



IDENTIFICATION OF THE LOCATION OF VANISHED OBJECTS OF BAROQUE LAND IN LYSÁ NAD LABEM

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The case study focuses on localizing the vanished complex of Count Špork's baroque landscape at Lysá nad Labem using aerial photography. The only source localizing the former historical objects is Vogt's veduta from 1712. The objects were not captured in any historical cartographic materials, as they had disappeared before the first mapping of the territory. So no relevant information on the vanished objects is at disposal. The results of the present study are rectification of the objects in the southwestern part of Vogt's veduta and aerial images of the previously unspecified structures near the former hospital Karlov. The study provides more information on one of the largest vanished baroque complexes in Central Europe and opens up further for closer studies of this area including the baroque landscape. At the same time, the effectiveness of aerial survey for the needs of landscape planning has been confirmed. Thanks to localizing the vanished monuments, they can be incorporated into the landscape planning system and approached as a cultural heritage, a value and a limit of the territory.

landscape planning; aerial survey; aerial archeology; photography



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INTRODUCTION

Now we are experiencing a period when man thanks to the hasty time and globalization, is gradually coming back to the country and perceives values, and can see them not only as production tools. Landscape awareness is increasing (Butler, Akerskog, 2013). At the same time, thanks to the current climate and the phenomena associated with it in our society, the need for water retention, work with land as an indispensable resource, return to the traditions and return to the original structures of the landscape are often commemorated. This leads to growing interest in planning and adjustment (Guo, Bin, 2017).

The process that regulates usage of a land is called landscape planning. The term landscape planning is not explicitly defined in the current Czech legislation (Ministry for Regional Development CZ, 2019). Planning in connection with protection and creation of the landscape is very well defined by Vaníček (1973) as 'scientifically thoughtful and verified by practical experience and rationally guiding all human activities while respecting principles of proportional development of natural and anthropogenic

factors acting together in time and space'. The main objective of landscape planning is to ensure the harmonious development of the landscape and to optimize the relationship between man and nature in given area as well as to protect identity of the landscape and man in it (Salašová, 2003).

Landscape planning is a multidisciplinary field covering a range of disciplines such as geology, geomorphology, geography, pedology, hydrology, ecology, climatology, history and many others related to natural science. There are necessary fields of zoning planning, urbanism, demography, sociology, economic policy, legislation and informatics. Very important are inputs from forestry and agriculture as they form a substantial part of the landscape (Sklenická, 2003; Selman, 2006; Haaren et al., 2008; Kozová et al., 2010; Kolejka, 2013; Siemensen et al., 2018).

The main output of landscape planning is a landscape plan. The landscape plan (LANDEP, Landscape Ecological Planning) is understood as an expert document where the design, so-called optimal spatial arrangement of the landscape, is subordinated mainly to landscape-ecological principles (spatial planning takes into account primarily the territorial-technical

parametres of the landscape and is not an expression of optimal but consensual possible landscape arrangement) (Salasova, 2003; Haaren et al., 2008; Kozova et al., 2010). The term of landscape plan was recognized at a conference in Rio de Janeiro in 1992 but it has not been anchored in our current legislation so that created projects in spatial planning are being used only as territorial analytical materials (Salasova, 2003). The need for a landscape plan is also based on the European Landscape Convention (Council of Europe, 2000). It was ratified by the Czech part in 2002 and became effective in 2004. The need for embedding the landscape plan in the Czech legislation has been pointed out by Ruzicka, 2000; Low, Michal, 2003; Salasova, 2003; Dumbrovsky, 2004 or Marecek, 2005 and others.

A landscape plan usually addresses vast territories, most often areas of cadastral zones under one administrative municipality. Analytical and planning work on such large sites takes up a great deal of time for the entire team of experts working together on planning (Haaren et al., 2008). This, too, may be why landscape planning has not been applied in the Czech Republic. Input documents for landscape planning are mostly field documents related to the area in question. This is in particular historical analysis and mapping of the current status which is based of the field documents (geological maps, soil type maps, melioration maps, maps of potential natural vegetation, biotop maps, hydrological maps, Territorial System of Ecological Stability (ÚSES) maps etc.) and field surveys. As part of historical analysis, cartographic documents, historical photographs and depictions are

usually used (Sklenicka, 2003; Kozova et al., 2010; Kolečka, 2013).

