



USAGE OF GEODETIC MATERIALS IN MULTISTAGE LANDSCAPE REVITALIZATION PROJECT PROCESS OF STRZELCE WIELKIE VILLAGE

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Summary

Country revitalization is a long-term multistage process which needs consideration of historic and contemporary determinants. In the process of landscape revitalization in Strzelce Wielkie village (Szczurowa commune) performed within the frames of a programme based on international cooperation, Polish and German experiences in such investments realization as well as owned output in the range of theoretical elaborations were used.¹ Revitalization of Młynówka stream flowing previously through the whole place was accepted as the most important project challenge and at the same time future investment purpose emphasizing among others diversity of surrounding landscape in its upper, middle and lower flow. The first research already revealed great variety of forms in the elaborated area and existence of numerous historical elements both vegetal and architectural ones. Usage of geodetic materials contributed to localize and include in documentation particular landscape forms, enabled to perform multi-range *in situ* researches of country landscape and even recreating of 19th century spatial solutions². Such elaboration made with use of maps and geodetic plans allowed to preserve elements that are important from the cultural heritage point of view and also to use them in prepared project conception of the place's spatial development.³

¹ *In situ* researches were performed within the frames of international programme – Polish-German cooperation: „Integrated programming of rural areas development in Małopolska on the basis of Bavaria standards”, on the basis of the Partnership Agreement: „Conception of Integrated Proceedings in favour of Rural Areas Development” (2014–2015). Low-key tests and *in situ* tests in the range of landscape: dr inż. arch. Przemysław Baster (cooperation in the German side: landscape arch. Thomas Wurth), scientific care: prof. dr hab. inż. Urszula Litwin; plants analysis: dr inż. Zbigniew Koziara.

² Elaboration of existing state, valorization and project directives for the whole tested area – including all project charts presented in the paper – were performed by students of the 3rd year of engineer studies of Geodesy and Cartography specialization within the subject entitled Projecting of Urbanized Areas, under the guidance of dr inż. arch. Przemysław Baster. Scientific care: prof. dr hab. inż. Urszula Litwin; plants analysis: dr inż. Zbigniew Koziara (Faculty of Environmental Engineering and Land Surveying, University of Agriculture in Krakow).

³ Conceptual project of Młynówka stream and town's centre revitalization was performed under the guidance of prof. dr hab. inż. Urszula Litwin by the students of the 2nd year of master's studies

Keywords

revitalization • revalorization • rural areas design • Młynówka stream • landscape architecture • project process

1. Introduction

During discourses about Strzelce Wielkie landscape with local inhabitants it was affirmed that revitalization of dried up Młynówka and redesigning of surrounding area was the most important issue.⁴ Nowadays, only its dry and overgrown riverbed covered with self-seeding of old growth of trees as well as flow ponds disappearing under water plants are evidences of that stream's past beauty. Renewed channeling of water to this historical watercourse would relieve water channels net built decades ago and prevent surrounding fields from flooding – which happened repeatedly through the last years.⁵

First, the discussed stream flew through the meadows belonging to Strzelce Wielkie, then it reached the town's centre to meander afterwards in unbuilt area and finally to find its river mouth to the nearby river. Every segment presents different landscape type. Near the beginning of the stream's course, the landscape is green with great amount of water elements. Two kilometers further, Młynówka flows to urbanized areas, crosses a big post-manorial pond and then goes with two meanders round the oldest village's buildings and monuments. The area around the third section of the discussed watercourse is the open landscape characterized by wastelands, meadows and fields largely belonging to Nature 2000 land.

2. Material and methods

The leading idea in outlining designed area's borders was to include there Strzelce Wielkie centre, Młynówka stream and parcels of land lying directly close to it. Noticeable both in documentation and reality, above mentioned area division to three sections which present three kinds of landscape was somehow reflected in project zones separated in the designed areas. There were four zones scheduled in the centre, one intermediate and two peripheral (at the beginning and at the end of Młynówka course).⁶ Moreover, mentioned seven zones were divided into smaller parts – 43 proj-

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⁴ Performing of widely understood environmental interview, social consultations and cooperating with local inhabitants is the basis of so called "Bavarian method", used in objective project and is the topic of separate elaboration.

