salt steppes are to be developed in some 700 ha arable field. In order to monitor the success of the grassland reconstruction, there have been first of all botanical surveys carried out [26, 27, 28], while zoological ones were much less [29, 30, 31].

In the case of all nature conservation management and restoration, it is an inevitable condition to precisely know the reactions of the given bird species, the changes in their population size, as these experiences are extremely important for the further landscape rehabilitation activities (“conservation based on evidences”) [32]. The objective of the present study is to evaluate the grassland restoration through the monitoring of the Skylark population, with special respect to the first year following the grassland restoration and, respectively, the years after well established grasslands have developed.

We are looking for answers to the following questions: Will the size of the Skylark population that decreased due to tall vegetation developed in the first year following the grassland restoration increase again after well established grasslands have developed? If yes, in which year will it start and in what extent will it grow?

## 2. Materials and Methods

The habitat complex of Egyek-Pusztakócs extending to 4000 ha is situated along the western edge of the Hortobágy National Park. Its development has been defined mainly by the Tisza: the floods of the river established point bars, loess ridges and lowly lying beds. Apart from the “classical” flat Hortobágy, significant differences in the relief level have developed here. Partly as a result of this, a landscape of extremely mosaic-like structure has evolved including grassy areas (salt steppes and loess steppe grasslands), marshes, which are drying out or have continuous water cover, arable fields, burial mounds and woody habitats. All this is favourable for the biodiversity of the flora and the fauna.

In the examined sample area first of all alfalfa (*Medicago sativa*), spring and winter wheat (*Triticum aestivum*) and sunflower (*Helianthus annuus*) was grown. In the autumn season of 2005 and 2006, in half-and-half, following an appropriate soil preparation in the arable fields, a restoration of loess steppe and salt steppe grasslands took place by sowing two types of grass seed mixture. In the first year, more than half meter tall, weedy vegetation developed. Beginning from the second year, however, the sown grass species became dominant, while in the third year a state characteristic to primary grasslands has developed. The survey of the bird population was carried out in altogether 22 sampling points between April 1<sup>st</sup> and May 30<sup>th</sup> in each year, at one occasion. Sampling was carried out most frequently by the well known Danish system of point counts. In the course of this, we marked counting points on the map, in a way that the circular observation zones of 100 m radius of each counting point covered more or less the entire examined arable field (under 10 ha), or were located systematically at 250 to 300 m distances from each other (in the case of fields larger than 10 ha). Where we had an option, we chose high

ground points, from where the observation zone was better seen. At the counting points, in a circle of 100 m radius, counting was made through a five minute period of time. In those points where the circle of 100 m radius could not be set up due to the form of the area, we made counting by the observation of an area the size of which was similar to the circle of 100 m radius (approximately 3 ha), starting the counting from the edges of the field, lasting also for a five minutes period. This method became especially important in the rainy year of 2006, when several former counting points were under water due to the extending inland water. We involve in this study only those 12 arable fields, in the case of which the ornithological survey was carried out in each year of the period between 2004 and 2008.

During the data evaluation the emphasis was given to the monitoring of changes in the size of farmland bird populations. In the United Kingdom the Farmland Bird Index (FBI) was developed to monitor together the population size of 19 bird species breeding primarily in agricultural areas. This index has been recognized by the Central Statistical Office of Great Britain, as well as its modified version by the EUROSTAT, the statistical office of the EU, as official indicator for biodiversity [33]. One of these species is the Skylark (*Alauda arvensis*). In the present study we investigate its population size changes following a grassland restoration.

For the data analysis of Skylark population Wilcoxon matched-pairs signed-ranks test were used, using Graphpad InStat software.

### 3. Results and discussions

The most typical four breeding species of the examined area were the Grey-lag Goose (*Anser anser*), the Skylark (*Alauda arvensis*), the Yellow Wagtail (*Motacilla flava*) and the Lapwing (*Vanellus vanellus*). From among these, we have chosen the Skylark, typical both in grasslands and arable fields, to use for the investigation of grassland restoration activities. The present study analyses those 12 arable fields, in the case of which the sampling was carried out in each year of the five-year period of time. From among them there were six fields restored to grasslands in 2005 and another six in 2006. During the spring and early summer following the grassland restoration, weed species dominated the former arable fields. However, after the mowing of the weeds at the end of June, strong and locally closed stands of the sown grass species could be observed.

First we evaluated the period of time between 2004 and 2006; that is we looked for an answer to the following question: How does the vegetation developed in the first year following the grassland restoration (2006) effect the size of the Skylark population?

The Skylark prefers those dryer patches of the habitat having shorter vegetation, from where it is able to look out, and, respectively, where it finds food as it feeds on seeds. Our results comply with this, as we found that the abundance of the



Skylark fall in the fields which were restored to grasslands in the autumn of 2005, and covered by weeds in the spring of 2006 (Figure 1.a), while the abundance of the species – except one case - increased in the control fields that were not restored to grasslands, but have been further cultivated as arable land (Figure 1.b). The only exception was an arable field surrounded by such other arable lands where the grassland restoration began everywhere in 2005. The reason for the growth in abundance in the control fields may be that a part of the Skylark population drew to the control fields as a significant part of the arable land became unsuitable for nesting due to the extensive water cover or the springtime weed cover of restored grasslands (local effect). It is also possible, that due to the several smaller, temporary inland waters evolved in the neighbouring areas of the Hortobágy in 2006, the population became more abundant in the suitable, dry habitat patches (regional effect). Should the reason be anything, our results support by all means that the transitional conditions between the arable land and the future salt steppe grasslands are not favourable for the Skylark.

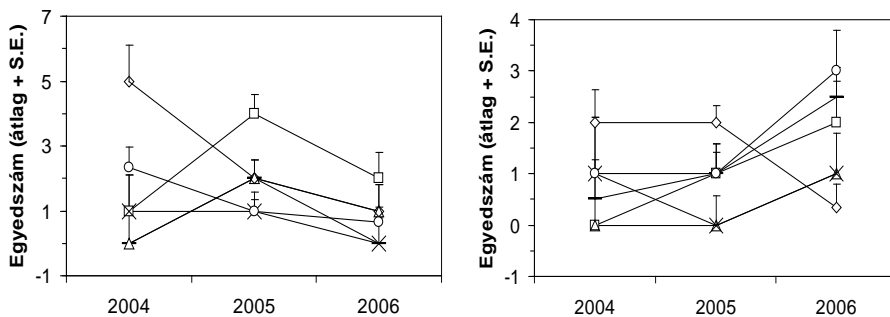
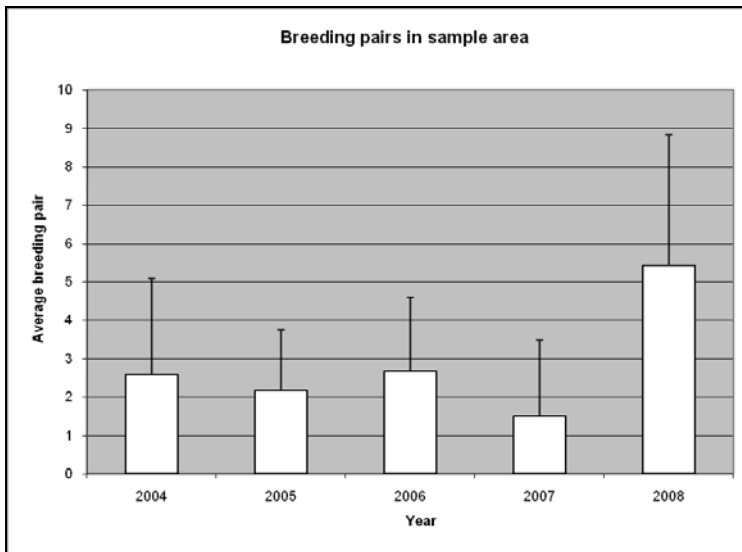


Figure 1: Changes in the abundance of Skylark (*Alauda arvensis*) in the areas of grassland reconstruction (a) and on non-restored arable lands (b). The Y axis shows the number of individuals counted during 5 min in a 100-m-radius circle (ca. 3 ha) around counting points.

Arable fields sown in 2005 and 2006 alike have established a state typical to the primary grasslands by the year 2008: the sown characteristic species (*Festuca pseudovina*, *F. rupicola*) have developed closed stands, and various dicotyledonous species [e.g. Tuberous Jerusalem Sage (*Phlomis tuberosa*), Meadow Sage (*Salvia pratensis*)] appeared among them. Therefore, in the second analysis, we compared the year 2008 with all the other years. The following numbers of skylark territories could be observed in each of the respective years (Table 1, Figure 2).

Table 1: Skylark's (*Alauda arvensis*) territories between 2004-2008 in Egyek-Pusztakócs

Year	Number of territories
2004	31
2005	26
2006	32
2007	18
2008	65

Figure 2: Changes in the territories of Skylark (*Alauda arvensis*) in the areas of grassland reconstruction

Annual mean value of nesting pairs was compared using the Wilcoxon test as the standard Gaussian distribution required by the parametric tests was not met in each of the cases. The findings demonstrate that mean values for nesting pairs in 2008 differed significantly from those in any of the previous years. (Table 2).

Table 2: Relevance of breeding Skylark pairs (mean) between 2004-2008 in Egyek-Pusztakócs (p = probability value, sig = significance level, \* = 0,01-0,05, \*\* = 0,01-0,001, \*\*\* = 0,001>)

Wilcoxon matched-pairs signed-ranks test		
	p	sig
2004 vs 2008	0,0068	**
2005 vs 2008	0,0098	**
2006 vs 2008	0,0137	*
2007 vs 2008	0,002	**

Based on all the above, we experienced that the year 2008 differs significantly from all the other years. It is supported by the change in the number of home ranges in the investigated 12 arable fields between 2004 and 2008. The habitat preference of the Skylark was introduced above and it perfectly complies with the state of the grasslands established in 2008. If we consider in addition to this the fact that low vegetation areas have developed as a result to grazing that had been started in several fields, then the reason of the growth in the population size becomes more obvious. In the course of years, ideal conditions have developed for the Skylark respecting its breeding, foraging and hiding needs. Having considered all these factors we stated that the year 2008 differed significantly from any other year, which is clearly demonstrated by the number of territories on the 12 plough land parcels investigated in the period between 2004 and 2008.

#### **4. Conclusion**

By analyzing the period between 2004 and 2006, it can be stated that the areas dominated by extremely tall weeds evolved in the first year following grassland restoration, are not favourable for the Skylark population. While the size of the Skylark population has grown everywhere, except in one of the six arable fields used as control area, a fall in the population size was experienced in the restored fields from 2005 to 2006. Because of the heavy precipitations in 2006, the effect of the grassland restoration could not be shown in the first year; the extremely rainy year might have concealed that to a large extent.

By investigating the period between 2004 and 2008, we stated that the year 2008 significantly differed from the others. The identification of 64 home ranges has also indicated this, as the second largest figure was only 32 in 2006. The Skylark prefers those dryer patches of the habitat having shorter vegetation, from where it is able to look out, and, respectively, where it finds food as it feeds on seeds. These types of grasslands have been established by this year. In addition to that, grazing of sheep and cattle has also started in several places, resulting in the development of quite low turf heights alternating with higher types of grassland in a mosaic-like structure. This way breeding, foraging and hiding places alike evolved for the species within relatively small, mosaic-like areas. Many studies pointed out that the abundance of the Skylark in adjacent, extensively and intensively cultivated areas shows only a small difference in favour of the extensive arable fields [21, 22]; the population data experienced in 2008 support this. The changes at landscape level could be even better assessed by the investigation of other farmland bird species.

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## **The changes of the public open space system of Nagytétény in the aspect of new development**

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**Abstract:** The public open space system of the city is being affected by several factors, which are changing the open spaces' morphologic attributes, functions and group of users as well. One of these factors is the development in the surroundings. A grand development has been planned in Nagytétény, which is in District XXII., in Budapest, that will change the structure of the open space system. Considering these changes a new public open space renewal is necessary.

In our research we demonstrate the possible changes of the public open space system through the example of Nagytétény.

**Keywords:** city structure, free accessibility, use intensity, development strategy, future effect

### **1. Introduction**

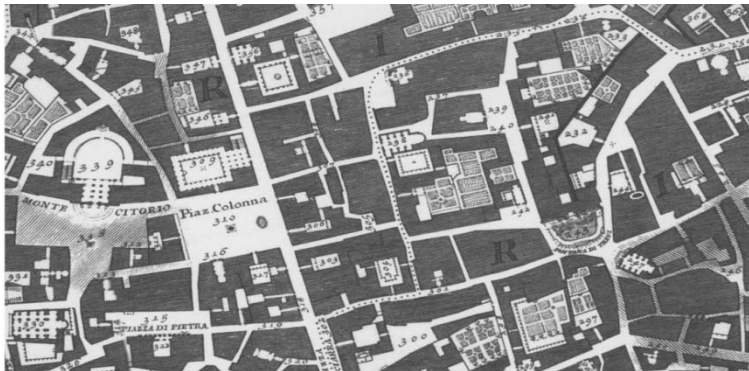
The public open spaces are essential elements of the cities. These most common places for human interactions, influence positively the citizens' psychical well-beings.