Currently the use of aerial survey in its full scope is not applied in landscape planning (Kolečka, 2013). However, methods of remote survey of the Earth are applied in several associated disciplines such as aerial archeology, landscape research in relation to its use, military photography, geology and pedology, forestry and many others. This field use has its own methods which may vary by purpose (Gojda, 2000, 2016; Sklenicka, 2003; Kuna et al., 2004; Paine, Kiser, 2012; Kolečka, 2013). Basic advantage of the aerial survey is that it is a non-destructive synthetic method that reveals both historical and current state of landscape structures. Aerial photographs taken under the right conditions and procedures can reveal a variety of information that is difficult to detect by an ordinary field survey (Gojda, 2000; Parcak, 2009; Verhoeven, 2009; Gojda et al., 2013). Landscape survey results can be used to improve, enrich, accelerate and streamline planning activities and predict a country's response to current trends (Cechak et al., 2005; Kolečka, 2013).

The use of non-destructive methods with elements of aerial archeology has unappreciated significance in the recognition of structures of vanished historical landscapes (Kozova et al., 2010; Havlova, 2019). This is especially true when we take into account that the detailed map of our landscape is related to 300 years of our history (Sklenicka, 2003).

An example of a landscape that had disappeared before the area mapping is the complex of Špork's baroque landscape at Lysá nad Labem. The baroque

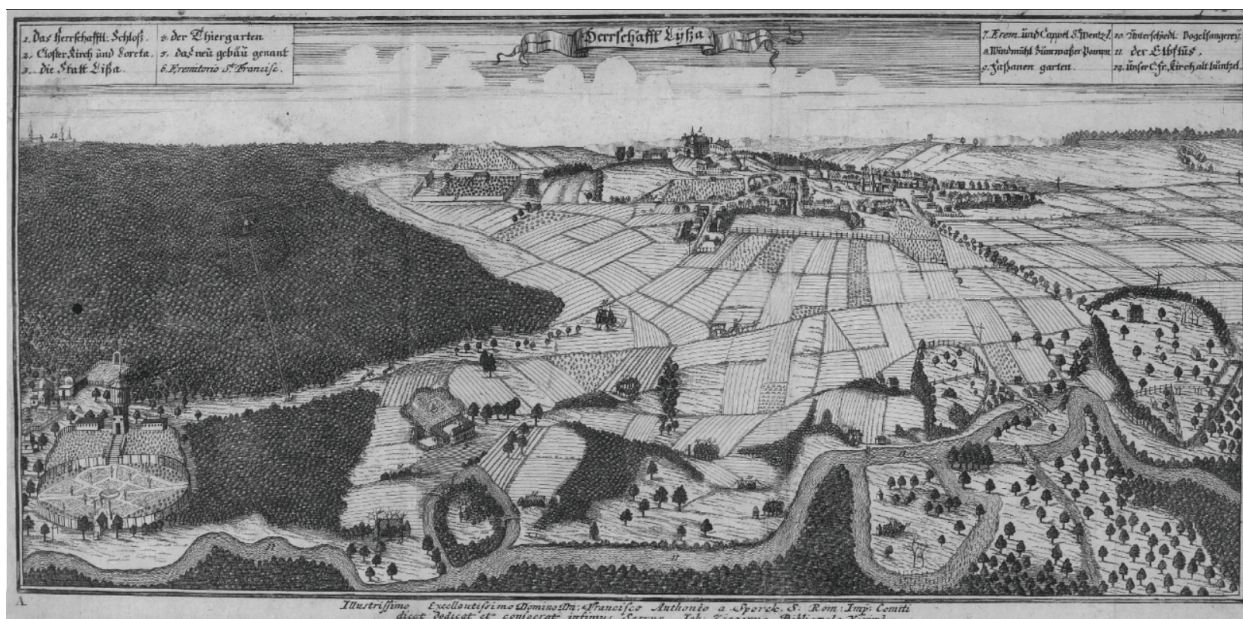


Fig. 1. Vogt's veduta 'Herrschaft Lyssa' (Vogt, 1712)

landscape is a phenomenon framework of the first quarter but rather the second half of the 17th century to the mid of the 18th century. It is usually referred to as the so-called historical baroque landscape or the composed landscape which can be seen at Valdštejn estate in the Jičín area or the estates of Špork at Kuks and Lysá nad Labem (S e m o t a n o v a , 2007). The composed baroque landscape is defined as the baroque landscape deliberately designed and created by man which includes both gardens and parks as well as extensive landscape compositions created for aesthetic reasons often (but not always) associated with church or other monumental buildings. These are distinctive types of landscapes whose overall arrangement or arrangement of their parts was based on predetermined compositional intent demonstrating the owner's position or spiritual belief or philosophical attitude as well as his aesthetic opinion (K u p k a , 2010).

