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DENDROLOGICAL GARDENS IN 19TH CENTURY GARDEN ARCHITECTURE IN HUNGARY

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The applicant met the requirement of the PhD regulations of the Corvinus University of Budapest and the theses are accepted for the defence process.

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PRELIMINARIES OF THE RESEARCH. GOALS

The dissertation highlights the Hungarian landscape gardens – the overwhelming majority created in the 19th century – in which alien tree species play a an esthetic and space compositional role in the overall layout and sight of the garden. From the early 20th century attempts have been made to differentiate this type of garden, but the concepts are still boggled up. One of the goals of my dissertation is to give an unambiguous definition of the gardens at issue from the angle of landscape architecture.

No comprehensive examination of dendrological gardens has so far been carried out. The topic is highly timely as the exotic trees planted in the 19th century have arrived in the last stage of their lives, which makes it research urgent. We have the last opportunity to study the plant stock of dendrological gardens, the characteristics of their spatial structure, their layout. I have tried to stop the mentioned gap in our knowledge of garden architecture by carrying on extensive garden historical research and on-the-spot exploration, and by inventorying the tree species that had a decisive influence on the spatial composition of the gardens.

SOURCES AND METHODS OF RESEARCH

The dissertation has three large sections: clarification of designations, concepts; garden historical research; on-the-spot inspection.

In part one I scrutinized each relevant concept with examples of their 20th-21st century mentions and their interpretations. The concepts were clarified on the basis of the examined landscape architectural viewpoints.

Part two contains my research historical findings. There is very little contemporaneous material on Hungarian gardens, and more important still, professional descriptions are almost completely missing. This aggravates the stock-taking of landscape gardens using foreign plant species. This chapter presents the findings I gleaned from primary and secondary sources and literature. I registered the earliest appearance and dissemination of the non-indigenous tree species applied in landscape gardens, and made an inventory of the gardens with special tree species – that is, the dendrological gardens.

Part three contains the experience and results of inspecting the still extant dendrological gardens. I carried on field research in 130 gardens in today's Hungary and 47 in Transylvania to record their typical alien tree special, and their places in the spatial composition. I collated my garden historical findings with the results of the on-the-spot investigations. In the analysis of still existing dendrological gardens I also examined the distribution of the gardens and the typical exotic species at county and national levels.

RESULTS

I defined the concept of dendrological garden, clearly differentiating it from arboreta.

My garden historical research has found that the exotic tree species popular in Hungary were already accessible for affluent and well-informed aristocrats at the turn of the 18th and 19th centuries, and they often used them for their parks. I collected the landscape gardens from the perused sources and literature whose authors mentioned valuable alien tree species.

Based on the list of dendrological gardens specified in my garden historical research, I explored the still extant gardens in loco and defined their number. In each dendrological garden I studied the foreign tree species determining the spatial composition of the park and registered the most popular exotic tree species during the perambulation of the garden. Another result of the study of the role of exotic tree species in the spatial composition of gardens is the differentiation of three types of plant arrangement. Finally, I put down

the regularities of exotic plants in the spatial composition I observed in the examined dendrological gardens.

THESES

I. *Definition of the concept of dendrological garden*

All garden architectural products are dendrological gardens in which spatial composition is unambiguously discernible and contains valuable old foreign tree species. Dendrological gardens were also typically created in the period of landscape gardens, thus they display the character, spatial and formal layout and garden architectural features of that period. The period of initiating dendrological gardens is delimited and terminated.

Main characteristics of dendrological gardens:

- the period of their creation coincides with the period of landscape gardens in Hungary, lasting from the very end of the 18th to the end of the 19th century;
- they do not constitute a period of their own in style history;
- in each case they display the formal and esthetic features of landscape gardens;
- their exotic tree species, tree taxa (including taxa and species indigenous in Hungary as described abroad) clearly determine the character and impression of these garden, strongly differentiating them not only by the diversity of colours and forms of the applied tree species but also by the evocation of the atmosphere of foreign landscapes, as compared to landscape gardens that use indigenous species in the first place. Thus, the dendrological gardens provide a different sight from collections of native taxa.

