Plants in Urban Areas and Landscape
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ANALYSIS TOOLS FOR GREEN INFRASTRUCTURE IN URBAN AREAS AND OPEN LAND

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The paper introduces green infrastructure in urban areas and open land in the context of contemporary landscape architecture as a field of research and practice. Cultural landscapes are designated as the contemporary domain of landscape architecture, with an emphasis on designed landscapes. Green infrastructure is presented as a component of cultural landscapes and as a strategic tool for enhancing Europe's natural capital in accordance with the Europe 2020 strategy. Garden heritage sites are highlighted as specific components of the urban green infrastructure and as the object of the research conducted within the CultTour project. The objective of this paper is to present graphic analysis tools applied to the analysis of structural and compositional changes of the studied landscape garden in Palárikovo. The structural development and compositional changes of this landscape garden are presented by graphic analysis tools – thematic layer maps and schemes. The main results are 1) the analysis of the historical development of the landscape garden and 2) the graphic analysis tools as an innovative tool for assessing garden heritage sites or other components of the green infrastructure in urban areas and open land.

Keywords: garden composition, garden heritage, graphic analysis tools, landscape garden

Introduction

Landscape architecture (LA) is a field of research and practice where diverse aspects and neighbouring disciplines interact – from architecture theory, dendrology, sociology and landscape archaeology; through art, landscape ecology, historical geography and forestry; up to economics, cultural anthropology, regional planning and cultural geography (Bell, Sarlöv Herlin and Stiles, 2012). The contemporary domain of LA consists in cultural landscapes of diverse types and components. A specific type of these is represented by designed landscapes which have been created by man in different natural, historical and socio-economic conditions (Salašová, 2004). The system of all green spaces, areas and their components within natural and cultural landscapes in urban or rural environments is designated as Green Infrastructure (GI). It is a topical issue in contemporary LA and related fields of research and practice. GI is defined as a strategic tool for enhancing Europe's natural capital in order to achieve a smart, sustainable and inclusive growth of our continent as stated in the Europe 2020 strategy issued by the European Commission (2013). According to the European Commission, there is a need for developing new analytical approaches within the LA research into the urban GI and its particular elements. Specific components of the urban GI are represented by garden heritage sites like historic gardens and parks (Supuka et al., 2008; Kubišta, 2006; Tóth, 2014). This special type of the urban GI has been the object of the research conducted within the international scientific project CultTour focusing on garden heritage conservation and sustainable tourism. The research has been conducted on the case study of the landscape garden in Palárikovo (Tóth, 2014). The objective of this paper is to present graphic analysis tools applied to the analysis of structural and compositional changes of the studied landscape garden.

Material and methods

Location and General Characteristics

The object of the research is the landscape garden in the small rural town Palárikovo situated in the south-western region of Slovakia, in the Danube Lowland, 13 km distant from the district town Nové Zámky, in the Nitra Region. The original Hungarian name used till 1948, was Tót-Megyer. The cadastral area covers 5,129 ha and has a flatland character, at the average altitude of 113 m. The protected historic landscape garden covers an area of 52 ha and is continued by a historic pheasantry established in 1752 with an original area of 1,700 ha extended to 3,000 ha protected since 1976 as a natural monument (Tomaško, 2004; Tóth, 2014).

The Classicistic Manor House and the Landscape Garden

The former baroque manor house built in the 18th century was rebuilt in 1866, into the present classicistic style according to the plans by Miklós Ybl architect

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Figure 1 Development of the landscape garden and its surrounding urban area and open land
Source: Tóth, 2014

Figure 2 Changes in the landscape garden's compositional structure (19th vs 21st century)
Source: Tóth, 2014

(1814–1891). Near the manor house, there is a unique technical construction – a 22 m high wooden water tower (1869). The garden composition emphasises the manor house as a landmark situated on the main compositional axis with a regularly designed cour d'honneur with a fountain at the front facade which continues in a large elliptical lawn. Another fountain is situated at the garden facade. The wide linear open space consisting

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of meadows, starting at the garden facade and continuing along the main axis, provides a characteristic view through the landscape garden framed by trees. There is a small circular lake with an island, in the middle of the composition. The former communication network has been partially preserved. The meadows are being sequentially overgrown by spontaneous woody plant growths. We can still identify former solitaires in the dense growths (Tóth, 2014; Kubišta, 2006; Tomaško, 2004; Vágenknechtová, 1982; Sziklay and Borovszky, 1899).