The composed baroque landscape at Lysá nad Labem was founded on Count František Antonín Špork's impulse in the years when he possessed the territory (1679–1722 and then in 1734–1738). Špork had numerous buildings constructed and new villages founded in the surroundings of Lysá nad Labem (P r e i s s , 2003). The architecture with ornamental gardens and parks was interconnected with the local landscape. He was inspired mainly by his stay at the court of Louis XIV. Špork always remembered personal prestige and presentation. Špork's fame grew and his image increased as well (S e m o t a n o v a , 2007). The period of the greatest glory of Lysá nad Labem is recorded in Vogt's veduta 'Herrschaft Lyssa' (Fig. 1) from 1712. It shows in details the layout of individual objects (ermitage, hunting lodge, statue, summer house, windmill, pheasantry or game reserve), with situation predominantly south of Lysá nad Labem (V o g t , 1712). In the first half of the 18th century or earlier, maps were compiled using simple measurement methods and tools, if any. The 'à la vue' method or a magnetic compass (angle measurement) or viatorium (length measurement) were used (S e m o t a n o v a et al., 2008). S e m o t a n o v a (2007) stated that some objects presented on vedutas can be deliberately rendered as over-dimensioned. Even Vogt's veduta captures Špork's baroque landscape with maximum expansion and exaggerated dimensions of objects. Buildings that appear on this veduta are from the years 1684–1712. Only in the following years are built Karlov court (1715) and the village Byšičky (1717). The baroque composition reached its peak around 1730. Its gradual attenuation began after Špork's death in 1738. The estate was inherited by Špork's son-in-law František Karel Rudolf Swéerts Špork who focused more on the economic issues of the estate prosperity. Some buildings were gradually rebuilt (Karlov hospital in the farmyard), while others were vanishing. The extinction of the baroque landscape can be dated to the last quarter of the 18th century (P r e i s s , 2003).

Thus, the vanishing baroque landscape was no longer captured in the first military mapping (1764–1768 and 1780–1783) or in later maps of the area (L a b o r a t o r y o f G e o i n f o r m a t i c s , 2019; V i r t u a l m a p c o l l e c t i o n , 2019). Vogt's veduta from 1712 is therefore the most comprehensive and detailed source concerning the original layout of the baroque buildings in this landscape. The baroque Lysá nad Labem appears on two later engravings by Michael Heinrich Rentz. The first one from the year 1717 records a virtually identical view as in Vogt's veduta with the presence of Karlov hospital but the depiction of the western part with the ermitage, chapel of St. Wenceslas and windmill is somewhat deformed and one part of the garden ermitage is missing. The second engraving from 1720 does not show the western part of the windmill area. The view on both vedutas is oriented more eastward (S e m o t a n o v a et al., 2008). The exact position of the individual objects is not known because of their disappearance before the first area mapping and due to the vedutas distortion. Despite the preserved Karlov and Byšičky village, the spacial connections are difficult to be found. Due to the great floods around 1750, the appearance of the river has significantly changed, and the flow was regulated in 1890s (at Litole) and especially in 1920s and 1930s. The river basin was shifted in some places by 800m (S e m o t a n o v a , 2007).

MATERIAL AND METHODS

The method of aerial research as a basis for landscape planning has not been set, and the methods exploited in other fields are not fully acceptable for this purpose. Landscape planning utilizes just commercial orthophotos from a remote research of the Earth. Current orthophoto snapshots are usually taken only during the summer months from a high height, perpendicularly to the surface, which is not sufficient for recognition of all land structures including the vegetation cover. The author of the article has been working on creating a relevant field method within her dissertation. The method is focusing on watching the existing state of the land, and also mapping of vanished land structures – their discovery, documentation and interpretation (H a v l o v a , 2019). The method is based on procedures used within aerial archeology presented by G o j d a (2000), K u n a et al. (2004), V e r h o e v e n (2009) or M u s s o n et al. (2013).