The public open spaces form networks in every city, which is one of the most important part of the structure of cities. The public open space systems are always changing in history. They are influenced by several factors, like changes of social demand, current economic situation, including the amount and frequency of

developments in the city. A new development can play a big role in changing the city- structure. It affects a part of the city or sometimes the whole city's future structure. It has a great impact on, not only the built-up areas structure, but the public open space system as well.

### *The open space system*

One of the first definitions was born in Italy in 18<sup>th</sup> century. Giambattista Nolli, an Italian architect and surveyor, made a map, which shows the public open spaces of Rome. This Nolli map was invented in 1748 and was drawn for Pope Benedict the 14<sup>th</sup>. It is a map to measure the density of cities, mainly in black and white. Nolli was one of the first people at that time, who used orthogonal rotation representation map of the city, compared with conventional representations in bird's eye view. The map is quite accurate compared to air photography. While buildings are shown in black, white represents the public spaces. It also includes the inner space of the churches and the monasteries and palaces and courtyards. This representation method has become widely accepted in urban design, as a way to show the public space. The method shows that every corner of a public space in Rome is "positive". Wherever you are, you're part of a convex space that surrounds you like a room. Another interesting feature is the combination of the free accessible built-up areas and the open spaces. Buildings define the open space, open space define the buildings<sup>1</sup>.



*Figure 1: Nolli map*

The public open spaces today in Hungary are basically providing the main liberty of the citizens. If we make a map, showing all the accessible open spaces and hiding the other parts - similar to the Nolli map, (in invert marking), with the

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<sup>1</sup> <http://nolli.uoregon.edu/preface.html>, 2011.04.06.

definition of these free accessible open spaces<sup>2</sup> - we can recognize, that these areas are not as big as we would expect.



Figure 2: Accessible open space areas

## Material and Methods

The research area, Nagytétény is located in the south-west part of Budapest, Hungary. It is part of District XXII and lays on the right part of the Danube. It is considered to be peripheral in Budapest and in the district as well.

The research started two years ago, when the whole downtown of Nagytétény has been observed, with special attention on the open space system. All the streets, squares, green spaces were classified according to functions, users, aesthetic values, recreational potentials etc. The result of the research was a very detailed analysis, that can provide a great starting point for a development planning process.

The second part of the project was the analysis of the several kinds of factors, affecting the open space system. One of these factors is the “effect of future development”, that presumably changes the open space system. The analysis started with marking all public open space elements of the city. Than these elements were sorted by the intensity of their uses before and after the development. With comparing the current and the future stage, conclusions could be made.

<sup>2</sup> Free accessible open spaces can be used by the public.



*Figure 3: Location of Nagytétény*

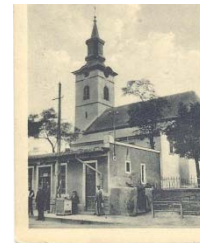
## **Results and discussions**

### *History*

The history of Nagytétény started in the Roman Ages. On the site of Nagytétény stood a camp of “the Danube limes”, called Campona, a part of the Roman Pannonia. In the Middle Ages Tétény has become an important settlement of the region, but the end of the times of the Turkish Empire it was completely exhausted. Just thirty years later between 1720-31 the castle of George Szaraz was built, being one of the most important landmarks even today. After the castle, between 1753-1754, the church of the village was built as well.



*Image 1: The castle of George Száráz*



*Image 2: The church of Nagytétény*

In 1861 the railway service has started. From that time Nagytétény has been evolving rapidly. Traditional streets were built around the castle and the church, where serfs, menials and craftsmen lived. From 1910 several kinds of factories, mills started operating, and when Great-Budapest was created in 1950, Nagytétény

became a part of the Capital. The city became an industrial centre. After 1950, the city had no significant development in trade, service and tourism, only in the industry. After the political changes in Hungary at the beginning of the 90's the heavy industry was broken down. Because the accumulated chemical pollutions, in this area the building operations of residential areas were blocked by administrative appliances. So the status of 1990's city-structure was preserved in Nagytétény. Only the industrial areas were slowly turned into logistic centres<sup>3</sup>.



*Image 3: Typical streetviews*

### *Present Stage*

Currently, the old city-structure is dominant, only some residential and industrial areas developed around Downtown. The arrangement of the city is linear. Every significant object, most particularly the church, is attached to the main Road of Nagytétény, which leads to the centre of Budapest. The city has two dominant elements, the church and the castle. The church is in the centre, and the castle is slightly in a peripheral position.

The whole city is surrounded by busy traffic ways. There are two motorways on the northern - eastern and western parts, a main road on the southern part, and railways on the northern and southern parts. River Danube, running on the southern part of the city, is hardly accessible because of the disjunctive effect of these traffic areas. Actually the whole city is isolated from the surroundings.

In the future a new residential area will be built on the south-east part of the city. This new development area could solve this isolation problem, so this is supposed to be a great opportunity to create linkage between the city and the River Danube.

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<sup>3</sup> Berza, L. (1993), Budapest lexikon II. (L–Z). 2., bőv. kiadás: The History of Nagytétény, *Akadémiai Kiadó*, Budapest: pp. 513





Figure 4: The structure of the city

The map of the public open space system shows, that the city has a pretty big amount of open space areas, but if we observe the accessibility of them, we can see, that most of these are completely isolated. For example almost the whole green space next to the River Danube is inaccessible.

In the aspect of the use intensity of these open spaces there are four categories. The first is the intensively used areas, that include the church and the Nagytétényi Road with its surrounding. The second is the average used areas, that include the green spaces of residential areas, the castle and the cemetery. The third one is the limited used areas, like the abandoned industrial areas, the public park next the castle in the neighbourhood of the railway and the unused agricultural areas. And the fourth one is the minimum used areas, like the areas next to River Danube and the isolated areas by traffic ways.

As we can see, the areas used most intensively are located in the city-centre, on the edge of the city the open spaces are almost completely unused. For example the castle, which is a very good touristic target, is currently used by only a few visitors, or the valuable public park next to it is almost unused.



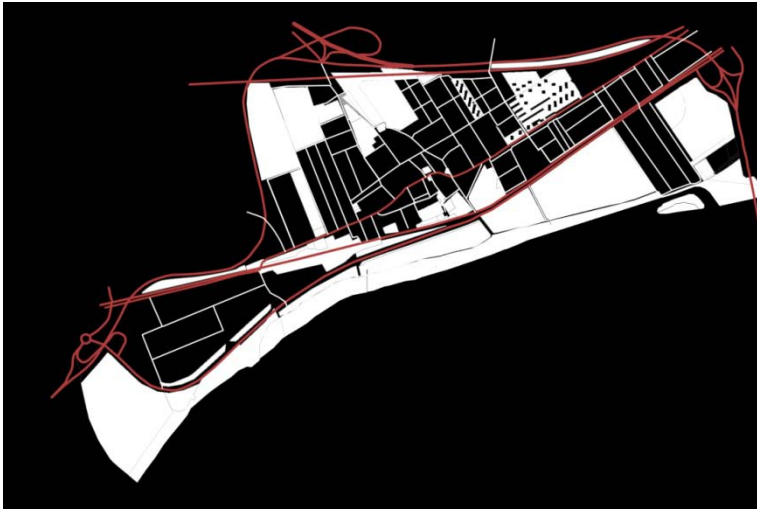


Figure 5: The public open space system of Nagytétény



Figure 6: The uses of the open space system of Nagytétény

### Development areas

In the city's development strategy two parts of the city will be developed in the present future. The municipality recognized that they have to do such developments, that can strengthen the city structure, and give the opportunity to resolve the isolation problems. One of these developments is located in the centre of the city and the other one is on the riverbank.



Figure 7: The development areas in Nagytétény

### The renewal of the city-centre

The aim of the first development, the renewal of the city-centre, is that the castle and the historical city-centre should be developed at the same time to create a liveable city with greater cultural-touristic values. With this development, the castle could be a flagship of the city-centre area, and the north-south axis can be strengthened. The goals of the development are:

- to improve the quality of the green areas
- to strengthen the visual contacts and the linkage between the open spaces, which are perpendicular to Nagytétényi Road, between the castle and the renewed main road
- to redesign the most important squares from the 18th century city structure (the square in front of the church, Szentháromság Square, Szent Flórián Square).
- to create the missing city-gates

This development has just started, and the constructions of several squares are in progress<sup>4</sup>.



Figure 8: The renewal project of the city centre

### *The Danube Spirit project*

The other development is on the riverbank, the south-east part of Nagytétény, called Danube Spirit project. This is the first extensive real estate development project of South-Buda. The purpose of the seller (the municipality of the district) was, that the development should fit in the project of the renewal of Nagytétény's city-centre. It should valorize the surrounding areas, create new workplaces, build

<sup>4</sup> M. Sziági, K., Almási, B., Nagy, I.R., Szabó, T., Filinger Zs., (2009), Nagytétény történeti központjának rehabilitációs engedélyezési terve – tervezési koncepció és program, Budapesti Műszaki és Gazdaságtudományi Egyetem Építészettörténeti és Műemléki Tanszék, Budapest, pp. 27-30.

apartments, and give a new publicly used riverbank for the inhabitants of the district. During the development program all the well-designed public squares, streets, parks, other public green spaces and the whole riverbank, which is more than 20% of the whole area, could improve the citizens' quality of life. The development would solve the problem of the waste recultivation and it can reduce the isolation between the eastern and southern part of the city.

The developed area is more than 32 hectares, the built-up area can be 40% of this. The public transport support would be provided by a new railway station and a bus stop. The linkage between the city-centre of Budapest and Nagytétény would be solved by water taxi, and water bus service. Currently the developed area can be reached hardly on foot, that is why a direct linkage is necessary between the Danube Spirit area and the castle, the castle park, and the old city-centre. This connection would be a pedestrian and bicycle overpass above Road 6, which goes on the north side of the area<sup>5</sup>.



Figure 9: The Danube Spirit project

<sup>5</sup> <http://www.dunaspirit.hu/fejlesztes>, 2011.04.06.



*Image 4: Design views of the Danube Spirit project*

In the long run these two developments, the renewal of the city-centre and the Danube Spirit project will transform the city-structure and affect the open space system of the city. If they were achieved successfully, the city's lateral axis would strengthen, the main parts of the city, the church, the castle, part of the ancient Campona, the Danube Spirit and the riverbank would connect to each other complete the present Nagytétényi Road main axis.

#### *The uses of the open spaces after the developments*

The effect of the developments on the open space system can be clearly concluded. The intensity of the uses would change. First of all, if the important squares of the city got their appropriate functions, their intensity of use would increase. Secondly, if a new lateral axis came into existence, the open spaces, that are actually forming this axis, would be more used. Because of this lateral axis, the city centre would be shifted and some peripheral elements would change to centre elements.

The next map of open space-use intensity shows the status of the uses after the developments. If we compare it with the current status of uses, many differences can be seen. Expectedly the intensively used areas would be the expanded centre of the city, the church, the squares along the new lateral axis, the castle, the public park in front of the castle and the area of the Spirit project. The riverbank would become an averagely used area next to the housing estate's green areas and the cemetery. The unused agricultural area and the abandoned industrial area would still remain limitedly used areas and the isolated areas by traffic ways would remain minimally used areas.



The most prominent use intensity changes can be observed at the riverbank, at the Spirit project area and at the public park in front of the castle. The intensity changes at the riverbank and at the Spirit project have been planned, but the public park's renewal is not part of any development project, however this public park actually would become the new centre of the lateral axis because of the centre shifting, mentioned above. The meeting point of the new Spirit project and the old city would be here, and the planned railway station would be placed here as well. These plus functions require to redesign the park to fulfil its new role. The investors and the government should cooperate to add this park into the process of the strict planning process. In these kinds of big investments it is hard to make agreement between the investors and the municipality, because of financial problems, but without the renewal, the development aims could be realized only partially.



*Figure 10: The uses of the open space system after the developments*

## **Conclusions**

The development strategy of Nagytétény is a very complex and a well-built strategy. It transforms the city-structure in a good way. It serves the needs of the city and the city's inhabitants. It has a great effect on the open space system, because it tries to involve all the important elements of the city into the "city's circulation". But if we observe the future status of the city's open space elements, not only the renewed ones, we find out, that one of an apparently insignificant open spaces, a public park, which is furthermore a valuable green space, will be one of the most essential parts of the whole city-structure. If this park will not be renewed,



the whole concept of the development would not work properly. The conclusion is, that during the planning process, designers should investigate not only the current status of the planning area, which has a sharp boundary as usual, but they have to observe the current status of the whole surroundings, and the future effects of the renewed areas on the other part of the city.

