

## DESIGN THINKING AND ROLE-PLAYING IN EDUCATION ON BROWNFIELDS REGENERATION. EXPERIENCES FROM POLISH-CZECH COOPERATION

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### Abstract

The scope of the paper is a description of experiences gained from the course on “Revitalization of urban post-mining areas” elaborated by the authors and run within the framework of the program: Education of specialists in post-mining sites management in the Polish-Czech border area. The program was implemented in 2013-2015 by the Silesian University of Technology and Technical University in Ostrava, with the financial support from the European Regional Development Fund. The main objective was to make specialists from different fields sensitive to spatial aspects of revitalization, to facilitate future interdisciplinary cooperation of persons who do not have architectural and urban planning background. The authors focused on exposing specific aspects of revitalization by means of particular case studies and simulations of the design method in the form of workshops, with reference to the Design Thinking methodology. Role-playing elaborated by the authors was used in the generation of developmental scenarios, in which course participants assumed the point of view of different stakeholders of revitalization processes.

### Streszczenie

W artykule przedstawiono doświadczenia z autorskiego bloku warsztatowego „Rewitalizacja urbanistyczna terenów pogórnicych”, prowadzonego w ramach programu Edukacja specjalistów z zakresu zarządzania terenami pogórnicych na pograniczu polsko-czeskim. Program realizowany był przez Politechnikę Śląską i Uniwersytet Techniczny w Ostrawie w latach 2013-2015 i współfinansowany ze środków Europejskiego Funduszu Rozwoju Regionalnego. Celem warsztatów było przekazanie podstawowej wiedzy związanej z przestrzennymi aspektami rewitalizacji terenów pogórnicych osobom reprezentującym różne dziedziny, nie mającym przygotowania architektonicznego i urbanistycznego tak, by ułatwić przyszłą współpracę z urbanistami i architektami, w ramach interdyscyplinarnych wyzwań związanych z rewitalizacją terenów pogórnicych. Autorzy skoncentrowali się na pokazaniu specyfiki przestrzennych aspektów rewitalizacji na konkretnych przykładach oraz zaznajomieniu uczestników ze specyfiką metod projektowych, w nawiązaniu do metodyki design thinking. Na tym tle wykonano analizy wybranego przypadku terenu pogórnicych oraz określono perspektywę rewitalizacji. W tworzeniu scenariuszy rozwojowych wykorzystano autorską metodę „gry w rolę”, w której uczestnicy przyjmują punkt widzenia różnych interesariuszy procesów rewitalizacji, reprezentujących różne pomysły i priorytety w zagospodarowaniu terenu.

**Keywords:** Urban design; Urban regeneration; Brownfields; Design education; Role-playing in education.

## 1. INTRODUCTION

Revitalization of brownfields is one of the most important current challenges that Silesia has to face. The debate on methods and directions for revitalization has been going on for years, and, at the same time, projects of different scale have been implemented: from adapting buildings to new functions, through investments devoted to provide one specific function (shopping malls), to multifaceted new urban complexes. In view of the Sustainable Development principles, which stipulate rational management of available resources, revitalization may be simply treated as “recycling of urban space”. As far as the urban categories are concerned, the objective is to find solutions that would not only be functional and economically feasible, but that would also harmoniously integrate brownfields with their surroundings, for the benefit of the city inhabitants [2]. Such search for the optimal solutions is conceptualized in the methodology of Design Thinking, described as a “human-centered process that emphasizes observation, collaboration, etc. in order to achieve innovative solutions for a given problem” [1].

Spatial problems involve diverse issues; starting with the crucial importance of formulating the vision of changes, to supplementary aesthetic activities. Sometimes architects and urban planners initiate and coordinate revitalization processes, but sometimes their role is reduced to designing buildings. However,

architectural objects often become a visiting card of transformations and visible tokens of their success. In recent years many spectacular and award-winning buildings have been erected on post-mining sites in Silesia, designed e.g. by Medusa Group, Konior Studio, Nikodem Gemander or Riegler Riewe. Post-mining areas inspire the imagination of design architects, yet for average “men-in-the-street” they are associated with noise, dirt and drudgery of everyday work rather than with architectural qualities or local heritage. Behind walls and governed by their own rules in the past, they are not perceived as fragments of the city, even if situated downtown. Therefore, it is necessary to initiate processes that will lead to the opening up of brownfields and their acceptance by the inhabitants. Such processes are complex, multifaceted, requiring the coordination of social, economic, legal, infrastructural, and spatial measures, other activities, as well as good cooperation with the stakeholders [6].

