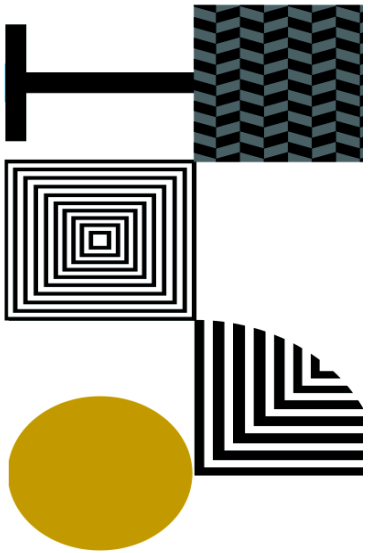

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Martina Peřinková and Martin Nedvěd

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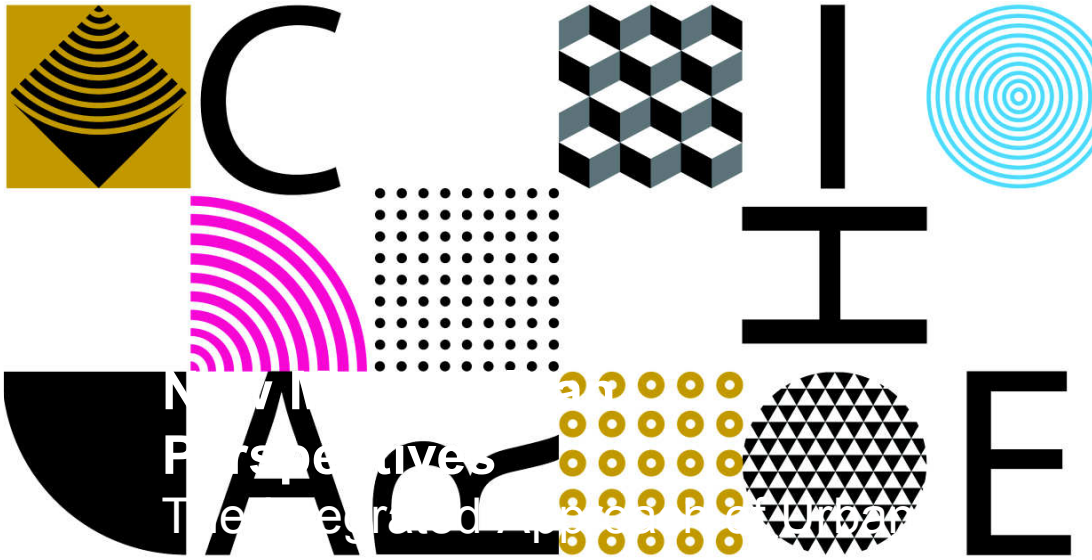

Architecture in Perspective VI

ARCHITECTURE AND URBANISM FROM THE 2ND HALF OF 20TH CENTURY

Edited by
Martina Peřinková and Martin Nedvěd

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Preface

Sixth international and interdisplinary conference is dedicated to topics of architectural and urban works from the 2nd half of 20th century. The intention of the organizers (Department of Architecture, Faculty of Civil Engineering, Technical university of Ostrava) is to continue the discussion on the relationship of the society to architecture and urbanism. Also representatives of other fields than architecture have the opportunity to submit contributions and open the space for other questions. The purpose of the conference is to find and evaluate in the open discussion the current state of knowledge of architecture with the shortest history not only from the perspective of different fields but from the experience from various countries with their diverse development and approach.

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The Revitalization of The Historic Centre of The Town Slany

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Keywords: revitalization, historic centre, bridge, *Slany*, *Vinarickeho Street, U Brodu*.

Abstract.
In 2006, the town council of *Slany* decided to respond to the new trend of regional policy in the Central Bohemia region and focused on the revitalization of the historic core of the town. The large-scale project was assigned to a team of professionals (teachers and graduates of the Faculty of Civil Engineering of the Czech Technical University in Prague), led by Professor Sykora. Team members are to deal with issues of historical centre. The project presented a challenge to test theory, principles and procedures in practical design. The projected area featured Masaryk Square and 22 adjacent streets defined by the existing town walls. The reconstruction project of *Vinarickeho* Street was the first part of the overall project of revitalization of the historic core of the town chosen to implement. This reconstruction was one of the most technically, organizationally and financially complex works that have been undertaken in *Slany* recently. Construction started in November 2010 and lasted one year. Although this is a project of smaller scope, thanks to its complexity, sensitive approach and craftsmanship it brought the creators the price Construction of the Year 2012 in the Central Bohemia region and advanced to the second round in the competition Construction of the Year 2012 in Czech Republic.

Introduction

The royal town *Slany* is a town in the *Kladno* district about 29 km northwest of Prague; inhabited by over 15,000 people in 1,927 houses and has a population density of 499 inhab. / Km ² [1].

Slany was established as the seat either of salt-makers or in relation to the documented trade route. The first recorded mention of the town is from 1239, and it is clear that the settlement called today *U Brodu* by monks from *Ostrov* is much older. *Slany* was elevated to town status sometime between the years 1295 to 1305, during the reign of King Wenceslas II. The transformation to a royal town was a single local act. In terms of urban planning, the new location was influenced by the older developed agglomeration. The newly built town covered a peak position on the hill northwest from the church of St. Gothard. The main longitudinal axis of the town remained the Saxon Way (*Vinarickeho*, *Husova* Street). A large rectangular square was located eccentrically in the north-eastern sector of the newly built town. The main route passed on the south side of the square; the houses on the north side were adjoined with the town walls. Construction of the town wall started in parallel with the location of the town. The main gates at the entrance to the town were on *Lounska* (in the west) and on Prague (in the east). The *Velvarska* gate in the north formed part of the square. The fourth gate in the southern part of the town called *Fortenska* or *Vsehlusska* was constructed later. The intention to establish a new town on checkerboard urban plan, typical for medieval urban locations, was deformed both morphologically and also incorporating existing church of St. Gothard with the provost of the Benedictines to the circuit of the town. The original Romanesque church was replaced by the architecturally challenging Gothic church in the mid-14th century. In 1371 a fire practically burnt the whole town down to ashes. Since then, the town has used stone construction to build the city. During the Hussite wars, *Slany* supported the people of Prague and subsequently was conquered by the *Taborites*. After the defeating *Taborites* the town yielded to the government. King *George of Podebrady* gave the town many privileges. During the Thirty Years War, the whole town

was devastated. Until 1960, *Slany* was a separate district which then in that year, it was incorporated into the *Kladno* district. In 1992 the historical core of the town became an urban heritage zone [1].

In 2006, the town council decided to respond to the new trend of regional policy in the Central Bohemia region and focused on the revitalization of the historic core of the town.

The large-scale project was assigned to a team of professionals (teachers and graduates of the Faculty of Civil Engineering of the Czech Technical University in Prague), led by Professor Sykora. Team members are to deal with issues of historical core. The project presented a challenge to test theory, principles and procedures in practical design. The projected area featured *Masaryk* Square and 22 adjacent streets defined by the existing town walls. Work began in June 2006. In October 2006, surveys were completed and partial architectural designs began: *Soukenicka* Street (November 2006), *Vinarickeho* (December 2006), *Masaryk* Square (August 2007), *Husova* (November 2007), streets of the southern part of the town (in December 2007), streets of the nothern part of the town (February 2008) and streets of the eastern part of the town (February 2008). During 2008, a construction project for the revitalization of the historic core of the town was prepared. Regional policy preferences have changed and health care projects became the priority in funding. Due to these circumstances, this ambitious project of revitalization disintegrated into parts. In 2009 - 2010 the reconstruction project of *Vinarickeho* Street was modified.

Architectural - engineering design of the revitalization of the lower part of *Vinarickeho*, based on extensive studies, contains:

- construction of new engineering networks that had to be built in a very small space in the original medieval street and had to be placed between the existing utilities and fragments of historical masonry in the underground,
- substitution of a damaged road ramp by new retaining walls, design of the neoplasm was inspired by a drawing of Josef Willenberg from the 18th century,
- substitution of the original surface parterre with new tiles, which expresses their function in space and at the same time remind the existence of historic building bridge, Barbican and the Prague Gate,
- location sculptural decoration in the foreground of the bridge, which forms the artistic accent of the whole composition,
- layout of the adjacent terrain to resemble the original castle moat.

This reconstruction was one of the most technically, organizationally and financially complex works that have been undertaken in *Slany* recently. Thanks to the concerted efforts of architects and civil engineers; a construction that includes both engineering modifications, and historical remarks was implemented, thus the town gained a revitalization of an entirely new dimension.

The construction site is situated on the medieval road from Prague to Saxony. At the beginning of the 13th century, during the reign of King Wenceslas II., the town walls were built here. Between 1460 and 1472 King George of *Podebrady* solidified the town walls and added massive walls with gates. A Gothic-Renaissance one-arch bridge, made of massive carved sandstone blocks was built for easier entrance to the Prague Gate at the foot of the towering walls of the Barbican [2]. In modern history all utilities including sewers, conduits, and aqueducts were inserted into the bridge and eventually a reinforced concrete girder bridge (ramp) was installed.

Vinarickeho Street is the main access road to the centre of the town with two-way traffic from the ramp below the church of St. Gothard almost to Masaryk Square, where, due to narrowing of the street space for the roadway changes to one-way traffic. The original solution of the transport outlet *Vinarickeho* to *U Brodu* led through a modern, but technically impaired reinforced concrete ramp, covering up the original stone arch bridge in front of house 163 and in front of a portion the preserved town walls. The street ground plan is defined by the medieval land allotment. Its width is 12 - 14 m on average and the longitudinal height is 65cm to 190m length. Sidewalks were relatively narrow and the basalt mosaic roadway was mostly asphalt, supplemented by pavement of large original granite block. South of the ramps is an artificial reservoir with stone riverside walls and lawn. Overall, the entrance space to the historic centre was unsightly [3].

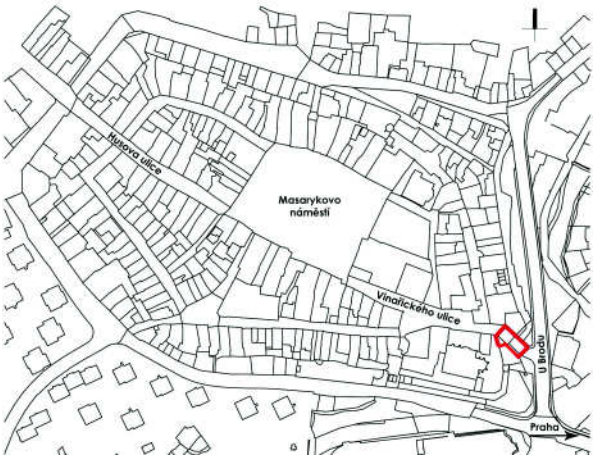

Fig. 1 – *Slany* situation with highlighted construction site of the bridge (author, 2011)

Fig. 2 – Panorama of the entrance to town with still unfinished bridge *U Brodu* (photo author, 2011)

Architectural Design

Architectural design is based on the total philosophy of regeneration of the historic core of the town by the prof. Sykora´s architects team: more pleasant public spaces, prioritizing pedestrians before motor transport, the precise definition of the functional surfaces of roads (traffic lanes, reserved parking, sidewalks, driveways and garages in the yards of houses) and the need to repair the damaged facades and the completion of the space with urban furniture. The design of the area under the walls is based on the idea to remind one of its historical appearance – an original one - arched stone bridge over a stream with the Prague Gate [3].

The final architectural form of the bridge went through a long process of fulfilling this concept. The first architectural study was prepared in 2006 [3]. Since then, the design was modified, simplified and clarified several times in its detail. The final design reflected consultations with experts from the National Heritage Institute, and the results of archaeological research conducted during the construction of the bridge. Among the first architectural studies and projections of the bridge took five years. The time was important in this case. The architectural design could ripen into its final form, which is persuasive, no frills and reminds of the actual historical details of the place.

The one – arch - bridge structure with pillars is a concrete construction with tiles of sandstone from *Bozanov*. In the foreground of the bridge is a statue of St. Anthony of Padua, which was picked from the depository of the National Museum and placed on a new pedestal with Baroque - inspired detail. Under the bridge, a dry moat was built. Unfortunately, funds and identified terrain conditions have not yet permitted to extend the water level under the bridge arch.

Design adjustments were projected to keep the main road into the town centre. The street layout has been maintained, expanded sidewalks and adjusted the roadway, which is vertically separated from the sidewalk with the curb stone. The original paving on the road was restored which consisted of large blocks of dark gray granite, and on the sidewalks a mosaic of granite countertops and basalt

paving was applied. To commemorate the archaeological finds (Prague Gate, bridge and Barbican) the paving was created from irregular quarried yellow granite in the original ground plan of the historical construction. To commemorate the original bridge arch, yellow granite sheet pile pavement was made. The edges of the sidewalks are lined by stone curbs of pale granite.

Fig. 3 – Original concrete ramp as the main entrance to the historical centre of town *Slany* (photo Jiri Novotny, 2006)

Fig. 4 – Revitalization of Bridge *U Brodu*, the lower part of the *Vinarickeho* Street (photo Jan Mrzilek, 2012)

Bridge

The construction site is from a historical and constructional perspective diverse, early-construction activities date back to the Middle - Ages. The original one - arch stone bridge leading to the former Prague Gate is in this space. Furthermore, in the past, in the area of the original stone bridge utility lines were installed; notably sewer lines, water mains, gas, electrical power cables, street lighting. From the above utilities the original stone arch bridge was most affected by the sewer construction, which the original space under the arch was divided into two parts by a wall supporting an ovate concrete sewer. Another visible violation was the implementation of tap water, which passes through the top of the arch and is clearly visible from the space under the arch. The most obvious intervention was the construction of a reinforced concrete girder bridge structure, which continued to the original bridge wall. In terms of the use, both bridge structures were unsuitable [4].

Method of construction:

- excavation of the area between the arch, the bastion and banks (area of the dry creek) to ensure access,

- demolition of the non-bearing side walls for access to the space under the bridge,
- static protection of the existing slatted structure of the bridge,
- removal of the roadway and sidewalk from top up to the concrete bridge structure,
- demolition of the slatted structure for securing access to perform work on the arch bridge,
- implementation of supporting walls of the bastion and supporting wall in front of the arch, construction of the supporting walls are outside the supporting structure of the existing reinforced concrete bridge,
- demolition of the remaining part of the bridge except for the conduit routes,
- backfilling and stabilization of the hollow spaces of the original bridge (mainly around the arc and the bastion in coordination with the construction of water supply and sewage),
- stone siding of the bridge,
- installation of street lighting and relocation of radio,
- drainage of the dry creek (the construction of sewer B),
- resurfacing the road and pavement on the bridge,
- landscaping in the area of the dry stream, dams and space along the town walls [4].

The name “bridge” in case of this construction does not reflect the exact character of the construction it is rather a visual illusion of a bridge, because the supporting structure is not a continuous free space. The supporting structure is arched above the illusion of a dry creek.

The bridge construction consists of a reinforced concrete vault, stored on the walls. The arch span is a 5.50m span relative to the centre line of the supporting structure and is 6.70m. The width of the space under the bridge is 3.00m. The roadway and sidewalks on the bridge are kept at a distinct longitudinal gradient of 7.9%. At the bottom of the bridge (towards the centre) there is a parallel wing protruding from the supporting structure and the length is 3.00m. A separate dilated angular retaining wall continues from this wing. On the upper edge the bridge (towards the town) follows on bench angled abutment arch second supporting wall that has the structural character of slant bridge wings. The aesthetic appearance creates the idea of a bastion. The supporting structure is a reinforced concrete frame with compact interconnected contact between the walls and vault. All visible elements are made of stone block masonry (block height is about 25cm). The vault in the view is vaulted with stone pie - shaped segments. The masonry is anchored with reinforcements embedded in the masonry joints and embedded in the concrete elements. The foundations are shallow on clay soil. The construction is founded above the water table. Pseudo - horizontal (nearly horizontal) reverse surfaces of the support construction (arches) are protected against the effects of moisture and a defrosting solution was sprayed on the entire surface. Insulation protects against damage to the protective layer of the concrete. A classic design with protection made from mastic asphalt was not installed in view of the considerable longitudinal inclination. Vertical reverse surfaces of the supports are insulated with a double epoxy-asphalt coating protected by a suspended drainage mattress *Enkadrain*. The soil on the reverse of the abutments is drained by drainage mats connected to a drainage pipe that leads through the wall with a pipe above the water level in the pond. In the longitudinal direction, the bridge haunches are adapted for the construction of the road, in the character of a transition plate. In the transverse direction of the bridge is a transition wedge of designed plain concrete. The paved roadway on the bridge and around the bridge in the transition area is not dilated, for a small bridge span. Railings on the bridge are made of stone, at a height 100 cm above the sidewalk, railing standard thickness is 50 cm. The railings are finished with stone slabs. An atypical solution of the railing above the upper pillar is in the pavements of the special railing adjacent of the bastion follow-up on the railing retaining walls. Lighting the bridge is solved by lights placed in the railing of the bridge [4].

Materials: concrete C 30/37 XF2, concrete reinforcement R 10 505, stone facing – sandstone.

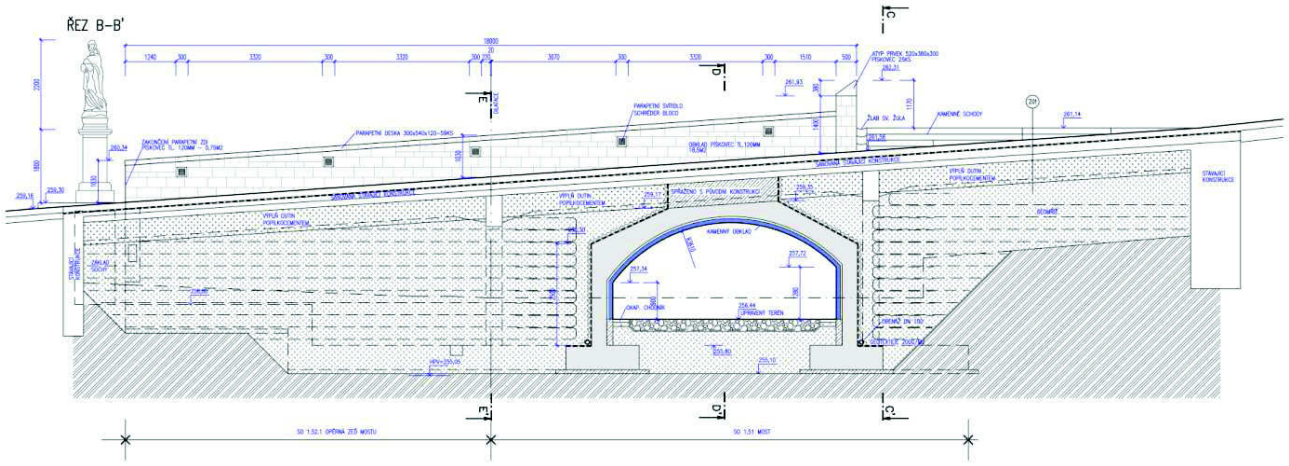

Fig. 5 – Construction cut (Jan Mrzilek, 2012)

Supporting walls of the bridge

The angled supporting wall forms a parallel (longitudinal) wing of the bridge *U Brodu*. This wall is separated from the bridge by dilatation. The classical angled wall is founded on the flat base plate with a down flow upper surface, which corresponds to the static operation and allows water to run off. A cession of the foundation before facing the concrete wall is adapted for the foundation block stone cladding. The stone cladding is anchored to the concrete with a grip and steel fasteners embedded in the masonry joints. A stone railing is built on the crown wall. Banister rails are made of stone slabs. The longitudinal slope of the crown wall corresponds to the slope pavement, 7.9%. A cable duct with a protector diameter of DN100mm connected to the cable chamber is hidden in the sidewalk of the bridge. The reverse part of the wall is insulated with a double epoxy-asphalt coating protected by a suspended drainage mattress, *Enkadrain*. This mattress prevents the impoundment of water behind the wall. Water is pumped through the mattress into the drainage system of the bridge and then into sewer B. At the free end of the wall a foundation for placing the statue of St. Anthony of Padua is separately located [4].

Materials: concrete C 30/37 XF2, concrete reinforcement R 10 505, stone facing – sandstone.

Supporting walls of the bastion

The corner facing wall creates a bastion following to the bridge *U Brodu*. Part of the wall can be characterized as an inclined wing of the bridge. The classical wall is founded in two levels on foundation boards. The slant of the wall leading along the dry creek and following part of the slants situated along the ramparts are founded in the lower level corresponding to the foundation of the bridge. The foundation before the facing concrete wall was prepared for blocks of stone cladding. The stone cladding is anchored to the concrete with anchors and steel fasteners embedded in the masonry joints. On the crown wall there is a stone railing. Banister rails are made of stone elements unilaterally tapering upward, thereby creating an aesthetic impression of a bastion. The space on the bastion is modified into the small inclination. The pavement of *Vinarickeho* Street lies at a longitudinal gradient of 7.9%. The bastion area in the upper part is connected directly to the pavement in the lower part by a set of small stairs. The inside wall is insulated with a double epoxy-asphalt coating protected by a suspended drainage mattress *Enkadrain*. This mattress prevents water leakage behind the wall. The water is drained just above the water level in the pond, where it joins a perforated drainage pipe which enters into the drainage system of the dry creek [4].

Materials: concrete C 30/37 XF2, concrete reinforcement R 10 505, stone facing – sandstone.

Landscaping space at the bridge

The space is defined by the current line of the town walls, bridge construction in *Vinarickeho* Street and the bank of the water tank. In the past, the space under the walls served as a moat, but the moat has not been preserved hitherto. The terrain slopes towards to the original bridge. The entire land area is covered in grass [5].

The landscaping design is based on the total illusion of a dry creek bed below the town walls and reminiscent of the original moat. The depth of the creek bed was chosen so that the designed construction of the bridge with the bastion stands out. Landscaping design around the bridge includes a possible future use of space under the walls of the promenade [5].

Initially the excavation was done by machine because of the scale the project, but the final clearing of the pit was done manually. After shaping the pit bottom of the dry creek bed, a layer of geotextile was installed to ensure the separation of the final terrain and the gravel fill of the channel. Diverse river stones with a diameter of 63-250mm with rounded and sharp edges supplemented by boulders with a diameter of 0.6 to 1.2m in several places were used to fill the creek bed. The landscaping design called for the areas of the slopes and the outside surface of the dry creek to be covered with grass. In order to promote the growth of grass upon the slopes, the sowing areas were reinforced with geogrid. The drainage of the area of dry creek was constructed using a drainage absorbing element with a safety overflow to the sewer [5].

Fig. 6 - Dry creek bed, the vegetation has not grown yet (photo author, 2011)

Road and paved areas

Vinarickeho Street is designed as a two-lane, two-way road with a width of 6.6m (connection to the existing unfinished part of *Vinarickeho* Street) to 8.1 meters (extending roads to improve the entrance from the street *U Brodu* to *Havirska* Street. Most of the road is 7.0m wide. On both sides of the street is a sidewalk, the width was modified in regard to a new course of curbs along the reconstructed road. The longitudinal and transverse slope of the surface is based on the morphology of the existing terrain, height connection to the current level of the street and the entries into existing buildings. The longitudinal inclinations on all the roads and paved areas do not exceed 7.2%. The cross slope of the road is designed especially in regard to the course of the existing underground cable duct variable - one-sided or roof-shaped in 2.5%. Due to the design speed was not designed tilt in the direction curves. Transverse inclinations pavements are designed in 2% basic inclination to towards the road. The streets are separated from the greenery and sidewalks by stone curbs 300 x 250 mm, placed in a concrete bed with side supports and a foot tap 0.10-0.15m. Part of the paved surfaces is a stone staircase, aligning the longitudinal pavement inclination and flat surface of the bastion at the top. The width of the step is 0.3m, and the height variable. The road surface is designed from cobblestones, the main pattern used is of mosaic pavements with the pattern called frame with a lady, or sheet pile paving or paving with a nature pattern. Drainage of the paved areas of roads and pavements is provided by longitudinal and transverse inclinations into

the storm sewer - street inlets and drainage line elements. In the road surfaces and pavements remained sections of the wall of the Prague Gate which are made of natural stone [6].

Fig. 7 - Reminder the bastion and the Prague gates in detail of paving on the road (photo author, 2011)

Engineering networks

In the street profiles of the area, virtually all types of utilities such as: sewers, water pipe system, gas (medium pressure and low pressure), power supply and power distribution network (high-voltage underground 22kV, low-voltage 0.4kV - overhead, low-voltage 0.4kV - underground), cable of public lighting, underground cable duct routes with concrete chambers, other communication cables were to be found. Spatially resolving and coordinating all the stored networks in a complicated street profile was the most difficult task of the entire process of the construction. The most interesting task was complete removal of existing sewerage structures and their renewal so that the flow of wastewater was not interrupted [7].

Fig. 8 – Converging chamber of sewer (photo Jan Mrzilek, 2011)

Construction

Construction started in November 2010 and lasted one year. POHL CZ, Inc. from Roztoky nearby Prague carried out the work. Professor Jaroslav Sykora put together a project team from graduates from the Faculty of Civil Engineering CTU in Prague. The members of realisation team were Ing. Jan Mrzílek, Ing. Ales Barton, Ing. Pavel Gärtner, Ing. Jan Stojka. Archaeological Survey led Mgr. Jiri Unger of the Archaeological Institute of the Academy of Sciences of Czech Republic in Prague. Academic sculptor Jan Tursky was restorer of the statue of St. Anthony of Padua. The main site manager was Ing. Karel Biskup. The cost of the construction was 30,106,819 kc without VAT (approximately 1,505,000,USD). Various technologies and crafts were combined, part of the sewers was excavated by mining method, while simultaneously archaeological rescue work was

conducted and at the same time it was necessary to statically ensure the existing objects so that the construction process could not damage them. Due to the fact that the work was done on the main access road to the town centre, it was necessary to carry out unpleasant traffic restrictions.

Summary

The architectural part of the overall project revitalization of the historic centre of the town *Slany* was processed by team of architects, whose research is focused on various aspects of the historical urban and rural space. Work on this project meant especially for members of the architectural team the extraordinary opportunity to apply the principles set out in theory in a real project.
The revitalization of the lower part of *Vinarickeho* Street in *Slany* (Central Bohemia, Czech Republic) represents the first completed section of an extensive project to revitalize the historic centre of the town. It is a team work of architectural, engineering, craftsman artists, and other professions that join together to make the entry into the historic part of town gained a representative framework. Under an elegantly stitched coat of a relatively small section of the surface, complicated engineering works which solved the arrangement of twenty-two networks trustees, where are waste pipes with flow about tons of wastewater per second are hidden and also hid in the remains of medieval fortifications. Although this is a project of smaller scope, thanks to its complexity, sensitive approach and craftsmanship it brought the creators the price Construction of the Year 2012 in the Central Bohemia region and advanced to the second round in the competition Construction of the Year 2012 in Czech Republic.

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Investment In Top Architecture And Its Potential For The City

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Abstract. Over a long period city of Ostrava has contended with consequences of termination of vast, intensive, long term industrial activity of heavy industry. City area consists of 10 % of brownfields and blackfields. These grounds are not, apart from a few exceptions, adequately integrated, from architectural and functional point of view, into the structure and image of the city. They are primary source of aesthetical and functional „pollution" and secondary source of air pollution in the form of dust from surfaces of forsaken sites, exposed slag heaps, tailings piles and disposal sites. Consequences of historical industrial heritage can be handled in a three different ways. There is a theoretical possibility to retain and revitalize all the historical industrial sites. More probable and more realistic, from economic point of view, is, however, to conserve and renew the most outstanding sites, the rest to pull down and reuse the vacated grounds in a new functional way. Finally, the radical solution consists of refusing industrial history of the city and removing all the industrial sites with an exception of small solitary industrial artefacts. When assessing efficiency of a new use of area or building impacted by former industrial activity it is necessary to check if the former or the latter are not contaminated which would represent a significant threat to ecosystems and environment. A level of cleansing of the area is dependent on the mode of functional utilization of the locality and it surroundings stipulated in a city master plan. The aim of the article as a comparison of a „restart" of 2 European formerly important industrial cities with an approximately even number of inhabitants which dealt with redevelopment of extensive vacated, once industrial, areas in the city centre at around the same time frame; and an analysis of the benefits to the city brought by new investment. Ostrava located in the North East of the Czech Republic is compared to Bilbao located in the North East of Spain.

Introduction

Industrial revolution, whose bearers were important historical industrial cities, started the process of industrialization. During the industrialization process industrial production, which played a dominant role in the economy of each country and region, increased enormously. Industrialization brought important social and political changes together with urbanization. In general industrialization led to increase in standards of living but had negative effects as well: pollution of the environment or depletion of natural resources to name a couple.

Evolution of world industry of the 20th century is characterized by a process of deindustrialization which brings about decrease of employment in the production plants with low added value. This process is typical for developed economies and goes hand in hand with transfer of production to near shore and off shore destinations. Industrial cities that bloomed during the industrial age found themselves in a lengthy economic, ecologic, social and moral crisis. One of the possibilities to ensure economic recovery and growth was to prepare conditions to attract new investment which would improve the image of the city and generate new jobs.

The aim of the article is an analysis of restructuring progress of two significant European, former industrial, cities with an approximately even number of inhabitants, which are centres of metropolitan territories about the same size and which dealt with redevelopment of extensive vacated, once industrial, areas in the city centre at around the same time frame with emphasis put on assessment of the return on investment in the unique architecture and evaluation of its multiplier effect.

Restructuring of Ostrava City

In the middle of 19th century city of Ostrava underwent a massive industrialization focused on mining, metallurgy and chemical industry. It became the most important strategic industrial centre in the Austro-Hungarian Empire and in Czechoslovakia respectively. Following the collapse of the communist regime in 1989 a market economy has been introduced and implemented resulting in deindustrialization of the economy. The old industrial sites that could not compete and did not comply with ecologic regulation were closed. According to the information available on the official website of the City of Ostrava 79 brownfields, occupying area of 19,04 km^2 (8,9 % of the city), emerged in the city area over the 200 years history of industrial activity [1].

Nová Karolina (area of 32 ha) and Dolní Oblast Vítkovice (area of 150 ha) represent the two largest and, due to its proximity to the city centre, the most important brownfields of Ostrava.

Restructuring of the Centre of Ostrava City – "Nová Karolina" project (design 2006)

The industrialization of today`s Nová Karolina territory was initiated back in 1837 when pit Karolina, coking plant Karolina and steelworks Žofie were constructed. By 1985 all the buildings with the exception of 2 were pulled down. The remaining buildings have been protected as monuments of industrial architecture. A costly decontamination of polluted grounds situated in the area of a former pit and coking plant took place in the 90s of the 20th century. It was turned into a building ground (see Fig. 1) which bordered with the city centre, therefore being suitable to enlarge the city centre. The city council was aware of a historic opportunity to develop such an attractive territory, therefore an international urban planning and architectural competition was proclaimed in 1998. The outcome of the competition was not put into practice since there was no investor to finance such an enormous project. A new, this time development competition, was announced by the city council in 2005.

The development project, Nová Karolina, became one of the biggest city development projects in the Czech Republic. The cost of the project which was divided into 4 phases is planned at 15 billion CZK. Nová Karolina is a unique project even by European standards because it envisages future integration with the transformed showground Černá louka and with redeveloped area of Dolní Oblast Vítkovice, the second most important brownfield. Altogether the project deals with an area of 200 ha in the central city location.