⁵ Such basic project assumption is in accordance with opinion presented already half of century ago that: "Preserving natural waters together with accompanying woodlot, fauna and flora joining former natural landscape with current development state should become a basic guideline of planning in landscape" [Rzymkowski and Chowaniec 1972, p. 59].

⁶ Nomenclature and method of division into zones with reference to former researches of prof. Urszula Litwin (only from a stylistic point of view the word "zone" is in the paper described interchangeably with the word "area") [Litwin 1986, p. 47–54; 1988, p. 79–88].

ect subzones with characteristic borders and area development. It should be indicated that despite so diverse landscape in discussed areas, the same geodetic bases – independently from the elaborated zone and subzones – were used in prepared project documentation. However, as development of areas along Młynówka stream is strongly diverse, the way of using geodetic materials in analysis and designing of particular zones was also diverse. The difference concerns information which were read out from them, symbols placed there and the aim of their usage while determining and inscribing of project directives.

To perform described elaboration, all accessible bases, maps and plans that enable both gained information analysis and low-key and field results plotting were gathered:

- An ortophotomap – created from air photos and being orthogonal area projection made in the even scale for the whole range (scale 1 : 5000),
- Plan of existing area development – defining particular purpose, arrangement and development in the given area (scale 1 : 5000),
- A cadastral map – presenting property laws of land plots or their usage forms (scales 1 : 5000, 1 : 10000),
- A situational-height map – presenting area height together with situational objects arrangement (scales 1 : 5000, 1 : 10000),
- A record map – with division of plots and properties (scale 1 : 20000), serving to determine zones and subzones borders.

The paper describes the ways of usage of above mentioned geodetic materials in designing of three chosen area fragments which present every type of landscape. To display old growth of trees, unfold grown up water elements and also perform integration of historical forms, reduction of a part of young self-sown was necessary in the initial part of the stream course. While analysing the town's centre, joining historical news with existing state enabled to perform historical-landscape study as well as communicative-observation outline. Studies over Galician cadastre from the half of 19th century resulted in reconstruction of former functional, compositive, vision and communicative connections and also the primary town-planning arrangement. Particular attention is paid to historical elements: park-manor layout, a big pond, smaller manorial ponds, a monumental church with historical tree stand and also roads arrangement in the place's centre. By contrast, the area along the last Młynówka fragment is largely included in the zone of landscape protection named Nature 2000 which induced to leave it in almost unchanged state in respect of spatial development limiting the designer's activity to provide the best possible exposure of existing forms.

The elaboration was performed according to Bavarian and Polish methodologies of the four-stage design system: resource, valorization, guidelines, project.⁷ Every work period concerned all mentioned characteristic areas with division to project subzones. In this way, the whole spatial system of elaborated landscape was analysed and valor-

⁷ This system is improved in Poland for decades [look at: Bogdanowski 1976, p. 76; 1999; 2000, p. 223–229].

ized together with plants profile. It was the basis for performing further planning works of this stream's revitalization as well as the centre's of the village. Restoration of projected area's former splendour, place identity and cultural heritage elements importance were regarded the most important aims of the elaboration⁸. Moreover, flood protection of nearby agrarian lands and also proposals of changes striving to improve inhabitants' life conditions are also undertaken.