The post-MSc. program of educating specialists in post-mining sites management in the Polish-Czech border area was implemented by the Silesian University of Technology and Technical University in Ostrava in 2013 – 2015 [4, 7]. The program participants were, among others, graduates of the following majors chemical engineering, organization and management, environmental engineering, mining and geology, civil engineering. There were no architects and no urban planners. The syllabus included the-



**Figure 1.**  
The workshop group during the study trip at Nowe Gliwice (photo M. Stangel)

matic blocks devoted to economic, environmental, social, legal and other issues. The authors of this paper were responsible for the block: “Revitalization of urban post-mining sites”. It was assumed that although it was impossible to learn architectural design in such a short time, the participants could become familiar with the issues involved in revitalization, to facilitate their future cooperation with architects and urban planners in interdisciplinary projects. Various forms of didactic activities were used: lectures, study trip, classes as well as workshops to explore specific aspects of revitalization by analyzing particular examples.

## 2. LEARNING FROM IMPLEMENTED PROJECTS

There are many directions for the transformation of post-mining sites. In Silesia, brownfields have been used for new commercial functions, for offices, housing, tourism, sports, culture, education, etc. During the study trip the program participants visited three post-mining sites that have recently been transformed into comprehensive, multi-functional urban complexes.

**Nowe Gliwice** located on the site of “**Gliwice**” **Hard Coal Mine** is an example of adapting the brownfields to serve modern functions, industry and education (Fig. 1). The area of about sixteen hectares was con-

verted to the economic activity zone, incubator of entrepreneurship, and tertiary education facilities. The construction works were conducted in 2005 – 2009. The monumental buildings designed by Jerzy and Emil Zillman and dating back to 1912 were altered in the following manner: the pithead – into the head office of Entrepreneurship College in Gliwice; the machine house- into offices and incubator of entrepreneurship and a new seat of the Artistic Foundry Museum in Gliwice. In the place of the previous coal mine administration building, a new facility was constructed and connected to the pithead by a glazed elevated walkway. The success of this project should be attributed to the consistent activities of the Agency for Local Development which has managed the site since 1999 (after the coal mine was closed down), as well as to its favorable location in the vicinity of A1 and A4 motorway junction. In the next stage of the transformation of this site, lots for private investors were prepared on which several companies representing the branch of new technologies are already active (Future Processing, FlyTronic).

**Strefa Kultury (Culture Zone) in Katowice** – emerging on the premises of the former **Katowice Hard Coal Mine** in the center of the city, next to “Spodek” (landmark – concert hall, sports hall, exhibition hall) provided a successful example of the revitalization of brownfields for cultural functions (Fig. 2). Three public utility buildings were constructed on the site:



Figure 2.  
The Culture Zone on the site of former Katowice Coal Mine – as seen from the top floor of the nearby Altus building (photo M. Stangel)



Congress Centre (designed by JEMS Architects), headquarters of the Polish Radio Symphonic Orchestra (designed by Konior Studio) and seat of the Silesian Museum (designed by Riegler Riewe Architekten). They were winning designs awarded in international competitions. The investments obtained substantial funding from the EU (from 50% to 85% of the outlays). They are supposed to spur the development of the urban quarter; the remaining post-mining sites are planned to be allotted for commercial investments. For the last few years artistic events were organized on the sites, for example: art exhibitions during museum nights, Tauron New Music festival, which enlivened these brownfields and gave a foretaste of their revitalization and functional integration with the city center.

The third example is **Nová Karolina in Ostrava** [5], a district located in the vicinity of the historic center of the city, on the sites of a coal mine, coking plant and power plant, comprising the surface area of thirty two hectares. Only two of the industrial buildings have been preserved: the administrative building and the transformers station of the power house, both entered on the heritage list. In 2000 an international competition for the revitalization project for the district of Karolina was held. The first award (by Architects: Andrzej Duda, Jan Kubec, Jerzy Witeczek, Henryk Zubel) was won by the design that

proposed the creation of the north-south main traffic axis – a wide, green boulevard, with the two historic industrial halls in its central point. The boulevard is to be surrounded by service settlements, housing and office facilities, as well as by recreation spaces. The first, already completed stage of the investment involves a shopping mall, service and housing settlements, the boulevard and the adaptation of the two historic buildings. The project provides opportunities for the creation of a multifunctional urban tissue in post-mining sites (Fig. 3).