A four-seat airplane Cessna C172 with a spacious cabine was used enabling the observer to watch the terrain from both sides of the airplane with minimum of windows curvature (without any reflection) (H a v l o v a , 2019). The flight speed during the snapshooting above the target area was 130–200 km h⁻¹ at the height of 150–300 m above ground according to valid Czech legislative (A i r T r a f f i c C o n t r o l C Z , 2018).

The images were taken by a camera CANON EOS 650D, a digital one lens reflex camera and lenses 18–55 mm IS II and telezoom ef-s 55–250mm. The technology of non-orthophoto oblique hand photoshooting was used. For a flight position report followed by specification of the snapshotting destination, a flight logbook Canmore Phototracker DPL 900 with a connection to USB was used (Havlova, 2019).

The photographing was carried out from March 2014 through October 2017 to record the all-year-round symptom development with regard to the phytocenological phase of the vegetation cover development. Photoshooting was done also outside the vegetation season. The photoshooting hours varied between morning and late afternoon to enable eliminate the shadow symptoms. Unfortunately, air traffic does not allow to set regular time and data for regular photographing.

Each snapshot of an object was taken in detail as well as from afar in order to capture as many reference (control) points enabling to get oriented and to perform rectification according to Kuna et al. (2004).

RESULTS

The result is a confirmation of the existence of the Count Špork's baroque landscape on the basis of Vogt's veduta from 1712, localizing of the vanished objects and, at the same time, confirmation of the hypothesis that non-destructive aerial research methods are an essential basis for landscape planning. They can identify vanished objects not captured during area mapping at the time of their disappearance.

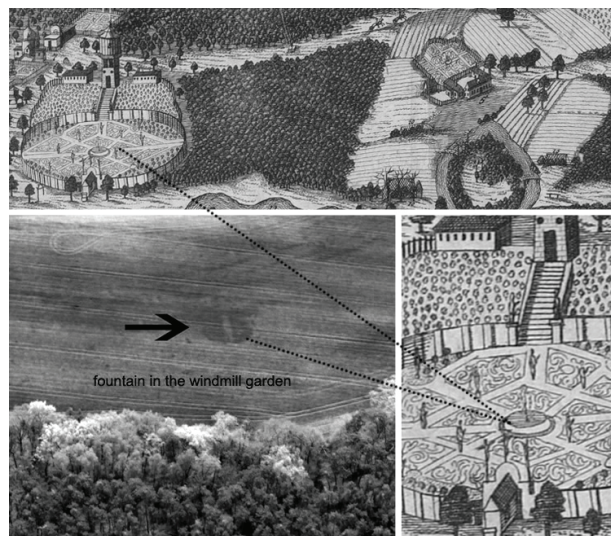


Fig. 2. Comparison of an aerial photograph (Havlova, 2016) with Vogt's veduta (1712). Image of a baroque composition vanished two and a quarter centuries ago

There was a mapping of the exact location of a fountain/pool in the garden by the windmill (Fig. 2) which vanished at the end of the 18th century. An unspecified regular structure (Fig. 3) was newly scanned on the axis of Karlov hospital.

The fountain in the garden of the windmill and the unspecified regular structure on the axis of Karlov hospital were described thanks to a positive vegetation symptom. The appearance of the symptom is associated with the fact that the surface objects locally change their chemical composition and structure of subsoil. This makes changes in vegetation that grows from this soil. Based on the observation whether the crop growing from the excavated objects is higher or lower than the surrounding crops, we speak about positive or negative symptoms. The positive symptoms indicate objects that arose by countersinking (soil excavating and removing) while the negative symptoms indicate objects that were erected (constructed – for example a masonry). The principle of positive vegetation symptoms is that humus components accumulated in the filling of the excavated object provide better growth conditions for the crops. An important factor is also a lower water penetration of the filling (water stays longer in these objects) that is observable especially in lighter sandy soils of river terraces, which is the case of the studied location near the river Labe in Lysá nad Labem. The results are based on visible differences in colour and height of vegetation growing above the vanished object and outside of it. There is also a higher density of crops growing above such objects because of better germination after sowing the grain. These plants ripen faster, too.