3. Results and discussion

3.1. Subzones 1–6, the beginning of Młynówka course (chart 1)

Resource and valorization

First six zones of the elaborated area is a territory where the Młynówka river starts its watercourse. The resource presents an existing state before elaborating the project. It is presented on several bases such as an ortophotomap, an area development plan or a situational-height map which in the following elaboration stages also became the basis to perform valorization and project guidelines. Also photographic documentation is taken as a part of elaboration; signs of photos and basic remarks resulting from area analysis were put to the ortophotomap. The flat and overgrown riverbed near which single historical trees grow attracts attention. Młynówka is obstructed in many places which is the reason of water-soaked lands that occur in the neighbourhood without access or with a very difficult one. The further surroundings of Młynówka are composed mainly of arable lands with some wastelands and ponds used for fish breeding. The area development plan informs about a very big variety of green lands – there are mainly wastelands and areas so overgrown that they are partly impossible to be crossed so they were decided to have been redesigned to greenery zones which would compose beautiful view for strollers along Młynówka.

Precise resource's determination enabled proper performing of its valorization. Positive elements that need to be redesigned are ponds that should be stocked with fry and their surrounding which ought to be enriched with tourist elements in order to make the area more recreational. There are also some elements of positive character such as historical trees growing along the riverbed living of which will both enrich landscape and will allow to preserve natural character of the elaborated area. Considerable amount of the river's initial watercourse is composed of lands of neutral or negative characters, dedicated to be redesigned.

Guidelines

Guidelines proposed by inhabitants which concern changes connected with Młynówka and nearby ponds were taken into account during design and most of them can be realized with small outlays. Regarding Młynówka, particular attention is paid to clearing up, flow capacity improvement and riverbed's deepening, greenery care, protection of

⁸ About meaning of mentioned project aims: [Kowicki 1997, p. 5–43; Myczkowski 2003, p. 3–38; O tożsamość wsi III generacji... 1983].

embankments, barrages' restoration and also connecting the stream with nearby ponds. It should also play tourist function after creating integrated greenery system and places with viewpoints that will attract to admire nature beauty. Changes that regard ponds concern mainly their cleaning up and deepening, bank line's regulation and stocking. A lit path along the bank line and a beach beside a little bathing place would be local attractions.

Project guidelines were presented at the situational-height map. A pedestrian and bicycle path for inhabitants along Młynówka bank and around the ponds together with two bridges were projected. This path can serve both for walking persons and people physically active who run or cycle. The path was designed to demonstrate nature's beauty to the citizens in the best possible way.

3.2. Subzones 20–35, place's centre (chart 2)

Historical-landscape study

In the elaboration, the existing state of Strzelce Wielkie village's centre was presented by means of the situational-height map, the ortophotomap and pictures showing characteristic places of the discussed area. As opposed to already described and almost unbuilt area, buildings of farm character presenting variety of buildings and adjacent gardens occur in the centre. Strong historical conditionings concerning both town-planning arrangement and particular monuments appear in this area. That is why apart from resource's analysis and its valorization, historic-landscape study was additionally performed the aim of which is most of all pointing out the current state of historical building objects and plants which create positive memories and are a display of their picturesque place. The manor built in 19th century together with a surrounding park, historical trees along roads that derive from the same time and also – which was crucial in the study – the Młynówka stream were undoubtedly key elements of the elaboration that influenced historical town-planning arrangement and spatial structure of the village. The antique wooden church dedicated to St. Sebastian with attached free-standing starling bell-tower is still a distinctive historical object of the village though it does not already serve as a parish church.

In the range of greenery, the most important element is an old growth of trees around the mentioned church that consists of 14 trees regarded by citizens as nearly monuments of nature. The village's centre is rich in numerous historical trees which are located mainly along the Młynówka stream and near the manor, parallel to the road in the north part of elaborated area where the beautiful trees avenue displayed in the photo goes by. Lonely trees on the crossroads are also worth attention.

Mentioned above historical elements are commonly known and easy to find, however, many forms were only able to be localized and considered in the project thanks to geodetic materials. An Austrian cadastre played the most important role in historical-landscape study elaboration. It came into being during the emperor Franz Josef's reign, was made in scale 1 : 2880 and included a part of current Polish lands which were located in Austrian annexed territory. It goes as far as to say that

in 19th century Strzelce Wielkie were vibrant and full of life because the manor house together with farm buildings, a big park, numerous alleys, paths, trees and an orchard can be seen in cartographic elaboration. It is difficult not to perceive that many roads led to the parish church dedicated to St. Sebastian from almost every part of the place.