### 3. WORKSHOP ASIGNMENTS – DESIGN THINKING AND ROLE-PLAYING

During short workshops course participants had the opportunity to experience “a tangible, direct contact with the problem” and realize its complexity. In the first phase, to acquaint the students with the methods and goals of design, the methodology of **Design thinking** was used. It postulates, in order to deliver innovative solutions of a design problem, five basic steps in the design process: **1. Empathize, 2. Define, 3. Ideate, 4. Prototype, 5. Test** [1]. **Empathizing** means understanding the needs and desires of the potential users of the urban space. It means getting to know the place well, with all the complex layers of local conditions: connectivity, ecological issues and



Figure 3.  
Nová Karolina in Ostrava (photo M. Stangel)



surrounding build form, to a broad scope of local heritage. This attitude prevents from failed “designer solutions”. **Defining** the problem is basically synthesizing and valuing the gathered information. **Ideating** is the brainstorming phase of producing a broad range of possible solutions. **Prototyping** a space can be an interesting issue on its own, but in the case of the workshop it meant producing a quick, but complete and comprehensive sketchy masterplan. Finally, the work was **tested** in a presentation, discussion and comparison of solutions by various teams.

The workshops were based on the case study of the site of “Michał” coal mine in Siemianowice Śląskie, which had a lot of features typical for brownfields in Silesia. The mine was established in the mid 19th century; in the early 1990s it was closed down due to its poor technical condition and depleting coal resources. The site is favourably located in the Silesian Agglomeration (about 10 km north of the centre of Katowice) and in the city quarter – in the direct vicinity of the centre, including: a housing estate, sports hall, services, municipal office, etc. The area has public utilities, supply pipes and sewer lines and is contained within the so called: “pillar protection zone”, therefore, special precautions against mining damage are not required. Its unique quality is the neighbourhood of “Górnik” (Miner) historic park and historic old coal mine facilities: the pithead,

machine house, top shaft construction, stack, etc.

Despite discussions and conceptual works that have been held for several years now, the revitalization of the site is hardly successful. Some of the historic buildings were adapted to provide services: an outpatients’ clinic, Lidl supermarket, several small industrial businesses. The greatest achievement is the Silesian Park of Mining and Metallurgy Traditions commissioned in 2012 and the adapted mining hoist building (Fig. 4). However, the major part of the site still remains unmanaged and underdeveloped.

The objective of the workshop exercise was a draft analysis of the development conditions, such as: location, traffic accessibility, neighborhood, biological conditions, preserved industrial facilities, urban planning conditions. On the bases of maps, photographs, in-situ visits and data derived from the Internet, the participants conducted SWOT analyses of the site.

The next task was to devise scenarios and visions of the site development. During mini-workshops the participants assumed the points of view of different entities that would be involved in the revitalization process. Accordingly, eight role-playing cards were prepared for the stakeholders, with details on their expectations and priorities (Fig. 5):