The 19th century value of dendrological gardens was in the rare plant species. Today, their value lies in the old age and fully fledged habitus of the surviving taxa of woody plants that were planted in the 19th century. These valuable dendrological items were the basic pillars of the spatial composition of a garden, always introduced on the basis of comprehensive thoroughly deliberated conception and planning (typical of forming landscape gardens) into the parks meant for recreation, amusement and socializing.

Dendrological gardens can be marked off from arboreta in terms of landscaping and the primary formal and esthetic principles.

Dendrological gardens are also decisive as garden historical values. It is also necessary to define them because in several cases the historical landscape gardens are protected on account of their – old, valuable – plant stock and we tend to forget that valuable plants are compositional elements of an entire garden constituting its organic parts and hence they can only be interpreted as a whole in terms of landscape architecture. (Cf. “Forest Act”, list of arboreta in which the

non-historical public parks with trees and historical gardens with valuable plant stocks are classified in the same category.)

Dendrological gardens coincide with the entire period of landscape gardens in Hungary (with a slight shift). My researches made it quite explicit that the use of exotic plants appeared in Hungary at the turn of the 18-19th century and they were used in the early landscape gardens as well. The use of foreign plants applies to the whole period of landscape gardens, with changing intensity, though. It is therefore unjustified to define a special style historical period on their basis. Periodization of dendrological gardens by tree species is hard to support, because even if garden historical references to the appearance of individual tree species might be found, it is rather troublesome to determine how long a species exerted its "control over the composition" of a garden. To conclude from the above-said, I interpret dendrological gardens as a compositional and atmospheric stratum of landscape gardens in Hungary, which might or might not appear in a garden in the landscape garden period.

II. *Qualification of one-time Hungarian dendrological gardens on the basis of garden historical research*

It is a new research result that I have collected the Hungarian landscape gardens (from archival, literary, etc. sources) which used alien tree species in the 19th century.

During my garden historical research I explored 158 former Hungarian dendrological gardens, 113 of them inside the present-day borders of the country. With the help of the cadastral maps of the counties and military surveys I gleaned the landscape gardens that existed in the 19th century (346). As the figures reveal, the ratio of 19th century dendrological gardens and landscape gardens is approximately 1:3 in the area of today's Hungary. The number of dendrological gardens I defined during my research and their rate compared to that-time landscape gardens univocally prove that dendrological gardens play an important role in Hungarian garden history and in the garden architectural practice of parks around country houses.

III. *Creation of the database of Hungarian dendrological gardens*

I prepared the database of still existing Hungarian dendrological gardens and I have considerably contributed to the creation of the database of Transylvanian dendrological gardens as well.

As a result of fieldwork in 130 Hungarian historical gardens I have defined 75 dendrological gardens. Within this stock I differentiated 28 particularly significant gardens which deserve special attention for their landscape architecture and dendrological values. 10

of the 75 gardens are in heavily endangered condition. I recorded my experience and results of the inspections, the state of the garden, current use and the old, valuable tree species. I thus registered important data for subsequent researches, garden reconstructions or revitalizations. All this information has enlarged our knowledge of 19th century dendrological gardens and through them, of Hungarian landscape gardens in general.

During my Transylvanian field research, I perambulated 47 parks of country houses. I defined 10 Transylvanian dendrological gardens on the basis of historical research and on-the-spot examinations.

IV. *Introduction of new concepts*

I registered the regularities of the spatial distribution of alien plants in dendrological gardens to differentiate which I introduced new concepts.

I differentiated *three main types of layout* according to the place of the exotic plants in the spatial structure within the 75 dendrological gardens I identified during my field research:

a. "*Transitional arrangement*": the foreign tree species are laid out more and more spaciously going away from the country house and are gradually replaced by indigenous tree species coming close to the boundaries of the garden (Pl.: park of the Wenckheim country house, Ókígyós; park of the Hoyos mansion, Lad; park of the Zichy country house, Nágocs; garden of the Széchenyi mansion, Somogyvár.)
b. „*Homogeneous arrangement*": the exotic tree species are relatively evenly distributed over the entire area of a dendrological garden (with constant density). (E.g. park of the Szegedy mansion at Acsád; that of the Széll country house at Rátót; garden of the Zirc abbey; landscape garden of the Zichy family at Surd).
c. „*Dominant arrangement*": when there are so many items of an exotic tree species that it is the leading or at least dominant species in the garden and clearly determines its character, appearing at diverse points of the park as a recurrent element. (E.g.: park of the Apponyi country house, Hőgyész; Margitsziget; parks of the Esterházy mansion at Pápa and the Batthyány country house at Zalaszentgrót.)