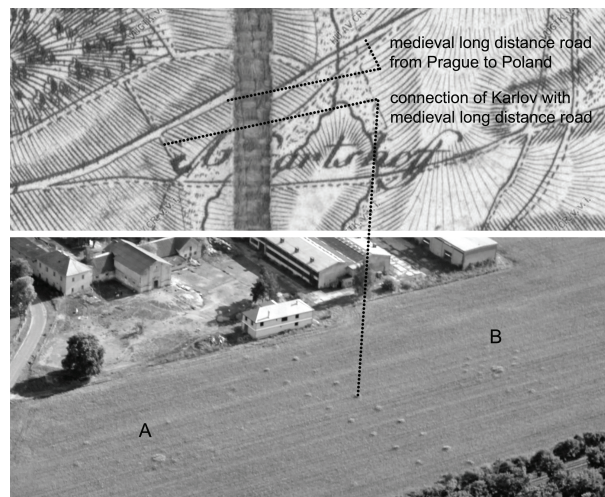


Fig. 3. Comparison of an aerial photograph (Havlova, 2014) with the map Topographic carte of an area in Bohemia (Schmettau, 1794). Image of a completely new structure that has not been copied into any preserved archival records

The structure near Karlov is a positive symptom where a significant growth of crops has been recorded. The structure could not be identified according to the preserved cartographic materials because most probably it was found after the foundation of Karlov – so after emerging of Vogt's veduta. We can only estimate what the line structure means. The structure is delimited by two parallel lines offset by 10 m. The raster of individual points in rows is also 10 m. Probably the line led to the hospital chapel over the current farm yard background where there are no symptoms thanks to the soil hardening and absence of any cover. The structure could have been a group of statues like we can see in the windmill garden or by some other objects that lined the entrance into the chapel. We may speculate on a vanished alley but places after dead trees are not geometrically shown so clearly. Side groups of structures include a central point 4 m in diameter and a group of twelve scattered points that are unidentified as well. With respect to a significantly large diameter of the central point, these might represent some water elements as they frequently appear near historical objects along the river Labe in Vogt's veduta. The axis of the structure connects Karlov with the original Zemska trail (medieval long distance road) which interconnects Bohemia with Poland (it was also called Slezska (also Kladenska and Polish)). The structures are observable on photographs taken by the end of August 2014 and also on those from the end of September 2014. The image was enabled only thanks to a relatively dry summer and a suitable crop cover (densely sowed sorghum).

In the image of the fountain in the windmill garden, the spring fertilization of barley that was on the field at that time, could have helped to highlight the symptom. The photograph capturing the object was taken in the beginning of May 2016 which is a period suitable for photographing vanished objects in the fields with narrow-leaved crops. There was measuring of the diameter of the object location within a rectification with the result of 15 m. It is possible to identify two objects of circular floor plan in the captured part of Vogt's veduta that were originally recessed – we are speaking about the fountain/pool in the windmill garden and the fountain in the garden of the summerhouse. The garden of the summer house is located on the plain or on the slight slope and the scanned position does not respond to the terrain configuration. On the contrary, the veduta shows a significant terrain edge between the garden and the orchard in the garden of the mill which is overcome by steep stairs. Based on historical sources, Semotánová (2007) suggested there were 25 steps. The ordinary height of one step is 15–18 cm. According to Semotánová (2007) at 25 steps the elevation can be 3.75–4.5 m. Here the physical elevation of the terrain is 175.5–180 m a.s.l. which means 4.5 altitude m. This terrain shift, the location of the preserved St. Wenceslas chapel and the diameter of the object led me to the conclusion that it is a fountain/pool in the vanished area of the windmill (Fig. 4).

None of these objects have been captured neither in available aerial military photograph sets from 1938, 1949, 1954, 1968, 1975, 1982, 1985, 1989,