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## Teaching landscape architecture: tuning programs in Europe for a common policy. The Romanian case

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**Abstract:** The article is discussing the gap existing between the Landscape Architecture curricula in Europe and Romania. Based on the definition of the landscape architecture as a world-wide (excepting Romania) recognised profession, several European and international organisations are developing a common view on landscape training and education programs.

The entire presentation is based on the main international documents concerning Landscape Architecture from the professional and educational points of view.

**Keywords:** education, profession, curriculum, core competences

### 1. Introduction

In the present context, that imposes Landscape Architecture as a major education and research field in Europe, ECLAS (European Council of Landscape Architecture Schools exists to) represents the main organisation that, since 1991, fosters and develops the dialogue between members of Europe's landscape architecture academic community.

The tuning programs developed in the frame of Le:Notre program (Landscape Education: New Opportunities for Teaching, Research and Education), also known as the European Institute of Advanced Studies in Landscape Architecture, are aiming to create a common educational base for all landscape architects and

engineers throughout Europe. Tuning Educational Structures in Europe is a large scale European project, with accompanies the Bologna process. The Tuning project is carried out by academics that work at institutes of higher education.

EFLA (European Foundation for Landscape Architecture) was equally involved as an active partner in the tuning and academic programs recognition process in order to construct curricula adapted to the professional demands on the market. Two Romanians schools are part of ECLAS and LE:Notre and also part of EFLA (Bucharest and Timisoara), thus trying to forge an European educational program in our country.

Landscape Architecture education started in Romania in 1998 in Bucharest and Timisoara, several other schools being opened afterwards (Iasi, Cluj, Craiova, Oradea, Bucharest). The evolution of our landscape education is merely a negative one. This situation is due to a lack of understanding of what landscape architecture represents as profession. In Romania we are confronted with an almost general confusion between landscape architecture and garden architecture or gardening.

Another confusion is created by the various formations of landscape professionals. As landscape architecture educational programs are organised in horticulture, architecture or ecology faculties, thus generating multiple diplomas (landscape architect, landscape engineer, landscape planner, landscape designer...), it is largely believed that a “hierarchy” should exist among the professionals. This is a huge mistake to consider that the administrative organisation of a landscape architecture curriculum is similar with the professional development and training and landscape architects or landscape engineers have different education and training programs.

As landscape architecture suppose an interdisciplinary approach of spatial planning, integrating design, ecology, social sciences, constructions and other “classical” fields, the educational programs are complex and, from administrative point of view, they can be hosted by various universities or faculties from the related professions (arts, architecture, engineering, environmental studies...). In Europe is recognised that is no difference between landscape architects, engineers or designers, all of them being trained in order to accomplish different task related to their work (design and planning, field work, constructions and detailing, planting...).

## **2. Landscape Architecture – a profession**

The landscape architect, designer or engineer (as defined by EFLA) “plans and designs urban and rural landscapes that satisfy human and natural, aesthetic and functional requirements. These activities are based on knowledge of the natural processes and cultural values that underlay a continuous process of formation of

landscapes, and the opportunities and constraints encountered in the intervention in existing environments.”<sup>1</sup>

“Landscape Architects conduct research and advise on planning, design and stewardship of the outdoor environment and spaces, both within and beyond the built environment, and its conservation and sustainability of development. For the profession of landscape architect, a degree in landscape architecture is required.

- (a) developing new or improved theories, policy and methods for landscape planning, design and management at local, regional, national and multinational levels;
- (b) developing policy, plans, and implementing and monitoring proposals as well as developing new or improved theories and methods for national parks and other conservation and recreation areas;
- (c) developing new or improved theories and methods to promote environmental awareness, and undertaking planning, design, restoration, management and maintenance of cultural and/or historic landscapes, parks, sites and gardens;
- (d) planning, design, management, maintenance and monitoring functional and aesthetic layouts of built environment in urban, suburban, and rural areas including private and public open spaces, parks, gardens, streetscapes, plazas, housing developments, burial grounds, memorials; tourist, commercial, industrial and educational complexes; sports grounds, zoos, botanic gardens, recreation areas and farms;
- (e) contributing to the planning, aesthetic and functional design, location, management and maintenance of infrastructure such as roads, dams, energy and major development projects;
- (f) undertaking landscape assessments including environmental and visual impact assessments with view to developing policy or undertaking projects;
- (g) inspecting sites, analysing factors such as climate, soil, flora, fauna, surface and subsurface water and drainage; and consulting with clients and making recommendations regarding methods of work and sequences of operations for projects related to the landscape and built environment;
- (h) identifying and developing appropriate solutions regarding the quality and use of the built environment in urban, suburban and rural areas and making designs, plans and working drawings, specifications of work, cost estimates and time schedules;
- (i) monitoring the realisation and supervising the construction of proposals to ensure compliance with plans, specifications of work, cost estimates and time schedules;

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<sup>1</sup> European Foundation for Landscape Architecture, Education Committee Report, Education Policy Document 1998

- (j) conducting research, preparing scientific papers and technical reports, developing policy, teaching, and advising on aspects regarding landscape architecture such as the application of geographic information systems, remote sensing, law, landscape communication, interpretation and landscape ecology;
- (k) managing landscape planning and design projects;
- (l) performing related tasks;
- (m) supervising other workers”<sup>2</sup>

A non-exhaustive list concerning the projects and activities that should involve landscape architect or engineers includes:

Airport master plans and planting plans, Botanical gardens, Business parks, Cemeteries, Ecological parks and networks, Environmental Impact Studies and Assessments, Forest, Garden Fairs and expositions, Golf Courses, Highway/motorway alignment and design, Historic parks and gardens, Historic landscapes, Housing renewal and new projects, Industrial sites, Lake shore development, Land reclamation, Landscape planning, Land use suitability studies, Leisure and tourism, Mineral extraction and mining (quarries), Monuments and sites, Nature areas, New towns, Outdoor recreation facilities, Port facilities, Power lines, Private and public gardens, Railway corridor alignment, Railroad yards, Reclamation of derelict land, Regional planning, Retail and commercial zones, River rehabilitation, Roadside planting, Roof gardens, Rural land improvement/ re-allotment schemes, Townscape appraisals, Town planning, University campus planning, Urban parks, Urban plazas and pedestrian zones, Waste disposal sites...<sup>3</sup>

### **3. Landscape Architecture – what professional training?**

In this professional context the outline for a Common Course Structure for European Schools is based on a minimum of four year of education and training and embraces the following four objectives:

- design and planning skills based on artistic/creative talent and an ability to think along the lines of logic and reason.
- an intellectual development based on a broad background knowledge of - and reflection on - human related and natural processes.

<sup>2</sup> Definition of the Profession of Landscape Architect for the International Standard Classification of Occupations /International Labour Office / Geneva

<sup>3</sup> European Foundation for Landscape Architecture, Education Committee Report, Education Policy Document 1998

- a technical know-how in order to understand the implications and consequences of design and planning decision.
- an understanding of the different roles of landscape architects in interdisciplinary teams and an ability to manage planning processes.<sup>4</sup>

ECLAS is defining landscape architecture as a field of professional activity and an academic discipline is concerned with the conscious shaping of the outdoor space at various scales. It involves planning, design and management of the landscape to create, maintain, protect and enhance places so as to be functional, beautiful and sustainable and appropriate to diverse human and ecological needs. (...)

Contemporary landscape architecture can range from carrying out large scale landscape planning or design projects, such as developing landscape proposals for the future large regions or integrating significant infrastructure projects into the landscape and ameliorating their impacts on the environment, through the formulation of strategies for the provision of green space structures and urban nature conservation, to the detailed design of new housing or commercial areas, individual parks, urban public spaces and gardens. Equally landscape architects may be involved in the development of concepts for the long term management of historic gardens and landscapes, recreation areas in the urban fringe or of national parks and protected landscapes.

In all cases the focus of the professional activity is the development and formulation of planning and design solutions for spatial problems of landscape conservation and development, involving the integration of specialist knowledge from a wide range of disciplines and the interests of society as a whole as well as a large number of institutional actors. This frequently takes place in interdisciplinary teams involving other environmental professions, such as architecture, urban and regional planning and civil engineering.

While many academic disciplines have an interest in the study of a wide range of different aspects of landscapes, as is clear from the above outline of the nature of the discipline, the central focus of landscape architecture is on active intervention in the landscape through means of planning, design and management. The goals of intervention can be located anywhere on a scale starting with the protection or conservation of landscape resources and their associated meanings and values, through to creating new landscapes through development projects.

Landscape architects are thus trained to undertake planning, design of management projects concerned with spatial and temporal interventions in the landscape as their central or core competence. Such interventions may be at a larger territorial scale (landscape planning), at a smaller scale on a site of limited

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<sup>4</sup> European Foundation for Landscape Architecture, Education Committee Report, Education Policy Document 1998



size (landscape design) or involving variable time scales (landscape management). It is by these activities that landscape architects contribute to the implementation of policies that address climate change, loss of biodiversity, sustainable development, soil protection, water management and flood protection, quality of life in cities and rural areas.”<sup>5</sup>

Thus, the training of landscape architects or engineers involves more scientific fields as ecology and vegetation, urbanism and urban open space, landscape design and planning, constructions, materials and engineering, social sciences, cultural studies...

This complex training is based on political and social demands, as described in various European documents, laws, conventions, policies and programs.

		Subject Specific Competences (Knowledge, Skills and Understanding necessary for intervening in the landscape)						
		Vegetation and Plant Materials	Urban Open Space	Landscape Design	Landscape Planning	Theory and Methods	Materials & Construction	Etc. etc
Core Competence[s] (Relate to the process on intervening in the landscape through planning, design and management)	How should the state of the landscape be described?							
	How does the landscape operate?							
	Is the current landscape functioning well?							
	How might the landscape be altered?							
	What predictable differences might the changes cause?							
	Should the landscape be changed?							
	In what ways can the changes be implemented?							

Figure 1: Subject specific competences - Source: The Tuning Project ECLAS – LE:NOTRE Landscape Architecture Education in Europe Tuning Landscape Architecture Education in Europe, version 19

<sup>5</sup> The Tuning Project ECLAS – LE:NOTRE Landscape Architecture Education in Europe Tuning Landscape Architecture Education in Europe, version 19

Concerning the European landscape architecture education, EFLA defined the areas of knowledge and skills:

## **LANDSCAPE DESIGN AND PLANNING.**

### **Design and Planning Theory.**

The ability to interpret general goals in society, converted into specific objectives, into landscape design principles, strategies, and methodologies.

Courses: landscape architecture and planning theory; design and planning methodology and their application in case studies.

### **Design and Planning Skills.**

The development of a creative talent, of a sensibility to form, colour and texture; an ability to generate concepts in space and time; to evoke, project and transfer images.

Courses: basic design, free hand drawing and painting, modelling, design studio projects.

The ability to fit new development into an existing environment within the scope of comprehensive regional planning with an emphasis on visual and ecological requirements and potentials.

Courses: landscape planning studio projects, regional planning courses.

The development of the skills of communication, negotiation and presentation.

Courses: verbal presentation exercises, language courses, free hand drawing, technical drawing, model making, computer graphics.

## **MAN, SOCIETY AND ENVIRONMENT**

### **Landscape history and theory.**

Knowledge of the fundamental concepts of the relation between man and his physical and socio-cultural environment. A general understanding of notions of changing values, attitudes beliefs and behaviour in the course of time.

Knowledge of the way in which our heritage of cultural landscapes was formed and transformed over time. The history of settlements, of land use, of sites and monuments. The notions and principles of conservation and renewal. Landscape as a continuous process from past to present to future.

Courses: historical-, physical-, social- and economic geography, anthropology, sociology, environmental psychology.

### **History of Fine Arts, of Architecture, Urban Design and Landscape Architecture.**

Knowledge of the contribution of the Fine Arts in the past as well as in the present to architecture, urban design and landscape architecture, as the basis of design philosophies, design styles, aesthetic standards and symbolic interpretation.

A study of examples of designed environments and buildings in ancient and modern times. This in the context of cultural, political and economic developments. Courses: history and theory of art & architecture, urban design, of garden & parks design. Contemporary trends.

### **Principles and rules of government**

Knowledge of the fundamentals of landscape and environmental policies. Environmental and planning legislation and procedures. The role of international, national, regional and local government organisation in environmental planning and design.

Courses: planning and environmental legislation & procedures.

