

LANDSCAPE PHOTOGRAPHY IN THE RESEARCH OF LANDSCAPE CHANGE

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Abstract:

The paper presents partial results of “entering” landscape photography, which can be considered as a complementary method for the research of landscape changes. Unlike the usual assessment of landscape changes using cartographic and other archival sources, old landscape photographs can contribute to the deeper knowledge of the local specifics of the examined places or supplement the conventional procedures. Thanks to the ongoing project, supported by the Technology Agency of the Czech Republic (TL02000222), we documented changes in photographic shots of various landscapes in the 20th century. We also added information about environment, vegetation, and geography and photo documentation of the details of the researched shot. This creates a comprehensive output for each old landscape photograph. Such processed photographs have been presented at exhibitions in museums and galleries. Furthermore, they will be available to municipalities and public at a web page created as a tool to support public recreation. Here we present some examples from the Bohemian-Moravian Highlands. They show four types of landscape changes: 1) afforestation and overgrowth by woody vegetation, 2) changes in the agricultural landscape, 3) loss of the grazing landscape, and 4) changes related to watercourses.

Key words: photographic shots, vegetation changes, landscape structure changes, public recreation, Bohemian-Moravian Highlands

Introduction

Usual methods of studying landscape „from a distance“, i.e. with the help of various map sources, enable analysing landscape changes from the second half of the 18th century onwards (Havlíček et al. 2018). Such analyses provide efficient results for the landscape scale (Skokanová et al., 2020). On the local scale, however, more detailed information about biodiversity or landscape structure is lost during the generalization of the maps. Therefore, using photographic documentation can be considered as a supplementary method for providing such detailed knowledge. Historical photographs can be used as a complementary source, in e.g. calibrating satellite land cover images (de Nuelenare et al., 2014) or for studying environmental changes (Nyssen et al. 2014, Kemp et al. 2015). Both historical and contemporary photographs also can be used for extracting land cover and its changes (e.g. Hendrick and Copenheaver 2009, Russell and Ward 2015) and are quite popular in capturing historical vegetation changes, especially in connection to climate change (Rohde et al. 2019). Repeated photography can therefore provide spatial and time specific information about vegetation succession and trends in land use (Moseley 2006). The main advantage of using photographs can be seen in their ability to identify features that are not easily discernible from aerial and satellite imagery (Tracewski et al. 2017). However, using landscape photographs is restricted by their first occurrence at the end of the 19th century (Skopec 1963).

In this contribution, we show the fundamental changes of the Žďárské vrchy landscape on the example of 42 old photographic shots localized in the field, which were selected for the 50th anniversary of the Protected Landscape Area (PLA) Žďárské vrchy and presented at an accompanying exhibition (Halas et al. 2020). We also assess their availability for the development of individual tourism based on their accessibility and distance from existing tourist paths and other roads.

Materials and methods

For assessing landscape changes, we used photographs depicting landscape before the large-scale changes of its structure. We also used literature about local flora, ethnographic books, knowledge from the locals and our own field notes to assess the rate of landscape change. The rate of landscape change can also be derived from the representation or extinction of species from the black and red list

of vascular plants (Grulich 2017). For assessing usability for the tourism and recreation, we used photographs with localized attractive landscape features.

We compiled commentary for each photographic shot in order to provide potential tourist with both ethnographic and natural scientific information about features depicted in the shot and causes and consequences of the landscape changes. Since there are differences in the scope of each photographic shot and their motive, the commentaries are tailored to the particular photographic shot. Photographic comparison of old shot with the current state is supplemented by a map with exact location and direction of the shot and by photo documentation of details discussed in the accompanying text.

We categorized the locations of photographs according to the distance from the existing tourist paths and other roads into four categories: a) on the path, b) up to 100 m from the path, c) over the 100 m from the path, and d) off the path.

Results and Discussion

Only 7% of photographic shots were localized on a tourist path. Another 24% can be found up to 100 m from the path and 69% are localized even farther. Two-thirds (62%) of all photographs were made outside current road network.

To illustrate landscape changes the Žďárské vrchy PLA went through, we selected several examples of four types of the change.

1) Afforestation and overgrowth by woody vegetation

Rocky dominants are one of the typical features of the Žďárské vrchy PLA. Samotín Rock near a hill Teplá (782 m n. m.) is one of less known rocks. It became a repeated feature in the paintings of e.g. Josef Jambor and Rudolf Hanych. As a photograph from the 1970s (Fig. 1 left) shows, it created an interesting landmark against the backdrop of distant hills. The demise of domestic husbandry in the 1980s (Halas et al. 2021) combined with the landscape overgrowth by trees completely changed the shape of the surrounding landscape and the potential of the former lookout point (Fig. 1 right).



Fig. 1: left: Samotín Rock, cca 1970s, source: SOA Žďár nad Sázavou, Department of regional development, Volume 239; right: A view of the Samotín Rock in 2020, photo: Petr Halas (April 21, 2020)

The Dědek and Babka rock formation on Pavlov hill above Ubušín represents a rock wall probably created by frost weathering processes during the Pleistocene. The rock is associated with the legend of an inseparable love that will last forever. Geomorphological processes usually work so slowly that we do not perceive them during our lives. In the case of the Dědek and Babka, however, the rumours showed that the term “forever” is relative. While we do not see any significant changes on the wide main top of the rock (on the original photo on the right, Fig. 2 left), the rock tower on the left has practically disappeared since the original photo was taken – it collapsed, creating a field of massive boulders. With regard to the spread of vegetation (Fig. 2 right), it seems that the rock decay occurred several decades ago. The former clearing in the foreground turned into a mature forest, which hid the rock formation in its shadow. On the contrary, historical stone accumulations were revealed, which can be considered as an unmistakable evidence that the land close to the rock was used for the agriculture.