Methods

We have applied graphic analysis tools in order to interpret the main structural changes in the landscape garden composition. An own coloured interpretation of the historic cadastral map from the 2nd half of the 19th century (Archive of the Monuments Board of the SR) enabled a comparison between the original composition and the current state depicted by an orthographic photomap (Eurosense, Geodis Slovakia). To show the development of the garden in the context of the landscape structure, we have produced a coloured interpretation of the 3 military mapping surveys (18th and 19th century) along with the topographic map from the 20th century (Geoportal of the Slovak Environmental Agency). The structural and compositional changes of the landscape garden are emphasised by schematic layer maps analysing the changes in:

1. the area,
2. the path system,
3. the woody vegetation,
4. lawns and meadows.

All these graphs and schemes are analytical tools used to evaluate the main changes in the composition. The software used to process the maps and produce thematic graphs and schemes was Adobe Illustrator CS5.

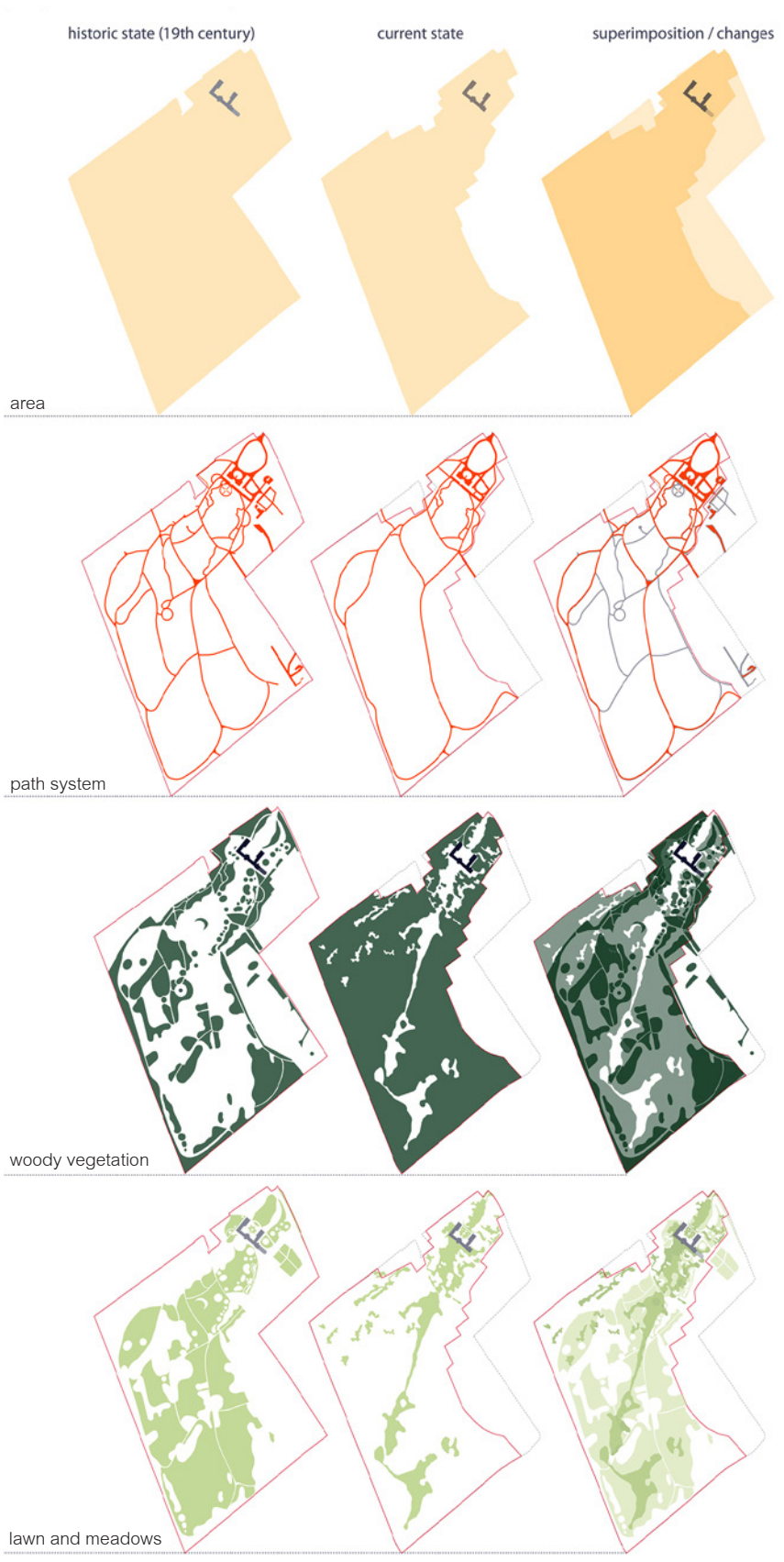

Figure 3 Comparison between the current and the historic state of the landscape garden in Palárikovo – Schematic designation of changes / Superimposition of different time layers
Source: Tóth, 2014

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Results and discussion

The 1st military mapping survey records no extensive garden space at the urban area of Palárikovo (then Megyer) in the second half of the 18th century. Therefore, we can assume that there was no extensive baroque garden preceding the landscape garden. The first map evidence of an extensive garden in Palárikovo (then Tót Megyer) is provided by the 2nd military mapping survey (1810–1869) and the historic cadastral map (2nd half of the 19th century). The 2nd military mapping survey already depicts the landscape garden in its very early stage. The military and topographic maps are not detailed enough to analyse the composition of the garden (figure 1).

The comparison between the original and the present composition of the landscape garden shows a significant decrease in lawns and at the same time an increase of the woody plant cover (figure 2).

