

1 Introduction

In addition to the main function of burials, historic cemeteries have other functions. Historic cemeteries have a role in displaying historical developments, and as historic landmarks they may contribute to the territorial identity (local, regional) memory and identity (Swensen, Nordh and Brendalsmo, 2016; Králová, 2018; Finka and Jamečný, 2018). Cemeteries are places of tourism, whether for architectural monuments, sculptural art, or for any important personalities buried there. According to Finka and Jamečný (2018), cemetery tourism is associated with an active form of tourism focused on the issue of cultural heritage. No less important are cemeteries as green areas, with microclimatic and recreational functions, which are particularly important in heavily urbanized areas of historic cities (Halajová, 2018). Many historically and architecturally valuable cemeteries in Slovakia are in bad condition for several reasons. In the case of historic cemeteries, there is a problem with the maintenance of tombstones and the growth of natural seeding woody plants. On the contrary, there are many historic cemeteries that are still very intensively used for burying, therefore graves and trees are damaged by the construction of new graves. According to Vaščák (2018), the necropolic architecture in Slovakia does not receive sufficient professional attention, due to the lack of methodology in identifying and evaluating these elements and because they do not have the status of national cultural monuments and their ownership is often unclear. In addition to the lack of professional care, there is also no public attention given to historic cemeteries. According to Vaščák (2018), the main reason for the lack of public interest in cemetery architecture is the reduced sensitivity of perception and ignorance of the cultural-social values of necropolic and sepulchral architecture as part of cultural heritage. The starting point for the protection of historic cemeteries is their assessment in terms of cultural-historical value, biological-aesthetic value and possible use based on evaluation of suitable activities (Gécová and Purová, 2018). The cultural-historical value is based on the age of the complex, architectural or artistic value of small buildings or tombstones and graves of prominent personalities. The bio-aesthetic value of the cemetery is characterized by the species composition of vegetation and its landscape composition.
2 Material and methods

The cemetery area is located in the town Hlohovec, a district town in Slovakia in the Trnava region. Hlohovec is a historically important town, situated on the bank of the river Váh, the longest river in Slovakia. The first written reference of the town was found in the Zobor Charter of 1113. The most important and dominant historic monument of the town is the chateau, originally a medieval castle. The cemetery is a complex consisting of three parts – the Old Town Cemetery with calvary, the Jewish Cemetery and the New Cemetery. The aim of this study was to design the revitalization of the Old Cemetery, to design the greenery in the New Cemetery, but also to design the street spaces in front of the cemetery. Data from the evidence of town greenery was used for the study of cemetery revitalisation. The study was elaborated at The Department of Garden and Landscape Architecture in The Course of the Restoration of Historic Greenery in the winter semester 2018/2019 by the 2nd-year students of Landscape Architecture.

3 Results and discussion

3.1 Historical and architectural analysis

The Old Cemetery in Hlohovec is linked with the formation of calvary in 1734. The calvary was created as a thank you for the end of the plague epidemic in 1705–1708. The calvary was built on the site of an older chapel with a hermitage and a small cemetery on the slope above the town. The whole calvary complex originally consisted of seven Stations of the Cross and the top sculpture with the trio of the Crucified from 1734. The site was closed by the original Chapel of Our Lady of Sorrows (Urminsky, 2019).

The chapel underwent two reconstructions, in 1730 it was rebuilt and in 1802 it was extended to the burial chapel of the Erdödy and Hardegg families. Sculptures of the Deposition of Christ from the Cross and sculptures of Mary Magdalene, Virgin Mary and St. John were added to the calvary in 1742. To this day, six stone reliefs with scenes from Christ’s journey to Golgotha have been preserved from the original way of the cross. Reliefs and sculptures are the oldest preserved and complete sets of The Way of the Cross from Slovakia.

After 1892, the original reliefs of The Way of the Cross were relocated and mounted onto the terrace next to the Our Lady of Lourdes cave, where they are to this day. The original Stations of the Cross were replaced by the new Chapel of the Cross, built by the citizens of the town as private tombs in the developing cemetery. The current form of the cemetery was completed with a collection of about 60 family tombs in the form of a chapel from the end of the 19th century, which is unique in Slovakia. A separate space with an altar,
A pulpit and benches surrounded by chapels was created near the cave chapel of Our Lady of Lourdes.