**Figure 4.**  
The area of the former Michał coal mine in Siemianowice Śląskie (photo M. Stangel)

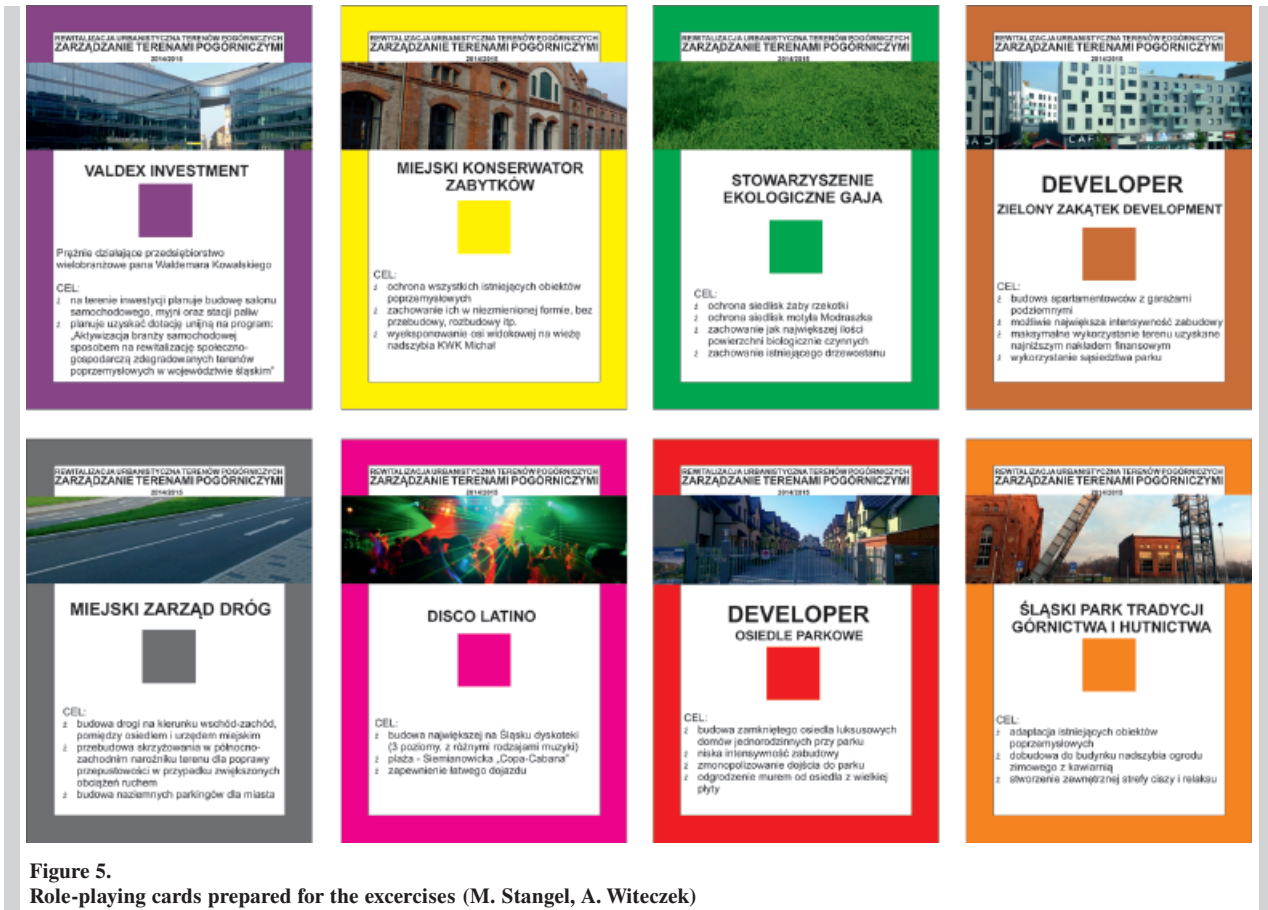


Figure 5. Role-playing cards prepared for the exercises (M. Stangel, A. Witeczek)

- Municipal Heritage Conservator, whose task was to take care of the preservation of the existing post-industrial facilities in their unchanged form and to expose the view on the top shaft tower.
- Municipal Roads Administration, whose plan was to run a new road cutting through the site and to lead to the construction of the ground parking lot.
- Association of Ecologists, whose priority was to protect the existing eco-system and the tree stand, as well as to preserve maximally vast biologically active land surface.
- Multi-trade company planning to build a car dealer's salon, car wash and petrol station, taking advantage of the EU funds allotted for revitalization.
- Developer wishing to build a multi-family housing estate and achieve maximally high intensity of the settlement with minimal financial outlays.
- "Park Estate" developer, whose objective was to build a luxury gated community of detached houses next to the park. The investment was planned to be shielded from the neighborhood by a wall and to monopolize access to the park.
- Latino disco – the investor's intention was to construct a three-storey discotheque, which would be the biggest in Silesia, with an additional attraction of an artificial sandy beach to be used for summer events.
- Silesian Park of Mining and Metallurgy Traditions – the only stakeholder that really exists, whose intention was to expand the surface occupied by the park, and, in addition to adapt the post-mining buildings and extend the historic settlements by new cubic capacity.