The result of the compositional analysis by thematic layer maps shows the changes in the composition with an emphasis on:

1. the area,
2. the path system,
3. the woody vegetation,
4. lawns and meadows (figure 3).

Graphic analysis tools used in this paper can be utilised also for assessment of particular components and elements of the GI. For instance Paganová and Jureková (2012) use graphic analysis tools to assess and evaluate selected tree parameters like stem, crown and its architecture, branching and phenotypic characteristics of trees. Our approach stands for a potential contribution to standard assessment methods of woody plants as components of the urban GI as conducted for instance by Raček (2000). Graphic analysis tools were also used for analysing private elements of the urban GI conducted by Lička and Jeschke (2008). They analysed design concepts of urban garden spaces using similar graphic tools, although they focus on the design concept, while we have focused on the structural development and compositional changes. The applied graphic analysis tools are presented as a way of spatial, structural and compositional analysis of garden heritage sites. As discussed above, they have the potential to be applied also in related fields of research or design.

Conclusion

The obtained new knowledge consists of two main components:

1. knowledge of the compositional and structural development of a landscape garden by the example of the case study Palárikovo,
2. application and verification of graphic (visual) analysis tools to assess the development and changes of a garden composition.

The most important results are the graphic analyses of the landscape garden composition by the example of Palárikovo, since such an approach has not yet been applied to any historic landscape garden in Slovakia. The scientific significance of these tools consists in their applicability to other historic (landscape) gardens and a subsequent comparability of results. Their application to further case studies would facilitate new knowledge creation and transfer in the field of LA, with a particular focus on historic green spaces and garden heritage sites.

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