A part of the cemetery complex is a Jewish cemetery bounded by a high stone-brick wall from the 19th century. In the cemetery we can find graves of important personalities, such as Sarah Ley van Geldern, grandmother of Heinrich Heine, or scholar Mordechai Deutsch from 1773. Baroque tombstones are situated in the older part of the cemetery.

The statue of St. John of Nepomuk with a pedestal at the Our Lady of Lourdes Cave and the Jewish cemetery area are the only heritage protected objects in the

**Figure 2:** The fact that the Way of the Cross in Hlohovec had originally only seven stops, as was a custom in the 18th century, is also evident in the town's veduta of 1807
Source: Archive of the Monuments Board of the Slovak Republic

**Figure 3:** The oldest building in the cemetery in Hlohovec, Chapel of Our Lady of Sorrows, in 1802 extended to the burial chapel of the Erdődy family by Count Jozef Erdődy

**Figure 4:** Complex of neo-Romanesque and neo-Gothic family tombs from the end of the 19th century in the cemetery in Hlohovec
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3.2 Analysis of current state, functions and operation

The historic cemetery is located on an area of more than 7 hectares. The cemetery complex can be divided into several functional units. The largest one is The Old Cemetery with traditional burial, which provides 6,600 grave sites. The graves are regularly arranged, raised, with a hard surface. There are over 200 funerals a year in the town, of which three quarters are held in already existing graves in The Old Cemetery. A part of the cemetery is represented by the historic sacral buildings of calvary and the chapel of Our Lady of Lourdes and a collection of neo-Gothic and neo-Romanesque tombs. The cemetery complex includes facilities such as a ceremonial hall with an entrance area and a parking lot. Another separate part is the Jewish cemetery, which is inaccessible to visitors. Behind the Jewish cemetery there is a New Cemetery with a traditional grave field and an urn grave field.

3.3 Vegetation analysis

The basis for the vegetation analysis was the evidence of the trees of the town of Hlohovec, which records the species composition of the trees and their condition. The greenery evidence also includes proposals for treatments and felling of the trees, which are divided into three time stages. Within the area of The Old Cemetery there are 311 trees represented by 31 tree species. Coniferous tree species predominate, they are represented by 18 species and 185 individuals, and 13 deciduous species and 26 individuals.
deciduous trees are represented by 13 species with 126 individuals. The most abundant species is the conifer *Platycladus orientalis* (L.) with 77 individuals, *Aesculus hippocastanum* L. with 29 individuals is the most abundant deciduous tree. From the compositional point of view, the remains of tree alleys of the species *Acer pseudoplatanus* L. and *Aesculus hippocastanum* L. and solitary trees *Tilia cordata* Mil and *Tilia platyphyllos* Scop are visible in the old part of the cemetery. Coniferous trees are located without any evident compositional intent; they are planted mainly individually near graves. The vegetation analysis shows that in The Old Cemetery, there are trees in different conditions, and 42 of them are to be cut down in three phases. In the cemetery there are still visible the remains of old alleys, unfortunately, they are not restored by planting new trees.

### 3.4 SWOT analysis

Based on the analysis of the cemetery area from the point of view of its operation, facilities, architectural and artistic value, history and current use, the state of greenery or promotion and attendance, a SWOT analysis was prepared.

### 3.5 The basis for revitalization

According to Swensen and Skår (2018) two societal tendencies are present in cemeteries: a tendency towards secularism meaning that people are paying more attention to personal desires, including recreational needs, and on other hand, a renewed interest in personal religiousness and life-philosophies.

The analysis shows that the cemetery in Hlohovec has, thanks to the presence of Calvary, a great value as a historic monument, but also as a sacred place. There is therefore a presumption of a clash between the two opposing tendencies, both of which must be consistent with the operation of the cemetery at the time of funerals. Thus, the revitalization of the cemetery is intended to reinforce all the three dominant functions of this space, namely funeral, sacral and recreational functions, in particular by adding greenery and amenities.

Based on the results of the analysis, a proposal for the restoration of the cemetery was established, which divides the restoration of the cemetery complex from the spatial point of view into the following functional and compositional units:

- revitalization of The Old Cemetery,
- design of the public space around the ceremonial hall,
- design of the cemetery entrance area,
- landscape design for The New Cemetery,

Within the framework of spatial units, priority was given to the following elements:

- greenery,
- park furniture,
- an information system.