The project was started in 2008. The city council together with citizens had a high expectation of the project to revive the city centre, make it more attractive and publicize the city as a whole. The new buildings designed by the world-renowned architects such as Rem Koolhas or Eva Jiřičná were supposed to follow the realizations of famous architects of past Camillo Sitte and Erich Mendelsohn.

Building Forum Nová Karolina – multifunction centre of total area of 240 000 m^2. The architectural concept of the building has been designed in atelier OMA (Office for Metropolitan Architecture) of Rem Koolhas and his partners. The concept was based on the principle of exact geometric cubes of different sizes placed in the space freely crossing outside in and inside out united by large glass roof. During the further stages of the project the concept has been significantly changed without cooperation with OMA. As a result architectural quality of the building has been impacted.

Footbridge construction – it ensures an important and busy connection of Nová Karolina to railway and bus stations.

The design of a unique elegant subtle footbridge was created by the London office of the Czech architect Eva Jiřičná. Due to the high cost of the construction the concept has been replaced by a cheaper solution.

The other buildings such as Nová Karolina Park and apartment blocks do not bring the requested aesthetic value. The first stage of Nová Karolina has been completed by the ceremonial opening of the renewed historic building of Trojhalí. The project should continue in the 3 stages one following each other.

Restructuring of the Centre of Bilbao city – "Guggenheim Museum" project (design 1991)

The city of Bilbao underwent an intensive industrialization during the 19th century industrial revolution and it became an important centre of industry focused on metallurgy. In the 20th century the old uneconomic and unecological heavy industry sites were gradually closed. The buildings of plants were pulled down and the brownfield areas in the city centre were turned into new development areas. The main goal of the local government was to make the city more attractive, as it had suffered from the crisis in the 80s of the 20th century due to its orientation towards heavy industry.

A public discussion on the construction and placement of a unique but costly project of Guggenheim museum in the style of deconstructivism designed by Frank Gehry in the city started in early 90s. After a one year of discussions the government of autonomous Basque Country decided not to rely on the central government but to finance the project with support of an association named Bilbao Metropoli-30. The association was constituted in 1991 by the City council of Bilbao, the Biscay and Basque Governments and diverse public and private organizations for the regeneration of Metropolitan Bilbao. The museum construction was part of 145 ha redevelopment project (Fig. 1).

The architectural competition on the design of the museum took place in 1991, the building itself was constructed between years 1993-1997 on the area of 32700 m^2. Based on the available information the return on investment was achieved after 6 years of service. Moreover around 3800 jobs were created [2]. In 2010 the museum visited almost one million visitors of which 60 % came from abroad [3].

Fig. 1. Winning proposal of Nová Karolina Development project (Ostrava City); Area for new development activities, Guggenheim museum in the foreground (Bilbao City)

This effect has been called Guggenheim effect. The city tourism had increased. The bold approach of the Basque government brought a range of world renowned architects to the city. The brownfield areas are being gradually filled with modern buildings designed by famous architects from all over the world:

Euskalduna Palace (arch. F. Soriano a D. Palacios, r. 1999), Iberdrola Tower (arch. C. Pelli, r. 2008), University Library (R. Moneo, r. 2009), Basque University (arch. Alvaro Siza, r. 2010). Urbanistic conception of reconstruction of former industrial centre into elegant part of modern city is impressive: Campo Volantín waterfront, Atea towers (arch. A. Isozaki, r. 2009), zubi-zuri pedestrian bridge over Nervión river (arch. S. Calatrava, r. 1996). The symbol of the new city is also a subway network and its stations Fosterios (arch. Lord N. Foster, r. 1995). Last but not least to mention is La Sondika terminal (arch. S. Calatrava, 2000). As a part of a generous redevelopment of Bilbao city the public space has been rearranged based on the principles of architect Jan Gehl. The city has turned into the place for people where automobile traffic is limited, the transport is secured by subway and public transport, the static transport is rerouted to underground. The city parter has become attractive, appealing, safe, popular and pleasant place for meetings of locals as well as visitors.

Comparison of restructuring of Ostrava City and Bilbao City

Flamboyant projects often arouse disputes within the professional as well as the non-professional public. This was the case of Guggenheim museum in Bilbao. However, the museum, one of the most striking and eccentric buildings of the past decade proved justifiability of progressive architecture. Successful restructuring of former Spanish industrial metropolis and substantial change to its image has been drawn by realization of ultramodern architectonic project. Since its opening in 1997 it has become the Mecca of modern architecture [4].

In 2006 when the winning project of Nová Karolina redevelopment was chosen, the museum in Bilbao had already been in service for 9 years. The Guggenheim effect became evident and the majority of buildings designed by world renowned architects were already completed. The model of Bilbao city has proven that the strategy of construction of architectural unique objects represents for former industrial cities the right path, and brings an important economic and social effect.

This model could have been an inspiration for Ostrava city. Based on the reaction of professional and lay public regarding the realization and operation of the first phase of the project of Nová Karolina, it is clear that Ostrava didn't take advantage of the opportunity to substantially change its image to restore the pride of Ostrava citizens to their broad public positively perceived city. The unique architecture would guarantee inflow of tourists which would contribute to the recovery of the city economy. In terms of accessibility, the situation of both cities is similar. Ostrava city is connected to a European highway system, Railway high speed corridors; it disposes of the airport with sufficient passenger capacity and efficient public transport system. The inflow of visitors would, similarly to Bilbao, lead to pressure on enlargement of public space areas and necessity to handle static and passenger car transport in the city centre, aestheticize the parter and surroundings which would help to the city.

The multiplier effect of top architecture

Cultural industries (creative industry) is not only one of the primary sources of innovation for other areas and an important driver of the economy as a whole, it is also, together with tourism (cultural tourism), is the fourth or fifth fastest growing sector in developed economies after the financial services, information technology, pharmaceutical industry and bioengineering [5]. According to estimates of the United Nations creative industries created in 2010, 7 % of global GDP with an annual increase of 10 % [6]. Alone architecture (as part of the cultural infrastructure), no matter how good the quality is, no gain, and therefore, of course, nor any positive economic effect for the near neighbourhood, city or region guarantee. However, if combined with the architecture of the world famous "brand" = author and thoughtful marketing move, the total value of which exceeds the physical value of the building. An example might be the project of the Guggenheim Museum in Bilbao, the total economic benefits the museum in the period 1997-2003 amounted to 1,072,845,000 euros, or roughly four times the cost of its creation and operation costs [7]. This situation is however conditioned by three fundamental aspects: tool = strategic plan of the City and the Region, product = existence of architectural act value-added world-famous brand and place = location with the greatest impact on the target group [8].

Conclusion

Bilbao city is experiencing a modern renaissance. Former Spanish centre of industry generously changed its uncomplimentary face. Brave decision of the town council paid off and the city became known to the expert and lay public as a world centre of modern architecture, architectural goal of world tourism a significant part of the cultural industry. The Guggenheim Museum in Bilbao exceeds its measure by a vast and dimensional complexity of everything that we have so far assumed that the architecture is aesthetically and technically possible.

Ostrava city still has the opportunity to inspire success of Bilbao. The city is considering a long-term implementation of significant cultural objects, such as a concert hall, library, gallery, which

will extend its meaning beyond the city and region. It is possible to speak about the potential of the cultural cluster of Ostrava. Key to this will be the added value of Ostrava, without a doubt, courage city council prepare thoroughly architectural acts with analyses of the consequences for the city and region and courage to invest large sums of money to these architectural acts.

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Assemblage thinking in urban studies: how to conceive of a city?

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Abstract. Assemblage thinking is process-based thinking. Understanding cities from this perspective implies searching for processes that are assembling the city and that keeps it alive. Because of this approach, we don't need to ask: „what the city is?“ but either: „how did cities emerge?“ or: „how is their existence maintained?“ The paper argues that the perspective, from which we see cities, matters, because it either highlights or hides something. We will argue, that the result of an object-based thinking about cities, that stems from modern order of the world, is a very finite and constricted notion of a city, that in effect precludes any alternatives. But by overcoming the obsolete notions of objects, objectivity and subjects by notions of assemblage, perspectivity and chaining, the new world order may eventually emerge and resolve also the mounting enviromental and social problems. We understand city as a specific kind of creature that has helped the human society to differentiate and become global. But now is the time to limit the city and this way force the global society to develop itself so it can adapt to the challenges of the Anthropocene.

1.1 Introduction & methodology

Since we state that *assemblage thinking is process-based thinking*, we do not start our inquiry by a definition of either assemblage thinking or of city but by asking: “how to conceive of a city?” What guide us in our task is the method of searching for processes that either hold the assemblage together (processes of maintenance) or for processes by which the assemblage emerge (processes by which something new appear or is being born).

Notice that instead of a term “thing” that our language would automatically suggest in such sentence, we use the term “assemblage”. So, what we are doing right from the start is a conscious detour from a conventional mode of thinking. The reason is that assemblage thinking entails divorcing from the concepts of object and objectivity that are heavily implicated in the *modern order of the world*. So, we have to clearly articulate, that assemblage thinking, as we understand it, implies a strive for a different world order. And that means, in words of Deleuze & Guattari [1], creating or finding a *line of escape* from the current order of the world.

1.2 Preparing the ground: addressing several preliminary questions

Critique of the modern order of the world. The question that needs to be addressed first, because it motivates our inquiry, is of course: why do we want to change the current order of the world? Isn't it, in the end, the best world possible?

There are at least two long and wide streams of criticism of the arrangement of modern world. One stream springs from Karl Marx and entails critique of capitalism that is focused especially on growing social inequality, resulting in a growing misery of large segments of population, and on alienation of human beings. This stream of thought is usually aware that the solution of perceived problems requires fundamental change of the order of the world, that is, overcoming capitalism.

Second stream of critique comes from various Earth sciences and points to the pollution of the environment, depletion of resources, extinction of species and consequences of climate change [2]. But it seems to us that only recently, with the advent of concept of the Anthropocene [3] and Bruno Latour's politicization of this concept in the image of Humans that are in a war against the Gaia-

Earth [4], the implications of this critique resulted in awareness that changing the order of the world is a necessary step in turning away from its self-destructive trajectory.

Considering these two broad lines of criticism, the current „modern“ order of the world needs to be changed. However, there are at least three big obstacles, that are protecting the modern world order from any substantial change: *individualism* that goes hand in hand with certain notion of *freedom*, and deeply embedded notions of *objectivity* and *objects*. We have to release ourselves from the grip of these concepts first.

Against individual freedom. People are born to be conditioned. Because we are so open to the world, capable of learning so wide spectrum of skills, languages and ways of life, we are also quite open, especially as infants, to all kinds of conditioning by society [5]. What do we learn as kids may, therefore, be quite difficult to unlearn later in our life. We are conditioned not only by our family, by places where we grow and by educational system, but also by the overall society and therefore also by the order of the world.

The problem with a concept of individual freedom is that it attributes responsibility solely to the individual and this way neglects the fact that we have only limited chance to choose our social conditions. Luhmann critically says: „modern values, such as equality and freedom, serve as cover terms to preserve an illusion of innocence—equality as equal opportunity and freedom as allowing for individual (and not societal) attribution.“ [6]

So, what to do? Although we are not free, the one thing we *can* do is to release ourselves from the chains of social conditioning and *strive to become free*: to acknowledge the specific way in which is our perspective framed and this way also find our *unique perspective*. Because it is only by way of separating that what is a result of social conditioning that our unique perspective, based on our capabilities, experiences and explorations, may emerge and inspire others [5]. Without this *deconditioning* or *unlearning*, our perspective or opinion will always be mixed with that what the social system implanted to us. Only freedom that there can be, is by realizing *how we are chained* and by learning to *cope with* it.

Against objectivity. Why we are againt the notion of *objectivity*? Because this notion entails petrification of certain power relations: „our task is to resist the cumulative depoliticization of concepts and the suggestion we are producing impartial information. Instead, we must realize that every truth produced has concrete power effects, and conversely, that we live in regimes of power that regulate what is considered a legitimate process for producing truths, the types of discourse that are capable of being recognized as truth and the status accorded to those who produce them.” [7]

What we suggest instead of objectivity is a notion of *perspectivity* that is: everything in the world is seen from certain perspective. This also means, as the theory of complex self-referential systems is telling us [8], that each pespective, each point of view, has certain *blind spot* or bias. In other words, because there is no way of perceiving the world “from outside”, we are forced to take stances, *forced to take sides*. There is simply no objective or neutral point of view. Asserting the notion of objectivity is only a practice of power that attempts to hide its working.

Against objects. Objects means things. Object is static, stable, or, in some conceptual extension, in a state of dynamic equilibrium. But life and living creatures are dynamic, changing and far from equilibrium. The problem is, that the notion of object is not compatible with the notion of life because it is hard to explain the existence of life, starting with the concept of “dead” (stable) matter. The other way is quite easy. Processes are, therefore, ontologically preceding things. This conceptual inversion means also a *preference of life* over death. And we must acknowledge that this is a perspective of a living creature – so, in our inquiry, *we are consciously taking the side of living creatures*.

This is why we [9] put forward the notion of *assemblage*, originating from Deleuze [1] and futher elaborated by De Landa [10], that replaces the notion of object. Assemblage is *assembled* from various elements (often from another assemblages), usually in a complex process of assembly.

Take, for example, the brick: it looks like a simple thing but in fact it implies some people that made it, the concepts of a house, standardization and form, as well as the rather advanced

technological process of burning. Because the brick is certainly not living, we are going to categorize it as an *artifact*, that is as a *passive assemblage*.

On the other hand, the *active assemblages* are much more interesting, because they entail the processes of positive and negative feedback, self-organization, self-reference or autopoiesis.

2 How do cities emerge? How is their existence maintained?

We propose, that cities are the second type of an assemblage and therefore that they are, in their specific way, a kind of *living creatures*. In contrast, there are also cities that became mere artifacts: destroyed or abandoned cities in deserts and jungles, ghost towns or deserted industrial areas. Interestingly enough, with advent of tourist industry, some cities like this now lives some kind of a second life: the buildings are revived or restored, the place is plugged into infrastructural networks and the whole city is populated by tourists, guides and shopkeepers.

We can see in this example, that an assemblage cannot be defined by any kind of *essence* [10]. It is all about processes and relations (even relation is a process because relations must be established and then maintained). And the elements, out of which the assemblage emerge, can be assembled differently. Although all the cities consists largely of the same elements: of streets, places and houses, that are put in place and vitalized by flows of people, goods and ideas, the way the people live in each city, or even in the same city, may differ substantially. Just compare the way people lived, what they discussed and what kinds of places and houses were built in Prague during the many social setting or regimes of 20th century. What each succesive regime did, was to rearrange the elements that were already there (who, what kinds of social groups rule the city?), changed some social practices (how are the city plans prepared and realized?), added several new elements (building the metro and big residential areas during the era of communist normalization) or removed some of the existing elements (demolition of Josefov at the turn of the century, displacement of jewish and german population during WW2, demolition of Těšnov railway station in 1985).

What do we propose here in speaking about the city as of a kind of living creature is, that these rearrangments of the elements of a city are not much of the choice of those who „rule“ or „govern“ the city. Every element is bound in one way or the other by other elements: although city council may decide on masterplan, it may not have resources to realize it; although private investors may have the money and own the property, they are still bounded by legislation, building authority, masterplan, opinions of the neighbours as well as and by the available supply of building materials, mechanization and technologies.

This is what we mean when we say „city decides“ – it is the „decision“ of the assemblage that emerge out of the elements in place: how to relate the elements to each other. For example, the general attitude of motorists to cyclists is not just individual decision of each driver, it is framed also by traffic policy, by affluence of the society, by social significance of car and bike (what kind of status symbol they are) and also by an available street space .

2.1 Cities as objects: an overwhelming weight of dead matter

Now we get to the point, where we are going to explain the differences between city conceived either as object, or as an assemblage. And by the way, we will also elucidate several features of the old (modern) order of the world as well as the way the undesirable features can be overcome and the new order of the world may emerge.

The modern order of the world is still hierarchical, although highly functionally differentiated. The most salient example is the way one of the social subsystems – economy – dominates all the other subsystems and that the distinction rich/poor or have/have-not frames most of the other relations. To put it more clealy, we are still living in capitalism and in capitalist cities. And this means that population in a city is distributed predominantly according to the income, which results in *fragmented city*: “social division in the post-industrial city suggests that it can be carved into distinctive quarters: (a) the luxury city, segregated in enclaves of specific, isolated buildings in the

city occupied by the economic, social and political elite; (b) the gentrified city, occupied by the professional, managerial and technical social groups; (c) the suburban city, apartments near the city centre or outer city housing, occupied by "mid-range" professionals and civil servants; (d) the tenement city, often occupied by "blue and white collar" workers in the rented sector, which includes social (public) housing; (e) the abandoned city, "the end result of trickle down, left for the poor, the unemployed, the excluded." [11].

Other feature of the modern order of the world is the subjection of population to power. According to Deleuze, only recent change is that *discipline*, which was a characteristic of industrial modernity, was replaced by *controll*. While disciplining power controlled our behaviour, controlling power is manipulating our desire [1]. This is expressed in a transformation of the city from a place of production (dominated by work and factories) to the place of consumption (shopping malls, services and omnipresent advertising). In short, cities has became spectacles of its own [12], superficial, tourist attractions and consisting of places "to see" and "not to be seen". Primacy of function was replaced by a primacy of design. However, we should not forget that the function of design is often just to obfuscate power relations. And accompanying feature of this transformation is also enormous level of alienation that goes hand in hand with information warfare.

In the end, what ensures continuance of the modern world order, its self-reference or its reproduction, is its *attribution* of subjects, objects and a notion of objectivity. While on one hand objects are all the material things, all the world is made of „dead" objects at disposal, curiously including also human and animal bodies, subjectivity, on the other hand, is attributed only to the human psyche. In this way, our bodies are subjected to our minds and there is a hierarchical relation between them, where mind dominates, moves and rules its object, *its* body.

But the most peculiar relation is the one where all such designated objects of the world are subjected to the *objective* world order. Such notion not only de-animates the emergent world order [4] but effectively blocks all the possible *lines of escape* [1] from it because it convinces us that such world order is necessary and that it was always there. The modern order of the world is therefore maintained by sacrificing its living nature on the altars of ours conditioned minds. And it is the mind that comes out of this operation as ruler. All the other possible worlds are at the same time blocked and killed as infants because *in objective world, possible becomes only that what is already realized* [12]. This is what we mean by an overwhelming weight of the dead matter.

2.2 Cities as assemblages: invisible alternatives in becoming

You want some new world order? Ok, just describe it so it can be assessed beforehand! This is how the guardians of the modern world, quite often distinguished scientists, teachers and critics are defending the status quo. Because, how can be described something emergent? Only things that can be possitively described are seeds of the new and vectors of the *lines of escape*. And this is the true role of scientists and philosophers: to discover the cracks in reality where can be planted the wild seeds of the new world. As Chatterton et. al. is telling us: „The aim of critical/radical geographers must not be to produce theory compatible with the present; we are not interested in reproducing a knowledge of a 'possible' that is constantly being defined on our behalf. *The only knowledge worth producing is that which contributes to the doing of the impossible*, of aiding us to do things we are told can't be done or thought." [7]

The difficult thing for modern minds is *not trying* to change the world because the world order cannot be changed this way, not by way of revolution. It is not that „we make a revolution" but the other way round: the revolution may eventually take us. Only thing that each one of us *can do* is to do that what he or she considers to be right from his or hers unique perspective [5] – only this way can the conditions for emergence of something new and desirable be prepared. But only conditions. New world order emerges only when the time is ripe for it.

The task of the teachers is to show us the diversity of the world and support development of everyone's unique perspective. We need to be freed from the homogenized world-view that the

modern education instilled into us! Only this way the alternatives can be seen and lived: if we unlearn that what we know and start to experiment with our own lives. Everyone is a probe, exploring and experiencing the diversity of all that there is. Our task is to articulate and share our unique perspective, inspire others and support them in their heresies. If we want to bring about something new, we have to try it, experiment and dare to make errors because only this way we may eventually find out what works and what is livable [5].

So, if there is, for example, overuse of our ecological capacity [13], we have to try to diminish our energy use, rework our energy systems to accomodate renewables and remake our transport systems in order to use less cars [14]. If we try this, we can make mistakes but we will be able to learn from them and make it better. There is no point in arguing that changing our energy and transport systems is impossible: the new elements (decentralized wind and solar power plants, passive or energy plus houses, electric cars or bikes) are already there and what is missing is overcoming the institutional obstacles and connecting the dots.

3 Conclusion

We may ask in the end: what is the role of cities? Or, how to live with as well as live within such unusual creatures? Hardt and Negri says: „the city is to the multitude what the factory was to the industrial working class.“ [15] It is a crucial place for maintenance of modern order of the world, and indeed a place from which it probably emerged [16], but it is also a place of struggle, which produces diverse alternatives and lines of escape.

In this paper we put forward the perspective that the city is a specific kind of a living and evolving creature. What that mean is that our attitude to it should be more of domesticating it, tending it, teaching it and accommodating ourselves to its way of life (where we play a crucial part), rather than looking at it solely as our own creation that entitles us to rule it.

The city is a creature that puts certain limits on us and that forces us to evolve and differentiate. And this is also a way, how to change our cities and societies: to put certain limits on them and then let it evolve and differentiate. Cities and societies would eventually accommodate to them and if the limits are reasonable (substantively rational), it will be for better.

But it must be noted that the question of limits is inherently political and therefore conflictual [17] and that we must take sides [4, 18]. We have to choose, whether we are on the side of modern world order, of abstract capital, centralized power, alienated and homogenized human beings or whether we are on the side of the Earth and whole diversity of living beings, that struggle to find their unique way.

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Spatial and Social Boundaries in Gentrified Neighbourhoods

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Keywords: Boundary, interface, threshold, primary boundary, secondary boundary, space syntax.

Abstract. In the paper we analyse the character of spatial boundaries of buildings and examine their correlation with social changes. For a case study we use Holesovice, a quarter of Prague, Czech Republic. This city part is a typical example of originally industrial suburb with a large number of factories, docks and railway station, all built mainly in 19. century. In the last 15 years the area has gone through gentrification that significantly changed its urban and architectural face. The transformation also affected the character of services and cultural facilities available in the area.
We compare boundaries of the original construction and boundaries of the new developments built in the last 15 years. The analysis is done at the scale of buildings. Our methodological framework is based on the Space Syntax theory and Urban Morphology. The studied characteristics are integration of accessible spaces and design of boundaries. The paper identifies urban and architectural features that correspond and reflect the lifestyle of the gentrified part of population.

Introduction

In this paper we present the results of research aiming at the analysis of spatial forms produced by new development built during the last 15 years. As a case study we use Holesovice, a former industrial suburb, currently inner part of Prague. We compare the new development with the original buildings and show that the new construction uses different urban typology. Our focus is on two attributes that distinguish the new typology from the original one. The first attribute is the character of boundaries between buildings and public space, the second one is the spatial composition of the objects. Boundaries in a city can be analysed at different urban scales. As we are interested in the people's perception, we focus on boundaries at the house - street level.

We use Space Syntax methodology [4] and the established representational methods of Urban Morphology [7] to describe the changes. Our aim is not only to describe the spatial characteristics of new developments but also to show how new spatial relationships and architectural expression correlate with social solidarity of inhabitants. In general, people develop two types of social solidarity: spatial and transspatial [2]. Spatial solidarity is characterised by strong relations with physically close people and institutions, e.g. neighbours, local shops, schools, employers. On the other hand, transspatial solidarity relies on shared interests regardless of the distance. Examples include religion, possibility to engage in distant social, cultural or educational activities, working at distance, activities using social networks (Facebook, Twitter).

Space syntax understands city as a relational system with complex organization of socio-spatial units. The analysis focuses not only on the relationship between individual city components but also investigates the relationship of parts to the whole. We will assess the accessible space, such as streets, squares or open spaces in terms of their integration within the city. Integration value is a measure formally defined in Space syntax theory [4]. The higher the integration value of a space, the higher chance this space will be a part of people's "natural movement" [4]. On the contrary if a place has a low integration value it becomes rather segregated and the chance that people will pass through is small. The spatial analysis is carried out using the Depthmap software [6]. It transforms the street map into the segment map, calculates the integration values and represents these values in the map by different colours. The colour range is from red, which denotes the place with the highest integration over orange, yellow, green down to blue, which represents the lowest integration.

Boundary – Threshold – Interface

The role of a *boundary* is to divide the whole into parts that have different characteristics. The part that is inside is called interior, the surrounding part is called exterior [4]. In addition to the creation of the spatial division, the boundary also defines a social division – it separates two groups of people/users. We will call the users of the interior inhabitants, the users of the exterior are called strangers. Possible interactions between the two groups depend on the ability of the boundary to operate as an interface or on the existence of thresholds [5].

Fig. 1. Boundary – solid wall at Varhulikove street with entrances (thresholds) at Holesovice; transparent interface at Vodickova passage

Threshold is a place that facilitates transition between interior and exterior, it is an "entrance" where the boundary is penetrable, see Figure 1. A person who moves from the interior to the exterior and vice versa changes his/her status. The inhabitant turns into a stranger and vice versa.

The boundary can also have a form of *interface*. The interior and exterior can engage in a dialog without the need to change individual's status. Examples are glass facades of hotels, cafés and other services as expressed in Figure 1. For example a person just walking by (stranger) can see what is in the shop window or in a cafe without the need to enter the shop.

Based on the relationship to public space we may distinguish a primary and secondary boundary. Primary boundary is formed by the houses themselves, whereas in the case of a secondary boundary the house is separated from the public space by other elements such as low fencing, solid walls, greenery, etc. [1] [3].

Case study Holesovice

We will demonstrate different boundary types on the case study Holesovice, originally an industrial suburb of Prague. Until 1875 new development was impossible inside the fortified city of Prague because there was not enough space for massively expanding factories and accompanying housing. Consequently, during the second half of 19. century, many suburbs grew outside Prague. New industrial suburbs such as Karlin, Smichov, Liben or Holesovice were attached to the fortification walls, next to the river, connected with the city by railway. After the demolition of the walls the suburbs gradually joined the city of Prague. Holesovice became a quarter of Prague in 1884.

Our analysis focuses on the Eastern part of Holesovice and the transformations of this area since 2000. This part of Holesovice included the large railway station, number of food factories, such as dairy, bakery, brewery, mill, docks, slaughterhouse and many others. The urban form of Holesovice reflects its mainly industrial development. The street pattern is a regular grid with the largest urban blocks in Prague.

After WW2 the development in Prague concentrated on building mass panel housing in the peripheral areas. The inner parts of the city were left in a poor technical and moral state. The change of economic model that started in 1990 opened the state economy to global markets. As a consequence in 1990's many factories left the Czech Republic to countries with less restrictive regulations and cheaper work force. Economic transformation resulted also in social changes. The

city lost its industrial character, blue-collar jobs lost their importance. New professions emerged in sectors such as services, media, IT, creative professions, education or banking. As a consequence the image of the city changed to post-industrial with reconstructions and renovations of old factories and new construction on abandoned plots. The new interest for living in an inner city is referred to as the "back to city movement". The new inhabitants are typically people working in the new services, with higher social status compared to the original inhabitants. Their arrival to the inner city is an expression of their free choice not a necessity. This trend can be described as a gentrification. The process of gentrification can be characterised by arrival of socially strong people, housing reconstructions, constructions of new buildings and by attracting luxurious services into the area.

Eastern Holesovice is a typical part of Prague where it is possible to observe the gentrification process. The area lost most of its factories and was left with large unused plots. With a short distance to the historical centre of Prague, closeness to the river, good transport connection to the city and its industrial image it was a great place where new exclusive development would emerge. On the site of former factories and docks projects such as The Towns Brewery, Classic 7, River Lofts, Prague Marina or Lighthouse have been realised, see Figure 2. In addition to residential and office construction, new art galleries such as DOX, theatre La Fabrica, design shops, SaSaZu restaurant or Italian Tutto Bene shop have been set up. Figure 2 shows the analysed part of Holesovice with light grey colour representing the original houses and dark grey the new developments built after 2000.

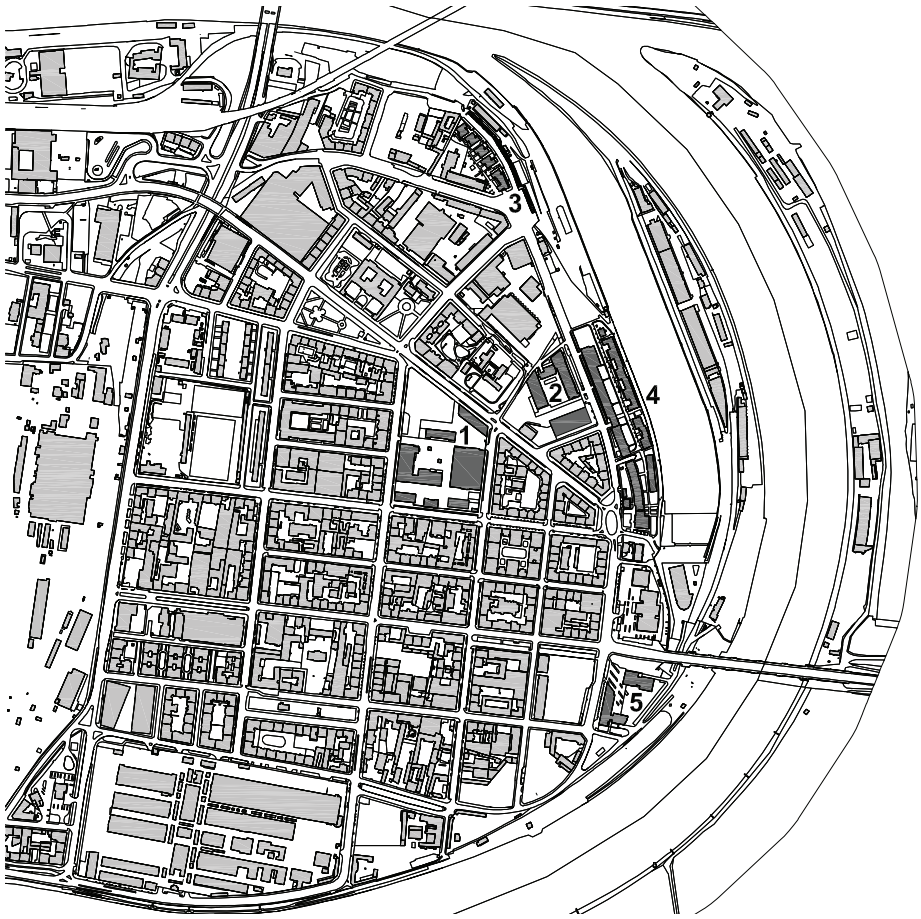

Fig. 2. Holesovice 2013, light grey represents the original construction, dark grey colour represents the new developments – The Towns Brewery (1), Classic 7 (2), River Lofts (3), Prague Marina (4), Lighthouse (5)

In Figure 3, the area is shown with streets transformed into axial lines and analysed with the Depthmap software [6]. Additional area of 2000 meters is included to eliminate the edge effect. In the regular grid, the integration value is high as indicated by red colour (in the B/W version the

darkest colour). In this paper we analyse two new developments: The Towns Brewery and Classic 7. These developments are well integrated at the periphery indicating that within Holesovice they are well accessible. On the other hand, the open spaces created by the clusters of houses have lower value of integration drawn as blue lines (in the B/W version the lightest grey). There is a significant difference between the integration of the open space of the developments and the integration of the peripheries though the open spaces are visually and physically connected with the surrounding streets.