The selection of the roles secured that the needs and objectives of particular stakeholders were different, or, sometimes, even mutually exclusive, causing conflicting interests as elements of the planning processes [3]. The objective was to evoke interactions and provoke discussions and negotiations, leading to a variety of urban solutions.

The participants worked in small groups. Each group member chose one or two role-play cards and, next, presented their objectives and priorities to the group (Fig. 6, 7). This provoked discussions, as the group





Figure 6 and 7.  
Workshop discussion with the role-playing cards (photo M. Stangel)



members realized how conflicting some of their interests were. At first, some basic functions that should be provided at the site were discussed, and, in the next step, the optimal location for the functions. Thanks to such exercise, the course participants became aware of the relations among the functions, and of the difficulty in accommodating so many investments at one site. The group work resulted in diverse approaches – some sought compromise, others rejected some functions, whereas some proposed a creative combination of the functions and even presented their own, new ideas. The concepts were created as a follow up of previous analyses of the site. Altogether, several projects were proposed and demonstrated by means of charts, diagrams and references. Two exemplary concepts are discussed in more detail in the following part of the paper.

The first concept (by Bożena Hajduk, Karolina Jąderko, Kalina Juszczak, Agata Juszczak-

Wiśniewska) (Fig. 8) was supported by a profound analysis of the existing state and the in-situ visit. The authors proposed the minimization of the environmental nuisance of the site and the utilization of its advantageous location to make it attractive for future users and neighbouring inhabitants. The authors identified the potential of the site which makes it possible for its industrial traditions to be used for new business and industrial functions. They separated the key lot that could potentially constitute the zone of the location of profitable investments such as: a multi-trade company, a discotheque and retail service facilities. They also proposed to expand the surface area of the Silesian Park of Mining and Metallurgy Traditions, adapting the post-industrial buildings. The remaining part of the site neighbouring with the park, would be allotted to housing and recreation area. Green areas would cut through the housing settlements and there would be connections with the