Fig. 2: left: Ubušín – on Dědek, around 1930, source: archive of Ivan Remeš; right: View of Dědek and Babka from a greater distance, photo: Tomáš Koutecký (November 18, 2020)

Changes of agricultural landscape

Photographic shot of Blatiny (Fig. 3) shows how the village and its agricultural surroundings has changed in the last 50 years – from the homogenization of landscape structure to destruction of solitary trees, overgrowing of meadows and former arable fields by trees to afforestation. The photograph reveals that for two decades after the collectivisation, the landscape still represented a harmonious mosaic and that this mosaic was destroyed in later period.



Fig. 3: left: Jaroslav Hecl: Early spring in Horní Blatiny – whole, 1976, source: Horácké museum; right: Comparative shot, photo: Petr Halas (April 16, 2020)

Changes of the landscape and people's lives are well illustrated by comparing present with the photograph from the Nové Město photographer Josef Štursa. He captured a family from Křižánky on their land a hundred years ago, using primitive ploughing facilities (Fig. 4 left). While the socio-economic conditions of the population changed significantly during the second half of the 20th century, it was not until the 1990s that a substantial part of the agricultural land was transformed into permanent grassland (Fig. 4 right).



Fig. 4: left: Josef Štursa: Self-ploughing (Polanský family), Mor. Křižánky, 1922, glass plate, source: Horácké museum; right: Comparative shot, photo: Petr Halas (November 18, 2020)

Departure from cattle grazing

In the photograph from the 1930s, an otherwise inconspicuous landscape element is captured in the foreground of the shot – the upper part of the right-bank valley slope of Svratka (Fig. 5 left). Due to large inclination, it had limited use, yet it was mowed or regularly grazed, as evidenced by the

captured vegetation cover. With the agricultural intensification and the disappearance of domestic cattle breeding in the second half of the 20th century, such parts of the landscape were neglected and overgrown with woody vegetation (Fig. 5 right).



Fig. 5: left: Josef Štursa: Parts from Křížánky with Čtyřpaličaté rocks, 1933, source: archive of Ivan Remeš; right: Comparative shot, photo: Petr Halas (November 30, 2020)

Watercourses

The shot from Moravská Svatka in the 1930s (Fig. 6 left) gives an insight into the landscape inspiring a number of painters from Czech–Moravian Highlands, including Rudolf Hanych, a native of Svatka. The original and current shot (Fig. 6 right) is dominated by the river Svatka, which was later heavily regulated. The regulation caused not only disappearance of places for painting's inspiration but also impoverishment of the river biota. However, behind the heavily regulated stream, we can still find less impacted landscape with a species rich meadow, which is drained only by a slightly sunken stream and draining canals. The dominants of old buildings, which have not yet been overshadowed by surrounding new buildings, also remain intact.



Fig. 6: left: Reproduction of a photographic postcard of the Vomáčka Pardubice Part on the river Svatka from 1930, source: archive of Ivan Remeš; right: Comparison shot, photo: Petr Halas (May 13, 2020)

Conclusion

Here presented results show that landscape photographs are a valuable source for studying landscape changes. Unlike landscape paintings, they provide a realistic picture of the captured landscape without artistic distortions. The photographs often prove how e.g. the height of a forest stand or overgrowth of the landscape with trees or disappearance of grazing management can significantly influence the landscape character, especially when they obscure features seen in the older landscape photographs (Hendrick a Copenheaver 2009).

Further, they provide more detail than maps or aerial photographs. At the same time, they are a work of art and therefore bring aesthetic aspects to the mix.

Photographs of attractive landscape shots with accompanying information (comments about nature, photographically documented changes of the locality) displayed on an educational board or on a web page (with QR code) are a prime example of capitalizing invested efforts connected with gathering relevant information about landscape depicted in the photographs in the tourism. They can be installed on already marked tourist paths or in their vicinity. Alternatively, they can be installed outside frequent tourist localities, leading to spreading visitors in the landscape.

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Souhrn

Navzdory kratšímu časovému rozpětí (ve srovnání s krajinomalbami) a nerovnoměrnému prostorovému zastoupení (ve srovnání s mapami) představují fotografie krajiny užitečný zdroj pro studium změn krajiny. Umožňují identifikovat různé prvky a skutečnosti, které v jiných pramenech chybí. Navíc jsou často cenným uměleckým dílem, které si zaslouží podobnou pozornost jako krajinomalby. Jsou tedy nejen doplňkovým zdrojem pro analýzu změn krajiny, ale jejich využití (a lokalizace) nabízí neobvyklý prostředek pro rozšíření možností individuální rekreace. Na rozdíl od běžných metod analýzy změn krajiny má využití a vizualizace krajinářských fotografií potenciál zaujmout veřejnost jak při pořádání společensko-kulturních akcí (výstav), tak při vytváření nových turistických cílů v krajině zachycené originálními fotografiemi. Tyto cíle mohou být označeny tradičními (ale často rušivými) informačními tabulemi nebo nenápadnými QR kódy umístěnými podle zeměpisných souřadnic.

Zde prezentované příklady historických i současných krajinářských fotografií ze Žďárských vrchů představují několik fází proměn krajiny v průběhu 20. století. Počátek 20. století ukazuje klesající tlak pastvy a zemědělství, spojený s vylidňováním v důsledku zániku sklářské výroby a následného zarůstání dřevinami. Padesátá léta 20. století představují přechod od původní dlouhodobě udržované jemnozrné struktury zemědělské půdy k homogenním celkům. Přestože krajina druhé poloviny 20. století již byla výrazně zasažena velkoplošnými změnami, řada fotografií dokumentuje, že tradiční struktura krajiny na některých místech převládala až do 70. let 20. století.

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