## **NATURAL AND FUNCTIONAL ASPECTS OF LANDSCAPE**

### **Ecology**

Knowledge of the physical and biotic basis of natural systems and the ability to appraise their existing and potential value; both for protection and development: finding design and planning potentials.

Courses: general and applied ecology, geology, climate, topography, soil science, hydrology, vegetation studies, plant materials, planting plans. Park and nature management.

### **Land Use Types and their Functional Requirements**

Knowledge of various land use types, their developments over time, their internal functioning and their territorial claims, interrelationships, compatibilities. Requirements in terms of layout and management.

Courses: functional and planning aspects of agriculture, housing, industry, infrastructure, outdoor recreation & tourism

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## **TECHNIQUES AND MANAGEMENT**

### **Data processing techniques**

Knowledge of, and the skill to apply, the techniques of inventory and assessment of landscapes and sites, the use of Geographic Information Systems, and the use of computers in design and planning process.

Courses: data collection and evaluation techniques, landscape analysis, remote sensing and photography, Geographical Information Systems, (graphic) computer techniques

### **Landscape Construction and Engineering.**

Knowledge of the materials and the techniques employed in the implementation of plans: the grading and modelling of ground form, the drainage and catchment of water, the construction of roads, pavements, walls, bridges, ponds and water courses etc. Also land reclamation and drainage. Planting plans, the handling of nursery stock, planting schedules. Further the knowledge of the rules of alignment and construction of highways, (rail)roads and other infrastructure.

Courses: building construction, landscape construction, rural engineering, highway engineering, biological engineering

### **Project management.**

The organisation of private and public offices. The writing of briefs and specifications, of cost estimates, the supervision of construction and maintenance.

Courses: professional practice, economics, marketing, management organisation.

### **Landscape management**

A knowledge of the relation between the layout of urban and rural parks systems and their long term use, development and maintenance.

Courses: landscape management techniques, ecological aspects of farm management.<sup>6</sup>

The landscape education is considered to be project and studio-work based, at least 50% of the study time must be spent on the training of design and planning skills and working on projects in studios.<sup>7</sup>

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<sup>6</sup> European Foundation for Landscape Architecture, Education Committee Report, Education Policy Document 1998;

IFLA - UNESCO Charter for Landscape Architectural Education

<sup>7</sup> European foundation for Landscape Architecture, Education Committee Document, Requirements and procedures concerning the recognition of Landscape Architecture programmes, 1998;

This is one of the most important aspects concerning the tuning or Romanian curricula to the European demands for landscape education. The confusion between the administrative organisation and the professional and scientific field generates the inadequacy of our programs. As most part of Romanian landscape programs are developed in the frame of horticulture faculties the landscape domain of training and education is integrated completely to the horticulture one. Thus the fundamental courses for landscape architecture, as defined by the Ministry of Education and Research, are:

- Mathematics
- Chemistry and biochemistry
- Biophysics and agro-meteorology
- Botany
- Soil sciences
- Plants physiology
- Genetics
- Ecology and environment protection
- Microbiology
- Descriptive geometry and perspective

The same document<sup>8</sup> is defining also the compulsory courses that are considered as specific for the entire field of education:

- Agro-chemistry
- Plants pathology
- Entomology
- Agro-techniques
- Horticulture plants improvement
- Energy resources and machinery
- Topography and land reclamation
- Management
- Marketing
- General vegetables growing
- General fruits growing
- Viticulture

- Flowers growing
- Trees growing

All these courses are supposed to represent 35-65% of landscape architects or engineers training and education. The rest of 35-65% should assure the project and planning, aesthetics, arts and architecture history, social sciences, constructions and engineering, landscape history and theory, urban and spatial development, computer assisted design and GIS training and courses.

Thus, it is practically impossible to spend 50% of the time working on projects and to provide basic knowledge as required by the European structures. Besides these administrative aspects we can highlight an inadequacy of the “fundamental” or “specific” courses to the landscape architecture training demands. Thus land reclamations is all about irrigation for agriculture exploitations, flowers growing is not including spontaneous or pioneer vegetation...

Based on this definition of the core competences by the Romanian educational system in the last 12 years the landscape architecture schools were forced to reduce the project studios, to eliminate aesthetical and cultural courses and to dedicate more time to agricultural or horticultural training. This lack of understanding of landscape architecture as a specific and important profession provoked strong discrepancies between professional needs and common understanding at practical level.

I will not discuss the results that we face today in our cities: the overwhelming kitsch of our public spaces, the lack of ecological approach, the poor quality of our parks and gardens...

As it was underlined by ECLAS “in the case of an academic discipline, the term “core competences” can be used to refer to those distinctive capabilities which give it its specific characteristics and thereby distinguish it from other disciplines. In the case of landscape architecture these can be clearly deduced from the definition of the discipline.”<sup>9</sup> in the Romanian case we should reconsider these core competences in order to train real landscape professionals and also to assure real specialists able to apply and develop the European legislations<sup>10</sup> that Romania signed in the last years.

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<sup>9</sup> The Tuning Project ECLAS – LE:NOTRE Landscape Architecture Education in Europe Tuning Landscape Architecture Education in Europe, version 19

<sup>10</sup> The main European documents with impact on Landscape Architecture field are presented in the annex of the present article



## 4. Conclusion

The Landscape Education in Romania is facing a huge disparity with the European tuning programs, professional definition and practice, both in vision and programs.

It is to highlight the fact that the Landscape Architect profession in Europe is not dependent of the type of university organising landscape architecture formation (e.g. Architecture, Agronomical Sciences, Arts and Design, Environmental Sciences, Technical Studies...) – thus is no difference made between Landscape Architects and Landscape Engineers. A profession is not defined by the institution but by the formation!

Even in Romania there are Landscape Architecture schools in the frame of Horticulture, Urbanism and Ecology Faculties. The problem occurs from the guidelines of education centred on faculty not on specialisation, thus the Landscape Architects formed in our schools are sort of Horticulturists, Town planners or Environmental engineers with some knowledge in Landscape Architecture.

A second important gap is resulting from the general confusion between Garden Architecture and Landscape Architecture – so a clear definition of LANDSCAPE (in concordance with the European legislation) should be adopted in the educational system, and to be promoted and forge in the Landscape Architecture programs.

In this context some important steps should be made in order to develop an European-level landscape architecture educational system in Romania:

- To recognise and to define the Landscape Architecture profession in Romania
- To rethink a common ground in the Landscape Architecture education in Romania, in respect of the existing European legislation and tuning programs
- To integrate our schools in the European professionals and academic structures (EFLA, ECLAS, Le:Notre) in order to reorient our educational system along the European guidelines and strategies
- To develop Master and PhD programs in Landscape Architecture, similar with other European programs
- To promote a Romanian legislation in the Landscape Architecture field
- To promote an open dialogue in-between Landscape Architects, Architects, Urbanistes, Ecologists, Geographers, Sociologists and other connected specialists in order to adapt the Landscape Architecture educational programs to the social, cultural, economical and professionals realities

Until then, the lack of a clear vision on Landscape Architecture (largely confounded with gardening) will keep generate inadequate curricula in the Romanian higher education system. It is to the Romanian schools, with the already existing European support, to promote together educational plans and curricula that are able to form real professionals and a field of work and research at European level.

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## **Annex 1.**

EUROPEAN LEGISLATION IN LANDSCAPE ARCHITECTURE FIELD: cf. EU-Teach - Implementation of relevant European teaching contents in the studies of landscape architecture

- European spatial development perspective (ESDP)
- Territorial agenda of European Union (Leipzig, 2007)
- Kyoto Protocol, 1997
- Winning the Battle Against Global Climate Change [SEC(2005) 180} COM/2005/0035 final
- A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council) [KOM(2001) 264 final]
- The Venice Charter for the Conservation and Restoration of Monuments and Sites (1964)
- Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)
- European environmental Agency
- Trans European network (TEN)

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- Convention (EG) Nr. 1367/2006 on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus 1998)
  - The Sixth Environment Action Programme of the European Community (2001-2012)
  - Convention of Biological Diversity (Rio, 1992)
  - Convention on the Conservation of Migratory Species of Wild Animals, CMS) (Bonn, 1979)
  - Convention on International Trade in Endangered Species of Wild Fauna and Flora CITES (Washington 1973)
  - Alpine convention (96/191/EG)
  - Framework Convention of Climate change (Rio, 1992)
  - European Soil Charta (1972 )
  - Habitats directive (Council Directive 92/43/EEC (1992) on the Conservation of natural habitats and of wild fauna and flora
  - Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds 2009 (SPA)
  - Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (EIA)
  - Council Directive 85/337/EEC (1985) on the assessment of the effects of certain public and private projects on the environment (EIA = environmental impact assessments)
  - European SEA Directive 2001/42/EC
  - Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise
  - Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy
  - Thematic Strategy for Soil Protection [SEC(2006)620] [SEC(2006)1165]
  - Clean Air For Europe (CAFE) initiative, 2005
  - Thematic Strategy on air pollution [SEC(2005) 1132] [SEC(2005) 1133]
  - Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks
  - Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration
  - European Agricultural Fund for Rural Development (EAFRD)

- Life+
- Leader
- European Regional Development Fund (ERDF)
- Charter of European Cities and Towns Towards Sustainability, Aalborg 1994
- Leipzig Charter On Sustainable European Cities/ 2007
- European action programme Lille
- Rotterdam Urban Acquis 2004
- Bristol Accord 2005
- European standards (e.g. on equipment and materials (play spaces EN 1176 (part1-7); EN 1177)
- Green paper on policy options for progress towards a European Contract Law for consumers and business COM(2010)348
- Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage
- The Service Directive (Directive 2006/123/EC of 12 December 2006 on services in the internal market



## The Evolution of Open Spaces and Green Surfaces on High-Density Developments Since 1950

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**Abstract:** Although the first housing estates appeared in Europe around the beginning of the 19<sup>th</sup> century, the concept of housing estates is closely connected to urban developments after World War II. Within this timeframe, it is most significant in the residential developments of former Socialist countries. In this region the housing estates can be considered as the symbols of Socialist urban planning. Within in the history of housing estate developments certain periods can be distinguished according to architectural composition, applied building technology and planning principles, and their urban structural situation. The main types of housing estates are similar in the various Eastern Bloc countries.

The development pattern of the housing estates built in the 1950s is different from those of the 1960s – when block technology was applied – and from the housing estates with the system-building technology of the 1970s. Due to these differences, the amount and quality of green surfaces and open spaces also vary dramatically in housing estates built in different decades. Housing estates built in the 80's and 90's are more ambitious regarding applied open space planning solutions, in order to balance the declining prestige of the block- flats. The big housing estates developments ended after the change of regime, but the construction of planned high- density developments has survived in the form of gated community developments. The gated community developments of the last 15 years fulfill the new needs of a social class quite different from population of the older housing estates. These new requirements affect the green surface and open space development in these new residential areas, as well.

During these 60 years, many new public functions have appeared in housing estates, and a variety of different planning styles and fashions have come and gone. There were significant changes in material use, and many new products appeared on the market.

In our research, the sizes and proportions of green surfaces and applied open space design solutions are analyzed on different testing sites. The evaluation of this data includes taking into consideration the relevant related building codes for residential developments effective in each period. Original physical plans, landscape development plans, aerial and spatial photos help to evaluate plant-coverage, proportion of impervious (paved) to green surfaces, composition of vegetation, and the amount and proportion of recreational open spaces.

**Keywords:** housing estates, green surface normative, parking, residential common gardens, urban ecology, tree canopy

## 1. Introduction

Although the first housing estates appeared in Europe around the beginning of the 19<sup>th</sup> century, the concept of housing estates is closely connected to post- World War II urban developments. Within this timeframe, it is most significant in residential developments of former Eastern Bloc countries. In this region the housing estates can be considered as the symbols of Socialist urban planning. Within the history of housing estate developments certain periods can be defined according to building composition, applied building technology and planning principles and their location within the urban structure. The main types of housing estates are similar in the various countries of the Eastern Bloc.

The development pattern of the housing estates built in the 1950s differs from those of 1960s housing estates – when block technology was applied – and from the housing estates constructed with system-building technology in the 1970s. Due to these differences, the amount and quality of green surfaces and open spaces vary dramatically among housing estates built in different decades. Housing estates built in the 1980s and 1990s are more ambitious as regards their applied open space planning solutions, in order to balance the declining prestige of the blocks of flats. The big housing estates developments ended after the changes of 1989, but high-density large-scale planned developments have survived in the form of gated community developments. The gated community developments of the last 15 years fulfill the new needs of a social class quite different from population of the older housing estates. These new requirements affect the green surface and open space development in these new residential areas, as well.