Fig. 3 Axial map of Eastern Holesovice, Segment Angular Integration of freely accessible space, R=2000, Depthmap software [6]

The Towns Brewery. The former brewery has been converted into a multifunctional complex with residential use, offices and commerce. The development includes also newly built objects. Inside are food shop, restaurant, travel agency, life style shops and other facilities. The Towns Brewery is also the seat of Ringier Alex Springer CZ publisher.

The separation of the The Towns Brewery from surrounding streets is shown in Figure 4. In the outward direction i.e. towards the surrounding streets, a clear edge exists formed either by a solid wall or by the buildings themselves. The wall represents a boundary with occasional threshold in the form of a gateway that leads to the open space. Otherwise the wall has no openings. The separation of the new development from U Uranie street is formed by the primary boundary of the facade of the new object. Thresholds - entrances to the residential units, are the only openings facing the street at the ground level. In the direction towards the Komunardu street the building has the façade made of glass panels placed over a massive wall. It is another example of boundary-type separation. The new object at the corner of Komunardu and U Pruhonu streets has commercial function, but even though the building has semi-transparent window panels at the ground level, these do not function as shop windows and the inner part does not communicate with the outer space. Consequently, the facade plays more the role of a boundary than of an interface.

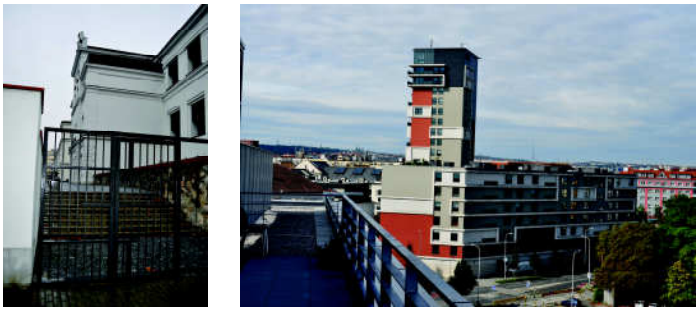

Fig. 4. The Towns Brewery, transparent gate in the surrounding wall; boundary facade at *U Uranie* street with entrances as thresholds

The complex reminds the original private manufactory with well-defined edges towards outside, however the inner courtyard is at present accessible. You can enter it through five gateways, some of which are permanently open. All services, shops and restaurants including the food shop that serves the whole neighbourhood are accessible only from the courtyard. The new residential object accessible from *U Uranie* street has balconies facing the courtyard. This facade is separated by secondary boundary designed as a landscape strip, see Figure 5.

Fig. 5. The Towns Brewery, landscape strip as a secondary boundary at the inner courtyard; inner courtyard

The separation of The Towns Brewery from the surrounding streets has a unique character because the conversion of a former industrial complex had to satisfy requirements on the preservation of historic urban style. In the following section we will introduce Classic 7 as another example of development. Though it also includes objects with monument preservation constraints, it addresses the task of separation in a different way.

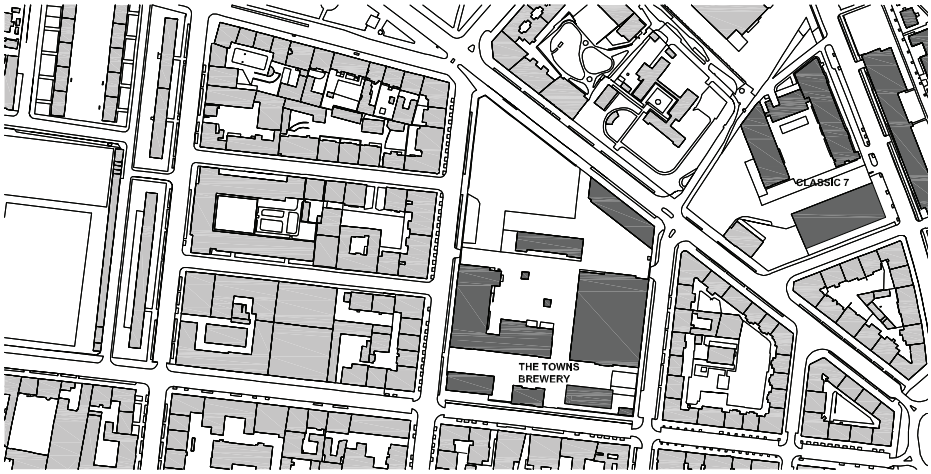

Fig. 6. Holesovice, light grey - original construction, dark grey – new developments The Towns Brewery and Classic 7

Fig. 7. Holesovice, dark gray - The Towns Brewery development, light grey - original construction; (blue) rectangles – entrances to offices or commerce, black arrows – entrances to residential objects, large arrows – vehicle entrances

Classic 7. This development is a conversion of former mills into the office complex supplemented with small retail spaces. It includes a new object that connects the existing buildings of the mills and another freestanding object, see Figure 6. There are no hard edges such as walls or fencing that would separate the complex from surrounding streets.
The separation is mainly by primary boundary created by the objects themselves. Compared to the Towns Brewery there are no robust physical boundaries between the streets and the open space created by the cluster of buildings forming the complex. However, there is still a clear distinction of the complex inside and outside areas achieved by using different material, see Figure 8, and exclusive design of the open space. In addition, the entrance to the complex is clearly marked as "Private property", see Figure 8.

Fig. 8. Classic 7, separation of the open space by the use of different material; "Private property" sign

Typical feature distinguishing the new development from the original building construction is the number of entrances. The new development has noticeably fewer entrances than the original houses. In Figure 7, the blue rectangles represent entrances to offices and commercial facilities, and black arrows show entrances to residential units. Figure 9 shows the design of a façade of Classic 7 where the threshold in the boundary is designed as a bridge over a ditch with the rest of the facade inaccessible. Figure 9 shows the café separated from the street by a lawn strip.

Fig. 9. Classic 7, entrance designed as a bridge over a ditch; café separated from the street by a lawn strip

Summary

The new development, here represented by The Towns Brewery and Classic 7, differs from the original construction by the character of their boundaries and by the composition.

The original buildings are organized into urban blocks with clear separation from surrounding streets. The separation has a form of primary boundary with many usually direct entrances (thresholds) and shop windows that operate as interfaces. Inside the urban blocks are private inaccessible courtyards.

The spatial organization of the new development is designed as a cluster of objects with open space between them. It uses both primary and secondary boundaries. Even though the open space is often accessible and visually connected with the surrounding streets random visitors are deterred from entering by the very composition. This is reflected in a very low integration value calculated by the Space Syntax software.

There are other ways that discourage people from entering open spaces. For example the architecture of secondary boundaries, consisting of a transparent fencing or low gateways. Even though the gates are permanently open it psychologically discourages people from entering. Another example is the “exclusive design” of the open space using high quality materials, water or landscape features. This does not prevent people from using the open spaces, but it does not encourage natural mixing of people with diverse social solidarity.

The new development acts like a “fortresses” regardless whether it is surrounded by walls or whether the separation is achieved by the design of open spaces or the character of boundaries.

The original urban design and composition of buildings in Holesovice encourages unmediated contact of inhabitants with public space of streets and squares and therefore encourages the development of spatial solidarity. On the other hand, architectural and urban properties of the rebuilt area of Holesovice reflected in the integration value tend to support the transspatial solidarity of inhabitants. This corresponds with the expectations and life style of gentrifiers living in the new development.

Our research has shown that the Space Syntax methods and the analysis of boundaries and open space are well applicable to the new development and characterise the impact of gentrification on architecture and urban design.

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The Development of Industry as a Condition for the Development of Urban Planning and Architecture on the Example of an Industrial Site in Podbrezova

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Keywords: Industrial area, urban development.

Abstract. Adequate natural conditions, including good raw materials and energy base, are prerequisites for a development of industrial production. The industrial production in these areas causes a creation of a settlement dependent on industrial activities. In this way the development of the industry results into the social and cultural development of regions and settlements. This simple scheme of regional development is accompanied by the construction of technical, industrial and ultimately residential and public buildings. In particular, a good production potentiality is the common characteristic of the construction development.

The impact of the industrial production on architecture and urban development is indisputable. The paper will present this dependence on the example of the most important iron producer in the former Kingdom of Hungary- Hronec complex. Ironworks in Podbrezova became the most important industrial site of the Hronec complex in the late 19th century and, today, it ranks among the European leaders in its field.

The industrial area of Podbrezova has determined the urban development throughout its history. The urban and architectural development of Podbrezova in the second half of the 20th century fluently followed up the development of the previous period. As then, production facilities has remained subject to the changing conditions of the production and the surrounding urbanism has been determined in response to these changes. Podbrezova's spatial layout represents complementarity between the current production requirements and demands of the population. The ability to adapt to changing conditions has guaranteed that Podbrezova is still a viable and workable urban structure.

Introduction

Ironworks in Podbrezova is the only continuously functioning industrial area of the metallurgical production in Slovakia with the gradual urban development, reflecting the needs of industry. The urban area of the tree local municipalities- Podbrezova, Valaska and Hronec forms a single urban unit, depended on industrial development and determined by geographical conditions. Despite the fact that there are three different cadastral territories, their urban growth and development is inextricably linked.

A new big state owned metallurgical complex- Hronec complex- was established in the area of Pohronie in the second half of the 18th century. The ironworks in Hronec gradually developed into the centre of the state iron-making enterprise. The iron-making complex of Hronec was the most outstanding, largest and most modern manufacture of its kind while ranking among the most important producers of iron in the Kingdom of Hungary [1]. Hronec enjoyed political, cultural and social influence in Podbrezova until the mid-20th century. In the second half of the 20th century, the impact of ironworks in Hronec was completely replaced by influence of ironworks in Podbrezova. Podbrezova ironworks prompted the further development of the entire community of Podbrezova and Valaska.

This study deals with urban development of Podbrezova and Valaska in the second half of the 20th century, which are the examples of urban development determined by the industrial area. The

aim of this study is to emphasise and demonstrate the inevitable relationship between the urban development and the prosperity of local industry.

The urban development of Podbrezova until the mid-twentieth century

Podbrezova was founded as a part of the village of Lopej in the mid-19th century. Over decades, the environment developed as an industrial settlement of local ironworks and as a part of the complex of Hronec [2]. The ironworks in Podbrezova were established in 1840 and located near the river Hron. Construction of the factory and surrounding residential buildings respected the topography of the terrain while taking into account the location of the village in a narrow river valley at the foot of the hill Brezova. The settlement thus expanded in the direction of the Hron river, alongside the existing road. At that time, several settlement in Valaska, Lopej and Stiavnicka already existed in the neighbourhood of Podbrezova ironworks. The development of these settlements gradually began to be associated with the development of Podbrezova.

The processing of iron was based on natural sources of energy, water, wind and charcoal. As a result, the respective factories were geographically dispersed. Establishing new ironworks in Podbrezova was a first step in gradual cancellation of the territorial production scattering that was typical for manufacturing methods of production. About 50 to 60% of Hronec complex production was manufactured in Podbrezova already in the 1850s. Thus, Podbrezova gradually gained a dominant position within Hronec complex [3].

In the period between 1840 and 1950, Podbrezova undergone a significant development, while the importance of the factory was growing. The industrial area of ironworks was extended and modernized by technological changes and expansions of production. In the 1850s, residential buildings, stables for horses and inn were constructed close to the service facilities [2]. The surrounding settlement was extended to the north and east of the industrial site. The urban area was thus shaped in the east-west direction along the river Hron and road (today road I/66). Then, new streets with the new residential buildings were built for employees and management of the factory. Local school, kindergarten and church were built later as well.

In the 1940s, the construction of the town extended southwards. During the war, Hermann Goring Werke weapons production, a German corporation, became new owner of the plant. A new residential district, called Hitler quarter, was constructed. The quarter consisted of three-storey blocks of flats with a gable roof for special employees. The building of the State junior school that was constructed alongside the residential district in 1950, was designed by architect Bohuslav Fuchs, one of the best Czechoslovak architects of the 20th century [4].

Urban development of Podbrezova and Valaska after 1950

The urban conglomeration of Valaska and Podbrezova today consists of several parts. Podbrezova as the local part of the village Lopej and then as a new municipality has continued to develop demographically, socially and architecturally as part of the local ironworks. This development in the second half of the 20th century extended into the neighbouring village Valaska. The municipality of Podbrezova was established in 1953 and, today, it consists of six local parts- Podbrezova, Lopej, Vajskova, Skalica, Stiavnicka, Chvatimech [2]. Lopej, Vajskova and Stiavnicka are the settlements of family houses incurred prior to the construction of factories in Podbrezova. However, the factory influenced them so their further development depended on its prosperity. The establishment of Chavatimech and Skalica was directly related to the construction of ironworks in Podbrezova.

The factory in Podbrezova, in the second half of the 20th century, was gradually modernized, rebuilt and the industrial site was extended. The prosperity of the factory has been reflected in the surrounding urban expansion, including the establishment of entirely new urban structures. The architectonic and functional centre of Podbrezova has become the main square (Sladkovicova street)

at the entrance to the factory. During the second half of the 20th century, Valaska became a suburb of Podbrezova.

The urban development of Podbrezova and Valaska since the mid-twentieth century can be divided into three groups: the extension of the industrial area, the development of the surrounding areas and the establishment of the new urban structures. The industrial area of Podbrezova, now called Zeleziarne Podbrezova old plant, extended alongside the existing industrial area in narrow valley of the river Hron and the arterial road in east-west direction. The residential districts of Podbrezova extended in the north-west direction to places of the flat terrain. Thus, new roads are perpendicular to the traffic artery. Valaska experienced rapid urban growth and increase of population in the second half of the 20th century (Valaska had 1929 inhabitants in 1950 and 3862 inhabitants in 2001 [5]. Podbrezova had 3089 inhabitants in 1950 and 4295 inhabitants in 2001 [2]). In the 1970s, the ironworks was expanded by a new plant in Piesok, now called Zeleziarne Podbrezova new plant. The new suburbia, called Sidlisko, was established to the south of the old village. The area of the original village Valaska was expanded with the development of the plant too.

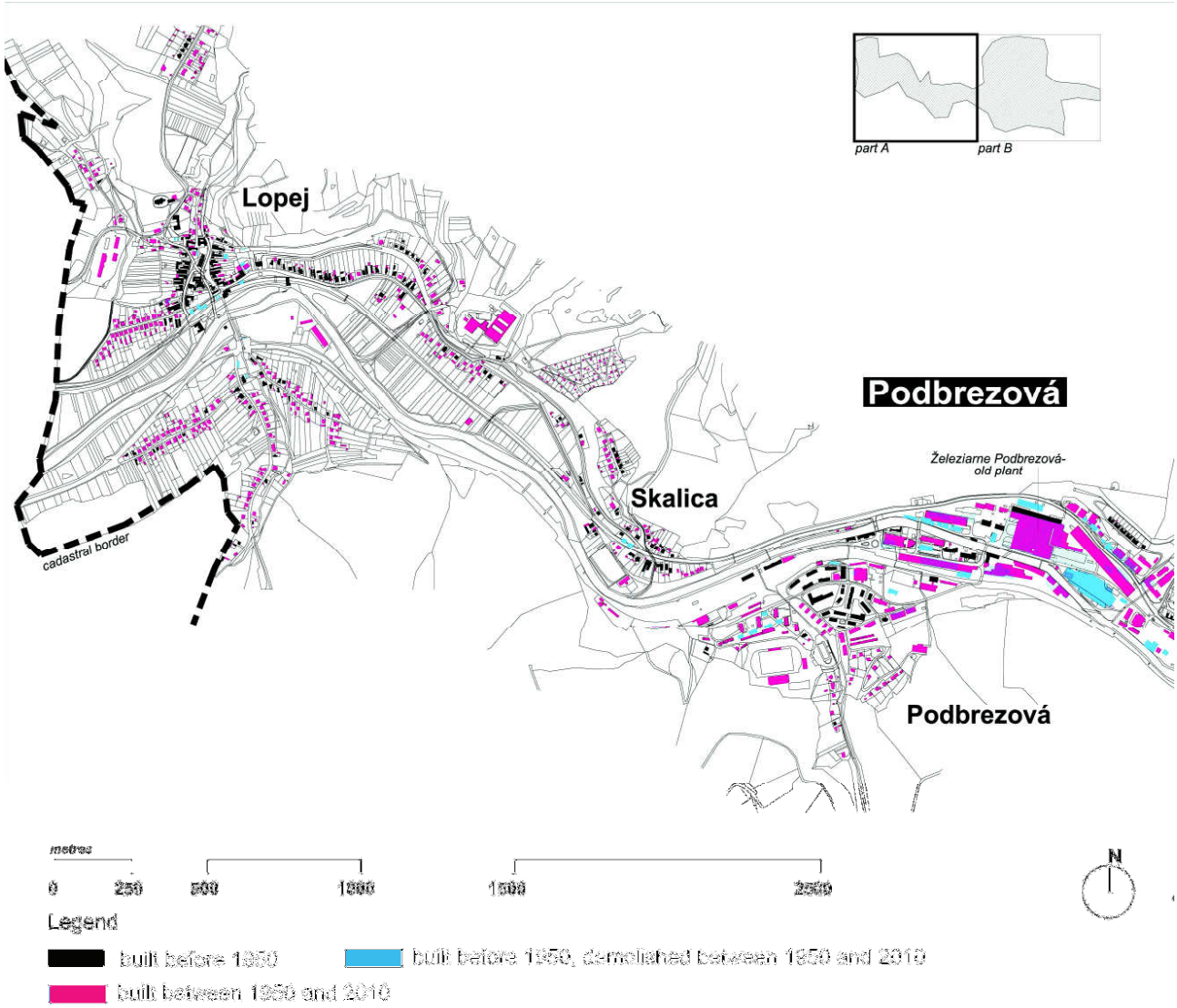

Fig. 1. The urban development of Podbrezova and Valaska- part A

In the post-war period, the Podbrezova ironworks was the only metallurgical enterprise in Slovakia, thus the government supported its development and the ironworks became one of the major strategic enterprises of Czechoslovakia. Therefore, the renovation and expansion of the ironworks began. Since the mid-20th century, the factory was constantly modernized, rebuilt and

gradually changed its appearance. The family houses near factory were demolished and replaced by the industrial area because of narrow river valley. In the 1950s, a new open-hearth steel mill and generating station were built in front of a modernized rolling mill hall. Both new industrial halls have steel skeleton and masonry infill, that allow to change the technology equipment without major problems. At that time, two new mills were built in Czechoslovakia, therefore the Podbrezova ironworks were predominantly focused on the production of open-hearth steel mill as so as on improving ingots quality. The construction of a steel stripping bay in 1967 represented an important technical improvement [3].

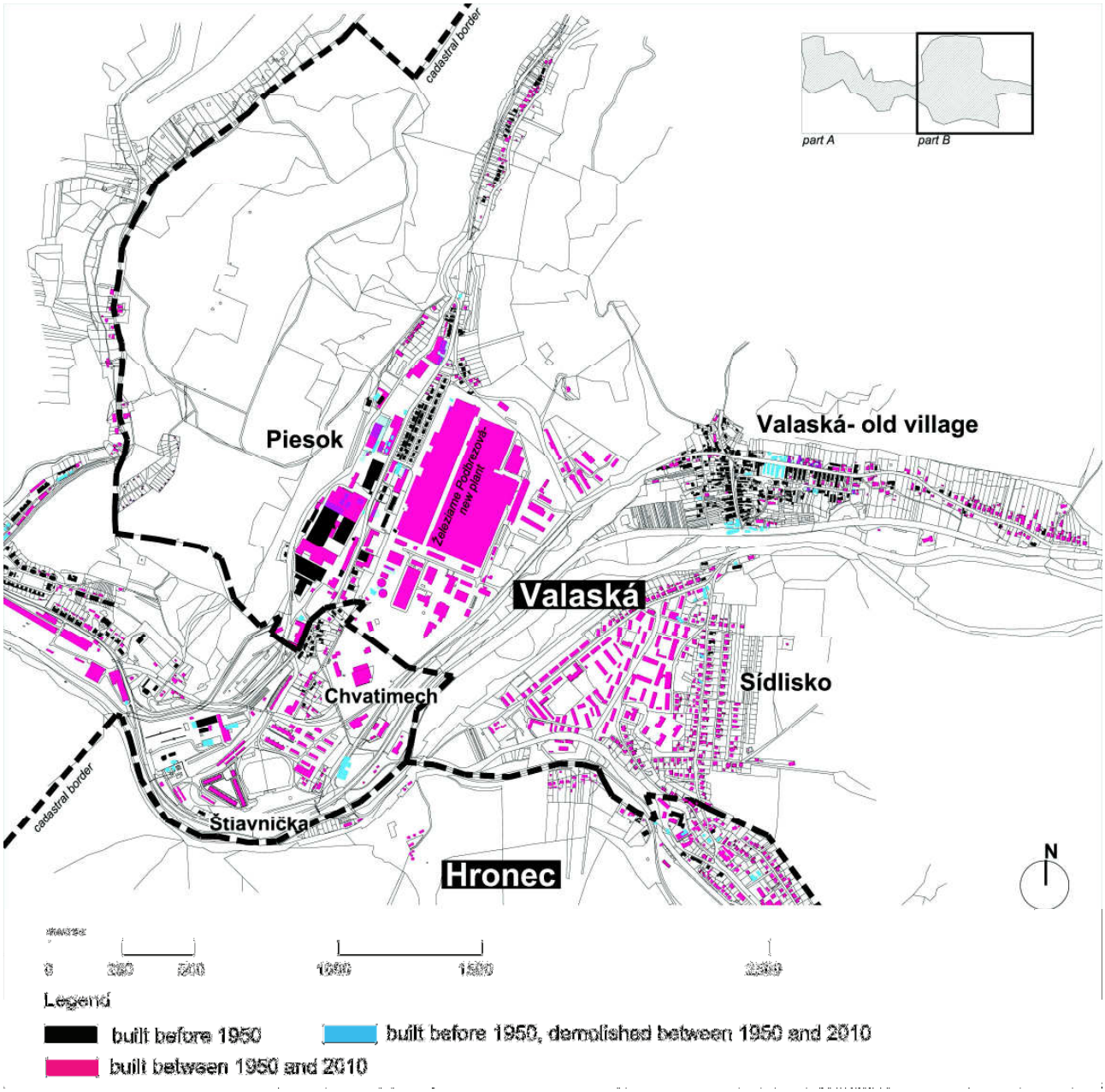

Fig. 2. The urban development of Podbrezova and Valaska- part B

The increasing number of factory employees caused the construction of new housing in Podbrezova and Valaska. The construction of residential district Kolkaren in the 1950s, continued in urban concepts of existing buildings (the Hitler district). New 12-storey residential tower blocks at Supkova quarter, a new football stadium and swimming pool was constructed in the 1960s and 1970s. Since the narrow river valley did not provide enough space for the construction of a large housing estate in Podbrezova, its construction was planned in Valaska. Thus, a new suburb Sidlisko that was built in the late 1950s, was designed by the Slovak architect Martin Kusy [6]. Sidlisko is

lying south of the historic village and is bounded by the river Hron and railroad tracks. The construction of this suburb solved the housing problem of the factory workers. Along the north-south compositional axis of the suburb (Trieda duklianskych hrdinov street) is a line of 4-storey housing blocks, in the middle of which is the civic centre- Namestie 1. maja. The square is surrounded by buildings of public amenities and dominated by a town hall [5].

In the 1970s, the old rolling mill that represented the outdated metallurgical production, was unfit for new technological processes. Therefore, the old rolling mill was replaced by a new hall in 1982. The construction of a new steel mill in Podbrezova was associated with a specialization in manufacturing of seamless and precise drawn pipes. Already during the 1960s, a plant management realized that production must focus on scarce production of Czechoslovakia. Therefore, the construction of Zeleziarne Podbrezova new plant in Valaska-Piesok was approved. The construction took place from the 1970s until 1993. The successful completion of a new pipes rolling mill, a new pipes drawing mill and a new electric steel shop made the Podbrezova ironworks a self-supporting company in steel. In all activities connected with the production expansion, the Podbrezova ironworks have always improved the operations and modernized machines and equipments [3].

The development of the ironworks is also reflected in the development of local parts of Podbrezova. In local part of Lopej, the housing estate expanded on the south bank of river Hron, alongside the road perpendicular to the main traffic artery. The building of the Vocational School of Metallurgy was constructed there in 1988. Today it is the Private Secondary Technical School of Metallurgy Zeleziarne Podbrezova and the Private High School Zeleziarne Podbrezova [3]. In local parts of Štiavnička and Chvatimech, that fill the narrow river valley between Podbrezova and Valaska, was built new housing estate, kindergarten and elementary school with a football field.

Conclusion

Since the mid-20th century, a significant urban, demographic and social development in Podbrezova and the surrounding region has been conditioned by the development of the factory. The Podbrezova ironworks have been continually modernized and adapted according to the new production needs to endure in a competitive environment. Thanks to the thriving company, new jobs outside needs of factory was initiated. In the course of time, the factory formed its environment in a way which provided for that, today, Podbrezova and Valaska meet all the requirements not only of modern industry but also of workable urban structure. The urban development of Podbrezova and Valaska demonstrates that the prosperity of the factory is able to encourage the development of existing urban structures and to initiate the establishment of new urban structures. The urban conglomeration of Podbrezova and Valaska confirms that industry is the main determinant of the urban development.

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Artificial Barriers of the Cities

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Keywords: city, barriers, maps, walls, roads, railways, demarcation, fission.

Abstract. Urban structure is constantly changing. Its development was influenced by several important steps in history of any city. Up to interval of time, it is possible to accept the assessment of the pros and cons, but mainly emerging lessons for the future. When studying the map sources, the authors of the article found three main groups. These groups have got common working title barriers of the cities. For the single barriers of the cities were chosen the specific examples of urban structures on which the effects of their influence there demonstrated. On the basis of the influence of the three groups of barriers were defined two basic structures of the cities.

Introduction

During the research of the individual map backgrounds, the answer for the question of what affects the development of the cities, revealed itself. They are barriers. The title was chosen deliberately because it simply describes the issue in the growth of the urban fabric. The observed barriers were divided into three main groups, the natural, the artificial and the legislative ones. [1]

The natural barriers were set by selecting a site for the establishment of the city. The biggest influence in this group had a river and the relief of the earth.This group was created by natural forces. In contrast, artificial and legislative barriers were created by man himself. [2]

The expected paper deals with the second group of barriers that have been named as artificial barriers of the cities. The title was chosen deliberately because it is a type of barriers that were created and implanted into landscape by human. This section included three elements: walls, roads and railways.

The first element – walls – had the only one impact, but the major one. When the walls were established and the city grew in its grasp, suddenly it stopped against them. This effect has been termed as the "demarcation" of the urban structure. Thanks to the walls we have the historically bounded oldest core urban centers now. Somewhere they have been demolished and replaced by roads, elsewhere they have been partly preserved as the parts of the historic centers.

The second element – roads – connects various cities to each other and according to which way they are conducted in the urban areas, they have a dual effect on the structure. They are mainly the present types of communication, the contemporary main roads, the highway ones. If the main backbone traffic is routed to the city center, it was observed from the maps the subsequent "fission" of the city structure. When the traffic was routed in a sufficient distance from the city center, the "demarcated" structure of the city was created.

The third element – the railways – as well as road and rail lines significantly affected the evolution of the urban fabric. If the railway was close to the city center, it caused the "fission" to the following growth of the city. If it has been conducted in the surrounding area, so in retrospective it "demarcates" the city.

Walls

In the Müller maps from 1790 a lot of the towns with walls were founded. Two different cities were chosen, Prostějov and Přerov, on which the theory of artificial barriers cities was applied to.

The influence of the walls had the same effect on both towns, it delimited the urban areas and thereby it prevents its subsequent growth.

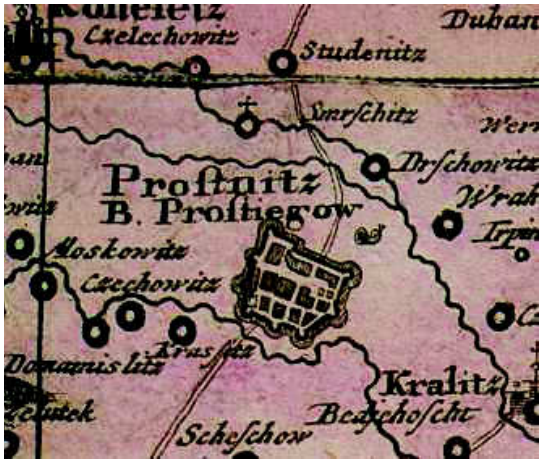

Fig. 1 Prostějov [3]

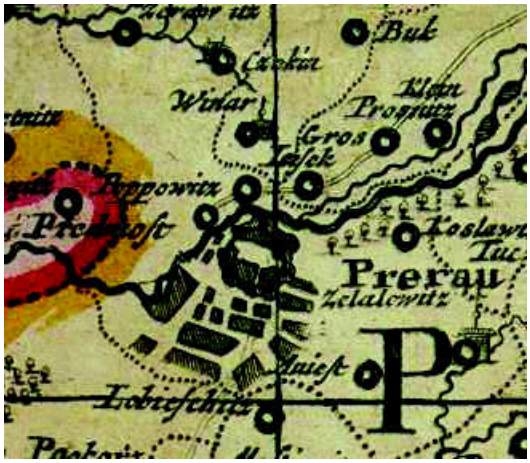

Fig. 2 Přerov [3]

Imperial imprints of the stable cadastre from 1830 depict the two cities in more detail view and with preserved walls. There is also a readable structure sprawl outside the walls into the surrounding area. This will be followed by the growth of new barriers – the expressway and railway network.

Fig. 3 Prostějov [4]

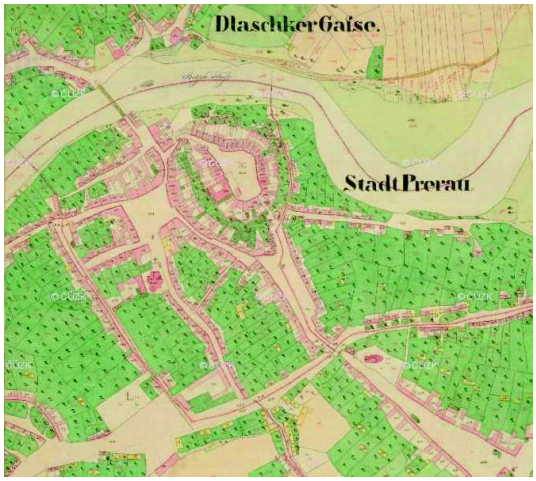

Fig. 4 Přerov [4]

Roads and railways

Each created communication connects the individual places among themselves, but it also divides the neighborhood where it is located. The same rule applies in urban areas. After the demolition of the first barrier – walls – the places for communication and parks were created. In 1836 the construction of the railway line Emperor Ferdinand Northern Railway began. This network was gradually built up from the south to the north, across the whole of Moravia and Silesia. By this the third artificial barrier was placed in the landscape, this barrier affected the growth of many cities.