It is worth to notice that urban transport system and arrangement of the most important space elements were well-considered and created harmonious space. No doubt, such spatial development inspired admiration and was properly exhibited. Concept of spatial forms marked on cadastre in the third dimension enabled to determine the most important views existing in the 19th century (though they are not inscribed). It should be emphasized that most of them does not exist now as self-sown forecloses it or viewpoints and field forms (f.ex. bridges) essential for proper space observation did not endure.

The cadastre significantly served to design Strzelce Wielkie village centre in order to improve its functionality and the Młynówka river development. It made the basis of the project in presenting differences between current state and this from the 19th century; while creating the study, the cadastre was used for comparing with the area development plan and the situational-height map. It was just the profound cadastre's analysis that allowed to reconstruct and map the most important existing in history spatial forms on geodetic bases. Reconstruction of the most important prospectuses to be afterwards placed in the project and restored in reality in the future became particularly important. They are presented in the guidelines, on the situational-height map in scale 1 : 5000. The view from the manor to the parish church and manorial ponds can be distinguished among others. The view from the church to Młynówka and the manor attracts attention in the opposite direction.

As it was mentioned, to determine properly the most important differences in the village's centre development, it was necessary to perform cadastre comparative analysis with the development plan, the ortophotomap and the situational-height map. The first of these three bases delivered above all information about area purpose. It largely helped to realize which grounds were grown by self-sown and need clearing and also which is the state of roads in the area of Strzelce Wielkie village. It is also easier to determine location of wastelands and then to design their transformation in f. ex. recreational areas. Current placing and general look of architectural and natural objects were determined thanks to the ortophotomap. The Młynówka riverbed is overgrown and its borders became worn away and water supply was cut off which caused drying up of the river that is supplied only by precipitations water. The same situation is with ponds: lack of fresh water, overgrowing with bushes as well as lack of flowing water cause that they not only lost their former charm but are even difficult to be localized. A historic island placed on the Big Pond which is now difficult to recognize between short and medium greenery comprises a characteristic place. The last element which by influence of time and negligence lost its enchantment is the manorial park that is inscribed in the monuments with historic forest stand register, now without any fence or clear arrangement.

Guidelines

Performing of the historical-landscape study connected with an analysis of the current state – so considering contemporary and even negative forms in the landscape – became fundamental to determine project guidelines for the discussed area. Both citizens and designers called the main aim as reinstating Młynówka current through the village centre, revitalization of the big pond with an island and also recreating of former smaller manorial ponds.

Concerning the stream, it was decided to direct tributaries to it as well as to clean and make water flow permeable to supply new water there. It should be provided by banks protection and fascining in order to preserve historic course with additional performing of alternative polders. It was decided to clean the bottom from trees and bushes growing in the river and also to complete plants along Młynówka. Designed ponds rebuilding is to be based on regulating of banks line and ponds shape revealing. Lit strolling-view paths and possibility to cross the pond to the island are additional elements. To make this area more attractive in terms of recreation, it was enriched with places to spend time nicely – f. ex. benches, piers and even a watering-place.

Proposed changes regarding the manorial park were most of all restoration of a fence which was destroyed, renewal of paths with preserving park's historical view, recovery of chaotic arrangement of forest stand as well as the state improvement of the manor which currently serves as headquarters of the local hunting circle named "Nadwiślan". Changes in high and low greenery system were made as well to recreate former views and also to create new distinguishing ones that will exhibit the most important landscape elements.