## 2. Materials and methods

Within the 60 years of analysis many new public functions appeared on housing estates, planning styles and fashions followed each other, there were major changes in the usage of materials, many new ready-made products appeared on public open spaces. By learning the then valid regulation and planning methods of green surfaces and by analyzing certain sample- territories, we reveal the size, quantity, proportion of the green surfaces in housing estates and the typical open space design solutions. In addition, we determine some theoretical and practical values, which can have some effect on recent green surface design and open space design as well. Number of flats in certain housing estates and the number of residents were determined according to statistical data. The plant coverage, the proportion of pavements, composition of plants, the proportion and quantity of open space units with recreational functions in different eras were evaluated with the help of original built-in plans, open space design plans, aerial photos and satellite images.

In order to study the planning principles of housing estates of the period from 1950 to 1990, we chose the construction plans of two housing estates planed in each decade and analyzed them according to certain aspects. These same aspects were used to analyze the construction plans of two housing estates built after 2000. The comparison of green surfaces and green areas of different housing estates can be tracked by the changes of the following attributes:

Character of development:

- The placement and usability of common gardens
- The relation of pedestrian to car traffic
- The means of parking and the number of parking places
- Specific proportion of green areas by type
- Proportion of green surface
- Coverage (tree canopy)

We evaluate the **present** coverage of housing estates built in different decades by the help of aerial and satellite photos, and we draw conclusions regarding the changes in green surface proportion.

### 3. Results and discussion

The typical systems of housing estates built in the first half of the 1950s are framed and open-framed. According to the superbloc planning principle the courtyards in certain cases were enlarged to a size that would permit primary public facilities (such as day-care for children) to be placed here. We don't see any sign of parking lots in the plans of this period. At certain housing estates, the placement of buildings is in axial symmetry, and the symmetry axis is emphasized by decorative pools, statues and trees (for example, Budapest's District XI. Villányi Street housing estate). The green areas of housing estates are ornamented with by lavish flowerbeds. Although compulsory regulation had not yet determined the minimum proportion of green surface, an extremely high proportion of green was typical in these housing estates.



Villányi út	Size/Quantity	%
total area (m <sup>2</sup> )	14902,6	100
built-in area (m <sup>2</sup> )	3102,5	20,82
pavements (m <sup>2</sup> )	3944,9	26,47
water surface (m <sup>2</sup> )	69	0,46
deciduous trees (db)	92	
flower surface (m <sup>2</sup> )	429,7	2,88
parking lots (m <sup>2</sup> , db)	0	
canopy (30m <sup>2</sup> /tree)	2760	18,52
<b>green area</b>	<b>7786,2</b>	<b>52,25</b>
number of residents	561	
<b>green area per resident</b>	<b>13,9</b>	<b>m<sup>2</sup>/fő</b>

In the case of the housing estates built in the 1960s, the parallel detached layout – more practical from a building-technology standpoint – seems to displace the framed one. But among the buildings, there are still semi-enclosed, large-scale „semi-courtyards”, in accordance with the superbloc principle. Car traffic is only outside the block, with only pedestrian traffic permitted in the courtyard. In these housing estates, the number of parking places is insignificant.

In some of the housing estates of the 1960s, the buildings are arranged in clusters, around cul-de-sacs. This method was successfully applied at housing estates that were built in one phase. (E.g. Budapest District XVIII. Lakatos Street Housing Estate) Very dense tree plantation (perhaps even too dense by today's standards) and huge flower surfaces are typical in the green areas.

At housing estates built at the beginning of 960s the size of green surface per resident is relatively high. We can find lavish flowerbeds in the green areas between the buildings. A large portion of the pavements are gravel-covered, which absorbs rainwater.



Lakatos u.ltp.5. egység	méret/menny.	%
teljes terület	59080	100
épület	8960	15,2
szilárd burkolat	22983	38,9
szórt burkolat	1526	2,583
vízfelület	0	0
fák (db.)	297	
virág felület	1525,9	2,6
parkoló	0	
borítottság(30 m <sup>2</sup> /fa)	8910	15,1
<b>zöldfelület (m<sup>2</sup>)</b>	<b>27136,8</b>	<b>45,9</b>
lakosság	1785	
<b>1 főre jutó zf.</b>	<b>15</b>	<b>m<sup>2</sup>/fő</b>

The 1970s is the decade of the so-called big-panel technology. The 33-meter high, several hundred meter-long giant houses are typical products of this period. The simplest layout method from the construction technology standpoint – the parallel detached arrangement of buildings – was applied. The houses were arranged parallel with each other and the courtyard character of the space between the buildings totally disappeared. There were some high prestige housing estates that were built by system-building technology, but still had some semi-framed placement. (E.g. Budapest District XIII., Újlipótvárosi Housing Estate).

The first normative regulation regarding the specific green area index of housing estates was introduced in this decade, which determined a standard of least 5 m<sup>2</sup> per resident of common garden space. (OÉSZ 1970)

A more detailed central regulation appeared in 1977 regarding the minimum specific green area on block parcel residential developments within the confines of mass-housing. According to this, for each resident of the new housing estates three times 7/m<sup>2</sup> – within the territory of the housing estate two times 7m<sup>2</sup> – green area must be provided. (11/1977ÉVM-OTSH joint decree) 7m<sup>2</sup> of green should be provided next to the building as a common garden area. The second 7 m<sup>2</sup> is to be classified as a local public park (E.g.: Bikás park in Budapest's District XI. Kelenföldi housing estates, or Óhegyi Park in Budapest District X. Óhegyi Housing Estate, but in many cases these required residential-level public parks

were never built. The third 7m<sup>2</sup> green area was designated to be provided in the form of metropolitan-level public parks).

The specific playground need for each age group, and the specific recreational and leisure areas for each resident were also determined by decrees. The public gardens with playgrounds, leisure areas and sport fields were placed in the narrow, often extremely windy yards between buildings.

The relation between pedestrian and car traffic is variable. However, at certain housing estates car and pedestrian traffic were divided (e.g.: Budapest District XIII., Újlipótvárosi Hosing Estate), in most of the cases they aren't. (e.g.: Budapest District X., Újhegyi Housing Estate). In this decade the required number of parking places was already centrally regulated. (approximately 1 place/flat), but according to the decree only 50% of the necessary parking place was to be placed next to the buildings and the other 50% was theoretically provided on parking palettes built at a distant point of the housing estate. In reality, these palettes were never built.



Újlipótvárosi ltp. II/B út.	Size/Quantity	%
total area (m <sup>2</sup> )	208236,2	100
built-in area (m <sup>2</sup> )	27503,6	13,2
pavements (m <sup>2</sup> )	106760,5	51,3
water surface (m <sup>2</sup> )	0	0
decidious trees (db)	633	
flower surface (m <sup>2</sup> )	0	
parking lots (m <sup>2</sup> , db)	27946	13,42
canopy (30m <sup>2</sup> /tree)	18990	9,1
<b>green area</b>	<b>73972,1</b>	<b>35,5</b>
number of residents	5487	
<b>green area per resident</b>	<b>13,5</b>	<b>m<sup>2</sup>/fő</b>

In the 1980s the renaissance of traditional “streets” can be observed. The primary public facilities are lined up on the main street of the housing estate with mixed traffic, which runs along the axis. (e.g.: Budapest District XX., Kispést Városcsözpont Housing Estate) The characteristic separation of car and pedestrian traffic so typical in earlier built-in plans seems to disappear, and traditional streets show up again. Parking places are arranged along the streets, with a sizing 1 place/flat. The buildings are organized on the street, but the building lines are recessed from the street line. However, even though the parallel detached construction layout is still dominant, the layouts of the buildings tend to be more versatile, with some buildings creating open or closed courtyards. The floor number is also more versatile; in one housing estate, there are 4-5 story high buildings besides the 11-story ones. (E.g. Budapest District

III. Pók Street Housing Estate) The playgrounds and leisure areas are located in the “bays” of the buildings.



Pók utcai ltp.	Size/Quantity	%
total area (m <sup>2</sup> )	127178,5409	<b>100</b>
built-in area (m <sup>2</sup> )	16560,4	<b>13,0</b>
pavements (m <sup>2</sup> )	54920,6	<b>43,2</b>
water surface (m <sup>2</sup> )	0	<b>0</b>
deciduous trees (db)	988	
flower surface (m <sup>2</sup> )	0	<b>0</b>
parking lots (m <sup>2</sup> , db)	545	
canopy (30m <sup>2</sup> /tree)	16350	<b>12,9</b>
<b>green area</b>	<b>55697,5</b>	<b>43,8</b>
number of residents	12393	
<b>green area per resident</b>	<b>4,5</b>	<b>m<sup>2</sup>/fő</b>

The multi-story gated community developments of the 2000s can be considered as the descendants of housing estates. Beginning in the 1990s, the central regulation regarding green areas and surfaces of new block-size residential developments disappeared – only the provision of the zoning plan is normative. In addition, while housing estate developments between 1950-1990 were funded by the state and social considerations (for example, family size) were also respected, the gated community investments of the 2000s are market-based, and privately financed by investors seeking a quick return.



Marina lakópark	Size/Quantity	%
total area (m <sup>2</sup> )	23160	<b>100</b>
built-in area (m <sup>2</sup> )	11222	<b>48</b>
pavements (m <sup>2</sup> )	6383	<b>27</b>
water surface (m <sup>2</sup> )	0	<b>0</b>
deciduous trees (db)	26	
flower surface (m <sup>2</sup> )	0	<b>0</b>
parking lots (m <sup>2</sup> , db)	0	<b>0</b>
canopy (30m <sup>2</sup> /tree)	780	<b>3</b>
<b>green area</b>	<b>5555</b>	<b>24,0</b>
number of residents	881	
<b>green area per resident</b>	<b>6,31</b>	<b>m<sup>2</sup>/fő</b>

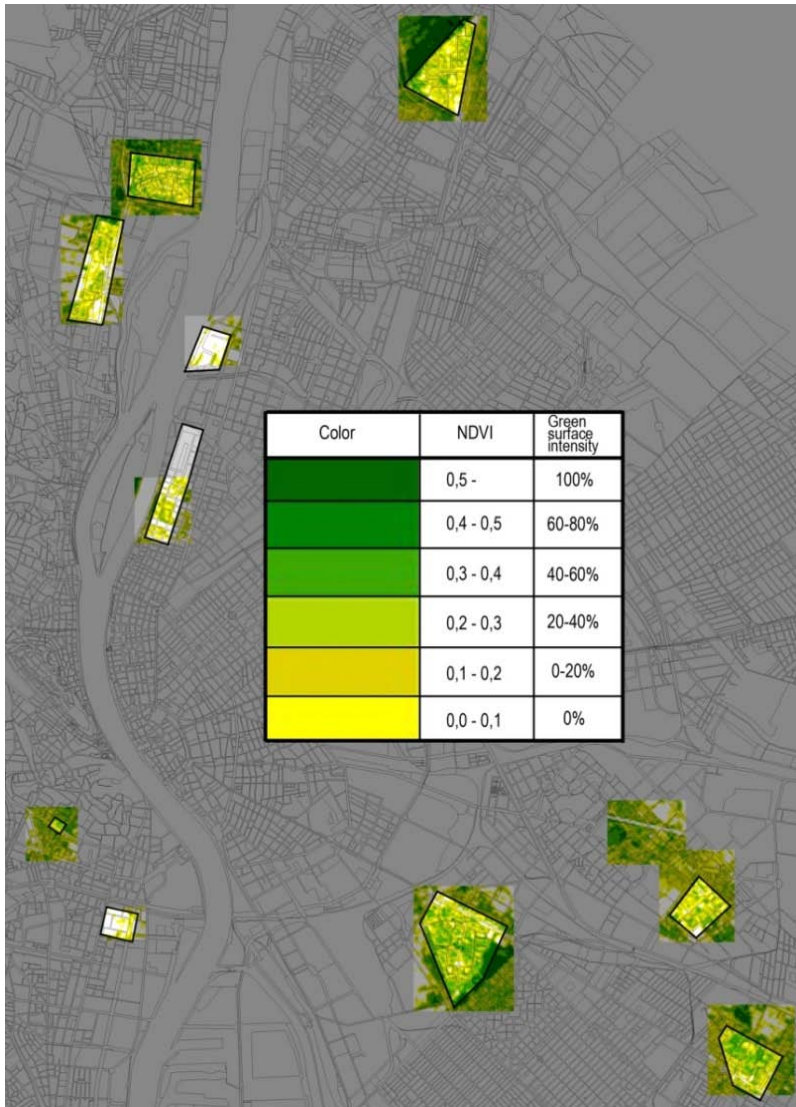
Extremely intensive construction with high-rise buildings is typical. There are relatively small, but very intensively-created green surfaces between the buildings. As a great proportion of them are roof gardens with variable thickness of soil layer, there are only a few places that permit the plantation of trees. The proportion of tree canopy coverage is extremely low. In some new “housing estates”, the congestion is eased only by adjacent big open spaces. (e.g. the Danube shore next to Marina Park).