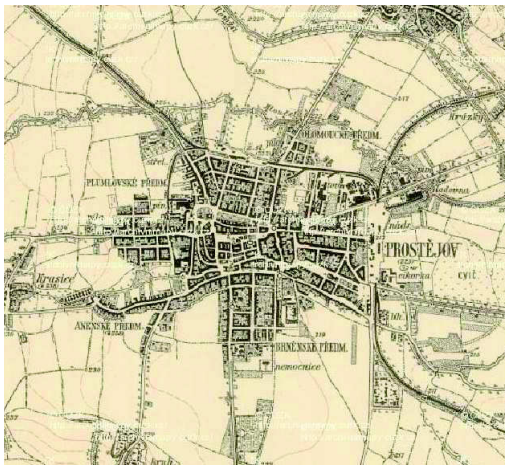

Fig. 5 Prostějov [5]

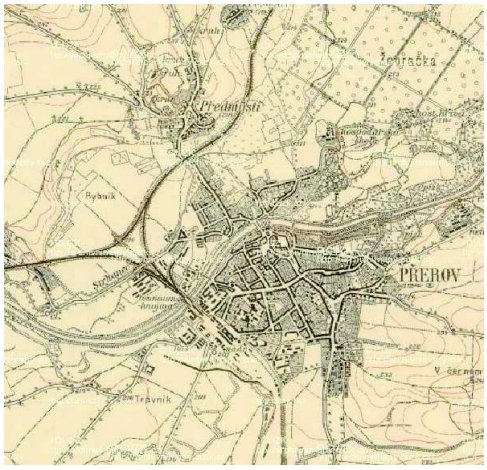

Fig. 6 Přerov [5]

Demarcation and fission

With the city of Prostějov on today´s perspective we can see how the artificial barriers gradually, during the development of the city, formed the first city walls of the historic core. Subsequently railway line delimited the city from the northern and the eastern parts. The expressway R46 delimited the city as well from the eastern part. In contrast, the city of Přerov, though the beginning was similar, walls formed the urban core, as one of the few had the important railway junction that caused the fission of urban development. Communication in Přerov also causes the fission of the urban structure now.

Fig. 7 Prostějov [6]

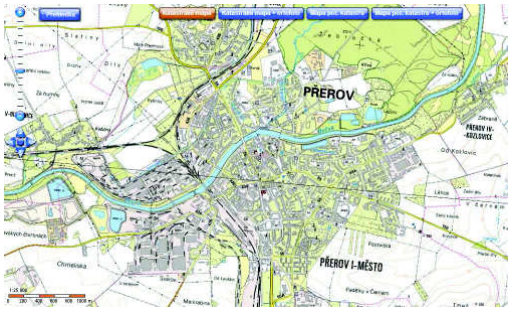

Fig. 8 Přerov [6]

Summary

The Athens Charter, resulting from the Congres' Internationaux d'Architecture Moderne (ClAM) meeting in Athens in 1933, crystallized the theory of the Modern Movement in architecture and town planning. The ideas of the great men of the first half of the twentieth century – Le Corbusier, Gropius, Jacobus Oud and others – were revealed to the urbanist as the dogma of rationalism. In the 1950s this preoccupation with function, structure, standardization was challenged and ideas about human association and the softer social aspects of urban planning and architecture given greater emphasis. Peter and Alison Smithson were among those in the forefront of this movement usually associated with Team 10, a group within CIAM. One outcome of this change in thinking among some architect-urbanists was the rehabilitation of the street as a legitimate element of civic design. The Smithsons wrote: 'In a tight knit society inhabiting a tight knit development such as the Byelaw Streets there is an inherent feeling of safety and social bond which has much to do with the obviousness and simple order of the form of the street: about 40 houses facing a common open space. The street is not only a means of access but also an arena for social expression.'12 Unfortunately the analysis led to the idea of streets in the air: 'The principle of identity we propose is the basis of the Golden Lane Project – a multi-level city with residential street-in-the-air.'13 As

an idea it failed in Britain: as a concept the street-in-the-air was not within the cultural norms acceptable to the general population in this country. An example of this type of housing at Radford in Nottingham was demolished after only twenty years in use. A street in the British tradition is firmly anchored to the land and still conforms, in the mind, to one of the three generic street scenes described by Vitruvius about 2,000 years ago. [7]

On the basis of the map background the authors of the article found several barriers that have been built up over the centuries by the human. This group of barriers was named as "artificial" barriers of the cities, because they were not created by natural forces but by the human ones. Into this group of barriers were included the observed elements: walls, roads and railways. As the research base to find these elements were used the map backgrounds from the map servers. The first of these elements had the only one effect, which was named as the "demarcation". The second and the third elements affected urban areas according to their positions towards the urban centers. If the element is located near the historic center then the "fission" of the urban development was caused. If the element has been created at a sufficient distance from the city center,then the structure demarcation followed by these elements (roads and railway).

Urban structure elements – roads and railway – are one of the most important elements of the structure of today's cities. With their construction the significant barriers that every city needs to function properly, were included into the urban structures. However, the people must remember that these important barriers are hard to overcome in terms of their reconstruction or complete removal. Therefore, these elements should be designed with sufficient respect for the city's future.

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Burying as part of life in the European context

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Keywords: Funeral, burying, cemeteries, cremation, interment.

Abstract. One of the eternal influencing factors on the development of people´s place of living is the problem of burying. These problems change in time but consequentially require long-term planning, the reservation of an area in a proper territorial community with all planned consequences thoroughly thought through. Cemeteries come close to the course of life in society and its relationship to the values of previous generations. According to the state of the cemetery and its tidiness it is possible to make a judgement on the cultural advancement of society. The loss of rituals and the encroaching secularization of society are connected to making the problems of burials and burying taboo. The objective of this work is an attempt to change this state by leading a discussion on the tradition of burying as part of life in the European context of selected cemeteries in Vienna, Brno and Prague. There are taken into consideration the historical influences and the reasons of introducing legal arrangements, historical connections, urban establishments, funereal arts, architecture and pictures of the cemeteries that were studied. There are observed the present trends in burying and the arrangement of existing cemeteries and comparing them with inter-European influences. The problems of cemeteries are presented with their projection into the future on the cultural and ethical level of the moral code.

Introduction

A visible manifestation of going through mourning is the building of cemeteries. Cemeteries provide a place of reverence for the collective memory of society in remembrance of the past. They are parts of a historical and cultural heritage. The spiritual value of graves is connected to the person who in buried in it and through its importance to society. Between the years 2004 - 2006 there were registered 5799 non-disturbed public and non-public burial sites. 1565 of these cemeteries, which is 33% [1] pg. 165, are in possession of the church. A public burial site is thought of as a place for burying all deceased without difference. A non-public then is a cemetery or a row of vaults or church graves. According to Roman law *care about the burial site of public things, but purely private matters, respectively the moral responsibilities of the bereaved persons ... with the coming of Christianity ... becomes the subject of care of all members of the religious community* [1] pg. 29.

Visiting a cemetery today is mostly the subject of interest of the bereaved. It serves as a reminder, a way of coming to terms with the mourning, the possibility to be with one´s closest, and it is also a common duty to take care of the grave during times of important holidays.

No society can do without burying, and at the same time each civilization makes distinctions according to concerns about the dead. In cemeteries various architectural styles, layout classifications and areas of greenery pervade. Cemeteries are witnesses to various time epochs and styles, that is they are preservers of time.

The forms of burial differ in various parts in the world, generally however interment (the placing of the dead into the ground) and cremation (the cremating of the dead) dominate. A third less common form is leaving the body for scientific purposes.

Secularization of society leads to the loss of funerals and weddings (60% of funerals are without ceremony). Without ceremony, the bereaved are deprived of lamentation, which eases the soul and shifts mourning into another phase.

For almost two millennia death was perceived as "tamed" *…death close and intimately known, but also presently weakened and unharming…in …dispute with our feelings – death defames us with such a threat that we are afraid to express its name…today death has gone wild and it used not to have been that way. The most ancient death was tamed* [2] pgs. 43-44.

It proposes such a question on where the development of cemeteries should be directed further in order for it to become a part of everyday life, and in the same way death, which has been made taboo and is denied. If it is possible to create an ecosystem enriching the environment at a time of the technical advancement of nations and industry, congesting individual cities and acting on the environment. If it is possible to return to our origin, to nature and blend with it to reach a state of peace. To classify these oases into existing sites and to create a place for life - that is, for the everyday or occasional enjoyment of the living, in respect and in remembrance of the deceased.

History. The History of Burying and Legislation Affecting Burying in the Areas of the Czech Lands.

The first funerals took place in marshes and in crags. This later led covering with stones and gradually placement into graves and cremation. The beginnings of cemeteries are connected to the settlement of tribes and through changes in the nomadic way of life.

At the time of Great Moravia, we perceive three nations, three approaches to burying in our areas. Dead Celts were buried with things, which accompanied them during their lives. They were buried by interment, and sporadically cremation appeared. The Romans enacted burying in ten of twenty legal records (5th C BCE). They write *not to bury or burn a dead person in a city …women neither to lacerate their faces nor lament at a funeral…nor give gold…*[1] pgs. 22-23. They used interment and cremation. Slavic tribes then used cremation and placement in ceramic vessels.

The first row of graves were placed outside a settled area (by roads and similar places), with the coming of Christianity they were shifted closer to a settlement or became part of it (in the vicinity of a church, in a church). In the second millennia interment significantly dominated (as a legacy of pre-Christian cultures and Christianity). Lex Salica from the years 507 - 11 states the right of each person to a burial place, without the possibility of having the place occupied by younger graves.

In the year 581 the prohibition to place one body on another ended in Mácon. The Carolingian Code of Law Capitulatio de partibus Saxoniae prohibited burial under "pagan" burial mounds and required the placing of a body in church cemeteries.

In the year 789 Charlemagne issued a decree, which prohibited cremation under punishment of death. This prohibition was respected in Europe for more than a thousand years.

Since the 11th century it has led to a shift from burying in adjacent areas to the centre of events in our lands. Since the twelfth century there has been recorded an increase in country churches with cemeteries. So cemeteries became common parts of towns and villages. They were accessible places for the public, amply visited and they served as a town square [3] pg. 226.

In the year 1594 Professor Felix Platter in Basil began to use the bodies of the dead for autopsies. In Bohemia the first autopsy was done by Professor Jan Jesenský at Rejček College on 12.6.1600.

In the year 1782, Joseph II reformed funeral services by the Dvorský Decree. Among the most significant orders, which considerably influenced the development and planning of our towns and municipalities was the establishment of cemeteries outside town centers. After eight centuries this led to the exclusion of the dead from the life of the community. From that also came a mandatory enclosure with a cemetery wall and the recommendation to separate a cemetery from the town by a forest, hill or river [1] pg. 171.

Up until the year 1955 our cemeteries were completely under the power of the church.

The development of a cremation movement became an issue of the second half of the 19th century and it is in connection to the development of big cities. Cremation was first legalized in Italy in the year 1874, and the first crematorium was built in Milan in the year 1876. The first cremation facility in the Austro-Hungarian Empire was built in the year 1917 in Liberec [2]. Since cremation by fire was prohibited in the monarchy, this activity had to be postponed until the foundation of an independent Czechoslovakia. So in the year 1919 a funeral using cremation was enacted through the law Lex Kvapil. In the first half of the twentieth century the Catholic Church still strictly prohibited cremation up until the Second Vatican Council (1962 -65), since when there was introduced the doctrine that burial into the ground was praiseworthy, but cremation could also be a possibility. According to the Law (§9 Declaration No. 8/1955) cremated remains should be placed in burial grounds. This was made looser with the issuance of a new law about funeral practices (No. 256/2001). It has not already been determined where cremated human remains should be placed. Another important valid law is Law 122/2004 of the Collection of Laws about wartime graves and places of reverence.

In the year 2008, under the auspices of the Ministry of Local Development of the Czech Republic standards were created for the work of gravediggers and the qualifications for gravediggers and tomb builders were officially established, finishing up with an appropriate exam.

Since the 1990s, there began the formation in Great Britain of natural cemeteries, as a return to the original natural ways of doing burials. This trend has spread to Germany, the Netherlands, Sweden, North America, Australia and Japan. In our country it comes across the strict geometry of burial grounds. They are hemmed in and subjected to rules for graves and tombs, in the same way as in the consequent location of cemeteries given by the heritage of the monarchy. So it was made looser only for dispersing and dumping meadows, where the absence of the name of the deceased speeds up the departure of the deceased from this world.

The Present Time. Current forms of burying in the Czech Republic.

Up to now in our country burying has remained a long-term tradition. This mostly deals with the placing of the body of the deceased into a coffin and placing it into the ground or a tomb. Cremation and the resultant placing of an urn with the cremated body into the ground or into a proper display case on the surface of the tomb in an urn grove or into the alcove of a columbarium, was placed on the same level as burials into the ground after the year 1955. There was gradually added the scattering of ashes on scattering meadows and dumping on dumping meadows. Cremation totally dominates today (80% of the total number of funerals in the Czech Republic). *There cannot be supposed any more radical development in another direction, because the Czech Republic presently occupies third place in worldwide ranking in the number of crematoriums per inhabitant* [4] pg. 98. This change should have an influence on the arrangement and planning of cemeteries.

Cemeteries in the Czech Republic are mostly marked out by a regular network of streets and lanes with a dense linear arrangement of graves. The street at the main entrance used to be lined with the graves of important persons (another possibility is a circle of honor, the corner of streets, and similar arrangements). For example, a circle of honor with the gravestones of famous artists is in the Central Cemetery in Brno. Graves, as forms of an after-death "dwelling forever", urge considerations about the size and crampedness of "dwellings". Graves are crowned with artistic works, where there are individual icons, packed in next to each other, competing together.

Streets, lined of grown trees and low bushes, usually cover the rear parts of gravestones. A grave or tomb is sometimes supplemented with a bush or tree, which grows from the body of a person. It is however necessary to keep in respect that greenery *has an accompanying aesthetic effort and the area of a cemetery or burial ground mostly is not an area with public greenery* [4]. Old cemeteries are marked out by high biodiversity, which used to be for reverential peace through the significant nesting sites for birds.

In the ideal case, streets and lanes are supplemented by benches, waste bins, a water distribution system, and other facilities. Sometimes it is supplemented by a bench by the grave, where a person can sit and visit with their closest. A frequent phenomenon is a bird house - the presence of life.

Flowers in flowerpots, which the bereaved must regularly take care of, in the same way as their closest during life. In the same way there are graves covered with ivy, losing their identity, or memorials to those fallen facing the grave. Locations of raised graves and tombs and steps built to them, where we go up higher to visit the deceased. There are usually dispersing and dumping meadows, whose periphery is lined with planted flowers, for freeing up the tight linear arrangement of graves, The anonymous location of the last resting place is supplemented by common flowerpots planted with flowers as paying attention to the deceased - a mutual sharing in a common fate (death). An urn covered in the ground under a stone slab, a urn in a columbarium, a urn fitted with a canopy or stone sarcophagus. Shelters for urns do not remain under the open sky. A cemetery lined with walls, sometimes a fence, separated from the world of the living. Cemeteries developing, cemeteries grown together, sometimes also divided, parts of them disturbed, withdrawing from the development of the town, and sometime totally disturbed, replaced by a park, by a construction and sometimes only a rubble site. Cemeteries with specific memorials (for example, The Central Cemetery in Brno, Olšany Cemetery) in Brno - Židenice, nowhere coming to an end, unenclosed. Long lines of streets lead to the peak of the slope itself and below the slope of the road, behind the road in a newly restricted field. The New Cemetery in Prague in Ďáblice, with a network of organically lead streets, with an attempt to open up areas, but disciplined by the strict outlines of Honorary Burial Sites.

The Future. Influences from abroad.

By directing the further development of cemeteries in our country it is possible to consider some examples from abroad, but also the several few previous and present designs in the Czech Republic.

In Great Britain there began to establish the first environmentally-friendly burial sites and natural cemeteries in the 1990s (the first was founded in the year 1994). The basic principle is harmony with nature. Cemeteries have the form of forests, meadows and parks. The flora and fauna have to be typical for a given area. In some natural cemeteries ash is placed towards the roots of grown trees, otherwise a tree is planted on each grave and till a "memorial forest" is established. Sheep graze in meadow cemeteries. Harmony with nature requires leaving minimal environmental traces. So the dead join into a cycle with nature. Natural, easily degradable materials are used. Gravestones are not used. Minute wooden signs are used. Protected reserves have been founded, on which original species of plants and animals do well. A pleasant place for life has been established, a place urging visits and not forcing death away.

In the Czech Republic a natural cemetery was founded in Ďáblice in the unused part of the cemetery, where ashes will be placed towards the roots of existing trees and a Forest of Remembrance will be founded (in autumn 2014). The idea "beautiful death" is reflected in wooded cemeteries (called forest cemeteries), which are environmentally friendly burial grounds, but coming close to the idea of natural cemeteries (the most well-known in Zlín since 1930 and in Hradec Králové). A singular method of construction is presented by the conception of the Central Cemetery in Vienna. The cemetery is built for the travel road network, which corresponds to the extent of the locality. There is a possible entry by bus or the use of bus lines in the area of the cemetery. From the main gate there leads a road to the dominant cemetery church from a well-known representative of the Jugendstil Max Hegel. The main entry and surroundings of the church is spread out into arcades with the tombs of well-known people. So in the same way a street connecting into two points is lined with graves of honor. Other graves line a slightly raised field established by regular, geometric divisions of the cemetery area. The increase creates a distance from the graves or tombs from the accessible road network. The graves are arranged around a periphery of loose parts, where high grass waves, or a poorly arranged forest grows up and so it

leaves the graves on the edge of the road "to subside". Ing. Paclová states that *in the west, north and south we meet with a greater moderation in the area of the cemetery than how it is here. A unified area of greenery mostly covers it from which only a memorial or cross sticks out... a place of reverence then acts with a calming, smoothing impression...* conversely *Central European areas originally presented graves full of flowers…Our design imitates the cemeteries in central Austria,* ...[4] 128-129 which is confirmed by surveys of Vienesse cemeteries (above). Some visitors perceive dense, linearly arranged graves by the laying-out of entire tombs for a „morbid" appearance, which discourages from visiting the place. The individual style of arranging graves however corresponds to the character and style of each tenant in the same way as current residential buildings. In simplifying (gradually, or radically) the entire look of a cemetery it is in such a way possible to achieve the positive perception of visitors so necessary for cleansing their souls.

Summary

In Czech society the older and dying are being displaced, and they are not in a favorable position in society. Children do not have contact with the dying and the deceased. The missing funeral rituals today are the basis for the future problems of those left behind. The result is the inability of society to deal with the death of one´s closest, one´s own. There is a vested role also played by cremation, which brings the possibility for placement in scattering or dumping meadows and therefore indirectly supports the development of funerals without ceremonies.

The basic problem with making death taboo and forcing it out from everyday life is possible to observe from the reforms of Maria Teresa mostly Joseph II, when cemeteries were centralized and shifted 15 minutes walk from the border of a community.

In regards to the development of the community, today these cemeteries are mostly again part of the urban area. It is necessary to move their significance farther, to not act as a strictly hemmed in area, which is bypassed and limits accessibility to the surroundings. It is again necessary to sort them into the structure of towns and villages.

According to the available information there is offered a way of simplification, a park layout, a natural appearance as a display of our origin in nature. A harmonic, calming environment, awakening respect towards the deceased and the bereaved, towards nature, towards its cycles and the inevitable end of all life - with respect towards death without prejudice and huge apprehension.

The creation of these public facilities must increase the cultural level of ceremonies, which are very personal in the lives of individuals, and are presently supporting the concerns of communities for each citizen. They are central parts of towns. They have to be presented through town-planning and architecture positively acting as a prerequisite for finding new ideas so that they can add to future generations.

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Sports Facilities – Analyses and New Trends

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Keywords: Sports Buildings, Architecture, Hybrids.

Abstract. The possibility to carry out sports activities is one of the factors which increase the quality of life for the citizens of a city. The city of Bratislava ranks among the biggest places of sport activities in Slovakia. Most of the sport facilities were, however, built in the past century; therefore they do not fulfill the demands of technical condition, economic efficiency, do not meet the international criteria of professional sport and do not meet the broad spectrum of the modern sport activities, especially for the younger age group users. It is needed to modernize and build the new sport buildings in all areas of sport, at school sports, sport for all and also in professional and performance sport activities. In accordance with the new trends in design of sports facilities, there is a need to reduce servicing costs, to improve implementation of technologies that increase the quality, safety and economy efficiency. The priority is the creation of multifunctional or hybrid facilities, which can offer the widest range of activities to users. In this report, the survey of the condition of existing sports facilities in Bratislava and proposal for possible solutions to the revitalization or the design of new facilities with sport function is published. The combinations of different activities which are compatible and suitable for multifunctional facilities are also published here.

Introduction

The transformation of sport in Slovakia was launched in 2004, which was mostly affected by The Project of decentralization of the state administration, what results into changes in the ambit of sport management at all levels. In the document Conception of Development of Physical Culture in the City of Bratislava for the Years 2009 – 2015, the main objective is to create better conditions for school, recreational, performance as well as professional sport, focusing on the support of general public sports activities. For the reason of the direct channeling funds for construction and renewal of sports facilities, in 2008, The Sport and Recreation Territorial Master Plan of the City of Bratislava was drawn. It suggests spatial development of functional areas of sport and recreation, set in the Land Use Plan of City of Bratislava. Currently, the municipality focuses primarily on the implementation of bicycle paths, but also develops activities related to the construction and renewal of sports facilities. As the issue of sports facilities is very broad, therefore this contribution focuses on the current conditions of facilities in Bratislava and the issues related to the modernization and design of new facilities.

Sports Facilities in Bratislava. Most sports facilities in Bratislava were constructed in the last century and currently do not meet the requirements in terms of technical condition, economic efficiency, their parameters do not meet current criteria for professional sport or do not meet of the required range of modern sporting activities, especially for the younger age categories of users and the disabled athletes. Options to do sports activities in Bratislava are determined by the amount of sports venues per population (about 430,000 inhabitants). Unfavorable situation in the material and technical provision of sport affects the stagnation in some forms of sport, as well as causes a decline in the sport in Bratislava. Shortcomings exist in all areas of sport, school physical education; sport for all and also on performance and professional sport levels. Types and number of sports facilities and venues, regardless of their owner, are inadequate and not in line with the needs of the sports industries which have a long tradition and results in Bratislava. Over the last 10 years some sports

facilities of national importance have been built. The construction of these facilities is for the development of competitive sports in Bratislava beneficial, but one can argue if at least some of them should be designed as multi-purpose ones, which would be more efficient considering the amount of invested funds.

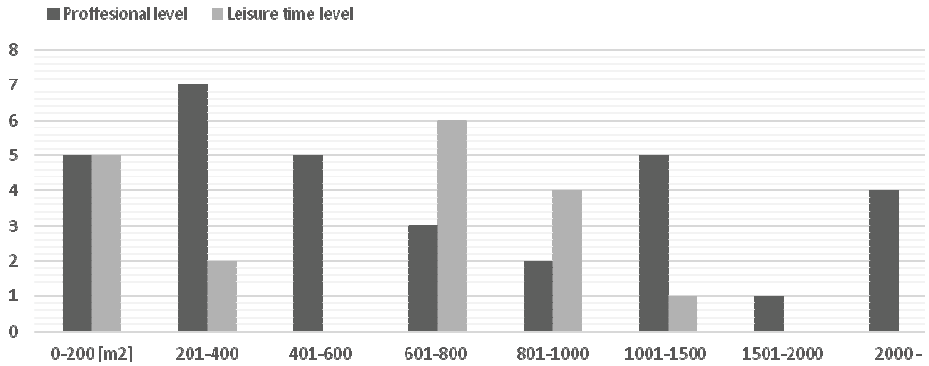

Fig. 1. Number of Sport Halls in Bratislava (y axis) and their total area (x axis).

The Land Use Plan of Bratislava, in the section referring to sports, physical exercise and leisure time states that "*Bratislava as the capital city of Slovakia has a lack of sports and physical education facilities. The capital meets only about 62% of the required land area of physical education and sports facilities per 1 inhabitant. Deficits in sports and recreational facilities are typical for all districts except for Nové Mesto."[*1] The largest deficit in sports areas is in the Staré Mesto, Lamač, Dúbravka, Devínska Nová Ves a Karlová Ves. In The Land Use Plan is the development of sport and physical education and sports activities designed by stabilization and completion of existing sites and facilities as well as by proposals for new areas for sport and physical education facilities in developing areas of the city. The lack of opportunities for sports is supported by the decrease in number of sports grounds and facilities, reduction of sports clubs or units and also by decrease in the number of sporting events. Some smaller private services such as spas, fitness centers, squash, or smaller pools within public buildings partly compensate the needs of citizens, many of them are costly and thus unavailable for the underprivileged parts of the population. The main reason for the loss of sports grounds is inefficient operation of sports facilities and the lack of state subsidies for the development of sport. The research is therefore aimed at finding suitable combinations of sports activities with other types of leisure time activities that are "perfect-fit" for residents of different districts of a city.

Recommendations and Solutions in Proposal of Sports Facilities. Respecting the changes and increases in the importance of sport in society, the more acute the concept of integration and hybridization of sports facilities becomes, i.e. merging sports activities with other functions. In parallel with the change in the system of values there is also an increasing need for quality for leisure time activities and active recreation. Reasons for integration and hybridization of these facilities are mostly of an economic character. Merging sports activities with other functions (cultural, social, business or with temporary accommodation, etc..) can be achieved by reduction of operating costs, whereas in the case of irregular use of mono-functional sports facilities operating costs are disproportionately high and return on investment is worse. Integration is not a new trend, is has been noticeable since the mid- last century, when the sporting activities merged with schools, hotels, colleges, administrative or residential buildings. Hybridization in the context of developing sports facilities, is viewed as a response to a change in lifestyle as well as the city, to the economic factors affecting land prices. Hybrid sports facilities represent a typological fusion of different kinds of programs that are able to operate independently. The positive result of the hybrid concept of new design or renewal of sports facilities is an object used throughout the day ("full-time building" [2]). It is a common requirement to improve the availability of sports facilities in the central zones of urban structure. The city must offer adequate spaces, or land for developing new types of sports, which applies to both recreational sports area and professional sport. The lack of state funds can be

saturated by private sector investments, which can promote the development of the spectrum of sports activities. New designs of sports facilities must meet economic, security and technology requirements. Reflecting the needs of the residents of the city and in combination with appropriate typological programs, one can create a favorable basis for high-quality, sustainable development of sport in Bratislava.

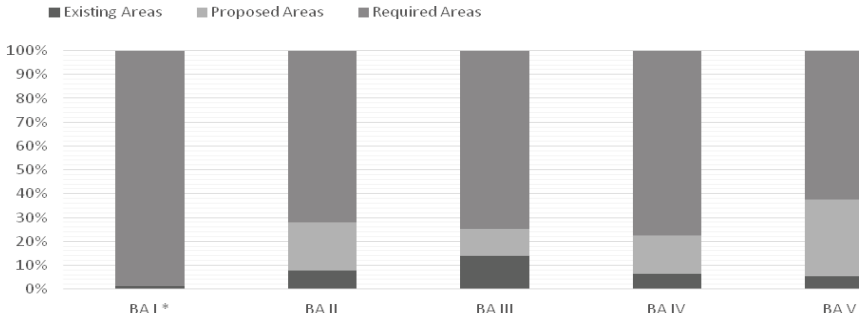

Fig. 2. Ratio of Existing, Proposed and Required Areas of Leisure Time Sports in Bratislava.

***** District Bratislava I. covers historical centre of town and no free space remains for building new sports facilities or hybrid buildings.

Survey. To find out real demands of Bratislava residents for leisure time in the form of sports or other activities, a marketing survey in the form of questionnaires and interviews was carried out. The aim of the survey was to monitor the general requirements of inhabitants for the availability of sports and other leisure facilities in the city district, as well as to find appropriate combination of new designed multi-functional use or hybrid objects [Figure 3, 4, 5]. The survey involved 742 inhabitants of Bratislava. A comparison of the analysis of the facts of sports facilities with requirements of inhabitants incurred basis for design options of new buildings for each district of Bratislava, which would reflect the population demand.

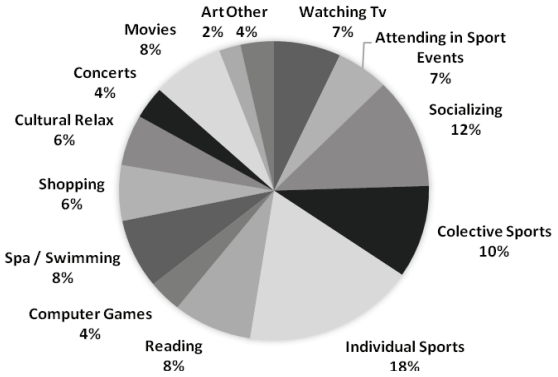

Fig. 3. Ratio of Residents Requirements for Leisure Time Activities in Bratislava.

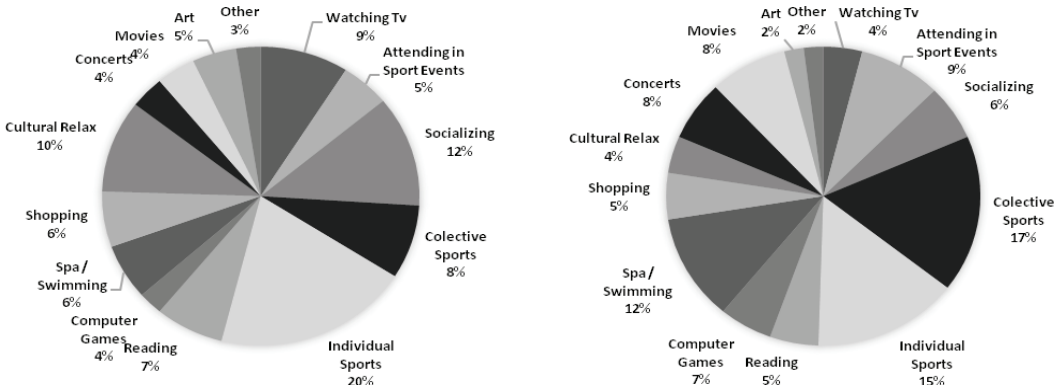

Fig. 4, 5. Ratio of Resident Requirements for Leisure Time Activities in Bratislava Districts. (Figure 4 - Bratislava II., Figure 5 - Bratislava V.)

The analysis of the research showed that the demands of citizens for different areas of sports are differentiated depending on the current offer of sports activities, on the age structure and gender of respondents. In evaluating sport activities based on the age the following facts were found:

1. Young respondents aged under 20, prefer team sports which are related to the game and competition, mostly football, basketball or floorball.
2. Adults 20 to 50 years preferred individual sports related to increasing fitness - fitness, running, cycling, female aerobic,
3. Middle aged respondents 40-60 years preferred sports activities related to increasing health fitness - gymnastics, swimming, cycling or walking
4. In the old age, the over 60s performed less difficult sports activities - walking, tourism, swimming.

In the evaluating the demand for leisure activities in the city districts, differences were found mainly related to the age structure of respondents and to current offer of services. For example, in the district of Bratislava II., where there is more accumulation of higher age groups, there was a demand for cultural activities, or activities of social character and a demand for facilities or venues to perform individual sports activities was dominating. The district of Bratislava V, where there is a higher percentage of young people, had generally a higher demand for sporting activities, for example team sports and swimming, because in this part of city there is not any swimming pool facility. The analyses carried out in selected urban areas further showed that from a commercial point of demand the combinations of these typologies in integrated facilities are suitable:

For the district Bratislava II - cultural events, public spaces, individual sports, business and the district Bratislava V - collective and individual sports, swimming pool, cinema, commercial spaces, culture. The next stage of the research will continue further specification of the ratio of each type of activities.