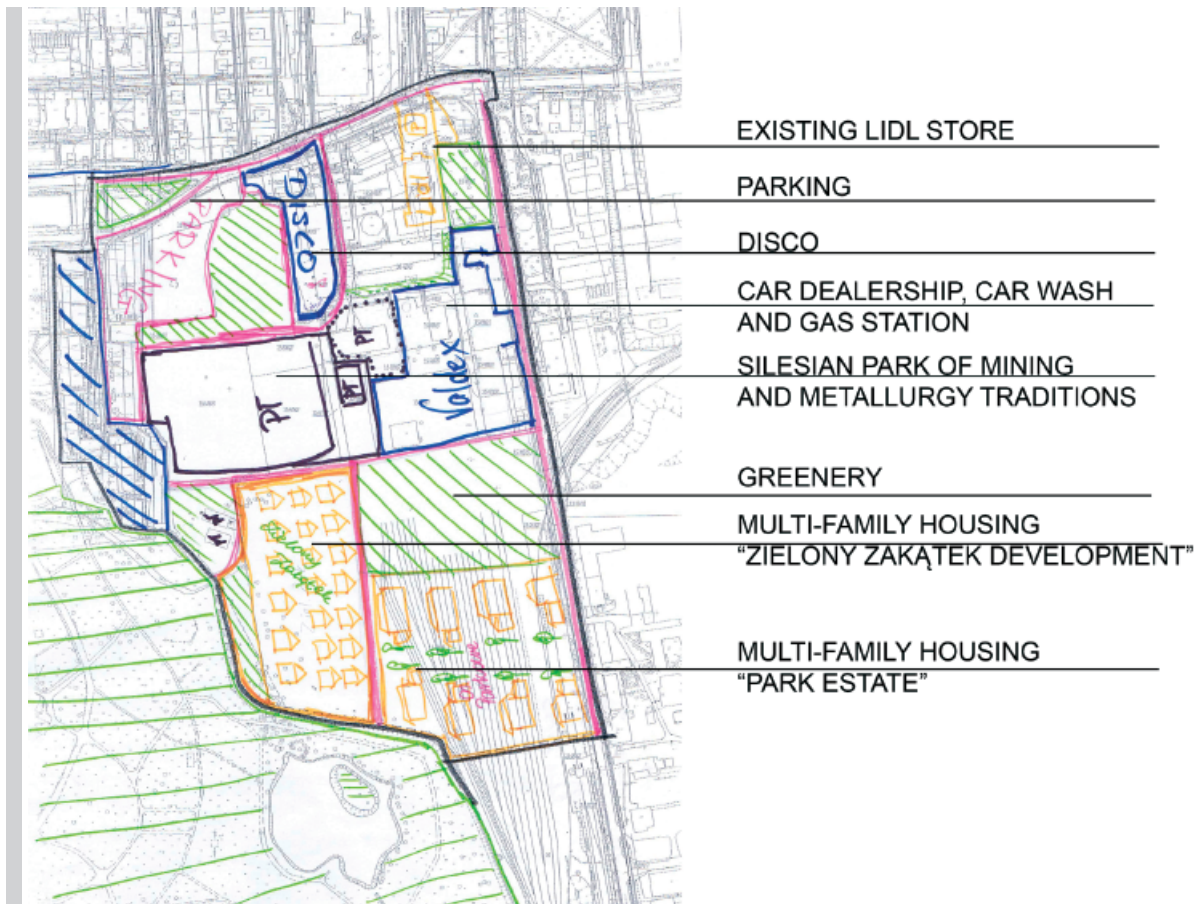


Figure 8.

Example of students work – ideas for the area of the former coal mine in Siemianowice Śląskie (B. Hajduk, K. Jąderko, K. Juszczak, A. Juszczak-Wiśniewska)

existing housing estates situated in the neighbourhood.

Despite the big potential of the site, the authors also noticed many drawbacks of its location, including: the mine waste dump, railway siding and many objects with unsettled ownership rights. The close vicinity of currently operating industrial companies is, in the perception of the inhabitants, a source of noise and pollution emissions. In spite of this, the attractiveness of the site supersedes its disadvantages.

In the second development concept (Fig. 9) the authors: Aneta Bogusiewicz, Bartosz Gieroń, Paulina Major, Damian Płonka, Łukasz Szwagrzak emphasized the opportunities and threats to the site and to its neighbourhood. Upon the closing down of the coal mine, inhabitants of Michałkowice were struck with unemployment. The revitalization of the site of the former coal mine could pose chances for employment. The growth of trade and services might contribute to

the availability of jobs. At the same time, the course participants indicated the threats resulting from the emergence of such vast area available to lease and services. Big companies drawn to the site may affect the local market of retailers and craftsmen.

The concept also assumed the creation of the east-west road that would part the site into the commercial part in the north, and the housing and recreation part in the south. The commercial part would hold some of the discussed functions and, in addition, an open market in the north-west. There would also be a housing settlement of high intensity, splitting the commercial part into two zones. On the other hand, the southern part of the layout would be allotted for housing and recreation, with scattered housing separated from the main road by a wide greenery strip, directly connected to the park. In addition, the reclamation of the neighbouring mine waste dump was proposed to convert it into recreation zones.