Last but not least we studied the Vegetation Index. By monitoring the changes of the past 20 years and the recent figures of the housing estates mentioned above, we were able to get numerical data of the urban ecological effects of the block-like construction.

The NDVI (Normalized Difference Vegetation Index) is a simple numerical indicator. It is calculated from the reflection of the light intensity in different wavelength ranges. Chlorophyll in plants is also responsible for the light absorption and reflection in the visible (red) and near-infrared regions. (Eredics, 2007) Therefore the quantity and quality (heat, levels, foliage) of the plants are also responsible for the Vegetation Index. They take on values between -1.0 and +1.0. The vegetation is very low near the 0.0 values, between -1.0 and 0.0 there is no plant life (only impervious surfaces: buildings, pavement or naked surface). Above 0.5 the vegetation is perfect (complex, prolific and rich).

The first map (figure) shows the vegetation status of the year 2005. The intensity of the green colour represents better vegetation. (Gábor, Jombach, Ongjerth, 2006) In this map, the green colour is dominant. These housing estates were built over 20 years ago, a by now, a complex green area has been developed. Three housing estates are in especially good condition: the József Attila housing estate located in the middle of the city, the Pók Street estate in Óbuda and the centre zone of the Lakatos Street state. There is no green colour in the modern housing park areas, as the vegetation has not yet been developed around the new building investments.



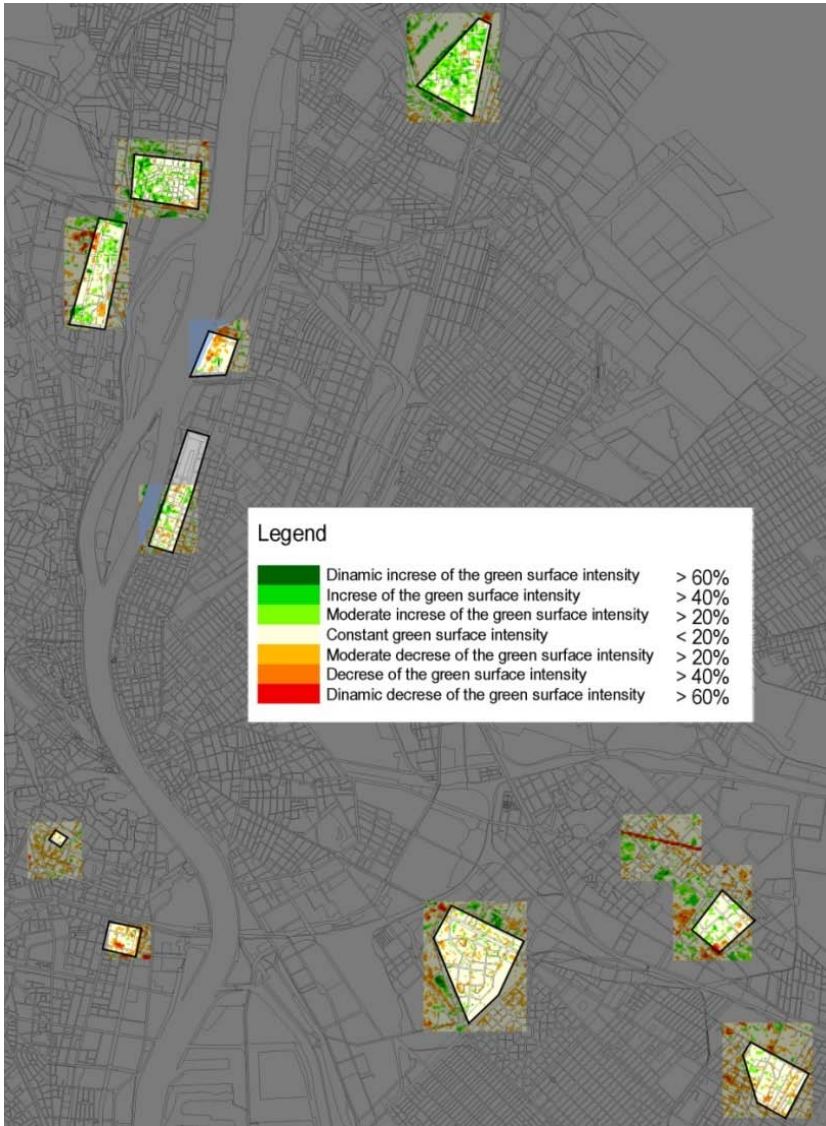


The next map (figure) shows the changes in the Vegetation Indexes between 1990 and 2005. The green pixel represents an increase while the red shows a decrease of green surface intensity. (Gábor, Jombach, Ongjerth, 2007) Generally the values seen to be constant; the vegetation index has not changed in most cases.

The housing estates in the southern areas were built in the 1950s or 1960s;



therefore a complex, multileveled vegetation had developed by the 1990s. There is a sign of construction marked by the red colour on our maps. We presume that new parking areas or other facilities (for example a sport field, shop or playground) were created. The housing estates in the northern districts were built in the 1980s; therefore we can see dynamic growth in the green surface intensity because the vegetation developed considerably between 1990 and 2005.



#### **4. Conclusion**

One of the greatest values of the housing estates that were built earlier is their well-established wooded vegetation, thanks to an open-space proportion provided by a detailed and high level green surface normative system that was more or less observed. The edification of our research is that these housing estates – so often criticized and viewed in a negative light – have developed an extremely high vegetation index by the present day. They can even bear minor new developments and expansion of functions. Thanks to their large open spaces, proper supply of green surfaces, and significant index of tree canopy coverage, 20, 30, 50 years after plantation these housing estates have a good *urban ecological* effect. The regulations, revised in the 1990s for market-based, privately-funded urban development, brought to an end a significant number of planning principles and norms that had served the public interest and improved quality of life. So, nowadays profit-oriented, extremely-intensive housing developments are built with little green surface and even less usable green surface. It is worth considering what environmental quality the housing developments of today will have in 30-40 years, how much they will be able to reduce the urban heat-island effect, how much they will be able to contribute to the conditional green surface system, and whether they will remain livable at all.

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## Challenge of Value Based Impact Assessments

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**Abstract:** Growing challenge of decision making is today the identification and respect of value system of sustainability. To diversity of decision making processes add all kinds of impact assessments and the diversity of participants and their varied value systems. The values system, which focus on evolving of human vital-being, on landscape and on adaptive management of ecosystems and their services, is an essential and indispensable precondition for sustainable oriented decision making and for the effective impact assessment process connected. Our aims: to emphasize fundamental values, and methods which have key role in development of value system of sustainability.

**Keywords:** sustainable development, decision making, indicators, results, vitality

### 1. Introduction

These days, there is an increasing need to respect sustainability, and in essence, the term Green Economy underlines the environmental aspects of this need. At an international level, the above tendency is indicated especially in point 136 of the Plan of Implementation, World Summit on Sustainable Development, final version, 24 March 2003; and, if we want to use a Hungarian example, in expressing the need for a sustainability framework strategy and a regional set of values mentioned in the National Regional Development Concept.

According to Blowers, it is easy to refuse the concept of sustainable development with the explanation that it is too obscure and uncertain from the perspective of applicability (Blowers, 1993.). The term – in spite of the disputes on its definition and usability – is slowly becoming one of the core objectives of public policy at many places. The real challenge is caused by the incompatibility between the paradigms of really sustainable development and the currently functioning globalisation of the economy which is increasingly free from real competition. The situation is further aggravated, because current economy is basically profit oriented, while sustainability is based on values (Szilvácsku, 2003).

Presumably, the present (global) crisis situation is exactly about how we can replace the view which correlates development with competition and with the place occupied in competition. The essence of competition is relative advantage – whereas that of sustainability is liveable absolute life for all. It is high time to obtain the theoretical need to explore the „cooperative advantages” besides/in stead of „comparative advantages”. The basic problem with the human factor lies also in the fact that the competitive world views human resources as factors to increase the added value, in stead of viewing them as Human Beings. Development is necessary to offer the individuals and the communities a worthy life (Gáspár, 2008).

## 2. Materials and Methods

Based on my experiences and the results of my researches I shall summarise those challenges which the person performing impact studies is confronted while exploring and enforcing the core values of sustainability. My objective is to stimulate thinking and discussion in order to promote, during the transition for sustainability, **the development of a value based and result motivated decision-making culture guaranteeing the accomplishment of the fullness of life** also via the impact studies.

### **Challenge 1: A central criteria to sustainability is guaranteeing the accomplishment of the fullness of life**

In the course of the impact assessment practice, the expert is confronted with the different interpretation of the sustainability criteria, values. A number of studies discuss the criteria of sustainability assessments also including the environment, social and economic criteria. In its article, Gibson (2008) emphasises the problems of sustainability affecting the society and the biosphere, and proposes central criteria for the sustainability evaluations among which the social and ecological aspects have a fundamental dominance. Further I have formulated a proposal for the central criterion of sustainability, as well as its application potentials and framework conditions.

A number of decision theory and practice researches deal with considering sustainability aspects, the examination of the values however, enforced by the

participants and their development potentials are not in the focus of researches. The multi-coloured nature of the world of the decision-making is further intensified by the number of methods applied in decision-making as well as by the diversity, varied level of expertise and set of values of those taking part in decision-making.

In spite of a number of well-built up decision-making processes on development, developments that are not sustainable and are **pointing not into the direction of the evolution of life** are realised with different additional long-term and short-term negative impacts. The reason for the phenomenon of development decisions and processes strengthening the direction of non-sustainability have been defined by Donella Meadows<sup>1</sup> and colleagues as a philosophy of the Sustainability Institution established by them as follows: *“We believe that unsustainability does not arise out of ignorance, irrationality or greed. It is largely the collective consequence of rational, well-intended decisions made by people caught up in systems – ranging from families and communities to corporations, governments and economies – that make it difficult or impossible to act in ways that are fully responsible to all those affected in the present and to future generations.”*

Besides Donella<sup>2</sup>, more and more have pointed out that **in the restructuring of the current system** (e.g., the economy or the government, the public administration) **and the processes in the direction of sustainability, the presumed or actual set of values held by the actors including the decision-makers plays a key role.**

The identification, recognition of the focal point, core value of the set of sustainability values is all the more an urging necessity as the enforcement of the impact studies' objective and potential is in essence not an issue of methodology but much more an institutional, personal and political challenge (Dalal-Clayton and Sadler, 2005; Szilvácsku, 2009). Methodology developments are necessary, but if we consider the different types of impact studies, especially with regard to SEA, we have been witnesses to an explosion of development in the past decade. In respect of an expedient application practice, agreement on the central value of sustainability is an elementary necessity, whose systemic and responsible enforcement may bring about the application of the impact studies to the necessary extent in the decision-making processes.

Two central questions emerge in relation with the development and enforcement of the set of sustainability values and value structure. The first question: what is the relationship between the economic, social and environmental values that serve as

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<sup>1</sup> One of the researchers involved in the author group of the Limits of Growth and World 3 analyses. The identification of the leverage points in the frame of system dynamics and system thinking have been tied to her name.

<sup>2</sup> Leverage Points (Places to Intervene in a System) by Donella Meadows, Sustainability Institute, 1999



the basis of sustainability. Second question: what methodological solutions promote the enforcement of the set of sustainability values in the different impact assessment and decision-making processes. Below I undertake to give a snapshot of some of the aspects of these two questions.

Regarding the first question, in respect of sustainable development, the primary aspect is guaranteeing the conditions of life. Guaranteeing the conditions of life means that the framework conditions to the accomplishment of full life must be ensured both in development as well as in sustenance. Life of full value is applicable to all humans and communities. In this approach, the central value is the human person, and all living things that serve the fullness of human life are considered a value<sup>3</sup>. This statement must be supplemented with three important comments. First: the values are qualities of things to be found on Earth, which make the life of human beings better accomplished. Second: the experienced reality of 'it is' does not always 'has to be' a moral value for the acting human being. Third: not only human beings have self-value. Nature also has self-value but human beings fulfil an outstanding role in the world. Man due to its capabilities is able to enrich the world of nature and prevent its destruction.

As a consequence of the above argumentation, **I propose that the lives of individuals and communities should be placed in the focal point of development, sustenance and operation**, the framework of which will be provided by the natural and artificially arranged environment, and/or the role of economy is defined as a tool to promote development. In this approach the **objective of development: is to guarantee the accomplishment of the fullness of life**, accomplish the existence and the vitality of living being of **persons and their communities** constituting the society (from families to professional and non-governmental communities). The objective is to promote the development of individuals and communities committed to the joint values, undertaking responsibility, increasing knowledge and culture-related assets, partaking there in by assisting (showing solidarity) and supporting each other, cooperating in challenges, able to stand hardship, fighting hard, having regeneration and load-bearing capacities and abilities.