Conclusion

The method of design and locating new sports facilities, with regard to the survey, from the earliest phases, should have considered the aimed range of services so that the facility was popular and therefore cost-effective. In developing leisure facilities one must also reckon on the changing requirements of the residents, therefore the architectural concept of new facility must be adaptable. Taking these factors into account, it is possible to achieve social sustainability and economic profitability, which is a prerequisite for the healthy development of sports at each level.

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What to do with Alvar Aalto?

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Keywords: Alvar Aalto, renovation

Abstract. Alvar Aalto (1898 - 1976) has built about 200 buildings. In Finland the influence of the Aalto has been very strong, but also ambivalent, as Tommi Lindh, the head of Alvar Aalto Foundation, said in an interview in *Rakennuslehti* (*Building Journal*), "there was either admiration or it was taboo" [1]. How should we renovate these buildings? It is not easy to say, what to do with Alvar Aalto and his buildings. Let's take three cases: The Central City Library in Vyborg, Sunila area in Kotka and Nano laboratory in Otaniemi Campus in Espoo.

The Central City Library in Vyborg

The Central City Library in Vyborg was built just before the Second World War. "The building is a famous masterpiece of 20th century Modernism, the tectonic forms are a result of functions and the architectural values are the essential object of preservation, conservation and restoration", as Maija Kairamo and Tapani Mustonen have written about the building [2].

The competition for the library was organised in 1927. Alvar Aalto won the competition with a classicist entry, in the next years he developed his design from classicism to functionalism. The library was built in 1934 - 1935. [3]

The former Finnish town was after the war one part of the Soviet Union. In the 50es the Soviet authorities decided that the building should be renovated. There were two possibilities: restoration in its former state or renovation on the basis on the requirements of Soviet architecture, in Socialist Realism or Stalinist style. In the middle of 50es the authorities decided that the facades are to be restored to their former appearance. The outcome of these renovations is not good, for example the flat roofs technique had not been mastered in the Soviet Union. [4.]

During the soviet era the building was in very bad condition. As Aalto visited the building in 1962, he commented: "The building exists but the architecture has gone" [5].

Fig. 1. The main entrance [Paajanen, 2014].

Fig. 2. The exterior stairs of the lending hall terrace [Paajanen, 2014].


Fig. 3. The entrance lobby and the reading room [Paajanen, 2014].

During the last 20 years it has been renovated in Finnish-Russian cooperation. Now it (almost) looks like it was in the 30es. Should we have a building like this in his earlier presentation or should we see also the history of the building? Tapani Mustonen, the chief architect of the Library restoration project, said in the interview in the *Finnish Architectural Review*, that in Russia they tried to make everything so that the building would look like it did when it was new, in Finland they tried to save everything useful and to preserve also some solutions from the Soviet era, for example the layout of the cloakroom in the entrance lobby because they were more functional than the original [6].

Sunila area

Sunila area in the near of the town Kotka was built by the wood company Sunila Pulp Mill in the middle of the 20th century. The company wanted to build one kind of a new factory area for a new age: the factory with a residential area for the employees. In Aalto's plan an open woodland area stretches between the buildings (see figure 4). There is a villa for the manager of the mill, row houses and apartment blocks for different kind of categories of employee. The plan is rather democratic, the open gardens between the buildings are open for everybody. The flats of the workers are small, in the flats there are toilets but not showers, originally there were some common sauna buildings. The architecture of the buildings is modern, for example the stepped apartment blocks Karhu and Päivölä are famous (see figure 5). [7.]


Fig. 4. Aparment block in Sunila [Paajanen, 2010].
Fig. 5. Karhu and Päivölä, stepped apartment blocks [Paajanen, 2010].

In the 60es the company sold the buildings. The situation especially in the 70es was miserable. The public bus and other connections from Sunila to the city of Kotka were not so good. The flats were small and in bad condition. The common saunas and heating centre have not more the original functions. What happens with building physics and the constructions, when the buildings are not in use or have other function (see figure 6)?

In the last decades the Pro Sunila society has worked for developing of the area and the flats. The society tries to organize all kind of activities for the people so that they could identify with the area. The society tries to protect and develop also the architecture. For example there are plans to make from two or three small flats a big one with bigger showers etc., so that also families with small children could better live in the area. The society has made guidelines for renovations, how to

protect also the architectural details. Before that the owners of the stepped apartment blocks Karhu and Päivölä have chanced the parapet capping during the renovation (see figure 5).

How can we develop an area? It's easy to renovate one building, but when every building has different owners it is not easy to say what you can and may do.

Fig. 6. Common heating centre [Paajanen, 2010].

Nano laboratory building

Alvar Aalto won the competition for the Otaniemi campus area of the Helsinki University of Technology in 1949 (situated in the neighbouring town Espoo) [8]. There are famous buildings like the main building and the library. Nowadays the university is called Aalto University.

Fig. 7. Nano building in the front and the main building in the back [Paajanen, 2007].

Nano laboratory building was built in 60es as wood laboratory. There are many very fine architectural rooms and details in the building, for example skylights, also in the laboratory rooms (see figure 8), the beautiful main lobby (see figure 9) and inner courtyard, so called "secret garden" (see figure 10).

Fig. 8. Skylight in one laboratory room [Paajanen, 2004].
Fig. 9. Main lobby [Paajanen, 2004].
Fig. 10. "The secret garden", the inner courtyard [Paajanen, 2004].

For about eight years ago the building was renovated as nano laboratory with very special microscope laboratories, brain laboratories etc. We (I worked as the project architect of the

renovation project) decided to have different areas: the lobby, the corridors, office rooms and other such kind of rooms belong to the most valuable areas, in the formal laboratory rooms (especially in the cases of the special laboratories) we could and should do more changes. In the best areas, for example in the lobby, it was one kind of restoration (or conservation), all old materials were "valuable", it was not always easy to find solutions for the new house technique.

How to renovate a laboratory building, when you should in the same time use renovation, conservation and build high tech laboratories?

Restoration principles

Does the restoration of a modernist building differ from the restoration of a historical building? Many restoration recommendations and doctrines have been developed for historical monuments.

In the case of modernist buildings the original architecture, constructions, materials etc. can still be there. Modernist architecture was minimal and the details are extremely important and sensitive. In the beginning of the modern architecture there was "the deep truth that modern science and technology could solve all problems" [9], but that means also that in this time they made many mistakes, for examples they copied in Finland many details from middle and south Europe, even the climatic conditions in Finland are quite different. Many flat roof and window details are problematic, for example parapet capping can be too small, perhaps without eaves flashing, often there is not enough thermal insulation etc. Should we rebuild also these "wrong details"?

All buildings from Alvar Aalto are not as strong as Viipuri City Library. For example the Nano laboratory building is just a laboratory building of "second class", the main building and the library are more important in Otaniemi campus - that means not, that the architecture of the wood laboratory building is some kind of "second class architecture". Sunila area is a living area where the people should live a normal life. What are the differences between these kind of buildings, should we take always conservation, restoration or reconstruction as principles, when we have buildings from Alvar Aalto? What should we do with other buildings from the same architectural era? It is not easy to say, which buildings are valuable, so it is also not easy to say, what to do with Alvar Aalto and his all buildings…

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Villas In The "Underground"

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Keywords: Socialist architecture, family house, villa, illegality, totality.

Abstract. The political changes of 1948 brought, among other things, a significant shift in the housing policy. Focus was no longer on living in detached family houses or urban villas so popular prior to 1948. On the other hand, we can also find architecturally great villa like family houses designed by professional architects. However, construction of these houses was not far from being illegal since everything was done secretly without the slightest possibility of being presented within the professional circles or the public. The investors recruited mainly from social and cultural groups of famous people with original ideas, were not acceptable to the ruling party.

Introduction

The houses were large typological theme of Czech modern architecture until WW2. First half of the 20th century preserved unusually large good fund of the houses and villas in the Czech Republic. They are the bearers of the progressive tendency on European level. Changing of political and economic conditions in 1948 caused that in our country the family villas became untouched theme not only in theoretical works but also almost unrealized type of construction for many years.

In spite of that, we can find a family houses villa of type of the architectural quality were designed by good architects and which were created for political reasons almost underground in the secret and without the possibility of presentation in this period. Their investors were most outstanding personalities of the cultural and social life, who were unacceptable to leading political class for their political views Residential architecture from this period bears no significant progressive ideas but becomes the evidence that in this strange historical period not disappears completely.

Zdenek Plesník's three villas in Zlin

In this hardest normalization period 50s of the 20th century were created three exceptional villas of architect Zdeněk Plesník in Zlín. They are a pair of villas for travelers Miroslav Zikmund and for Jiři Hanzelka on the southern slope in Zlin from the years 1953-1955 and villa of composer Zdenek Liška from 1956 to 1959. The first one is the rebuilding of Januštík´s villa. The second one standing on the neighboring property is a new monumental building, which contrast to the Zikmund´s villa in all ways.

Hanzelka´s villa is characterized by the monumental pyramidal symmetrical composition with an expression of dominance. Hanzelka´s the villa is characterized by the monumental pyramidal symmetrical composition with an expression of dominance. The tiered character of villa is based on the natural gradient of the slope. The concept is connection between architecture and landscape and is reflected inside the house in form of gradual unfolding disposition. This is a three-storey house with partially submerged basement below the ground level. The center of gravity disposition of this house is staircase. We can find a clear parallel of Loos Raumplan here. The entrance of the house is in basement level the residential then forms a large continuous space. *Jiri Hanzelk's vila had been dedicated to art - a hall for producing sound. His passion for playing the organ was famous and house was designed by wavelengths tone of this instrument. Structurally it supporting walls*

supplemented by reinforced concrete pillars [1]. The ceilings are made from concret and they are ribbed. Brickwork is complemented by elements of artificial stone. *The fate of the villa Jiri Hanzelka is however the memento: In 1958 it was donated to The Czechoslovak State to the terms of use for nursery school with the operation in whole week (now children's rehabilitation center). With this is related the removal of organ and the built-in furniture. New feature requested gradually a number of construction impacts, which led to the complete devaluation of the work. When carrying out the massive building extensions in the 2000 it was destroyed, as well as untouched terrain configuration of the garden. Non-renewable is surface of the prefabricated parts of the facade [1].*

Fig.1. Villa Jiři Hanzelka in Zlín (1956), Zdeněk Plesník

The Zigmund´s villa and Hanzelka´s villa villas in nearby Kudlov were supplemented by the third house from years 1956 to 58 - **villa of the composer Zdenek Liska.** Vila Zdenek Liska is different from the pair of Plesník villas for Hanzelka and Zikmund. *It is a work subtly linking typological and architectural motifs from different eras and environments, but always with a sense of perfect stylization in favor of a new whole. Again, there is an organic connection with nature but already through allusive "Patium 's pool [1*]. This is a two-story house with the basement partially sunk below ground level. Entrance into the house is in the basement level so that utilizes slope of the terrain. Ground floor of the southern wing with bay window is formed by the continuous living space, half of the living space occupied office Zdenek Liska. The east wing was the bedroom and the northern tract belongs to operator rooms. Garden of Liska´s villa is fully integrated into the disposition. Linking house with the garden is realized through the portico made of stone and concrete. Structurally it is the supporing wall system. The facade of the house is the brickwork with elements of artificial and natural stone smooth plaster and the brizolit. *The fate of the villa Zdenek Liska is also a memento: Zdeňek Liška sold his villa to Czechoslovak State Film. Then in 1975 it was adapted to the studio of the short and puppet film. In the mid-90s the house became a private property and ceased to be used. Due to the poor safety and to the bad maintenance the house had been destroyed during several years. The current state resembles the coarse structure [1].*

Fig.2. Villa Zdenek Liška in Zlín (1959), Zdeněk Plesník

Prague villa in the "underground"

One of the most important implementation Prague villa the period of socialism is the **villa of the film director Věra Chytilová in Prague** - in Troja by architect Emil Přikryl of 1975. The villa stands on a very exposed location on the edge of the slope and the entire building is characterized by consistent inclusion the surrounding countryside. The project is based on a functionalist approach to the creation but uses an obliquely cut shapes that are typical for the house and gives it brutalist expression. The villa stands on a very exposed location on the edge of the slope and the entire building is characterized by consistent inclusion the surrounding countryside. Residential functions of the house have no end enclosed between four walls but penetrate farther into residential gardens. Views into garden provide a feeling of integration of exterior and interior. Interior spaces are well designed and they provide living conditions for a large family and creative work. Large living space is divided vertically by platforms and by built-wooden galleries. A part of completely open living space is the dining room. The private part of the house consists of two separate studio apartments (each with its own suite). On the second floor there are three bedrooms, which are also studies. Basement of the house contains a technical background, cellar, workshop and studio. *Its own equipment interior have a certain amount of "bohemian romance"* [2]. The villa was built by traditional technologies masonry reinforced concrete ceiling atypical windows (from standardized profiles). The smooth white plaster contrasts with the dark blue paint window frames and doors. This amazing project had been realized by creative obsession of the investor. But his tolerant approach always respected the project [3].

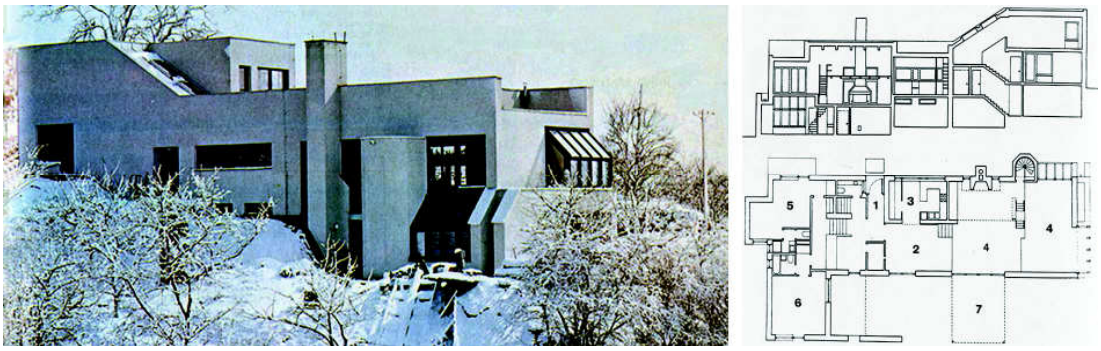

Fig. 3. Villa Věra Chytilová in Prague-Troja (1975), Emil Přikryl

The aggressive mass compositions were very close to Věra Machoninová. Little is known about her two villas, about her own house in the street Na Hřebenkách under Strahov from 1970 and about the villa for Otomar Krejča in the Šturm street in Bubeneč. Among the functionalist villas colony Baba, in the corner of the street Na Ostrohu attracts by brutalism concept Jindřich Hladky's villa from 60's. Twoperpendicular lying mass blocks gives a surprising look of the house, which was not designed by the architect, but by own builder of the house by the mechanical engineer. However the unqualified builder made his mark on inappropriate internal dispositions [4].

Fig. 4. Family house Eva Machoninová and the family house on Na Ostrohu, Jindřich Hladký

Another exceptional examples of villas from Prague area is own house J. Louda and K. Prager in Bráník out of 70 years. Atypical expression gives the house cylindrical solution of the roof.

Brno villa in "underground"

The implementation of Brno houses from 60th to 80th years due to its architectural quality beyond the ordinary architectural creation are Ivan Ruller villas. His houses, thanks to the used material can age naturally and still remains modern charm. The builder of the house on the Preslova street recorded after many years o: *I'm lucky that I live in the house that Ivan Ruller created. I am still enchanted by his work. If you do not believe me that the house can be magical even after 32 years after its completion, visit us* [5].

House of Ing. Petráček in the street Preslova in Brno Stránice from the years 1968 to 1972 belong to the best implementations of Ivan Ruller. The building is inspired by the new brutalism, one of then the most prominent trends in the European architecture. The two-storey building masses elongated cuboid uses the slope of the terrain and Land is narrow plot and own house is hidden from the street view in the courtyard gardens. It opens up the southern facade of the garden. Architectural effect is multiplied by the landscaped garden designed by the project of significant landscape architect Ivan Otruba. On the 1st floor there is an entrance hall and utility room with the garage. Social and resting area is located in the second floor, at the same time the western part is filled by a living room with dining area and the eastern part is reserved for the bedrooms with a study and a bathroom. Structural design is based on the intention to create a space for the entire depth available to achieve variability and the opening of the south wall to the garden. Facades admit unfinished exposed concrete belonging to massive reinforced concrete grid overarching the whole building and forming a continuous parapet. It forms a characteristic expressive element along with strip windows in wooden frames The house still stands practically in its original condition without the intervention of undesirable structural modifications [5].

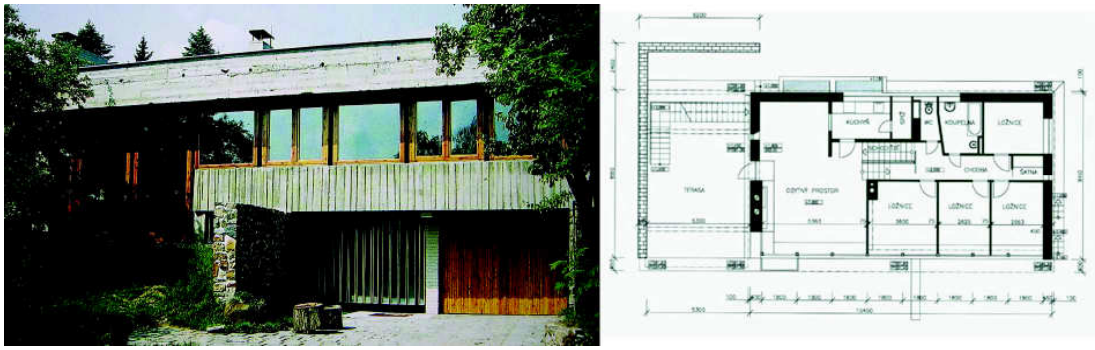

Fig. 5. Family house Preslova street in Brno (1968-1972), Ivan Ruller

House Ivanovice from 1976 by the same author is an example of how under the guidance of a qualified architect is possible to achieve good results even in buildings self-realized. With its modern simplicity the house shows undeniable artistic quality the interior and exterior. Detached house with two floors and a basement is located on the terrain break. From the simple cubic building masses are protruding color-coded buttresses. The basement contains the economic base and garage on the ground floor there is a social area and resting area. The garden facade is opened to the garden with swimming pool by glazing. Use of construction technology (the cinder blocks reinforced with steel construction) was unique at the time of construction. The building is in excellent condition, but is marked by inappropriate romantic reconstruction implemented in 90’s without the knowledge of the author [4].

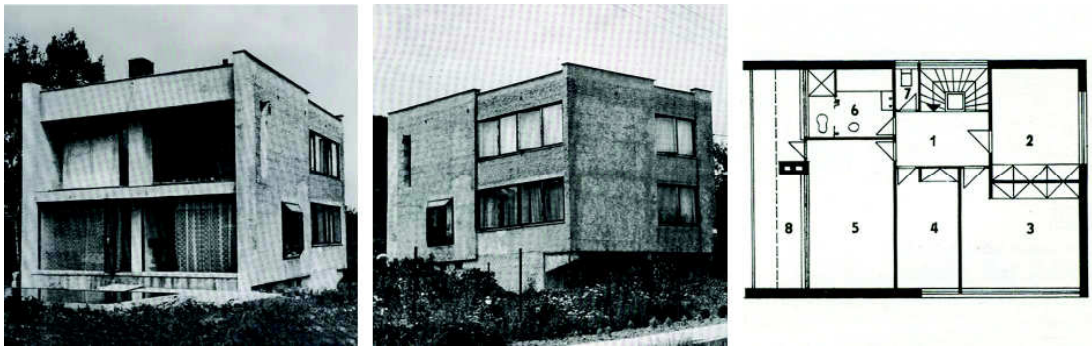

Fig. 6. House Ivanovice at Brno (1976), Ivan Ruller

Family house from 1963-1968 in Kalvodová street by architect Josef Nemec (pupil of B. Fuchs) by its simple and clean volumes sensitively enters onto the sloping land and follows the interwar tradition Brno architects House is defying against rectangular building areas of surrounding houses which are oriented into Pisárky valley with impressive views. "House is reversed toward the valley" and stands out from street line, what is underlined by dense greenery towards the street. The mass of the two-stored house consists from cube which is cutting into the slope. Social and quiet area of the house is on the 2nd floor at the entry level. In the first floor are the study and the economic background with the garage. Interior space is divided vertically and horizontally and different levels of height are articulation of importance of the room to the whole. The supporting structural system is a combination of masonry pillars and walls from solid clay bricks. Ceiling structure is from I-beams and slabs blocks and single-layer roof with surface of galvanized steel. The house has been preserved without the intervention of undesirable structural modifications in virtually original condition [4].

Fig.7. Family house Kalvodová street in Brno (1963-1968), Josef Němec

House Ivanovice at Brno 1979 by Miroslav Spurný is bordered on both sides of the street free-standing single-family homes mostly from the 70s and the 80s. Basically building was created by the owners themselves. The entire mass of the house is destined by the embedded atrium in horizontal plane. The resulting built-up area has the shape of a U. The actual mass of the object, which is derived from the shape of block, is further divided in two floors. Social and quiet area of the house is located on the 1st floor. Living room with kitchen is designed as a space which is open, both into the atrium also into the street. On the 2nd floor there is the bedroom with the bathroom. The bulk of the 2th floor, however occupies terrace. There is a noticeable influence of Le Corbusier's villa Savoy and foremost there is consistently implemented his idea of living in generous terrace as a full-fledged space the house. Structurally it belongs to brick wall structure with partial basement. Ceiling construction is carried by crosswise mounted I-beams. Color and material of the building is very clean and simple. Steel structures in exterior (columns, I-beams, railings) are painted dark blue. Glazed surfaces without the possibility of opening are by material solved from kopilit. House has not passed yet, no major changes [4].

Fig.8. House Ivanovice at Brno (1979), Miroslav Spurný

Custom atrium house of architect Růžena Žertová in the street Zákoutí from the years 1979-81 stands on the axis of street which terminates a good distance from other condensed terraced houses of Palacky Hill. It is atrial house and consists of two basic masses in the shape of the letter L. On the front part of the house follows the mass of associated garage. The building is single-stored house without a basement with flat roof. It acts very compactly and simple, clearly dominate by the horizontal solutions. Timeless Interior prefers the "free plan" which is evidence of artistic feeling and of craftsmanship ability the architect. The house stands on piles drilled to bedrock. The cladding is designed as a sandwich. The house is in excellent condition not only due to the quality of design and overall solution but mainly due to constant maintenance and care of the owner [4].

Fig. 9. Family house on the street Zákoutí in Brno (1979-1981), Ružena Žertová

Conclusion

Due to complexity social conditions in the Czech environment during communism it had been created only a little of pronounced family villas. It was more of exceptions, which confirm their high level and their high value in their expression and also in their supporting idea. These are the residential objects in no way exceptional in scope in scale no way flashy.

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Slovak Retail Facilities in the Postwar Period

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Keywords: retail unit, historicist formalism, wide variety store, symbology of shapes, cubic expression, socialist realism, cubic locution, postmodern view, cooperative store, consumers cooperative, rural, market, supermarket, hypermarket.

Abstract. Retail units built in Slovakia after the war have continued in the tradition of the functionalist pre-war production, where the emphasis was placed on rational operation. Their solutions: disposition-spatial, material-construction and operational were determined by socio-economic and political conditions of a totalitarian regime. Directional management of construction has been focused on building-up sale units in central urban areas, in areas of newly-formed residential dwellings and conditions of rural settlements. Insufficient design capacities led to the creation of typified designs. Sterile cubic solutions conditioned by the building-material base of society were reflected in the austere architectural embodiment. The transformation process of the nineties significantly affected the overall retail structure. The possibility of entrepreneurship and free pricing encouraged vendors to build large numbers of different small-scale devices. Globalization tendencies with an internationalization of trade and the free movement of capital caused by the turn of the century led to the building of major shopping centers with super and hypermarkets. The building was focused initially to the remote large settlements and later to wider centers of towns. Architecture of modern suburban retail buildings is marked by utility of function, low-floor construction, and high volume mass. By typological and material-constructional solution and by austere architectural expressions we have the adjective "ephemeral".

Introduction

Commercial buildings among the public buildings are ranked among the most with utilitarian function. They are built around the world in order to achieve the greatest gain at the lowest possible cost. In Slovakia, led by the idea of utility, many traders in the first half of the 20th century built up meaningful business establishments with austere modernist expression.

This is documented, for example, by the store the Danube and the former Bat'a store in Bratislava. Business units that emerged in the post-war period were following *the pre-war functionalist tradition of design* [1], where the emphasis was on rational operation. Their architectural design was determined in the 20th century by socio-economic and political conditions of a totalitarian regime. In view of the above conditions it can be divided into:
-objects built in central urban areas,
-business establishments located in newly created residential units,
-buildings built in rural settlements.

By directing construction activities to restore war-damaged buildings and housing, commercial establishments in the post-war period relegated to the background. Commercial facilities were built only in emergency cases as part of residential buildings.

Buildings Built in Central Urban Areas

The construction of commercial buildings in central areas of cities began at the end of the 50s. Typically they were commercial facilities whose architecture was marked by *historicist formalism and efforts to adapt to the ambient constructions* [2], as in the case of store Rozvoj in Prešov.

Under the influence of foreign spectacular realizations in the 60s, construction was built in city centres on the land of demolished historical buildings, with a wide variety stores of large construction volumes without respect to adjacent objects. They were located in the focal positions, typically near intersections of main streets, or on routes "center - station of passenger transport".

Designing of the overall shape was based on contrasting mass structure, horizontals and verticals. Gradually there was *created a symbology of shapes of stores, consisting of undercutted glazed entrance floor, with smooth external walls of the upper floors, combined with glazed continuous area along the entire height of enclosing structures* [2] . Bulky cubic shapes with austere façade combined with large glass walls and flat roofs starkly contrasted with adjacent historical valuable buildings. Examples of this period are stores in Košice (architect R. Žertová), Trenčín (architect J.Melichar) in Bratislava (architect I.Matušík), as well as in other cities. This trend continued partly through to the eighties of the last century.

The initial noble simplicity and headedness of this new approach began to fade over time. Whole society and professional criticism meant that already in the seventies and even eighties, some makers had begun to implement a more *sensitive approach to the designing stores* [3] in order to make optimal integration of new constructions into the urban fabric. Among many good examples we can mention a store Jednota in Trnava (architect L.Lýsek), Dom Odievania situated in Námestie SNP in Bratislava (arch.J.Bahna), store Prior in Prešov (F.Kalesný architects and F.Minárik), or emporium Vtáčnik in Prievidza (P.Valach architects and I. Kepko).

Business Establishments in the Newly Created Housing Units

In the newly created residential areas were initially built commercial establishments as part of residential buildings located in the entrance level. Despite the negativity resulting from the philosophy of socialist realism enriched monotonous building block and in many cases, they got the city-forming character, for example *Miletičová street in Bratislava (architect K.Paluš) or at the Pavlovičovo námestie in Prešov* [2].

Extensive construction of new residential units in the second half of 50s, industrialized building production, and a creative functionalist approach allocated commercial establishments into solitary, square buildings with large-size glass walls and flat roofs. Striving for efficiency of circulation of vending units led investors (state) to the pooling of commercial establishments in focal positions estates, their assembly on a busy pedestrian moves. That is how the new typology of mall with single-storey or two-storey buildings was created. Although the concept was austere, without any deeper philosophical ideas with the absence of the formation of urban space. Because of the territorial integration of business functions, there was a richer supply of services, making it more attractive to visitors.

Shops protruded into the front of residentail buildings were adopted in a positive way, for example, *Račianska street in Bratislava (authors: Š.Svetko, V.Houdek and O.Dukát), shopping malls Lunik I, II in Košice (architects: E.Kramár and J. Šprlák)* [4]. From a series of standard examples exempts an atypical solution of shopping mall Slimák with circular floor plan located on Kukučínova street in Bratislava (architect I.Matušík) . The tendency of solo buildings, constructed under the dictates of large-scale production with cubic expression, without aesthetic esprit, persisted until the end of the eighties. These were attempts to revive them, for example, the design of Ivana Marco, whose solutions in Dolné hony or in Záhumenice in Bratislava also defied the former universe. Neither did he succeed, due to a misunderstanding of the investor, hard constraints by the supplier, the absence of other features in the restricted area, to bring these centers shape of streets or respectively squares.

Failure to create socio-generated shopping centers in the late seventies efforts to repositioning of commercial establishments into the ground floor of residential buildings with the greatest application of the construction of the largest housing estate in Central Europe "Petržalka". *Undersized sale areas* [5] in new parts of the town necessitated the construction of additional capacities mostly whole settlement importance. One of the buildings is the store Ružinov in Bratislava. Architect J. Bahna tried to apply postmodern view into the overall concept of the object.

Unconventional shape enriched solution has become a landmark between modernist and postmodernist conception of architecture. Happy transformation of basic themes of a new world´s flow to our current conditions opened the way of looking at art, especially to the younger generation, that went this new way until the beginning of the transformation to the market economy system.

Commercial Facilities in Rural Settlements

Political and economic changes after February 1948 had a strong reflection in architecture and rural retail establishments. While the city was defined for the retail sector to governments, to villages was given the task of developing retail establishments of cooperative trade through *consumers cooperative called "Jednota"* [6]. The building-up began in late 50s. To ensure the building design was created central design organization, that was responsible for delivering projects for all villages. Insufficient capacities led to the creation of typified designs and their subsequent application. Sterile cubic solutions with large glass windows, flat roof raised rural regional conflict with modern universal. Siting and constructing of stores and shopping centers in the rural environment, without analyzing the local architectural specifics, transformation of modernist shape-poor solutions with urban housing scale to the picturesque small built-up areas inflicted great cultural and historical damage to the overall architectural expression of villages. Dissatisfaction with the estate prompted, in the late 70s, some users to order atypical projects with *the requirement of respect for a particular environment* [4]. Completed objects of the mall in Spišské Podhradie (architect Bandžák), a shopping mall in Moravany nad Váhom (architects: Dobrotka, Remenár, Augustín, Kašický) or object of grocery and municipal office in Dolná Lehota (architect D.Čupka) confirmed, that creative approach may be beneficial for the village environment. Unfortunately, in Slovakia were built very few positive evaluated implementations.

Retail Establishments in the Period of Transition to a Market Economy

The transformation process of the nineties significantly affected the overall retail structure. Privatization, free pricing, the possibility of entrepreneurship, but also the decrease of purchasing power of the population have resulted in the building of small-scale boutiques, kiosks, small business establishments in the spirit of post-modernism and historicism in cities and also in villages. In addition, in the cities were becoming more and more popular marketplaces. One remarkable example is the market in Komárno, that was created in the context of the Hungarian regional architecture. The last decade of the 20th century is characterized by the absence of building large-scale commercial facilities in central urban areas. The only exception is the capital city, where foreign capital entered the central areas and reconstructed or built new commercial buildings whose shape-mass solution, facades, colorful treatise respects the urban environment, such as business center in Bratislava on Bottova street by Talašovci architects, objects City Point and City Centre on Obchodná street, Bratislava. Peripheries are witnessing the emergence of new typologies of retail, such as shops of sanitary ware (Jopa in Bratislava), furniture (Jopa Centre in Banská Bystrica, arch. Š. Moravčík), car sales, petrol stations, whose solutions are fresh, corresponding with international trends and recover our sterile environment.