Summing up, it should be underlined that the work over the historical-landscape study mostly included analysis of gathered cartographic and text data and also Strzelce Wielkie place photographs. Creating the study, information from inhabitants which outlined the main directions of conducted works were very useful. As a result, elaboration including a very valuable and important comparison of history and the present time which means Austrian cadastre confrontation with contemporary geodetic materials came into being.

3.3. Subzones 36–43, the end of Młynówka watercourse (chart 3)

Resource and valorization

After flowing through the green lands and then the urban ones, the Młynówka riverbed runs in the open landscape. It is the area with small variety of forms (in comparison with both ones described above) and poor historical conditionings (in contrast to the village's centre). In that case, geodetic materials served to prepare a project of an area with predicted slight changes. It is easy to read from the ortophotomap that the designed area is occupied mainly by arable lands and meadows whereas the stream's banks are grown by self-sown. This area's location in the protection zone called Natura 2000 additionally determined more precise plants analysis – and this plants variety was signed in the area development plan. Native species of trees and bushes such as lime,

oak, alder, birch and lilac were mainly recognized. Further neighbourhood is composed of arable lands where grains, potatoes, root plants and meadows covered with grass and Leguminosae plants such as white clover or meadow clover are cultivated.

Current way of development was preserved on the most of the area. Only in the northern part corrections were done in order to increase attractiveness of the pedestrian and bicycle path, part of arable lands situated in the vicinity of the village's centre were also removed to confer on the area's more recreational character. The most northerly of designed area segments where a pumping station is located also needed redesigning. On the remaining vast area, small changes serve to expose plants that grow there and to state points from where the most beautiful far views stretch.

Guidelines

In their guidelines, inhabitants pay attention to the need of making area attractive in respect of recreation which means creating a walking and bicycle path with integrated greenery system, greater amount of playing fields and also Młynówka flow capacity improvement and returning to its historical flow. The designer's guidelines concur in the majority with citizens' conclusions. The walking and bicycle path, sport and recreational areas, coffee-houses and a camp site together with adjacent area to play paintball were planned. The remaining changes concern only small elements of spatial development.

Creating a cafe with playground for children as well as tennis court for more active citizens were proposed in the closest vicinity of Strzelce Wielkie centre, in the bend of the Młynówka river. A bit further, a parking place was provided for visitors who want to watch panorama of the countryside from the observation tower which could become one of the main local attractions. In its vicinity, some resting places were prepared which should make pleasurable Sunday walks for citizens and tourists who visit Strzelce Wielkie. A small Młynówka pool was planned near the camp site where the lonely willow can be admired from the place situated on the floodbank. Landscape chart presents views that will be able to be watched by strollers during a saunter.

4. Results

Performed comprehensive conceptual project of spatial planning included the area of Strzelce Wielkie centre and surroundings of the Młynówka stream flowing through that village, from its source to estuary. In the elaboration, geodetic materials that included initial information concerning many aspects of elaborated issue were used. They not only allowed to familiarize with existing state but also enabled to perform *in situ* tests and proper determining of their results in project documentation. Geodetic materials were successfully used in performing researches and preparing project documentation concerning three different kinds of landscape. They became valuable source of information while designing both urbanized and completely deserted lands, full of historical elements and also totally deprived of them. In town-planning as well as in planning scales, using the wide range of geodetic information made the elaboration

more perfect both in places where many spatial changes were made and also where designer's interference was very slight. In-depth reporting of geodetic bases contributed to preserving of many forgotten or hidden elements of cultural heritage and to using them in created conception; it also enabled easier associating of information concerning different domains of science and art.

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The list of project charts:

1. Spatial development of Młynówka and its surroundings in Strzelce Wielkie. Resource, valorization and project guidelines. Zones 1–6 (author: Marcin Klich).
2. Historical-landscape study of Strzelce Wielkie centre (authors: Edyta Augustynek and Arkadiusz Doróż).
3. Spatial development of Młynówka and its surroundings in Strzelce Wielkie. Resource, valorization and project guidelines. Zones 36–43 (author: Cezary Piszcz).

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