### 3. Results and discussions

#### **Challenge 2: The role of impact studies in enforcing the central values of sustainability**

On reviewing the impact assessment studies carried out in Hungary and the neighbouring countries, in particular SEA (strategic environmental assessment), the endeavour to identify and enforce the core values of sustainability is quite

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<sup>3</sup> Note: metaphysically speaking, it means extra being for the human being.

apparent. Our experiences show that the assessment aspects have been identified in an extremely high number in a number of groups (e.g., the SEA of “New Hungary” Rural Development Programme applied 32, while another SEA applied almost 20 evaluation criteria). Instead of the large number of criteria difficult to overview we recommend the exploration and adoption and systematic application of the sustainability core value as explained in the above point. With the development of the methodology carried out our intention was to support this endeavour.

The staff of Respect Company prepared for the environmental impact assessment (SEA) of the 13 development programmes elaborated for the period between 2007-2013 a so-called Strategic Assessment Methodological Scheme (SÉMA), which gives the opportunity for the strategic assessment of the different social and policy interventions from environmental and sustainability perspectives.

The SÉMA combines three models fundamental from the perspective of the environmental and other policies and programming:

- The DPSIR model,
- The three-pillar model of sustainable development,
- The model of output-result-effect indicators.

The basis of the SÉMA method is the Driving Force-Pressure-State-Impact-Response (DPSIR) model. The DPSIR model is based on the version of the PSR (Pressure-State-Response) model further developed by Anthony Friend (1970), which is also used by the OECD State of the Environment group.<sup>4</sup>

The assessment model developed within the SÉMA facilitates the combined and structured analyses of the actual situation, the objectives, the interventions and the related indicators from the perspective of the sustainability values and the environmental policy objectives.

In the outer circle of the model, we find those terminological areas which should promote the description of the environmental and/or sustainability problems and the definition of the types of interventions.

- The first terminological area is the Driving Forces. These are the economic and social tendencies and phenomena, which have direct impact on the ecological system (the ecological system of water) and on its elements, and which influence the decisions on the existence, operation and the conditions thereof of the systems and elements. These include, besides others, environmental consciousness, landscape attachment, individual set of values, consumption habits, competition, the need for economic growth, community existence, etc.);

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<sup>4</sup> Eurostat (1999), Towards Environmental Pressure Indicators for the EU. European Communities, 2000, Luxembourg

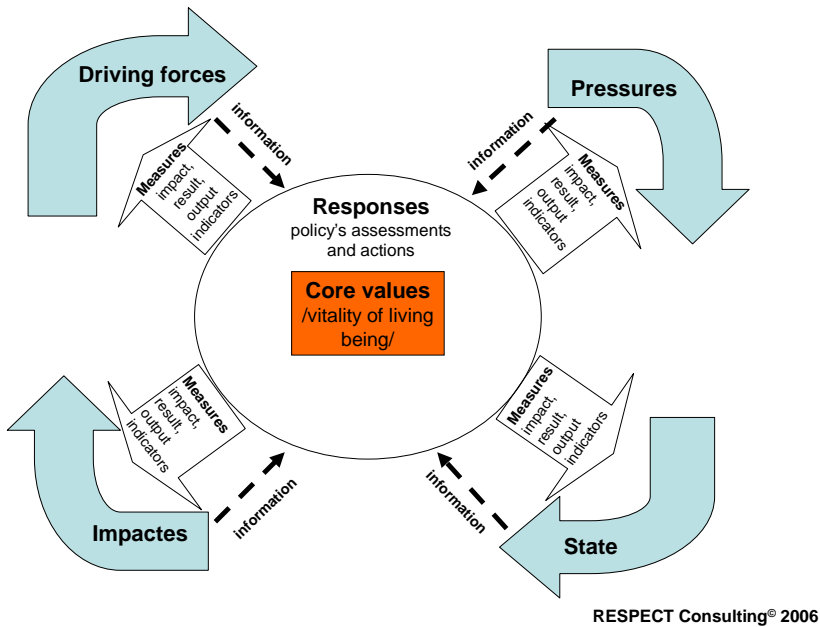


Figure 1: Value Centred Assessment Methodology of IA

- The second terminological area is the Pressure, namely those loads, those human activities, which have a direct impact on the environment (like, for example: CO<sub>2</sub> emission, area occupancy, etc.);
- The third terminological area is the State, namely the observable changes in the status of the environment (like, for example: temperature change, quantity and quality of the available food resources, reduction of habitat contacts, etc.);
- The fourth terminological area is the Impacts, the impact of the altered environmental status on the elements of the environment, on the living systems, and on human population (like, for example, changes in the health status of people, reduction of the number of species, etc.).

The actual environment and the sustainability situation can be described in a comprehensive and logically coherent, structured manner with the use of the above terminological areas, and if the method is applied adequately, the environmental changes, together with their causes and consequences in time (from the perspective of the trends and processes) can also be presented and analysed.

In the inner circle of the SÉMA model we find the different policy responses, by which we understand the complexity of all those social interventions which result in changes in any of the presented terminological areas. These include the

priorities and interventions worded in the operational programmes. The planned interventions can be categorised into categories A,B,C and D, in the function of their target areas, depending on what level they treat the problem in question (for example: the programmes for the elimination of damages fall into category C interventions, as they aim at directly changing the environmental status).

The SÉMA model can be very well applied in analysing the impacts of the different plans, programmes and policies. The nature of the planned objectives and priorities can be identified very well with one of the intervention types and offers the investigation of the interventions in their correlations.

The interventions defined within the framework of the responses can be evaluated on the basis of the sustainability principles and set of values. In this case, the question is the following: the implementation of which sustainability principle is supported by the given intervention and if it supports it at all? **I recommend that the assessments focusing on the core value of vitality of living being to be introduced in the impact assessment practice.**

Indicators are attached to the objectives to be realised and enforced in the responses, and they measure implementation at three levels:

- The first is the level of output indicators
- The second is the level of result indicators
- The third is the level of impact indicators

The application of the proposed approach can only lead to success if they have up-to-date information on the actual quality of life of humans, species, ecosystems and that of the landscape as the space for living. This information can be stored and served through different databases and collected and assessed in the course of monitoring and follow-up measures. These are extremely important base data for impact assessment studies, which are often not available because of the incompatibility of the different database structures or due to lack of data.

To offer a solution for these potential problems, a project was launched in Hungary in 2009 titled **Cadastration of Cultural Landscape Heritage for the Implementation of the European Landscape Convention in Hungary and the Development of a Landscape Character Assessment Methodology**, which creates the foundations for the online contact and the cooperation of database administrators of a schematic database containing all landscape values, as a result of which a broad scale institutional and web2 technology based social participation and service focused information flow can be implemented.

One of the objectives of the project is to serve as an example for other information collection and service cooperation arrangements on the state of human life and ecosystems and the quality of vitality of living beings.

## 4. Conclusion

In the practice of impact assessments with regard to different types of programmes, plans and policies that I have reviewed, a high level of uncertainty can be sensed with respect to the set of values of sustainability and a lack of commitment and responsibility can be experienced on the side of the decision-makers and participants.

In the frame of the development decisions and implementation processes it is important to develop and spread methods that can be applied to raise the awareness and consideration of values regarded as important ones by the different participants and decision-makers. In order to create the foundations of the sustainability and other impact studies and the set of values of sustainable spatial development we need researches and cooperation where in the focal point of the set of values **the accomplishment of personal and community life** is placed.

I recommend that in the course of the impact assessment and decision-making processes carried out in the framework of governmental and public services the enforcement of **the accomplishment of personal and community life and its exposure to threats should be placed in the focal point**.

By building upon the experiences of results-based management, participation-based planning and impact assessment practice accumulated in a number of countries, e.g., in Canada, and Japan, I call for a cooperation in which the vitality of living being is in the centre and which creates the foundation of a multi-coloured and innovative development and sustenance culture on regional, national and international level alike. Its logical model is shown by the following figure:

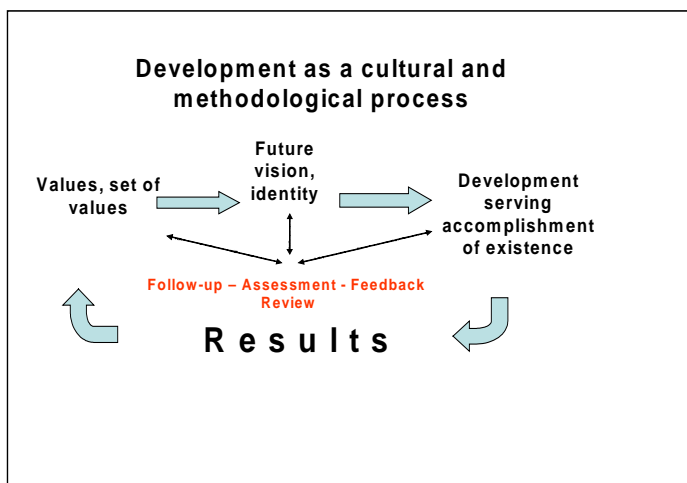


Figure 2: Development as a cultural and methodological process

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## **Industrial Space's Visual Negative Impact on the Rural Landscape and his Reduction by Landscape Architecture**

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**Abstract:** One of the problems of industrial development in rural areas is the negative impact on the landscape, particularly on their environmental and aesthetic values. Industrial areas integration in rural landscapes should not be neglected. Visual impact is an important factor that influences the way how industrial facilities are perceived by the public. This paper contains a theoretical analysis based on rural landscape literature and a case study that exemplifies how an industrial complex located in a rural landscape can be designed so that will not lead to loss of the main features of the rural areas.

**Keywords:** ecological values, aesthetic values, design, development

### **1. Introduction**

Industrial development is running a growing pressure on rural resources increased, threatening the rural land production, aesthetic, and environmental values. The objective of this paper is to highlight design strategies for industrial space located in rural areas, environmentally compatible strategies that effectively oppose to loss of sites (with industrial development) natural qualities. General industrialization, excessive in some rural areas, new industrial spaces with objects of various activities setting up and led to appearance and enhancing of the one most serious phenomenon: rural area pollution (ground, air, and water), agriculture and



forest landscape damage, flora and fauna alarming reduction and an ecological imbalance producing in many ecosystems of the countryside. This aggressive impact, detrimental for natural environment requires the adoption of measures that aim to limit and eliminate the negative effects of pollutants factors on rural space.

Visual impact analysis on landscape has become a statutory requirement for environmental impact assessment. For example, large-scale developments such as wind farms, landfill sites and large industrial developments require a visual impact assessment. Authorities responsible for planning industrial zones must take into account these evaluations, which determine the exact visual impact magnitude on landscape. "Guidelines for Landscape and Visual Impact Assessment" is one of the publications dealing with these issues extensively, and was published in 1995 as a joint initiative between the Institute of Environmental Assessment and Landscape Institute of Shetland Islands. Visual impact analysis should be included in the assessments being made to establish land use classes. Different developers, organized into stakeholders have different expectations and feelings for the rural landscape [1]. Good communication is essential in the early planning phase, so that mutual understanding grow steadily. A continuous dialogue between all involved stakeholders will establish a solid basis for ongoing relationships [2].

## **2. Materials and Methods**

The research is based on scientific literature review, the inventory of a site, exploring the rural characteristics and industrialization impact. The case study integrates rural values conservation tools through design, environmental design and industrial areas landscaping. Design strategies include the following components: elements of design that blends with the countryside environment through an understanding of cultural context; land use methods that promote the conservation of rural resources and sensitive landscaping proposals for the relationship between man and nature (vegetation, environmental impact, construction, material, design).

Beyond the practical purpose of this study, is analyzed the relationship between man and nature by observing closely the rural characteristics, thus encouraging architects and landscape architects to consider natural and cultural heritage during the design process. Applied in the early stages of the design process, landscape visual impact assessment tools should allow an objective comparison of the visual impact based on different proposed scenarios.

In this way, can be chosen locations and development types that will reduce the visual impact. To develop a landscaping model with beneficial effect on the landscape was chosen to study an existing industrial complex with an area of approximately 5.4 hectares, situated in Rădaia, Baciú village, Cluj County. In

order, to site study for landscape proposal, the rural landscape and the existing situation of the industrial complex was analyzed. The methods used to characterize the area were: the visual impact assessment, analysis of maps, aerial photographs and field research.

Were analyzed the area's following principal natural factors: topography, soil type, hydrology, drainage systems and vegetation land coverage.