The capital significantly reflects the tendency of building large shopping centers with supermarkets and hypermarkets in the boundary sites of towns in close connection to the transportation system. Architecture of retail establishments Tesco in Košice, Nitra, Ikea in Bratislava, Baumax in Bratislava, Prešov, Banská Bystrica, Carrefour in Petržalka or shopping center Soravia on Rožňavská street is marked by utility of function, austerity of architectural style, low-floor buildings, large volumes masses without proper interpretation. This architecture with its typology, material and design and its austere architectural expression has acquired the attribute *"ephemeral"* [7].

Summary

Based on international experience, it is expected that the trend of building suburban shopping centers will continue in the coming years. In their design will be *increasingly significant aspect prefer enviromental solutions architectural concept* [8]. The merits of such routing is supported by real facts-building is now the largest consumer of energy (about 40% of the total energy consumption for heating, air conditioning, lighting). The solution will be effective utilization of advanced technical technologies. These allow saving energy, produce, accumulate, absorb and recover. Photovoltaic systems and the pursuit of effective use of solar energy creates new opportunities for composite rendering of commercial buildings. New alternatives in architectural design allow time to crystallize a separate typological species with specific morphological solution that have crystallized over time separate typological species with specific morphological solution, a special status in the urban organism, with which we have become familiar.

Successful examples of commercial facilities built in recent years are a platform for optimism and a belief that new commercial buildings architectural solutions are imaginative, unrepeatable, to respond to trends in the world, while respecting the surrounding environment.

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Malacky - Character Change of a Small Town In the 2nd Half of the 20th Century

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Keywords: Malacky, building development, mass residential housing, socialism, housing estate

Abstract. The paper presents the view of the situation in a small town that started to develop dynamically in the second half of the 20th century. Until then, the town Malacky made a reservoir of labor for the near capital - Bratislava city. Social changes after the Second World War and the development of production technology had a deep impact on the city. This impact is visible up to these days. New times brought the development of industry and concentration of production, that led to new job opportunities. It attracted people of the surrounding area. This situation led to the housing crises. The way out of this situation was the construction of new urban structures and extensive housing estates of residential buildings, which inexorably replaced the original buildings. Part of the historic organism of the city was demolished and new buildings were formed directly in the city center. Rationalization and pragmatic solutions were dominating, they better met the demands and requirements of the society and material and technical production possibilities at that time. After several years there have been consequences of the situation which prioritize only selected aspects of housing. These residential complexes are the document of the way of society life in the second half of the 20th century, as well as the evidence of abilities of architects and urban planners who were created in the conditions of centrally planned construction.

Introduction

The city Malacky is located about 37 km north from the capital of Slovakia - Bratislava, on the major transport route Bratislava - Prague. Until the half of 20th century, it maintained the character of rural settlement with a predominant agricultural production. It was in the position of label reservoir of Bratislava. Malacky had 6,200 inhabitants in 1931. [1] Its industrial base at that time was formed by a production oriented priority to the processing of agricultural products from the surrounding area - distillery (Slovak Distillery Industry), artificial stone factory, factory of rattan goods, factory of sausage goods, factory for the production of technical fats (Olio), two brick factories, three mills, four saws and power station. [1]

Malacky Development and Consolidation of Its Position after World War II

After World War II, Malacky was becoming an important city, the population increased rapidly. New industry was established, there were created schools, hospital, social and cultural facilities, as well as devices for physical training and recreation. The foundation stone of pavilion hospital was put down in 1965, in 60´s there was established enterprise called Chemical Cleaning and Dyeing, and there were also established the largest enterprises in Malacky - Agrostroj (production of agricultural machinery), and the Bratislava branch of the company Kablo (production of electrical materials, power cables and wires). Consequently incurred further enterprises - machine factory, Slovlik (Slovak liqueurs) and the production company Kožatex (production and processing of leather and textiles). The construction of Western-Slovakia Furniture Factory began in the second half of the 70´s. People from Malacky have no longer to travel for a work, because they found it at home. At the same time Malacky began to provide jobs to people from far and wide. It was a reason for new influx of people to the city resulting in sharply increased demand for apartments.

The city did not provide the sufficient amount of housing units for newcomers workforce. This situation initially led to the housing crisis. The political leadership of the state was aware of the

importance of housing issue. Therefore, the provision of housing has become a priority social and political task.

Table 1. It was envisaged the increase to 15 000 inhabitants up to 1980. [2]

Year	**1945**	**1960**	**1975**
Population	8320	9650	13918
Apartments	1873	2454	4043
Residents per 1 apartment	4,44	3,93	3,44

Mass Housing Construction and Its Application in Malacky

Social changes after World War II, the dynamic development of industry and manufacturing technologies encouraged the expansion of the construction industry. It created also new possibilities for residential construction. Unification of residential buildings and prefabrication of construction elements allowed their implementation in less time. As a consequence, there were the transition from handmade constructions to structures under prefabricated technology construction from large panels. Building area was subjected to this aspect - ideal area was without major obstacles, areas of the city outskirts removed from the original rural structures. [3]

State housing policy followed up the experience of the interwar period with construction of rental apartment buildings all over Slovakia. Mainly small-sized apartments arose at that time, that already satisfied the requirements of sanitary facilities available for disadvantaged populations. Houses complied new hygiene requirements for illumination of apartments, ventilation and they were equipped with central heating, electricity and hot water. The bulk of the population did not have such living conditions until that time. Later, when the material base of construction was stabilized, it was passed to the system of prefabricated panel construction. Large-scale production of building components rose to the uniformed, at first glance identical residential houses. Although prices of prefabricated houses were higher in compare with brick houses, decisive advantage was the speed of construction - dwellings arose rapidly, thus filled the state strategy to ensure housing for all residents. Prefabricated construction technology of houses allow to increase the number of floors, which brought a new phenomenon to the image of the seat in the country.

Mass estate housing brought efficiency and pragmatic solutions to urban structure. The primary indicator will become high-speed construction and reduce the costs of housing unit.

Territorial development of Malacky was guide by the new urban plans for the development of urban structures and projects of new residential estates. State planning organization called Stavoprojekt drew up a program of centered housing construction in September 1971. Concept was to build a multi-storey apartment buildings that would fulfilled the needs of a growing population. There were developed detailed urban plans for the housing estate Malacky - Houses (636 housing units), Malacky - South (452 housing units), Malacky - Center and completing housing estate on the Street May 1st (520 housing units). Finally 1328 dwelling units were provided to use in the 70´s (458 cooperative apartments, 394 corporate apartments, 286 communal apartments and 190 units in family houses. Designed social amenities had to complement the residential function of these estates.

Urban layout of the residential buildings moved from the street character (housing estate on the Street May 1st) to open yet unusual system of houses that had lack of compactness, previously typical for urban organism. Efforts to realize the ideals of healthy living in the vegetation with the segregation of residential and production function, resulted in urban structures with free line buildings of isolated dwelling houses. Among them there was created home environment - areas with recreational vegetation.

Malacky experienced its most intensive development in the first half of the 70´s. The effort was to improve housing conditions in the city. Demands on public space has increased. There were built dust-free roads and pavements on one side of streets on main roads, street lighting, playgrounds, they planted the vegetation that complemented public spaces. New bus stops, parking areas, asphalt

pedestrian moves and upgraded roads served to people. There were built kilometers of tap, sewer and road network, gasification of the city was completed. Motorway feeder road was brought directly to the city center.

Multi-storey buildings of housing estates became the new dominant of the city and they considerably changed its appearance. The replacement of the original ground floor houses by large housing estates has become inevitable consequence of residential intensification. New construction emerged not only at the edges of the settlement, but entered directly into the city center and it influenced his identity. Old structure of the city disappeared due to reconstruction of the original, unsatisfactory buildings and new complex form was formed in the city center in accordance with current views on urban organism and environmental hygiene.

Malacky was up to 90´s part of the district Bratislava - Countryside, in 1996 it became the administrative seat of the Malacky district.

Housing Estates in Malacky

Advent of Socialist Realism, the official artistic doctrine that determine character of architecture in Slovakia in the first half of the 50´s of the 20th century, stifled the application of the principles of the Athens Charter. Ground plan layout of the residential complexes of that time approached rather to historic building complexes. Although their functional subdivision, structure of services and the high proportion of green areas still corresponded with the current international views of residential areas. [3]

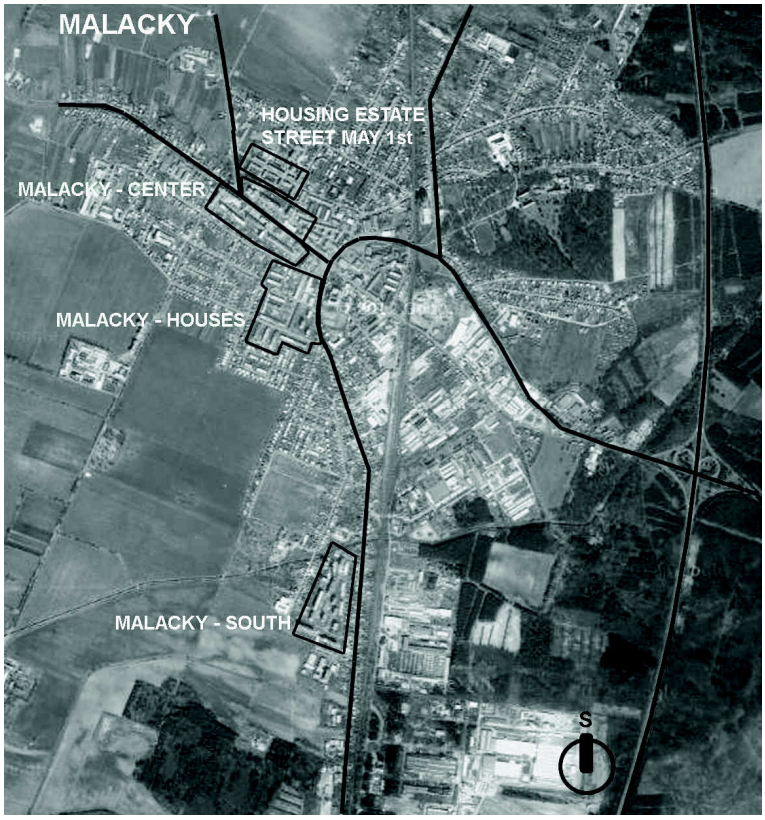


Fig. 1, Malacky and its housing estates.

Housing estate on the Street May 1st was the only housing estate in Malacky established in the tendencies of Socialist Realism. It was completed in 1956. Low, three storey, even brick residential buildings with hipped roofs are surrounded by vegetation and offer amount of semi-public spaces. They are located close to the city center. Street May 1st was formed in the fields that belonged to the houses on the Záhorácka Street. Residential buildings are arranged axially symmetrical around this street. The architectural design draws from expressive means of the previous periods. They have applied a certain effort of decoration, although in significantly reduced form. Risalits with

shield and cornices divide long facades of buildings, windows have chambranies and jambs of entry doors are framed and beveled.

Following residential construction was related to strengthen position the city Malacky as the important seat of the district, it means as the city with the perspective of population growth. Next housing estates in Malacky was formed from standardized panel-prefabricated houses.


Fig. 2 (left), Housing estate on the Street May 1st, around 1960.
Fig. 3 (right), Housing estate on the Street May 1st, in 2013.

Housing estate called Malacky - Houses. First phase of construction was completed in 1974. During the second half of the 70's the construction was finished, and also its attributable public amenities - kindergarten, nursery, shop and also surrounding landscaping and garden arrangements. Hviezdoslavova Street delimits housing estate called Malacky - Houses from the north, Ján Hollý Street from the west and Mierové Square and General Štefánik Street from the east. During the construction of housing estate Malacky - Houses it was envisaged with the sanitation of 100 existing family houses, and 66 dwelling units has to be maintained as cooperative apartments. Housing estate originated from the four-storey sectional panel-prefabricated houses. Free line grouped buildings create a number of semi-public spaces with main road routes around the perimeter of the housing estate and vegetation inside the structure.

Housing estate called Malacky - South is located between Štúrova Street and Stupavská Street, at considerable distance from the city center. During the period from 1976 to 1983 there were completed 472 apartments, kindergarten, nursery and shop. Eight-storey sectional panel-prefabricated houses with larger distances from each other create a free urban structure. Pressure on finishing flats was more intensive since the 70´s, there were efforts to greater reduction of construction costs, therefore there were not realized original plans and projects comprehensively. Implementation was restricted only to apartment buildings and road routes, others has to be completing later, which was not. This housing estate has a lack of emphasis on the environment, vegetation, recreation areas, playgrounds, public and semi-public spaces.


Fig. 4 (left), Nursery school and housing estate Malacky - South in the 70´s.
Fig. 5 (right), Nursery school and housing estate Malacky - South in 2008.

Housing estate called Malacky - Center was established along Záhorácka Street in the city center. They began with its construction subsequently after completion of housing estates Malacky-Houses and Malacky - South. Malacky - Center should solve still non-decrescent demand for apartments. In urban structure it should connect and Malacky - Houses. It should create a significant dominant location corresponding to the central part of the city. Housing estate on the Street May 1st defined it from the north, Břeclavská Road and Youth Road from the west and Hviezdoslavova Street from the south. It was necessary to respect the existing individual building plots there, with retention of plots according to the current rules from 600 to 800 square meters. [4] In the east the area was defined by the Red Army Square (now Monastic Square). Existing commercial facilities were in substandard buildings, therefore it was proposed to demolished and reconstruction of the total area made the new structure with adequate amenities.

The new housing estate was built in accordance with the master urban plan. Only a single object from the original buildings had to be maintained and protected - a cultural monument Roman Catholic church. The master urban plan specified requirements according that the western part of the residential structure should respect the church with its number of storeys and urban layout. However, new construction did not deal with the urban relationship to this object, which acts in the final solution as a solitaire isolated in vegetation.

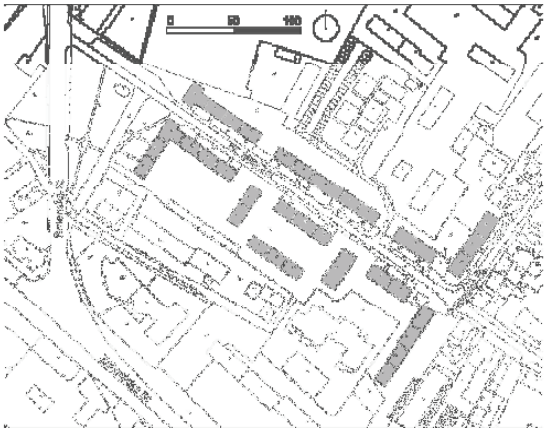
In concerned territory there was originally 89 houses, in which 139 families lived, about 550 people in total. Existing building stock in this area was specified as seedy. 63 houses were identified to be demolished, 21 houses to endowment and only 5 houses as being in good condition. The vast majority of houses (94.6 %) was seedy according to documents. For their inhabitants there were defined replacement dwellings in the estate Malacky - Houses, which have already been finalized at that time. During the construction of the housing estate Malacky - Center there were finally demolished 133 residential buildings and 25 buildings of state organization. [4] The new structure of the city did not respect the natural historical development of settlements, disappeared continuous row of family houses, structure that have been built up over the centuries.

Buildings with a maximum of six storeys and a height of 30 meters above ground level were initially designed in this territory. However, the required minimum density of 300 inhabitants per 1 ha of area forced to change the original construction program and build on this territory eight-storey section buildings in combination with twelve-storey tower buildings. 800 new housing units were created in this housing estate. [4] Following this settlement there was planned new center of citywide amenities towards to east. It responded to the central part of the seat of district importance and complied the increasing demands of society of that time. It was considered with the construction of a department store, office building, public toilets, food shop, hotel, state bank building and state savings-bank building, cultural house, cinema and commercial stores. This concept was finally not realized to the full extent.

High vegetation was planted along Záhorácka Street. It had to satisfy the insulating function and to serve the citizens for local recreation. Its composition had to complete a new residential estates and it contributed to a healthier environment. Sports facilities and playgrounds were inside the new structure. Planted low and high vegetation had even there mostly insulating character, there were also created areas of decorative flowers.

Stream Malina flowed through the territory of housing estate Malacky - Center. As part of estate construction, the stream profile was covered up to the Brnenská Road, under which a new outlet was created. Malacky originated during the Middle Ages as a stream village with a watercourse as a central compositional axis. Stream Malina divided the open space on two parallel paths forming a relatively wide semitrailer. Along these paths there were vertically sorted farmhouses, situated on narrow plots, defining individual farmyards. [5] Construction of profile that covers stream Malina also largely contributed to a change in city identity.

Fig. 6 (left), Construction of housing estate Malacky - Houses.
Fig. 7 (right), Housing estate Malacky - Center.



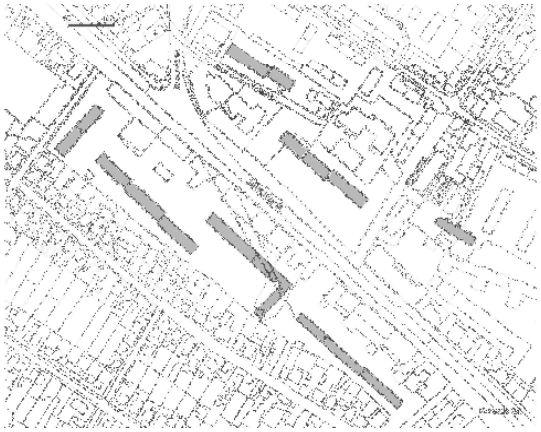


Fig. 8 (left), Housing estate on the Street May 1st.
Fig. 9 (right), Housing estate Malacky - Center.

Fig. 10 (left), Housing estate Malacky - Houses.
Fig. 11 (right), Housing estate Malacky - South.

Housing estate called Malacky - Center II. Urban area project Center II was created in 1979 and should provide 733 new residential units. In urban structure it was designed in response to the

housing estate Malacky - Center as its second phase. Designed houses were located to the north from the Roman Catholic Church, between the Záhorácka Street and Brnenská Street. Also in this area were existing houses proposed for demolition, only mill and mill race had to be maintained. Housing estates Center and Center II should create a single residential complex. There were designed sections houses with the orientation of the longitudinal axes to north - south. Millrace of the stream Malina should have on pedestrian path a part of the open watercourse. High-rise gradation has been applied in the project concept. It led from the tower of the church gradually to eight-storey to and twelve-storey residential houses. But the realization of the estate Malacky - Center II never happened and finally original family houses remained on this territory.

The Current view of Socialist Residential Construction

The end of mass residential housing in Slovakia is usually dated to 1989, when it was dismantled the socialist social system and the death of those entities that oversaw the construction of mass housing. [3]

Problems of housing estates, as we perceive them today, are mainly associated with the properties and durability of the used materials and with poor implementation work that was due to the speed of construction. With increasing time from their construction it leads to the degradation of their technical status. Revitalizing interventions in terms of reducing the energy consumption of buildings can provide them further satisfying life.

Another downside is the traffic situation, which nowadays with the huge increase of vehicles per dwelling unit, brought the lack of parking spaces and poor transport connections. Monotony of residential buildings and the lack of architectural means of expression also collects criticism. There was not created sufficient space for regional specificities, so cities became more uniform and they have gradually lost its distinctive character, that they kept for many centuries. One of the biggest impacts on the urban city identity is destruction of compact urban structure and the end of traditional street, cityscape suffered considerably.

Despite all mentioned negatives, housing estates form the basis of the city residential stock. Panel houses create the background of a large group of population and fulfill their economic demands. Today the reconstruction of prefabricated houses is gradually realized and it is revitalizing their surroundings. Residential complexes creating indispensable component of the environment in which we live, and they are an important evidence of way life of the second half of the 20th century, as well as evidence of creative skills of architects and urban planners in terms of centrally planned construction.

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Malacky - Character Change of a Small Town in the 2nd Half of the 20th Century
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Signs of a Totalitarian System in Architecture of Socialist Realism

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Keywords: Architecture, propagation, ideology, totalitarian system, socialist realism.

Abstract. The presented article deals generally with the use of architecture to the propagation of the ideas and the use of structure of space for propagation of power influences of one group at the expense of another group. The use of architecture to the propagation of ideology lies in the tendency to shape ideologically acceptable space. Space is shaped so the world should be seen in accordance to the ideology and not to the reality. Architectural styles are specific for certain communities that are separated by land, culture, and time. Morphology is associated in architecture with a certain cultural epoch.

The article focuses on the use of architecture in propaganda of one totalitarian system - socialist realism, which is typical in the Czech cultural environment in 1948 – 1958. The architecture of socialist realism should promote sociability of people. The aim was to demonstrate the power of unity of collective and nothingness of human individuality.

A few examples of basic elements and characters in the architecture of real socialism in Ostrava are mentioned in the conclusion of the article.

Introduction

We live in space that forms us and our thinking and attitudes. We regard ourselves as freely-minded individuals considering the influence of space and the "talk" of shapes that regulate our "free" thinking every day insignificant. Architecture is often seen as a very narrow field, which is dealt with only by a small group of experts, but its relation to other fields of human endeavor is enormous, as it almost always takes place within it. Architecture works with the space, which is created by infinite number of combinations according to the conditions and requirements which can not be repeated and influence not only the final work, but also the perception and thinking of men moving in this area and becomes a space that influences social interaction by transformation of the material world. The manipulation of the readability of the space, in which we move and which we consider as natural precondition for life in the human community, was the most consistently practised in the architecture of the totalitarian regimes of the 20th century. [1]

Throughout the historical development there are milestones where a part of human society comes to the realization that their evolution just came to a dead end and it is inevitable to change something in order, that the development could continue. In the past, such significant changes were e.g. the migrations of peoples, which have been known since ancient times. If the individuals and nations want to survive, they have to find and create new conditions to overcome these changes. [2] The efforts of power groups have always been, and still are, to use these newly emerging conditions of life for enhancing the influence of the 'powerful' group on another group (of the controlled). They also try to create an environment favorable to the exercise of power. Urban and architectural models in non-totalitarian power systems of the society are derived primarily from the properties of the existing space (natural or artificially created). They draw inspiration from this space and they are based on the effect of this space. The architecture is not non-ideological even in non-totalitarian regimes, but the space must be, in totalitarian systems, entirely newly created under the pressure of ideology, covered with perfection and order of the corresponding to the only correct "new truth

about the world." The immediately preceding development (e.g. the effort to exterminate the Jews, the prohibition of the religion and idealistic philosophical theories in communist states, forcible eviction of nations or their parts, elimination of the original settlements) is denied in order to change the historical context and establish a new ideology or a "new order " manifesting in creating an adequate space. [2, 3]

Space and its readability is related to the coexistence conditions at all times of structured human community. The creation of populated space as a place for the exercise of state power becomes a goal in the rational modern society of the totalitarian regimes of the 20th century, Nazism and Communism [4]. In addition in the 20th century the realization of this effort was in addition supported by rapid technical and technological development, which unusually accelerated rate of formation of the "New World". The practice of communist totalitarian ideology implemented in the state management was (and has been), unlike the practice of the Nazi totalitarian ideology, limited in time (1933 -1945) and space (the territory controlled by Germany during the World War 2), much more widespread in time and space. Large residential residences covering considerable territories could be created on the basis of ideology, when pervasive propaganda became a tool to control, which does not allow a discussion or a rejection in contrast to persuasion. Any urban and architectural intervention in the environment entailed the ideological and propaganda meanings, which move the mind of the controlled men towards the "new worlds" which were being created. Planning as well as individual buildings have become a symbol and instrument of power. Monuments, squares, buildings of public facilities and residential buildings, as well as transportation construction or factory complexes had to confirm the individuals every day, that the new truth is already a reality [4]. It was (and still has been) not possible to avoid the view of them and therefore also their influence.

The architectural period of Sorela (the Czech term for the socialist realism derived from the first syllables of the words socialist realism and architect Zdeněk Lakomý´s surname) is the architecture of the Central European area after 1948, which was the result of the communication of the state using buildings. The architecture should express a strong state power, its key function was political, moral and aesthetic education shaping revolutionary consciousness of man and it was completely subordinated to the vision of "higher whole." One of the most important realizations of Sorela are satellite towns around the center of Ostrava built on the basis of gigantic urban design of the new socialist cities of Havířov and of New Ostrava (Poruba), although neither of these projects have been implemented in the final design.

The following features can be considered the basic politico-ideological features of the architecture of the socialist realism:

- Consistent regularity of composition of urban plan which should have evoked the order
- Difficult understanding of the space
- Monumental form that refers to the smallness of the individual
- The use of historical elements to confirm the continuity of development
- Clearly ideological painting and statuary decoration
- Emphasis on ideological correctness of architecture at the expense of its quality [5].

Regularity of the Composition of the Urban Plan. It was based on the theoretical idea and vision of "ideal" cities of ancient times and Renaissance and designs of industrial-garden concepts of the city of the classicism, but with a strong emphasis on symmetry, regularity (regular systems of streets and closed residential blocks) towards monotony, which should eliminate the randomness and unpredictable variables. The traditional urbanism of blocks and squares with the dominant features in the axes and openings is implemented in maximal scale.

Fig. 1. Ostrava - Poruba [6]

Difficult Understanding of the Space. It was reflected in the lack of natural density of population of the settlements - anonymous places, large, regular and clearly arranged (controllable) free squares without intimate nooks practically eliminating friendly spontaneous meetings, except those which are intended to deliberately organized gathering to demonstrate loyalty to the power [3] (e.g. Main Street, former Lenin Street in Ostrava Poruba, Republic Square, former the Square of Victorious February in Havířov).

Fig. 2. Havířov – square and open space, the monument of V. I. Lenin was the dominant feature up to1990 [7]

The Monumental Form. It preferred to the economic aspect was based on admiration for height (the original inspiration by American skyscrapers) and the pursuit of monumentality and shocking monstrosity. The purpose of the monumental concept was to highlight the contrast between the insignificance of the individual and the power of the masses walking forward under the firm leadership of the power towards the utopia of communism. It should have confirmed the power of political establishment and strengthening the faith in the future. Arising structures copied monumental Soviet palaces. Many political monuments remained unfulfilled and many grand plans became their own caricatures for the lack of money and poor implementation.

Fig. 3. Square U Oblouku, Ostrava – a copy of the headquarters of the Winter Palace in St. Petersburg, its ground plan has the shape of a sickle [8]

Historical Elements. Historical elements of parapet with axial gradation of stepped gables, gradation of the middle sections of objects, classicist style of colonnade, high pilaster orders, corner buttresses finished by spires, reliefs, bossages and friezes on facades were based on the ideas of the

Renaissance and Classicism. The aim was to evoke a sense of continuity and inevitability of the anticipated development. Connection with some historical periods of architectural design and their incorporation into the current architecture was a prerequisite for the presentation of socialist realism as the only bridge to the future. Feudal Gothic or Catholic Baroque was unacceptable for ideological reasons, and on the contrary Classicism and Renaissance were acceptable.

Clearly Ideological Painting and Statuary Decoration. It was a combination of the constructive and patriotic themes (lime leaves) and is consistently applied in the decorative elements of the facades and the additional structures. The color scheme should have given the seeming of use of noble natural materials – natural stone with a light shade of sand and ocher color in combination with red terracotta and ecru off-white. Distinguishing characteristics of the stone, hardness, durability, constancy and almost infinite life-span, should have proclaimed the same characteristics as the ideology proclaimed.

Fig. 4. Constructive motives of relief – Ostrava- Poruba [9]

The possibility to influence human thinking and behavior by transformation of the space is the force of architectural design and its natural artistic component. The architecture of the period of socialist realism can not be assessed without considering the historical context of its creation. And it is not possible to ignore the totalitarian patterns of its influence which were the purpose of its creation. Sorela was artificially implanted by brutal political force into the Czech milieu in the very limited time frame of a few years. Vast areas that have been effecting and will be effecting social relationships and perception of their inhabitants even over several generations, have been newly created in the ideology with unprecedented ideological mobilization of human and material resources.

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Museum of Contemporary Art by Artists

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Keywords: Museum, Art, Museum Concept by Artists, Museum Design.

Abstract: Museum is type of building which among architectural work occupies a special place by its distinct function of documenting existence and progress of humankind, society and their environment. This is reflected in the outstanding architecture of these buildings. 95% of museum buildings arose after World War II. This authorizes us to talk about the museum as a "20th century phenomenon" especially of the second half of it. The unprecedented growth of museums after World War II – most of them are museums of art, especially contemporary art – entitles a question which is often discussed: What is an ideal museum like as an object serving for exhibiting art and what does an ideal exhibition space for contemporary art look like? This question had only been discussed among architects and museologists for a long time. According to the nature of contemporary art and because of the fact that alongside these two determinants the exhibiting artists who actively influence exhibition space and form the final spirit of the exhibition became an important element in creation of the museum; the question what is the artists' vision of the ideal museum is poignant. Answer to that question can be given by concepts of the ideal museum of contemporary art from the end of the 20th century created by artists. The "Bilderbude" concept by Georg Baselitz, two projects "Ideal Museum" by Gottfried Honegger, "A Place Apart" by Marcia Hafif and also concepts of museums or opinions on a museum of contemporary art by other artists provide an idea of how the artists deal with and look on this problematic. The issue of museum of contemporary art perceived by the optics of artists definitely represents an interesting example of connecting functionality demanded by the artists, significant author's approach and philosophical ideas concerning the ideal museum of contemporary art.