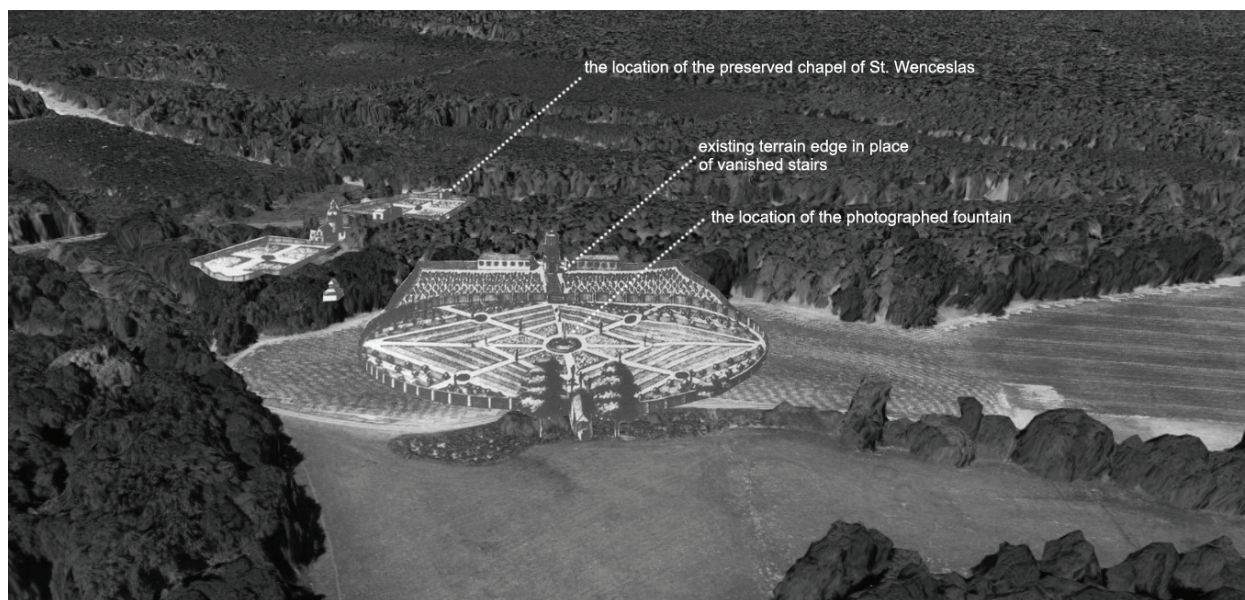


Fig. 4. Reconstruction of historical objects in the southwest part of Vogt's veduta – map record tilted 3D view of an aerial map (July 7, 2007; source: Seznam.cz). Inserted objects: cut-outs of Anonymous veduta of St. Wenceslas ermitage near Lysa nad Labem from 1720 (Semotánová et al., 2008). Opposite to Vogt's veduta, this one works in greater detail because it is focusing only on this area of the original baroque land

1995, 2002 (Military Geographic and Hydrometeorological Office of General Josef Churavý, 2015), nor in LIDAR (Light Detection And Ranging – laser land scanning) data DMR 4G, DMR 5G, DMP 1G (State Administration of Land Surveying and Cadastre, 2019) (Fig. 5).

DISCUSSION

Due to the fact that the baroque landscape complex in Lysá nad Labem had vanished before the first area mapping, available informations are limited, and Vogt's veduta is the only complex material capturing the historical arrangement of the area. The only study material on this topic provided Semotanová (2007) and Semotanová et al. (2008).

In 2007, professor Semotanová took the measurements in Vogt's veduta in compare to the Basic Map of the Czech Republic at the scale 1:25 000 with the following result: the largest distortion (shortening and dermation of the picture) was shown in the entire lower part of the veduta ranging 30–40%. The smallest deviation displayed the large space of the forest complex and both ermitages (ca. 10%). It was determined from the geographical and thematic content that the veduta reaches approximately 70% of credibility. From the space arrangement point of view and based on a cartometric evaluation, the veduta reaches approximately 40% of credibility.

The work by Semotanová et al. (2008) is the only source dealing with this issue, presenting the supposed location of the individual objects and accompanying photographic documentation (authors of photographs indicating the positions of the objects: MVDr. Jan Kořínek, PaedDr. Marie Kořínková, Ing. Stanislav Svoboda). According to this documentation, the windmill with the garden should have been located about 1 km to the west of Karlov. This contradicts the

results of aerial photographing indicating their position by 800m more to the west. This fact, of course, shifts the position of the summerhouse and connected objects. Determination of the position published by team of co-working authors originated based on comparison of cartographic sources, and probably on wrong position interpretation of a historical object against the forest located west of Karlov. The size of the forest is distorted in the veduta which is reflected in Semotanová's (2007) results. The defined position presented in the current article works with this distortion while the present author relies on the scanned position of the vanished fountain and a terrain territorial disposition that confirms the assumption. The scanned structure near Karlov hospital is a new structure undetected in any available archival documents.