Subsequently were described a series of cultural factors such as: land use, settlement patterns, terrain type and infrastructure. In order to obtain a comprehensive analysis of landscape characteristics were evaluated: colour, texture, lines.

In the second stage were formulated guidelines to be implemented to minimize industrial site's visual impact in rural landscape and were developed three landscaping scenarios. In the third stage were compared these three scenarios, analyzing the aesthetic, ecological, and economic visual aspects.

### **3. Results and discussions**

What are Landscape and Visual Impacts? Before describing the key-principles for Landscape and Visual Assessment is necessary to explain the importance of landscape and visual impact and make a distinction between these two. Landscape and visual impacts are two separate but closely related elements: landscape refers to the appearance of the terrain, including shape, texture and colours.

It also reflects the way in which these components combine to create specific models and distinct images for certain areas. The landscape is not just a visual phenomenon; it is based on a number of other characteristics / influences that formed his character. For example, topography, geology, ecology, land management and architecture play a role in the landscape development. Of course the landscape is not confined to rural areas. In Fig.1 are shown the interactions between landscape and visual impact [3].

They can be summarized as follows:

- Landscape Impacts: "Changes in the fabric, character, and quality of the landscape as a result of a development":
- Direct impact upon specific landscape elements;
- Subtler effects upon the overall patterns of elements that give rise to landscape character, regional and local distinctiveness;
- Impacts upon acknowledgment, special interests or values such as designated landscapes, conservation sites and cultural associations.
- Visual Impacts: "relate solely to changes in available views of the landscape, and the effect of those changes on people".

The impact does not necessarily coincide. For example, a development can be designed so that plant will screen that will mask changing, but the landscape will

change inevitably. Impact can result from various sources and varies during the development process.

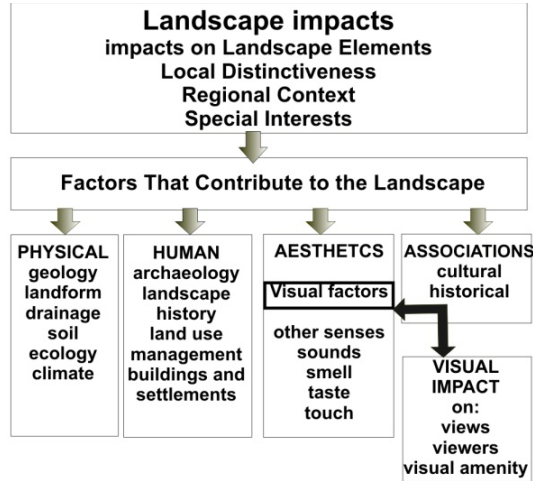


Figure 1: Interaction between landscape and visual impact. Adapted after Institute of Environmental Assessment and Landscape Institute [3].

Evolution, technical progress gives us conclusive comparisons between “new forms” in full swing and ‘traditional forms’, and relations that are established in some stage between these forms. From analysis of relations, we can imagine the one sector or another importance for social activity. An “conservative” agriculture may impede industry natural evolution, social progress in general. An industry inadequate located can cause irreversible imbalance in an agricultural area or a localities system.

Naturally, such a situation creates some form of socio-economic organization of space, determines mutations in spread and in population structure, expresses a certain degree of adaptation of humans to technology developments. This background sets various types, “forms” classifications or space systems that include elements of the geographical landscape. Large-scale industry, usually present in large cities, has sometimes negative effects on the rural landscape producing imbalance in hydrological regime, in air pollution and especially in relief preservation as a result of communications network expansion, deforestation, deposits, etc. Buildings and large structures integration is much more difficult. The construction of such buildings may involve loss of natural habitat for wildlife. Large belts of trees planting lost habitat replacement and rainfall storage measures are needed to help reduce environmental impact, it is important to be allocated enough space for this action since in the planning phase. In rural and semi-rural

area, industrial and commercial aspect should be in accordance with local rural character. In the rural areas situated industry sites landscaping projects following actions represent an important step in reducing the visual impact on rural landscapes: large trees and hedges planting (ex. oak or other native species), protecting existing trees and shrubs, wild meadow flowers, the allocation of adequate budget for landscaping and maintenance, preservation and protection of watercourses and ponds, the use of appropriate materials to build fences, security fences placement, avoid reflective colours for the buildings since they will be more visible and will have a negative effect on the landscape, avoiding the development of industrial complexes at less than 5 meters distances from watercourses. Signalling is another important aspect in the construction of industrial facilities. It is necessary to determine if there is already an integrated system of signs for the industrial property, system that will contribute to create building or site identity and easier location of a company. A good signal can improve the appearance of a building or site, while being the focal points in the landscape.



*Figure 2: Vegetation disposal in industrial areas landscape [4].*

Lighting design should avoid: excessive levels of light, which will result in the night sky brightness (type of light pollution that refers to production of a “light dome”), glare (uncomfortable brightness) and light passing ownership limit. Existing vegetation analysis is important to determine the exact health state of vegetation and specimens with environmental and decorative value – is recommended their preservation. One element that will reduce negative impacts on rural areas is the use of commercially valuable species, such as those used as fuel: willow, poplar. To emphasize and establish industrial site limits is recommended hedgerows and tree alignments planting - these can be considered as an alternative to traditional fences. For fences and walls, to increase the aesthetic and ecological value, climbing species can be used. For industrial building facades are recommended species with special decorative features use. Vegetation softens the harsh lines of the parking lots and

buildings, improve the aesthetic appearance of the entries. White walls of industrial buildings form a good background for groups of trees and climbing plants.

Development proposal aimed mainly developing and applying a methodology designed to assess and mitigate the visual impact of industrial space located in a rural area. The studied site is located in the area of Rădaia, Baciș village, in Cluj hills area, on left side of Nădaș River, near Cluj-Napoca city, metropolitan area of which is expected to join. The average altitude is 357 meters and the geographical coordinates of the location are: 46°47'48.51"N, 23°28'15.54"E (Fig. 3, Fig.4).

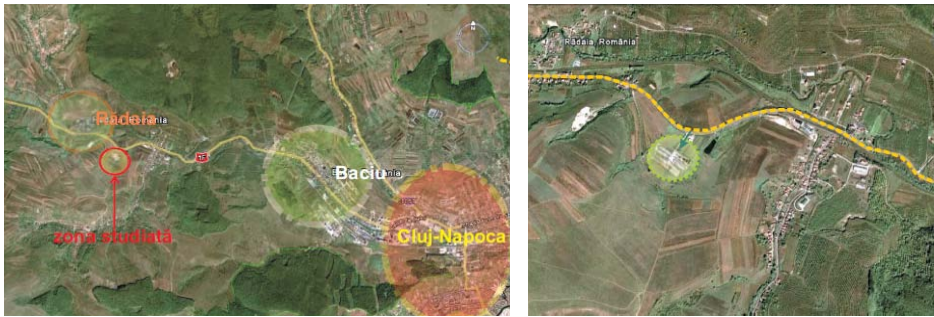


Figure 3: Studied area localization.



Figure 4: Visual assessment.



The study area is characterized by low soil fertility. The landscape is characterized by an alternation of hills and depressions, streams, canals and ditches. These small water courses are enhanced by alignments of trees and shrubs belonging to the wild flora. The settlements in the area are characterized by concentrated villages.

The houses are clustered around the village institutions: schools, churches, town halls. The settlements are located in depressions. Land use is characterized by grassland alternating with arable land. Forests are underrepresented near the analysed site.

Terrain presents a combination of flat areas, gentle slopes with a good degree of vegetation coverage (Fig.5). Access is from the North, being directly related to 1F national road. Pedestrian and auto access paths materials are cement, they have an deteriorated, aged and anaesthetics aspect (Fig.6).



Figure 5: Studied site topography.



Figure 6: Buildings, pavement, existing fencing.

Existing vegetation condition is satisfactory both in terms of composition and in terms of health. Coniferous species predominate (*Thuja spp.*, *Juniperus spp.*, *Picea abies*, *Taxus*). Deciduous vegetation consists of the following species: *Buxa sempervirens*, *Cotonester*, *Cornus*, *Ulmus*, *Salix* and spontaneous specimens, and is disposed in alignments, groups, solitary specimens, and hedges (Fig.7).

The aim of the present project is to promote the use of methods to reduce the maximum intrusion into specific of local landscape. The chosen site, because the

surface and position, has the ability to show industrial development high pressure on rural landscapes.



Figure 7: Disposal types of existing vegetation.

Three preliminary variants and a final version of landscaping were developed, with distinct characters and contain at the same time combinations of these characters. All four variants, regardless of their form, had as final goal achieve a landscape effective model that complies with the described guidelines. It was specifically aimed at mitigating the negative character of the site: buildings impact on landscape, paved surface reduce, land vegetation cover improving, proposed vegetation harmonization with existing vegetation, efficient lighting system proposal, fences restoration, existing pavement rehabilitation, improve the appearance of buildings accesses (Fig. 8).

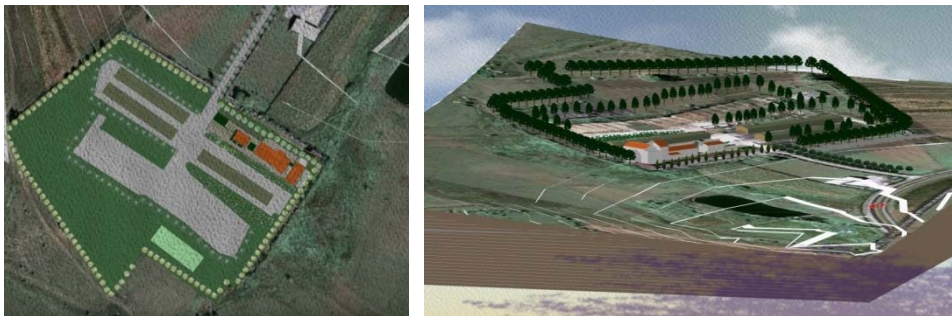


Figure 8: Proposal.



None of the four development proposals has occurred on the existing vegetation, which is entirely preserved. Special feature of the new design proposals is administrative buildings newly established green space design - it has a powerful impact in shaping a perception at first sight (*Fig. 9*). Special feature of the new design proposals was green space near administrative buildings - it has a powerful impact in shaping a first perception. Following preliminary analysis of the three alternatives was chosen the final option for implementation. In this alternative selection, a decisive element was the economic factor, taking into account the development and maintenance costs.



*Figure 9:* Landscaping variants.

The final version is a result of analysis and discussion of preliminary alternatives. To increase the aesthetic qualities, near building's façade and the building access, new green inserts are proposed (*Fig.10*).



*Figure 10:* Vegetation and planters localization in the vicinity of the building facades.

Garcia et al. (2006) distinguishes four aspects that help understanding the relationship between buildings and surroundings: the value of landscape, location of buildings, colour, line and texture that characterize the landscape and colour, line, texture and other elements of buildings [5]. After analyzing the situation and a good understanding of these issues was proposed buildings rehabilitation in order to achieve an optimal integration into the landscape. Therefore is recommended to use neutral colours and natural, pastel shades (*Fig.11*).



Figure 11: Proposed buildings and pavers rehabilitation.

The main idea of the proposal is to introduce as much vegetation without suffocate the perspectives. The landscape will be based on the dominant effects of trees and shrubs – are proposed suitable species, with existing climate and microclimate tolerance. Alignments are located at site limits, having protective role, reducing the visual impact on the landscape of this industrial site and create backgrounds for smaller facilities (Fig.12, Fig.13).



Figure 12: Proposed trees alignments – 3D Render.



Figure 13: Proposed plan - section.

#### 4. Conclusions

The landscape is a portion of space, is the result between interaction in time of the initial physical environment and human activity. So at integration of interactive elements is added historical dimension, scale, human life organization and its development.

The proposed method proves valuable for its active use in planning. First, landscape description helps to understand the current situation in the area to be planned.

Where appropriate guidelines are formulated based on this description, it will be possible to develop several scenarios for site development and obtain various measures to mitigate the negative visual impact. Once these scenarios have been developed, their careful analysis quantifies the visual impact of each of them. This quantification of the visual impact allows objective comparison of scenarios.

This paper provides a better understanding of the public perception for industrial spaces determinants factors and clarifies the role of mitigation measures that might change this perception.

In addition to restoring the traditional landscape, visual impact of industrial sites site can be diminished if the locations of new plantings are strategically chosen.

Special consideration was given to the most exposed to views - views from the main road to studied industrial development.

The final conclusion is that a proper planning proposal will help to improve the quantitative and qualitative aspects of an industrial site, which will lead to a drastic change of spatial processes related to this kind of areas and their effect upon rural landscape.

Large commercial or industrial construction should be designed so as not to interfere brutally in the landscape, being necessary a set of useful guidelines preparation.

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