The concept of greenery revitalization of The Old Cemetery is based on:

- finding suitable places for planting deciduous trees among the graves in the field,
- restoration of deciduous trees alleys,

| Table 1 | SWOT analysis of the historic cemetery in Hlohovec |
|---|---|
| **Strengths** | **Weaknesses** | **Opportunities** | **Threats** |
| – unique cultural value – historical, architectural, artistic, spiritual | – great density of graves, Inappropriate grave design | – identity | – high burial intensity |
| – memory, identity, story of the city | – decline in number of trees in alleys, lack of green elements (flowers, lianas, trees) | – education | – stone industry |
| – ecological value of greenery | – inappropriate spreading of nature seeding trees | – tourism | – lack of funding |
| – sacral place | – inappropriate design of entrance areas | – recreation | – no preservation of monuments |
| | – lack of park furniture elements | | |
| | – missing orientation and information system | – contemplation | |
| | – inappropriate design of equipment elements (water, lighting, waste containers) | | |
| | – unsorted waste | | |
| | – barriers | | |
| | – no promotion | | |
removal of unsuitable plantings, especially coniferous species of trees and natural seeding trees near the calvary and chapels,
above the benches and along the roads, where trees cannot be planted, it is necessary to supplement the area with other forms of greenery for shading, such as climbing plants on frames,
in terms of tree species selected for planting, species of deciduous trees that are growing in cemetery such as *Acer pseudoplatanus* L., *Aesculus hippocastanum* L. and *Tilia cordata* Mill. were selected.

When revitalizing older cemeteries with a high burial density, the most substantial problem is finding a place for planting trees, whether in grave fields or in alleyways. Especially in places where tree planting is not possible, shielding of resting areas is particularly important. Shade is important both for regulars and occasional visitors, but especially for visitors who experience a period of mourning shortly after losing a loved one when their cemetery visits are very intense. In Slovakia, wearing a black suit as a sign of a mourning period is fairly common, thus increasing the need for shade in cemeteries, especially for the elderly and indisposed.

The design of the green space in front of the ceremonial hall is based on:
- creating a meeting area with plenty of rest areas and benches,
- supplying hedges, perennial beds and roses, or climbing roses,
- the selection of perennials is focused on the year-round effect of flowering, but especially on the time of the highest cemetery visitation in the fall, when different grass species will act on the beds, but also *Aster ericoides ‘Pink cloud’* and *Anemone hupehensis*,
- covering up negative elements such as waste containers or the ceremonial hall operating premises by greenery.

In particular, the space around the ceremonial hall fulfils the role of a meeting and rest area, so its design should be representative and quiet.

The design of the entrance area of the cemetery, in this case in the area of a busy street is based on:
adding the area of grave fields with elements of green – trees, hedges, perennial beds or grass areas.

**Park furniture and the information system**

The cemetery, such as any other public space, is completed by elements of park furniture and elements of orientation and information systems. These elements must also be understood as design elements that improve the aesthetic quality of the space. In the cemetery in Hlohovec, these elements are missing or they are in unfavourable technical conditions or very diverse in design. That is why we have focused on uniting the design of these elements. Various elements were designed for the cemetery, namely a bench, a waste bin, an information board, as well as containers with trellises for climbing plants or water sampling points. These elements are located at the burial field so that they are accessible in as small

**Figure 9:** The design of the street space in front of the cemetery fulfills a representative and a meeting function, with added greenery and resting places

- visual separation of pedestrians from the road,
- creating a representative space with greenery and resting places,
- completion of the information and orientation system of the cemetery in the entrance area of the cemetery.

The design of The New Cemetery was limited by the existing network of paths and roads, so the solution was focused on:

- the concept of the possible arrangement of graves, their types and design,
- building a central resting area,

**Figure 10:** The design of the new cemetery was focused mainly on enriching the area of grave fields with elements of greenery, and designing the graves and the furniture
as possible walking distance. The elements of the information system, providing information about the historical, artistic and architectural value of cemetery are important.

4 Conclusion

The main problems we identified in the cemetery complex in Hlohovec are e.g. high density of graves in grave fields, decline in the number of trees, the lack of elements of park furniture and orientation boards, and the lack of an information system, etc. In the case study of the cemetery complex in Hlohovec, we proposed measures to improve these conditions, especially in terms of greenery and small architecture elements such as planting of deciduous trees, designing the entrance and resting areas, and addition of park furniture and equipment elements. In case it is not possible to replace the original trees in the burial ground for spatial reasons, other forms of greenery can be added, e.g. mobile containers and trellis with climbing plants. The design elements used in the case study design can be applied generally to the revitalization of historic cemeteries in order to make them more attractive to visitors and preserve their historical value.

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