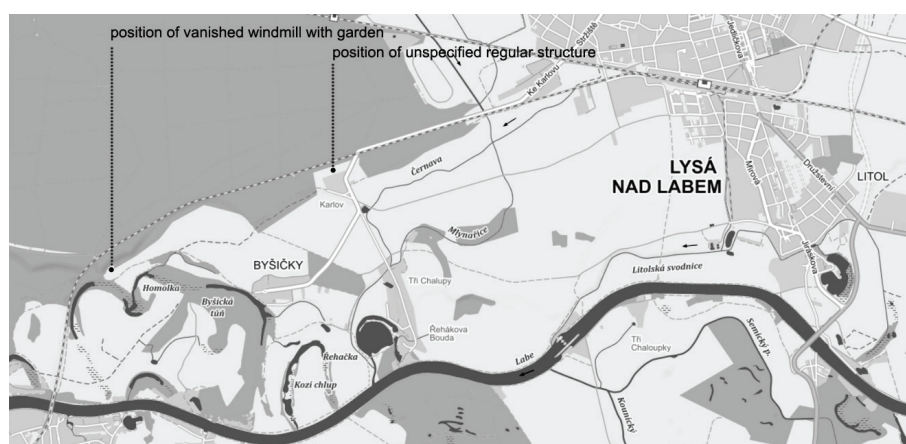
The results of the scanning provide a more detailed information about one of the largest baroque complexes in Central Europe. They are opening further possibilities for closer studies of this area and baroque countryside as well.

I have confirmed the efficiency of the aerial research method which should be adjusted to the needs of land planning and distinguished from other field methods focused on remote ground research to make this method effective in this field. It is important to note that the scanned objects have appeared neither in historical aerial photographs, commonly available orthophoto images (probably due to inappropriate date of scanning), nor in the data of landscape scanning.

As stated by Cechák et al. (2005) and Kolečka (2013), results from aerial scanning can be used for improvement, enrichment, acceleration and streamlining of planning activities and prediction of a country's response to the current trends.

According to Sklenicka (2003), for landscape planning the cartographic documents, historical photographs and pictures are usually used as historical documents. This is insufficient for landscape planning because area mapping has been covering only the

Fig. 5. Location of the study area. Position of the captured structures on the Base Map of the Czech Republic (source: Seznam.cz; modified by author)



last 300 years of our history. If there is no attempt to exclude the existence of vanished or not yet discovered structures within landscape planning in the analytical part, we will endanger our natural and historical heritage. This, of course, would threaten not only the landscape identity but also human in it (Salasova, 2003). This risk is increasing with urbanization and modernization of the landscape.

However, the knowledge of history and context of entire landscape development does not influence only historical and cultural values, as stated by many authors. Antrop (2005) summarizes that knowledge of processes, organization in historical landscapes and people's relationship to the environment, offers valuable knowledge for sustainable planning and landscape management for our future. Similar opinion presented Guo, Bin (2017). Marcucci (2000) remarks that history can be a valuable tool because it has a potential to improve description, prediction and tools in landscape planning. He further states that a land which is based on history and knowledge of ancestors is usually permanently sustainable. This cannot be understood without knowing the processes which created the landscape. Palang et al. (2011) state that land and zoning planning have big gaps in the identification of history, context and use of knowledge from the past. Palang et al. (2011) concludes that it is necessary to realize that decisions we make today can influence processes in the relatively distant future.

Landscape planning must be implemented with respect to the historical context of landscape development. Therefore it is necessary to put emphasis on learning landscape history both in terms of history development as well as in details of landscape-forming processes.

CONCLUSION

The functionality of the aerial photography method (flight altitude, speed, technology etc.) was verified as a basis for effective landscape planning and the validation of spring and autumn terms as appropriate for applying the method in praxis. The southwestern part of Vogt's veduta was rectified, the objects vanished by the end of the 18th century were localized. The exact position of the vanished fountain in the garden of the windmill was captured. In the vicinity of Karlov an unspecified structure, the existence of which was not previously supported by any archival or cartographic background, was captured. The results open new possibilities in the research of the baroque complex in Lysá nad Labem. The newly acquired information needs to be included in the landscape planning process as analytical data which should be reflected in the zoning plan as a value and at the same time the limit of the examined area. It is undoubtedly necessary to initiate a discussion over the protection

of the cultural heritage in the form of the vanished baroque complex in Lysá nad Labem which is once again beginning to emerge into the light of the world.

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