These types can be applied not only to the contemporary size and condition of the gardens. My historical investigations – in the course of which I compared the one-time garden size with the present-day measurements – revealed that 63 of the 75 dendrological garden have preserved their original sizes to this day. For these 63 gardens the arrangement types also illustrate the distribution of exotic-species-

centric garden compositions, and consequently, they are also variants of garden planning in terms of plant spacing.

V. *Definition and inventorying of foreign tree species*

I identified and inventoried the alien tree species determining the spatial structure and atmosphere of still extant Hungarian dendrological gardens.

There is diverse information accessible on exotic tree species in 19th century landscape gardens, but there has not been any research to collect the exotic tree species dominating the spatial structure and overall view of dendrological gardens and to rank them by frequency of occurrence.

During my field research I collected 34 characteristic non-indigenous tree species in Hungarian dendrological gardens. Each of them could be found in at least five different gardens. 20 tree species occurred in at least 20 of the 75 dendrological gardens, 13 of them in at least 25 gardens.

The 20 most popular tree species in diminishing order of occurrences are: *Platanus x acerifolia* (64), *Aesculus hippocastanum* (45), *Ginkgo biloba* (41), *Fagus sylvatica* 'Atropunicea' (41), *Pinus nigra* (39), *Liriodendron tulipifera* (37), *Sophora japonica* (33), *Abies spp.* (31), *Juglans nigra* (31), *Quercus robur f. fastigiata* (30), *Magnolia spp*. (28), *Quercus rubra* (27), *Sequoiadendron giganteum* (26), *Gymnocladus dioicus* (24), *Gleditsia spp*. (23), *Catalpa bignonioides* (23), *Taxodium distichum* (22), *Pinus strobus* (20), *Pinus sylvestris* (20), *Pseudotsuga menziesii* (20).

VI. *Exploration of the plant compositional characteristics and regularities in Hungarian dendrological gardens effective to this day*

From my on location observations of the role of exotic tree species in the spatial composition I concluded that ten regularities could be described:

a. *Platanus x acerifolia*: four types of layout could be differentiated in the dendrological gardens (alley, group, symmetrical framing, solitary tree).
b. *Ginkgo biloba:* in eleven cases their placing close to the mansion was observed (usually on the edge of the central lawn, well visibly from the house).
c. *Fagus sylvatica* 'Atropunicea': while in historical investigations I only found mention of the copper beech in eight sources, during field research I came across old specimens in 41 gardens, which alludes to the unprecedented popularity of the taxon in the 19th century.
d. *Pinus nigra*: it is typically planted in clusters in the garden composition, but sometimes it occurs single.

e. *Liriodendron tulipifera:* most diversely applied. It occurs as a solitary tree, in groups of three, in clusters, rarely in pairs and as a recurrent component of a garden composition.

f. *Quercus robur f. fastigiata:* I found hardly any mention of it in the sources, while during field research I encountered large numbers of it as one of the most characteristic deciduous trees in both today's Hungarian gardens and in Transylvanian gardens.

g. *Magnolia spp.:* I found shrub or bush sized magnolia species in 30 dendrological gardens, 20 of them immediately close to the country house, which confirms the representative role of these species.

h. *Sequoiadendron giganteum:* its peculiar habitus endows this taxon with great importance. It is the third most popular pinaceae, most frequently planted as a solitary tree.

i. *Larix decidua:* not used close to the building. In the spatial composition of dendrological gardens it slackens the sight of dense foliage or compact groups of trees like some subtle decoration thanks to its loose, veil-like habitus.

j. Bunches of trees: In some dendrological gardens in the case of *Liriodendron tulipifera*, *Platanus x acerifolia* and *Ginkgo biloba* I met with bunches of specimens of the used tree species (planted densely like a bunch).

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