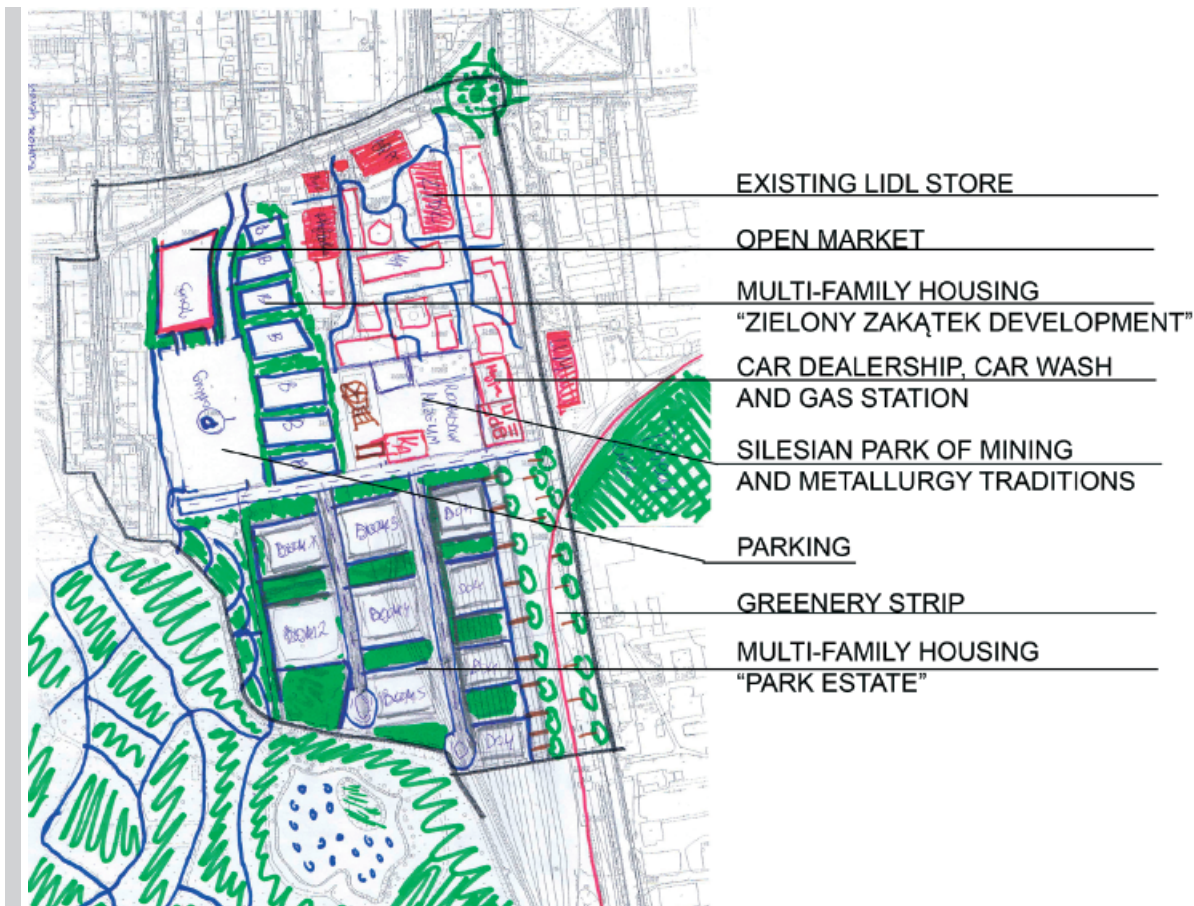


Figure 9. Example of students work – ideas for the area of the former coal mine in Siemianowice Śląskie (A. Bogusiewicz, B. Gieroń, P. Major, D. Płonka, Ł. Szwagrzak)

## 4. CONCLUSIONS

The objective of the course was to make its participants acquainted with the issues of revitalization by simulating its process, in which different stakeholders would be involved. Such method enabled the engagement of the participants in a dynamic, interactive process leading to the creation of draft functional and spatial concepts. Out of the presented concepts of the further development of the site in question, some common features and ideas could be drawn:

- The site of the closed down “Michał” Coal Mine is worth revitalization. Its location is attractive both in relation to the city quarter and to the region.
- The services functions should be located in the northern part of the site layout, in the vicinity of the centre of the quarter and main public roads, where other service and culture facilities are already operating.
- The housing and recreation functions should be located in the southern part of the site layout, in the vicinity of the park. The housing settlements should be separated from the functions that generate noise (a discotheque).
- The housing settlements should be distanced from the existing mine waste dump, accordingly, their best location would be right next to the park or near the existing housing estate.

The conducted analyses and attempts at creating cohesive concepts have made the participants familiar with the issues of the revitalization of brownfields. The objective of the course was to make the participants sensitive to the problems that Silesian towns and cities have to face since the liquidation of heavy industry, and to make them aware of multiple issues and conflicting interests of the stakeholders of the revitalization process.

Such formulation of the course objectives provoked the participants to the active acceptance of the roles and involvement in the design process. Their active engagement resulted from, as they admitted, the opportunity for “practical creation of something”. The effects of their work was “something tangible” – a concept of site management. On the other hand, for the authors and organizers of the program, the course was a great opportunity for the confrontation of the architectural and urban design teaching practice with the perception of its issues by the specialists in other fields of engineering, opening up prospects for the popularization of the architectural and urban planning knowledge.

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