Museum Concepts – Thinking about Museum

Museum concepts[1] from the beginning of existence of museum buildings (in some cases even before considering a museum an individual specialized object or an institution) provide us the notice about the main themes which the actors of this problematic were dealing with at that time. While at the beginning in the museum concepts we can trace the effort to define an individual type of a museum building, an ideal museum; then we can see searching for a form which would be adequate to the building expression. Later especially in the 20th century until nowadays there have been solved more specific problems concerning the growth of the museum collections, expanding the functional structure of the museum, shape and form of the exhibition space etc. The museum topic such important personalities as for example Étienne-Louis Boullée, Le Corbusier or Ludwig Mies van der Rohe brought their contribution. The 20th century especially the 2nd half of it, if we do not only consider the narrow present scope, brought an unseen growth of museum architecture. 95% of museums arose after the World War II. [1] A great part of museums which were built in this period are museums of art, often presenting modern or contemporary art. This fact - emerging of such an amount of museums of contemporary art together with the changed form of visual art in the 20th century – the importance of depicting and documenting function of art, which until then visual

[1] We do not have on our minds individual concepts of each museum which are a part of every object, but above all not realised philosophical or visionary concepts or realised museum buildings which brought conceptual thoughts that strong that they foretold and influenced the development of museum architecture for a long time ahead.

art besides the aesthetical function was satisfying started to decrease, the artist were engaged in new themes, they experimented with new methods etc. – brings increasing effort of the artists to influence the final form of the exhibition spaces in the means of their specific demands and also to influence the form of the general form of the museum building. The artists more and more actively participate at creating the museum, they influence the form of the exhibition space and the exhibition itself – unlike in the past, when the museologist, curator was creating the exhibition by choosing from the collection, which he had at disposal and the exhibition was formed by them relatively independently from the artists – authors of the exhibits. The first artistic experiments, which balance on the edge of visual art and museum, have been occurring since the 20-ties of the 20th century – let's mention for example El Lissitzky (Proun room, 1923), Kurt Schwitters (Merbau, 1923-37) or Marcel Duchamp (Boîte-en-valise, 1935-41), and they persist until nowadays. In the 70-ties Brian O`Doherty analyses from the point of view of an art theoretician but also an active artist the key exhibition space of the 2nd half of the 20th century, which he characteristically identifies as White Cube. Donald Judd – artist and at the same time a hostile critic of contemporary museum architecture (70-ties-80-ties) formulated his uncompromising point of view to the museum architecture as follows: "Forms' for their own sake, despite function, are ridiculous. One reason art museums are so popular with architects and so bizarre, is that they must think there is no function, the clients too, since to them art is meaningless. Museums have become an exaggerated, distorted and idle expression for their architects, most of whom are incapable of expression." In another text he posed the question: "Why are artists and sculptors not asked how to construct this type of building?" [2] As we can see the artists' opinion who seem to stay unheard in the museum and their needs stay unnoticed has full legitimacy and is very interesting for the problematic of museum and exhibition space. Beginning in the 70-ties of the 20th century these opinions are given more and more precise contours. While O'Doherty only comes with a theoretical essay on exhibition space (1976), D. Judd already presents his own idea of a museum even realised through the Marfa complex in Texas (1979/1986). Let's mention some other artists who form their ideas of an ideal museum in form of unrealised concepts. Some authors name their proposals after a bearing idea of their concept; others call them directly ideal, in the same way as it was in the beginning of the history of museum.

Contemporary Art Museum Concepts by Artists

Georg Baselitz: Bilderbude.

In the year 1977 *Georg Baselitz* presents his concept *Bilderbude*, which represents an architectural design of a museum. The object which was not realised was formerly designed as a temporary pavilion accommodating the paintings of four painters[2] for the *documenta 6* (1977) event. G Baselitz explains the concept at his lecture within Dortmunder Architekturtage, 1979. Starting with the motto: "Four walls and light from above or else, no painting on the wall" [3] the author presents himself as an active artist and from this position in the introduction develops ideas on the nature of a painter's work and autonomous nature of his creation which can exist on its own and needs not be viewed on any wall (hanging on the wall the painting according to Baselitz becomes a political instrument). Baselitz builds ideas on a museum – its only function is to create a protectory for a work of art and art viewing while no way should the museum influence by the context of perception the quality of the exhibits; it must enable viewing art in a simple, complete, unhindered and unpretentious way. He contemplates about perceiving museum by society – he criticizes its incompetency and nourishing the wrong opinions. Society doesn't understand the function and nature of museum and tries to turn it into a temple which according to Baselitz is outlived. He also criticizes the wide functional structure, so common presently which trivializes the museum. In these intentions he creates his concept which he himself characterizes: "Art contains no information, at least not more now than ever before; it is there to be looked at, not used in any other

[2] Bilderbude was planned for an exhibition of painters A.R. Penck, Jörg Immendorf, Markus Lüpertz and Per Kirkeby.

way. For this, space, walls and light are required. The best light comes from above, the best room for this purpose has closed high walls, few doors, no side windows, light from above, no partitions, no baseboards, no base mouldings, no panelling, no shiny floors, and finally, no colour, either." [4] The simple minimalist form of Baselitz's concept consisting of four identical rooms for four artists without any hierarchy isn't surprising. Walls of exhibition spaces are high. Communications are minimalized and drawn out of the spaces – in plan view they form a cross defining particular exhibition rooms, entrances to the museum are on the corridor endings on the facade, entrances to the exhibition rooms are in the room corners at the inner corridor crossing. Lighting comes from above by the means of a pyramid-shaped skylight. The museum object volume is shaped into an elementary cubic form.

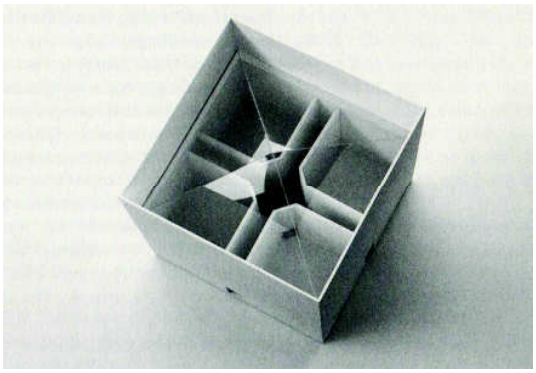

Fig.1 Georg Baselitz: Adler im Fenster (1982), Photo by Chris Ilsley [5]
Fig.2 Georg Baselit: Bilderbude (1978), Photo by Kunsthaus Bregenz [6]

The Museum as Imagined by the Artists. Espace de l`art concrete in Mouans-Sartous also addressed the question what should the museum look like according to the artists, when in 1997 mounting the exhibition entitled "The Museum as Imagined by the artists (Le Musée imaginé par les artistes)". They invited artists to provide statements, ideas and visions for museums and exhibition spaces and to design a Space for Art from their specific reference point as an artist. Based on the Museum for a Small Town by Ludwig Mies van der Rohe (1942) modestly-sized museum for concrete art rather than draw up detailed plans the artists were asked to come up with ideas and develop visions and utopias.

Christoph Haerle: Ideal Project.

Within the event *Christoph Haerle* came with his *Ideal Project* with a rather particular design elaborated in form of five models on a scale of 1:200 analysing individual spaces and a general concrete model on a scale of 1:50 corresponding with authors' work.

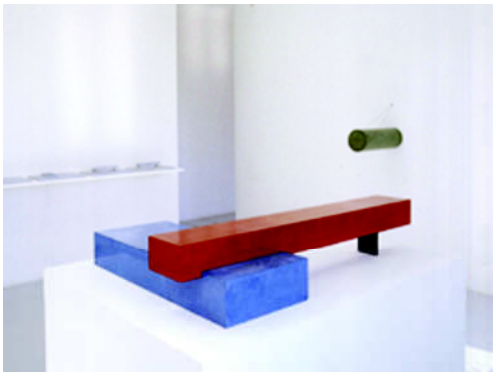

Fig.3 Christoph Haerle: Espace d`Art Contemporain, Demigny (1996)
Photo: www.haerlehubacher.ch [7]
Fig.4 Christoph Haerle: Ideal Project (1997),
Photo: www.haerlehubacher.ch [8]

The volume configuration enables using lighting from above in the exhibition spaces in both of them, Haerle considers external wall perforations serving besides the lateral lighting especially to provide views into the outer room though; light entering purely from above would according to Haerle tend to be too sacred, inner space should have contact with the exterior. Interior space should be simple and white; the main body of the building should comply with the character intended in the model: monolithic, poured volumes made of dyed and sealed concrete that possesses the ability to react to light. According to Haerle museum "is a part and an expression of a conservative aspect of a society in a sense of "conservare", to preserve, to keep. In this way it represents something, the museum represents a society that is interested in time not just evaporating." [9]

Gottfried Honegger: Ideal Museum. *Gottfried Honegger* suggested two solutions for the *Ideal Museum* which can be seen as two variations of one concept. Varying of motives is a principle the artist also applies in his artistic work. In both cases the main body is divided into two main volumes, these are arranged above each other with a shift or rotation – in the first variation we see squares aligned with parallel orientation shifted along one of the axis in basic plane, in the second variation Honegger creates rectangles rotated at 45°. The volume offset and their relative shift in both cases creates a terrace designed as a garden with sculptures. The upper volumes use lighting from above through skylights positioned along external walls and in the centre – in case of the square plan there is a central square-shaped skylight, in case of the rectangular plan the skylight is also rectangle shaped with the same orientation as the volume. The upper volumes have fix space partitions in accordance to skylights location – in case of the square the rooms are arranged in a spiral aiming to the centre accentuated by the central skylight, in case of the rectangle the exhibition spaces and niches are lined up along the longitudinal axis. In both cases the author identifies the inner structure in the upper volume located museum space and rooms arrangement conservatively – as classical or traditional museum (in a modern building of course). The author thinks of the design as an object located in centre of a town creating "a kind of heart that beats for culture". [10] It is supposed to be a "meeting place" of which the author contemplates on two levels. The ideas start in a public space of a piazza in front of the museum, which should serve to culture and create "a lively urban environment" [10] – this is the first level of the space for human encounters. The second level of the meeting place is located inside the museum object – on a terrace created on the edge of volumes. Here a quiet and calm place to sit down, to discuss and to look at sculptures occurs. The object is not only a museum, it is a cultural centre – besides the museum it contains a library, a video-tape library, a cinema, a conference room, a book shop and a newspaper stand. Architecture should be anonymous, which means "without decoration and without any correcting interference". [10] This museum is not supposed to be a subject to fashion or any other personal influence. Architecture must stand out from the commonplace, it must be a kind of a symbol, a signal in the urban environment, yet it should have a plain and simple character. „My museum would no longer be a museum, but a place to learn how to see, to confront our history, to look, and to change up our souls." [10]

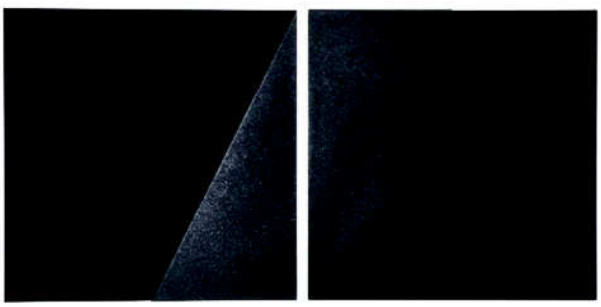

Fig.5 Gottfried Honegger: Tableau-Relief R 1237 (1997),
Photo by Florent Darrault [11]

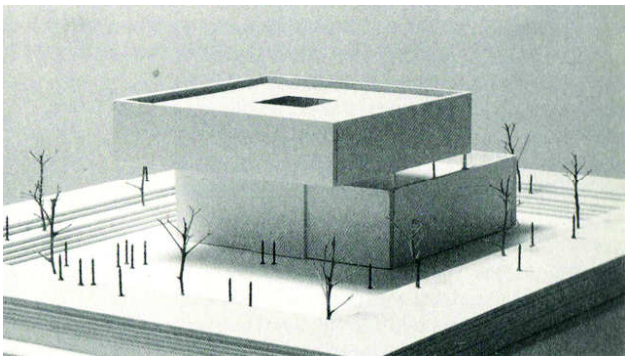
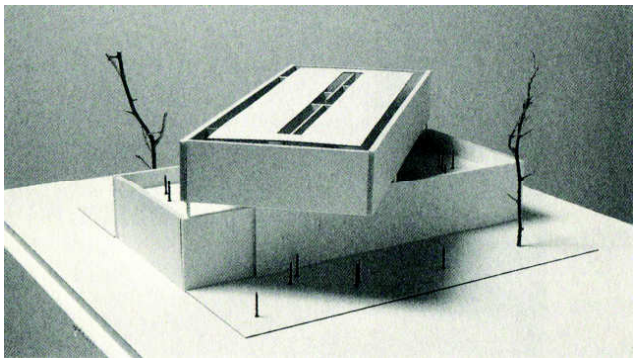

Fig.6 Gottfried Honegger: Ideal Museum, Alternative 1 (1997), Photo by Kunsthaus Bregenz [10]
Fig.7 Gottfried Honegger: Ideal Museum, Alternative 2 (1997), Photo by Kunsthaus Bregenz [12]

Marcia Hafif: A Place Apart. *Marcia Hafif* named her project *A Place Apart.* The main idea of the concept is a contemplative effect of solitude and isolation. It is proved by situating the project – after the author's words – in "a quiet place, far away from everyday life" [13], "an isolated place, perhaps within a forest". [14] The concept comes up also with another – inner form of separation, the author doesn't speak about isolation directly but it is an integral part of the design – the museum has a form of area created by five distinct, autonomous pavilions. The pavilions have basic forms of a cube, a cuboid, a cylinder or a truncated cone accessed by stairs or ramps. The object should be made of yellow or pink limestone. The structure implies an impression of an antique area. Pavilions are different in shapes of their inner spaces depending on the volume shape, the inner space is not an exact reflection of the pavilion shape though (the oval forms have straight walls inside). The inner structure of the pavilions also varies – in some cases there are monospaces, in other cases we see structured spaces creating diverse exhibition possibilities. The interiors should have different lighting levels achieved solely by the upper light through flat glass skylights with possibility of regulation by retractable canvas shades. The pavilion walls are not perforated by window openings – the walls are solid, with white plaster. Floors are terra cotta. The place should according to Hafif serve for exhibiting, perceiving, and contemplating Concrete, Constructive or Radical painting or sculpture. "The place has only this purpose – no more". [15] This is supported by the museum only being a museum, nothing more – no additional café, bookstore or other functions, not even a parking place. To sustain the contemplative character and undisturbed atmosphere the museum should even be guide free.


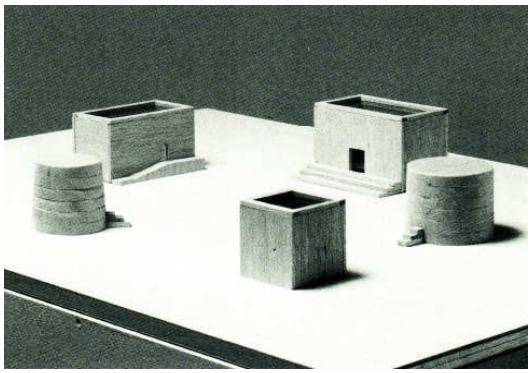

Fig.8 Marcia Hafif: Pale Painting: Blues (2009), Photo: www.marciahafif.com [16]
Fig.9 Marcia Hafif: A Place Apart (1997), Photo by Kunsthaus Bregenz [13]

Bernar Venet: Position of Four Right Angles. The *Bernar Venet* design called *Position of Four Right Angles (Position de quatre angles droits)* is an architectural expression of his same named wall installation from 1979, extended to his concept of an ideal museum. Playful and free structure of volumes creates a dynamic dialogue and various spatial situations of diversely formed courtyards – some of them open, some of them covered – which can be used for multiple purposes. The exterior ones as for example a garden with sculptures, the interior ones can be an extension of

interior simply shaped spaces. In the interior the exhibition rooms are of various shapes and sizes – rectangular or central, squared shape with perforations of the exterior walls by window openings, doors and diagonally shaped perforations. Additional openings by skylights along exterior walls enable upper lighting of exhibits placed along the walls. This kind of structure enables "classical museum situation". The colour scheme of the interior and exterior is white with accent to the light and shadow interplay of the concave and convex surfaces. This makes perceiving architecture easier and emphasizes the details of a simple concept. Venet's interest is to give architecture a subordinate role to the art and thereby have architecture serve art solely as an "exhibition wall". It is Venet's critique of "crazy excesses of many architects, who spend more time thinking about future generations than about having their work serve the artist". [17] Though this idea isn't a completed project, the concept brought by Venet in case of growing future demands allows the ideas about potential expansions of the museum by adding one or more square modules. Multiplication is namely one of the motives resonating through Venet's work.

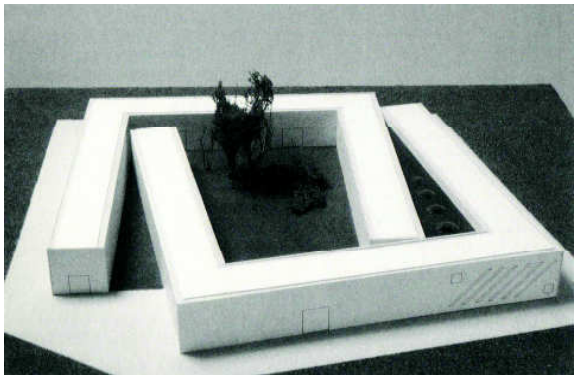

Fig.10 Bernar Venet: 219.5° Arc × 28 (2011), Photo by Groume [18]
Fig.11 Bernar Venet: Position de quatre angles droits (1997), Photo by Kunsthaus Bregenz [17]

Daniel Buren: Project for a Museum of Contemporary Art or "As you make your bed, so you must lie on it". *Daniel Buren* brought a solution - *Project for a Museum of Contemporary Art* or *"As you make your bed, so you must lie on it"*. [19] The concept doesn't represent an actual design as we could see in more or less detailed form in previous cases, it is more a vision, it outlines a modus operandi of how an ideal museum of contemporary art should be created. It is a long-term plan for 10 or even more years involving intelligent people absolutely convinced of the project. After choosing a plot of land large enough and in good location it is necessary to address chosen artists, the maximum number is limited by Buren to 36. These will design objects meeting set regulations - maximum ground surface (200 m^2), maximum height (9-10 m) embodying 1-3 floors etc. The minimal dimensions are not limited.

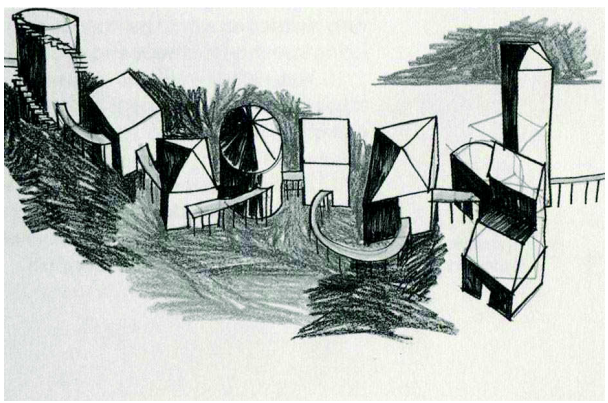

Fig.12 Daniel Buren: Installation at Monumenta, Paris (2012), Photo by Jeanette [20]
Fig.13 Daniel Buren: Project for a Museum of Contemporary Art (1997), Photo by Kunsthaus Bregenz [21]

The museum manager will provide technical aspects of the project; the strict demand for the artists is to create designs which are able to be built. Each object will correspond to artist's work and they can be ordered for example in a form of a spiral with the starting point in the centre of the plot and entwining to the its verge. Buren says the museum won't serve for temporary, short-term exhibitions. It should be a permanent installation with a relationship to particular artists who embodied the museum. He warns of one more thing: "And, finally, the invited artists may not call in architects to plan their room, apart from technical support." [22] This opinion clearly reflects some artists' view to architects and museum buildings created by them.

François Morellet: Museum of Concrete Art. *François Morellet* despite his indisputable qualities as a minimalist, light art and three-dimensional installation artist doesn't feel to be authorized to design an architectural concept of a museum. He develops theoretical ideas on a museum; he starts with the title and his own experience. He considers the term "museum" too serious or even boring "despite all the joy, despite all the discoveries that I have been lucky to have made in very many museums". [23] Entitling the museum as a "room" ("espace") as used in case of Espace de l`art concrete in Mouans-Sartous is according to Morrelet more suitable or at least less archaic. Morrelet doesn't consider Greek temples or cathedrals – as the museums of 19th century seem to him, to be suitable for a concretists exhibition nor does he approve 20th century museum architecture where the art falls into oblivion, lands up subordinate or its presentation is prevented by slanted or bent or otherwise deformed rooms, walls made of unplastered concrete, marble or glass or instead of walls hanging panels etc. He rediscovers a "commonplace" architecture for a museum – rooms that he describes as flats or artists' ateliers, spaces "with pure white walls that reach from the floor to the ceiling, without base mouldings, and in which nails can be put". [23] According to Morrelet, his works which were created in "commonplace" rooms, really feel comfortable in such "commonplace" architecture. The artist closes his ideas by thoughts of two elementary functions of a museum of contemporary art: "The first function of a museum of contemporary art is to convey joy. Especially and above all the joy of discovering new works, new movements, new culture etc…" and further he continues – "The second function of a museum naturally continues to be that you can seek out masterpieces there again (until you're sick of them), which you have already discovered". [24] Morrelet closes this discourse and comes back to the beginning: "It is very clear that, as a visitor, I also prefer museums which have a discrete or even commonplace architecture" [24] and adds up an illustrative picture having a character of a protest.

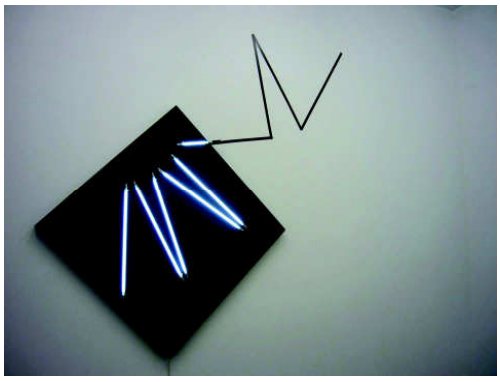

Fig.14 François Morellet:
Négatif n°8 (d'après π Strip-teasing 1=10° sur la pointe) (2005),
Photo by Natalie Hegert [25]
Fig.15 François Morellet: Musée d`art concret (1997),
Photo by Kunsthaus Bregenz [24]

Similarities and Dissimilarities

What is the artists' opinion on the museum of contemporary art then? What do the concepts have in common and what on the other hand different? Ideas on an ideal form of a museum differ. Many

aspects are perceived differently by different authors – from the extreme points of view for some locating the museum in an isolation to achieve a contemplative character and uninterrupted art viewing is important (Hafif), others on the other side of the spectrum see the museum as a cultural centre which is a part of a lively urban environment and creates a heart beating for culture (Honegger). The opinion on contemplativeness, undisturbed exhibits viewing and traditional museum standstill is also connected with some artists' view on functional structure – while some consider the museum a basis for many other functions and talk about a cultural centre (Honegger), others see the museum as the only possible and admittable function (Hafif), or even consider adding other functions trivialising the museum topic (Baselitz). Besides exhibits viewing in some cases the related element of discovering and educational importance of the museum is accentuated (Honegger, Morrelet). Some artists create a museum in form of a plain solitary single volume divided in the interior though (Baselitz), others' designs form more structured volumes (Haerle, Honegger, Venet), the most extreme have the form of pavilions – interconnected (Buren) or radically isolated in form of basic shapes organised into an ancient-like complex (Hafif). Despite the structure of the complex as well as the used material (limestone) reminding of antique, the form of the particular objects is contemporary with only few historical reminiscences. Though refusing museums as temples – the temple principle in spirit of a historical object is refused (especially Baselitz, Morrelet), sacrality is more or less present in each case – in physical form by the volumes structure and used materials (Hafif) or only spiritually, internally in the contemplativeness, viewing and discovering inside the museum (Hafif, Baselitz, Morrelet, Honegger).

By all the artists the theme of giving priority to art and admitting absolute dominance of the exhibits persists – museums serves the art not the other way round. This motive mostly resonates in the interior and in the environment that the artists create for the exhibits – here a rare accordance was found: solid white walls (in some cases with views to the exterior though) and preferring the ideal lighting from above. Despite accentuating the higher importance of the exhibits than of the architecture of a museum and also the fact that in case of architects the artists strictly refuse strong authors' concepts with expressive results, they do not avoid same approach when designing themselves (and it is good so). In case of the artists coming up with an author's concept in form of an object (Buren) we can question the legitimacy of this kind of approach by the artist as the author of architecture. The strong effect is present especially thanks to the concretist nature of work based on elementary geometrical principles of the majority of them. The concepts which have the form of an architectural design are architectonically very cultivated.

As designs on the verge of reducing architectural elements to an inevitable minimum we can classify Macia Hafif's design, which in a large extent relates to the nature of her art work; but surprisingly also the design of Georg Baselitz, who doesn't belong to the concretists group and is classified according to the critics' opinion as neoexpressionist or postmodernist. He brings up the minimalism not corresponding with his art work as a manifest and this makes his contribution even more interesting. Within the architectural minimalism Baselitz too doesn't deny being an artist and applies art quotation on an architectural element – both sides of the entrance doors to the exhibition rooms are for him canvases for paintings and therefor he covers them with his artwork.

We will not find a universal consistent approach to the museum theme among the artists as we won't find it among the architects. In the artists' ideas on an ideal museum of contemporary art as well as the whole museum problematic through we can sense great plurality. It is this plurality that the most precisely characterizes the museum theme since its beginning and especially in its present times.

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The Influence of Colour Solution of the ETICS Surface on its Thermal Exposition

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Keywords: Colour shades of ETICS façade surface, absorption of light, HBW coefficient, TSR coefficient, surface temperature, dynamics of surface temperature changes, risk of ETICS damage.

Abstract. The colour solution of the surface of the façade is one of the basic factors for reaching the requested aesthetic and architectonic expression of the building. This target is sometimes reached by using very saturated tones of colours or changing dark and light tones on one façade. Such solution is often risky as one of the characteristics of dark colour tones is high absorption of solar and scattered radiation. Its thermal compound causes warming of the outer layers of the façade proportionally to the surface colour saturation. This consequence is very serious especially for thin-layer plaster of external thermal insulation composite systems (ETICS) immediately exposed to dynamic effect of external environment temperature changes, which can be even increased by inappropriate colour solution of the ETICS surface. This paper focuses on evaluation of the influence of ETICS surface colouring on the thermal load.

Introduction

So far the influence of the saturation of the façade surface colour on absorption of solar radiation has been mostly expressed by HBW coefficient (Hellbezugswert – coefficient of light radiation reflectance). This parameter is not completely objective, because in the spectral range of the light radiation only certain part of the thermal radiation is distributed to the surroundings. Light (visible) radiation corresponding with the spectral sensitivity of human eye can be found within the wavelength ranging from 0.38 to 0.78 μm. Infrared (thermal) radiation lies in the adjacent interval of the electromagnetic spectrum in the wavelength ranging from 0.78 to 1000 μm. Although based on Wien's Displacement Law the visible radiation corresponding with the temperature of the Sun (circa 6000 K) is the carrier of a significant part of the thermal energy incident on the Earth that makes only circa 40 % of the total thermal radiation radiated in the whole spectrum of the solar radiation. Therefore the parameter TSR (Total Solar Reflectance) has been introduced [1]. This parameter takes into account the total thermal output generated on all wavelengths of the solar source radiation.

The human eye is able to distinguish lighter and darker tones of the colours based on the ability of these colours to absorb the visible radiation. Darker tones (more saturated colours) absorb more light (and reflect less of it) while it is vice versa with the lighter tones. The tones perceivable by the human eye as darker show at the same time also higher ability to absorb the thermal radiation, therefore they get warmer in the sunshine. The ability of the body surface to absorb or reflect the radiation does not directly depend on the colour tone but on its saturation, glossiness, and surface structure. That is why the absorption of thermal solar radiation is better expressed by the coefficient TSR than HBW. The problem is that there is no direct dependency between TSR and HBW, the value of HBW might be higher or lower than TSR. Depending on the composition of the surface layer and colour tone, it is possible that even several different values of HBW can correspond with one TSR value and vice versa.

The coefficient HBW, which has been used in the construction practice so far is a percentage formulation of the share of reflected component of light radiation on the total visible radiation incident on surface of the sunlit façade. Mathematically it is possible to express it by Eq. 1:

$$HBW = \rho \,.\, 100\ (\%) \tag{1}$$

while reflectivity ρ is for non-translucent solid objects an addition of the emissivity to value 1 – see Eq. 2.

$$\rho + \varepsilon + \tau = 1\ (-) \tag{2}$$

where 1 …… 100 % of visible radiation incident on the surface of the object;
ρ …… proportion of radiation reflected from the object surface (surface reflectance = reflectivity);
ε …… proportion of radiation absorbed by the object (surface absorption = emissivity);
τ …… proportion of radiation penetrating the object (permeability of the object = transmissivity); most of the solid objects show τ = 0.

Evaluation of the Dependency of ETICS Surface Warming on Coefficient HBW

The suppliers of certified contact insulation systems ETICS usually recommend using colour tones of the thin-layer plaster with HBW value = 25 or higher. However the use of tones with value HBW less than 20 is not so uncommon. It is possible to deduce from the Eq. 1 and 2 that the surface of the peripheral wall plaster with colour tone of HBW = 25 reflects 25 % of the incident light radiation back to the surroundings and absorbs 75 % of it. Lower value of HBW on the other hand means the higher percentage of absorbed light radiation which thermal compound therefore more warms the sunlit surface. It is the same in the case of TSR values, which have been gradually introduced into the practice. Besides other negative consequences warming of ETICS constructions causes increase of dilatation and mechanical stress mainly on the surface layers of the insulation systems and further in combination with other influences it increases the risk of their damage.

In last years there was a research of the influence of coefficient HBW on surface temperatures of sunlit ETICS surfaces. The experiment was performed using chosen samples provided by the company Baumit Ltd. in series Granopor and ArtLine. For the basis they used boards of façade EPS with thickness 100 mm on which they applied formation of reinforced armour layer and thin-layer plaster with fraction 1.5 mm in 24 colour tones. The coefficient HBW of the used samples had values between 11 to 87; the values of coefficients TSR were not stated. Arrangement of the samples ETICS into the test matrix is shown in the Fig. 1; the characteristics of the thin-layer plaster of the samples are in Table 1. The testing matrix was placed on unshielded vertical south-west façade.

Table 1. Characteristics of thin-layer façade of the tested samples acc. Fig. 1.

Granopor Top Style 3271 – K 1,5 **HBW 14**	Granopor Top Paradise 3363 – K 1,5 **HBW 45**	Granopor Top Touch 3163 – K 1,5 **HBW 25**	Granopor Top History 3121 – K 1,5 **HBW 16**	Granopor Top Smart 3301 – K 1,5 **HBW 21**	Granopor Top Family 3111 – K 1,5 **HBW 20**	Granopor Top Aqua 3201 – K 1,5 **HBW 24**	Granopor Top Ocean 3221 – K 1,5 **HBW 30**
ArtLine Top Orange 7 – K 1,5 **HBW 25**	ArtLine Top Blue 7 – K 1,5 **HBW 13**	Granopor Top Home 3073 – K 1,5 **HBW 38**	Granopor Top Life 3337 – K 1,5 **HBW 77**	Granopor Top Basic 3393 – K 1,5 **HBW 11**	Granopor Top Princess 3009 – K 1,5 **HBW 87**	ArtLine Top Blue 1 – K 1,5 **HBW 15**	ArtLine Top Red 5 – K 1,5 **HBW 12**
Granopor Top Ice 3191 – K 1,5 **HBW 28**	Granopor Top Free 3181 – K 1,5 **HBW 29**	Granopor Top Flirt 3151 – K 1,5 **HBW 17**	Granopor Top History 3123 – K 1,5 **HBW 26**	Granopor Top Harmony 3097 – K 1,5 **HBW 65**	Granopor Top Tradition 3101 – K 1,5 **HBW 22**	Granopor Top Sacret 3135 – K 1,5 **HBW 56**	Granopor Top Home 3071 – K 1,5 **HBW 27**

Fig. 1. Arrangement of tested samples ETICS into the testing patterns.

Some of the assorted tones of the samples of test matrix were fitted with sensors for contact measuring of surface temperature and sensors for measuring the temperature and humidity of the surroundings environment in distance 100 mm of the ETICS surface. All sensors were attached to a logger, which had been saving the measured data in 10 minutes intervals for longer period of time. The whole test formation of the samples was at the same time recorded by thermocamera with data saving interval 20 minutes. An example of the surface temperatures arrangement is shown in Fig. 2.

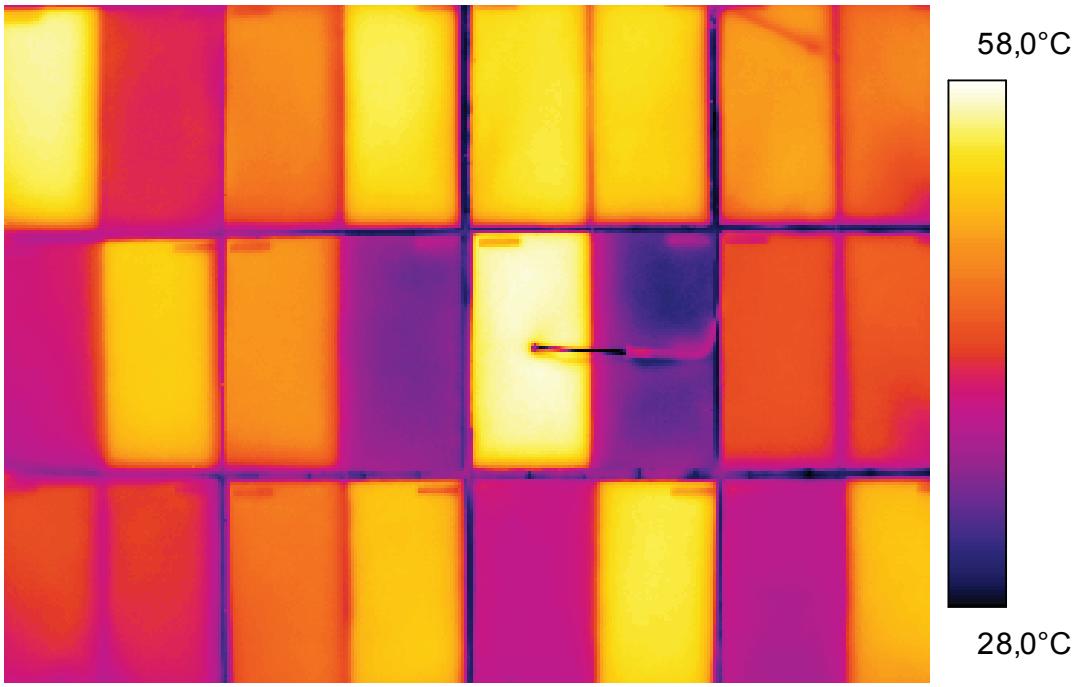

Fig. 2. Example of surface temperatures arrangement of tested ETICS samples.

The maximum values of the measured surface temperatures especially at samples with HBW = 11 to 15 were nearly 70 °C while at samples with HBW higher than 50 they were almost 20 °C

lower. However during the years when the intensity of solar radiation is higher than in the interest period or when the surface is older and covered with dirt it is possible to expect also the surface temperatures to be higher. In case of using foam polystyrene as thermal insulation ETICS it is possible to expect its damage by high temperatures. The highest measured values of the surface temperature are shown in the Fig. 3. The significantly different values of the surface temperatures found at samples Granopor and ArtLine with approximately the same HBW values are caused by higher value of TSR for ArtLine series.

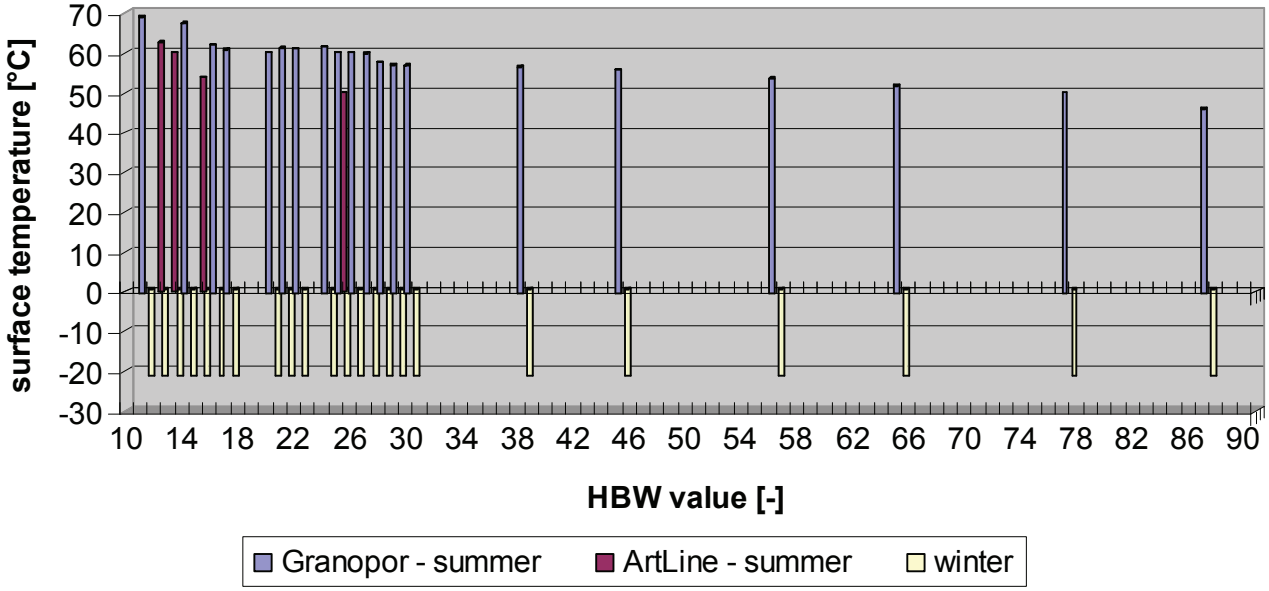

Fig. 3. Dependency of maximal values of experimentally measures surface temperatures on HBW of the surface.

Dynamics of Thermal Changes on the ETICS Surface

Fast temperature changes, which take place not only during summer when there are storms and the warmed surface is fiercely cooled by torrential rain proved to be significant in terms of dynamics of temperature changes on ETICS surface. Quite dynamic temperature changes also happen during transition periods of the year (autumn, spring). During this time the sun is relatively low on the horizon, its radiation reaches the surface of vertical façades in very effective direction, and warms them intensively to temperatures higher then 50 °C (see Fig. 4). After the sunset the thin-layer façade cools very fast because of the cold surrounding air, low temperature inertia of the whole formation ETICS, and incidence of the low potential radiation of the cool sky. In framework of evaluation of the dynamics of surface temperatures decrease the following temperature changes were detected on the sample with HBW = 11:

- during 10 minutes decrease of up to 16 °C;
- during 30 minutes decrease of up to 22 °C;
- during 1 hours decrease of up to 29 °C;
- during 6 hours decrease of up to 56 °C.

During the measuring on sample with HBW = 11 a temperature fluctuation more than 62 °C (see Fig. 4) was measured in a 24-hour cycle and within a 12-month period the width of the temperature interval was measured to 89 °C (the lowest surface temperatures dropped during the winter time below -21 °C). Both these temperatures are circa 20 °C higher than the range of the surface temperatures to which the samples with HBW higher than 56 are exposed. Some already performed researches (e.g. [2], [3], [4]) proved that the temperature changes significantly exceeding the range 60 °C during an annual cycle pose high risk of development of cracks in surface thin-layer façade ETICS.

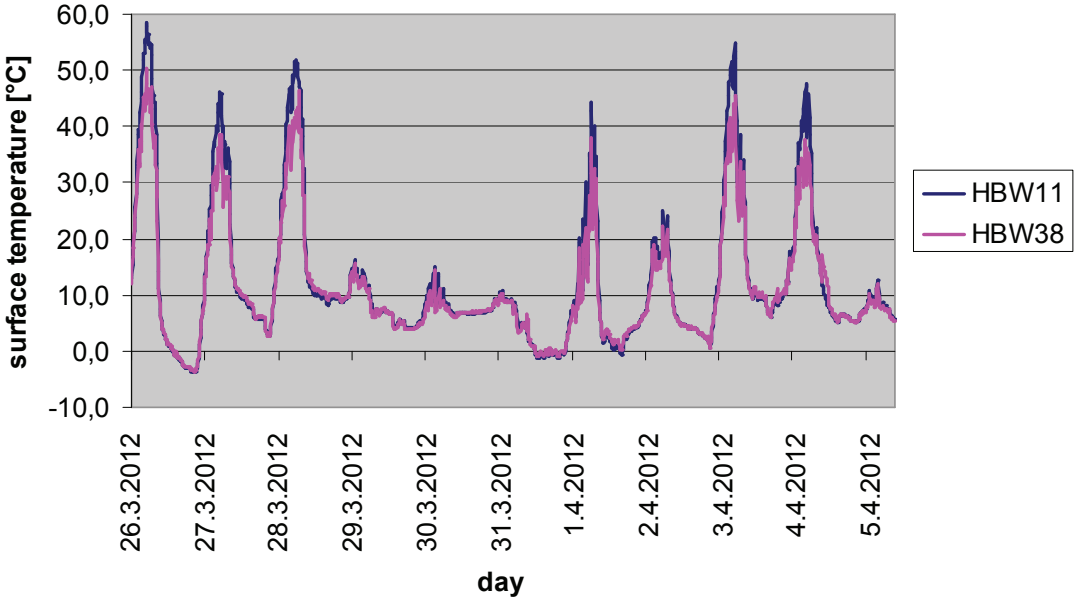

Fig. 4. Graph showing development of contact-measured surface temperatures on samples Baumit Granopor Top Basic 3393 – K 1,5 (HBW = 11) and Granopor Top Home 3073 – K 1,5 (HBW = 38) during the period from 26th March, 2012, 10.00 am to 5th April, 2012, 7.30 pm.

Summary

Using dark colours on ETICS finish with low values of HBW or TSR has several negative consequences. Among the most important there is excessive warming of the ETICS surface causing increased dilatation and stress of the surface thin-layer façade. That leads to increased risk and to actual cases of disruption of the layer and further decrease of durability and reliability of the whole ETICS formation.

The measurements performed within the framework of the long-term research showed that in case of ETICS it is appropriate to move the recommended limit of minimal HBW from so far used value 25 to at least 30 in way to provide sufficient reliability of the contact insulation. At the same time it is desirable to better specify the influence of solar radiation on the thermal exposition of ETICS by more detailed research and by replacing the currently used coefficient HBW with TSR.

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The Potential Influence of Progressive Construction Materials and Structures on Market Value of Buildings

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Keywords: Progressive building structures and materials, parameters of building structures, quality of buildings, market value of the buildings, real estate market.

Abstract. Use of so called progressive materials and structures has been more and more common in architecture and building construction in recent years. We can simply describe them as materials and structures characterized in one or more characteristics with significantly above-average level of quality compared to materials and structures usually used today. The buildings where such elements are incorporated are usually characterized with higher value – architectonical, technical, economical, and environmental, or there was time and/or financial savings during their realization. Since the word 'progressive' is used in connection with whole range of construction materials, it is necessary to distinguish among them those which don't really have such features. This paper is focused on the motivation of use of progressive construction materials and structures in buildings and their potential influence on market value, technical characteristics, and architectural level of the buildings.

Introduction

The principal reason for using progressive construction materials and structures as well as technologies is mainly to reach higher reliability, durability, endurance, economy, and technical parameters of the buildings and their constructions (especially the rigidity, bearing capacity, thermal and acoustic insulation, harmlessness etc.). Its side-effect is extension of possibilities to reach better architectonical expression of the buildings (composition, dematerialization and form of the buildings, interior arrangement and release, structure, plasticity and purpose of the structures etc.) and wider possibilities in the area of reconstructions. For the owner of such building it is also important that use of progressive materials and structures is usually accompanied with either immediate economic effect (e.g. faster realization) or increase of the real estate market value of the finished building.

It is possible to find very wide assortment of items labelled as 'progressive' on the current construction materials and elements market. The reality is however that in many cases such materials or elements are not worth the label and they are rather a marketing tool. Really progressive construction materials or structures should prove such characteristics, which exceed in one or more parameters significantly the characteristics of the materials and structures, which are widely used today. Examples of these kinds of materials and elements are e.g. high-strength concrete, super-insulating and thermally accumulative masonry elements, aerogel, reinforcement elements from carbon and glass fibres [1], noncorrosive and chemically resistant metals, elements for large-area glass-walls, natural and biodegradable materials, or more and more the nano-materials e.g. self-cleaning paints or protecting layers etc. Progressive technologies of building realization, characterized with mainly speed, economy, and ecology of the construction are also more and more common. A significant representative is for example spatial completed prefabricated units on wide material base and technology of removable (able to be disassembled) building constructions for repeatable use [2].

Progressive Materials in Modern Architecture and Building Construction

Choice, design, and use of construction materials in modern building construction is becoming more and more sophisticated process including wide range of criteria [3]. Depending on the character of the building it is possible to choose among traditional construction materials, standard, and progressive ones. Use of progressive materials and structures in modern architecture is not limited on one small group of buildings but it is becoming a part of construction in wide scale. They are more and more common in developers' projects, which characteristics is to minimize the construction costs; it shows the fact that the progressive materials and structures are becoming cost comparable to the standard ones. This process is motivated mainly by development of technical, architectonical, and environmental requirements on buildings and increasing requirements of the owners and users of present buildings on their characteristics; also the changing climatic conditions are the reason.

Technical and architectonical or urban requirements on buildings and their structures are often contradictory. A typical example is systematically decreasing required value of heat transfer coefficient mainly of the peripheral structures of the buildings, which leads to increase of their thickness. A natural consequence is technical and optical increase of the weight and massiveness of the common buildings and further reduction of the area of usable space inside the building or increase of their volume and using more space to build on. In many cases this is architectonically or from urban point of view difficult to accept or completely unacceptable. It is possible to largely eliminate the problem when using progressive materials – according the need either by super-insulating construction (masonry) elements, or by combination of bearing structures made from high-strength materials and effective thermal insulation system. Especially with the second variety it is possible to reach relatively small thickness of the perimeter walls of the buildings.

Specific area of use of the progressive materials is reconstructions of existing construction fund. Their use is mainly in cases of increasing bearing capacity, improvement of thermal insulation or sound insulation characteristics, more reliable remediation of the constructions damaged by floods, explosion, fire etc. Requirements to perform the adaptations in way they were visible as little as possible or not at all on the original construction appearance are common not only for historically valuable buildings. Depending on the character of the construction of the building it is very difficult or even impossible to reach this target when using standard elements and materials [1]. Similar problems have to be solved in connection with maintenance of the buildings, in conditions of worsening climatic phenomenons (e.g. excessive wind, snow, solar radiation, and temperature changes, air pollution, floods), etc.

In connection with use of progressive construction components in the modern building construction it is necessary to point out the requested high quality of performance. The quality of the final product of the construction – the building structures or the whole building – depends not only on the used materials but also on the used technological process. In case of use of progressive materials the process of realization must be very precise. If the required technology is not abided it is possible the requested characteristics of the structures or building might not be reached and use of progressive materials than can be rather a disadvantage – the expended funds than are not proportional to the reached effect.

Economic and Market Evaluation of Use of Progressive Materials and Structures in Buildings

The factors influencing the economic effect of use of progressive construction materials and structures in buildings can be divided into two groups. In the first group there are parameters connected with the realization of the building and don't have to necessary influence the market value of the finished building:

- time necessary for the realization of the building with use of progressive / standard materials and components and its influence on the construction costs – can be the same, higher or lower;

- costs on purchasing and incorporating the progressive materials and structures compared to the standard materials and structures – can be the same or even higher;
- possibility of structures or building to be repeatedly disassembled and realized again on another places of the construction and its economic context.

The second group contains factors that influence the value of the completed building on the real estate market. These can but don't have to have connection to the parameters in the first group. They include especially:

- higher architectonical and aesthetic level of the building;
- higher technical level, durability, and reliability of the building and its structures;
- higher environmental friendliness of the building (during the stage of construction, use, maintenance, and demolition of the building);
- better ability to use the interior space of the building.

When evaluating the influence of use of progressive construction components on the market value of the buildings it is necessary to perceive the difference between parameters easily to specify and parameters that are subjective [4]. Especially the parameter of architectonical and aesthetic quality of the building belongs among so called special influences on determining the market value of the building (influences of intangible character); it is very difficult to calculate it and has wider context too. This factor makes the difference between the common price (market value) and time value of the real estate. In general an architect influences the architectonical and aesthetic quality of the building and he can increase its market value compared to the time price of the real estate with the quality of his work (so called goodwill) or decrease it (so called badwill) [5]. Using progressive components can help to reach higher aesthetic, architectonical, and urban level of the building and that means also its market value. The difference can be up to 10 % in favour of the building with high aesthetic quality; determination of the market value is however quite dependent on experience and subjective evaluation of the real estate appraiser, who has to be able to assess the value of the building [6]. Some means for this can be for example elements with high bearing capacity (high-strength concrete and metals, large-area glass-walls etc.) as when used it is possible to design and perform very subtle constructions with high shape variability.

A parameter of durability and reliability of the structures is possible to be quantified through costs on maintenance of the building in which they are incorporated. It is possible to assume that the structures made from suitable progressive materials will request less extend of maintenance than constructions made from common materials. Market value of such building can be increased for saved costs on future maintenance and repairs. Quantification of the higher market value of the building with progressive constructions is quite individual; compared to standard building it usually varies for a few per cent.

Ecological friendliness of the building is very wide parameter overstretching into other areas. It includes mainly the energy performance of the building and also possible ecological fee connected with environmental characteristics of the materials used during construction and environmental connections to the maintenance and demolition of such building (e.g. fee for production of emissions, fee for deposit of demolition waste in landfills, etc.). In these cases too it is possible to include these potential savings on the future costs into the increase of market value of such real estate.

Relatively the most objective is the economical quantification of the use of interior space in the building. It is possible to reach realization of more subtle structures (compared to common construction) when using suitable progressive construction materials, which leads in case of vertical load bearing elements to creating larger floor space area. In real estate business this area is included in the sale or rent and accordingly increases the market value of the building. This increase can make only a few per cent, however especially in the large developer projects from financial point of view it makes very interesting numbers. In the case of reconstruction of existing buildings without reducing the floor area, the use of progressive elements can help to keep the value of real estate.

Summary

Contemporary technological progress and changing requirements on constructions motivate development of besides other things also the progressive construction materials and structures. One of the effects of their use in a significant extend is also potential increase of the market value of the buildings. That can be reached through several factors of which some are difficult to quantify and their evaluation largely depends on extend of use of these elements and experience of the real estate appraiser. Increase of the market value of such a real estate compared to similar standard buildings potentially reaches a few per cent up to circa 10 % and depending on the size of the building it can generate also quite significant amount of funds. In the future there will be more and more significant distinguishing of the value of traditional buildings and modern progressive buildings due to that fact on the real state market.

On the other hand using progressive construction materials and structures does not necessary lead to increase of the market value of the given buildings compared to the buildings realized from common construction components. The reason for that can be on one hand a different purpose of use of such elements during construction (e.g. to shorten the time for realization, decrease the area of the construction site etc.) and on the other hand there is higher dependency on the quality of the performance. In case of insufficient level of technology of the realization and following low quality of the construction itself the market value of the real estate equals to the market price of a standard property and in extreme cases it can be even lower. It therefore depends a lot on the competence of the real estate appraiser of the real estate value and complexity of the documentation on which base the evaluation is elaborated. Stress must be put especially on the identification of the above mentioned facts and their correct including into determination of the market value of the building.

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The Beauty of Skylight

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Keywords: Post secularized society, postmodernism, consumption, religion, shopping center, skylight, architecture, theory of architecture, philosophy.

Abstract. It is commonly claimed that the modern secularized society worships consumption and fetishism of things and that consumerism has become a substitute to religion. Is that still true? Is our society really nonreligious? Has not secularization exceeded the stage of atheism? It might not need being defined to the old religion any more. Maybe again without remorse the new paganism indulges, for its faith is not ashamed. How are these trends reflected in architecture?
The paper presents details of a particular architectural work - skylight in an the Avion shopping center (Ostrava), as a case study, which analyzed and interpreted with help two opposite principles. It is also said that a hypermarket (English only knows the word: supermarket.) became a temple of consumerism. Temples traditionally used to have specific lighting - more of chiaroscuro. Windows allowed only little sunlight to enter, artificial light was imperfect. On to contrary a hypermarket has no windows - and the artificial light is even of better quality than the daylight. Still there is a skylight in a building of a shopping center. This modern temple is open to the sky, lets sunshine enter into the own inner. The skylight is shaped as a pyramid. Through skylight tradition meets with new practice: a popular symbol of free Masons is reinterpreted by nowadays builder/designer - steel rods have inverted bearing system, going from thin to thick profile. Skylight refers to himself - connects the earthly closed space with the air vertical (strengthens the axis mundi). It is an archaic work or on the contrary postmodern anachronistic?

Introduction

The paper wants to point out opportunities of a philosophical and a theoretical interpretation of a seemingly simple part of a utilitarian building Avion – a shopping center - a roof skylight. Its peculiar structure by originality in both layout (the opposite tectonics) and processing (beam rods opposite technology) [1] really points on itself – on a real as well as a symbolic celestial horizon.

Wider context of shopping centers

When turning into the 21st century social sciences begin to talk about the necessity of reevaluation of the rethink the paradigm of secularization, even the term "post-secular society" started to be used [2]. That meant that the secularization (loss of religion, loss of mythology, loss of spirituality and metaphysical dimension) as the classical heritage of the enlightenment was losing its general understanding and acceptance. One of the manifestations of the postmodern turn is that while rejecting the deification of totalizing modern understanding, man is not afraid of irrationality, or even spirituality. New religiosity and spirituality is one of the salient features of postmodern times. But it is another religiosity than the one in pre modern times. Post-secular is a society also because under the conditions of globalization and multicultural mixing it is made up of a significant segment of immigrants from yet classic religious environment. We will therefore have to get used to the fact that religious beliefs are again - at least for someone - important and that they become part of politics, social life and public space. Also, even non-religious people are (again) sensitive to the spiritual dimension and their postmodern life absorbed an adapted pre modern religious gear (tradition), though in all sorts of misshapen or caricatured form (pseudo-, quasi-, para-).

Religiosity and spirituality in a post-secular society serves surely also to a desperate search for identity, lost somewhere in the process of postmodern distraction, fragmentation and individualization. One manifestation of this panic are tendencies to general exaggeration

(overreaction) - gestures, emotions, the search for truth, as we see them in for example in organizing world events, all kinds of exhibitions, malls, buildings, sporting and cultural events (e.g. China). Searching for a lost identity, personal as well as collective, leads even to force highlighting of differences and peculiarities. This social hysteria describes among others the Czech philosopher Václav Bělohradský living in Italy (Post-secular Society II and Four Forms of Chaos, 2010).

One of the many manifestations of this mental stress in post-secular society can be also a striking popularity of shopping centers, supermarkets, shopping malls, which cannot be explained simply by economic and consumer laws. The phenomenon of hypermarkets and shopping centers is already settled into a separate discipline (see, eg, Journal of Shopping Center Research), in which economists, sociologists, anthropologists, architects, engineers and project managers deal with all aspects of modern temples of consumerism and substitutes to paradise [3]. Likewise a discipline about consumer mentality and culture (see, eg, Journal of Consumer Research) was established, as a today's hedonistic substitute to former religious devotion.

Is it really necessary to be ashamed for the shopping centers? It is a fact that is difficult to trace the authors of such buildings; the designer-architects are hiding their share in a project or feeling ashamed for being connected to a shopping center. Are we ashamed for designing garages, parking lots or commercial warehouse storage zones? As we can see in reality, it is possible to design a good of quality and nice shopping center, successful examples as follow: Černý Most in Prague (Benoy), Vaňkovka in Brno (Hrůša et al.), Breda in Opava (Šafer + Hájek) or City Plaza and Plaza 66 in Shanghai (KPF + ECADI), there are also good smaller shopping centers in Austria and Germany. From that we can see the issue is the quality of the architectural design, well managed object scale of the functional plans, its material and technical processing to the very last architectural, technical detail with good quality of materials and their further sustainability. Although people are ashamed for their shopping mania for consumerist lifestyle, even for dedicating time to what the French philosophers call flânerie (meandering through the city and staring at shop windows) and psychologists describe as effect of “windows shopping” (latent dreaming about what a man could have if he could afford it).

Let's admit, that shopping centers are modern temples of consumerism and what people indulge in there bears characteristics of worship, liturgy. Some shopping malls have actual proportions of a temple; we can analyze it using geometry, spatial configuration, composition, order, interior views, using elements such as landscape, paintings, portals, and specific ways of lighting [4]. All this is true even though these buildings are also quite a utilitarian, pragmatic puzzle that fulfills meaningfully planned requirements about meters square and an appropriate amount of money earned, as it is clear from the Enlightenment spirit of modernism and its calculating rationality. It is high mathematics and money game. And to this pragmatic scheme comes a city planner and architect [5], who in addition to technical, normative knowledge has yet to add something to appeal on visitors and draw inside, into the vortex of mysterious shopping games, getting lost and wasting money, as well as reaching ecstasy, pleasure and the illusion of a new, higher life. Maybe it's a religion. But in any case it is the opium, aptly described by Marx. Devotion, intoxication, self-crossover, merging with the higher, ideal, pure - that's what philosophers like Plato, Kant and Heidegger described as desirable. Effectiveness and beauty are not mutually exclusive. It may be a detail or whole, exceptional phenomenon or elegance of harmony, but even on a shopping center can be found something that can be interpreted as a sovereign act of culture, not just of nature (consumer need).


Fig. 1: Skylight today, detail of the interior (photo: Vendula Šafářová)
Fig. 2: Skylight in the process of building construction, temple view (photo: Martin Krejsa)

A pyramid as a skylight?

The construction of the skylight was designed in the summer of 2007 as a part of the support system of the shopping center. The supporting steel structure of the pyramid-shaped skylight is made up of a space frame, which is supported around the perimeter by a system of fixed articulated linkages. The skylight has a symmetrical triangular floor plan with 36.3 m per side and is mounted on a support system of reinforced concrete structures. Rods structure consists of rolled sections with graded dimensions of IPE 140 to IPE 300. The author of the static calculation was trying to optimize the design of cross-sections of individual members with regard to the efficiency of the design, but also the aesthetic impression of the support system. Part of the support system is cross-bracing of the wind logs with a diameter of 10 mm, capturing the effects of horizontal wind, which was placed in the center of each side of the skylights. [1]

The figure (picture) of the skylight construction shows that the space has a composition, tectonics of a simple, rational, neo pragmatic design as a temple. It's an unusual idea, but if the observer does not know that it's an unfinished shopping center, this architecture scene can be perceived as a temple interior space. In modern European history, the architecture of pyramid shape was used by the Chinese –American architect I. M. Pei in Le Grande Louvre, herewith he sealed in the mental map and image of the city of Paris a new symbol and a new value for Paris. Pyramid serves as a symbolic entrance into the world gallery and simultaneously illuminates its underground space. The skylight in Avion shopping center is a three-sided pyramid with shorter height than side length and therefore it loses its essence of a pyramid, still similarities and intension what we can clearly observe and describe. The question is, what would happen, if the skylight was much higher than now and the pyramid shape was inserted radically to the bottom of the interior, than public could feel a real pyramid there. In such case a spatial composition would have probably moved further as well as the subsequent rich emotions and experiences formed by this rich interior space.

Summary – Quality

Postmodernism rejected the enlightenment mannerisms of functionalism as boring sexless boxes without a spirit of comfort, and welcomed the opposite, full of feelings and emotions, religious, archaic, anachronistic, organic shapes and symbols. Successful Mannerist eclecticism was created-postmodernism, which accelerated in deconstruction and minimalism, and on the other hand in neo pragmatism.

Architect Robert Venturi with his team created slight chaos in the architecture reality as well as theory when they began to teach according to Las Vegas, and further searched for new phenomena, and thus have refined in theory of opposites in architecture (Contradiction in Architecture). Architect Rem Koolhaas shifted and discredited the whole postmodernist discourse by his statement Fuck the Context. How these problems will solve a contemporary architect designing at the time of

consumerism, in his own philosophy? There are a few ways to increase the quality of space - work done with perfection, usage of good quality materials, innovative structures as here mentioned skylight. Pushing the boundaries of technology, technical sciences and aesthetic perception and philosophical thoughts of architecture and public space is the goal. It is important to try to destroy complex prejudices about shopping centers in general. The triangular skylight breaks the sameness of utilitarian forms of air cubic structures, but simultaneously does not conceal its technical skeleton and is not ashamed of its weight, points upward, emphasizes the verticality, thus acting against the award, which has a vision to get back to civil concerns (which are paradoxically pleasure too). Space for hope and a room to stop and breathe, slow down, exempt from the compulsive actions and addictions in life are created. Although it´s only a contemporary pleasure, it makes you free from the ecstatic feeling of a race and accelerating life out there.

Fig. 3: Vertical skylight, overhead lighting, spirituality and people (photo: Vendula Šafářová)
Fig. 4: Avion Shopping Centre, Ostrava (photo: Panoramio)

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Selected Problems in Using Round Timber in Building Structures

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Keywords: round, timber, building, structures, joint, steel, bolt.

Abstract. The content of this paper are possibilities of using round timber in various public facilities structures (e.g. children´s playgrounds) and in engineering constructions (e.g. watchtowers, bridges and footbridges). Specific problems of designing round timber structures, mainly in joints, are presented here.

Introduction

Over the last decades the use of round timber constructions has increased significantly. Current trends support the use of ecological constructions. These structures are environment friendly and emphasize the use of natural and renewable building materials. Round timber structures (milled or simply stripped of bark) meet all these requirements. Various view-towers, pedestrian bridges, visitor centers in natural parks or in the ZOO, playground equipment and other landscape structures are built from round timber logs. In all the cases the structural systems were used as an interesting architectural feature.

Types of Timber Structures Made of Round Timber

At present children´s playgrounds, which are made of natural round timber (see Fig. 1) or shaped round timber (see Fig. 2), are very popular.

Fig. 1 Playground made of natural round timber (left)
Fig. 2 Playground made of shaped round timber (right)

Round timber can be used also in timber footbridges constructions and bridges with smaller span. Example of a footbridge made of round timber in Orlová is in Fig. 3.


Fig. 3 Footbridge in Orlová (left)
Fig. 4 Lehmilahti bridge (Finland), photo - [1] (right)

Example of timber bridge made of round timber with 19 *m* span is in Fig. 4.

The tallest round timber view-tower in central Europe was built in Lázně Bohdaneč in the Czech Republic; the height of the tower is almost 53 *m* (see [2] and Fig. 5). The tower was opened in 2011. The whole tower was made of natural round timber (spruce) and bolted joints with slotted-in steel plates.

Fig. 5 View tower near Lázně Bohdaneč

Several interesting view-towers were built near Uherské Hradiště. One was built in combination of round and sawn timber and bolted joints with slotted-in steel plates (see Fig. 6). Another one was built only from round timber and bolted joints (see Fig. 7).

Fig. 6 View tower in Polešovice

Fig. 7 View tower in Vlčnov

Types of Joints

Several types of joints can be used in round timber structures, e.g. carpenter joints, nails, screws, steel bounds, but nowadays bolted joints or bolted joints with slotted-in steel plates (see Fig. 8) are most popular.

Fig. 8 Example of a round timber bolted joint with slotted-in steel plates

Research of Bolted Joints with Slotted in Steel Plates Carrying Capacity

Element connections are often made from bolts with slotted in steel plates, especially for truss structures. These connections are the weakest part of structures. Mechanical reinforcement possibilities of round timber bolted joints were researched and tested in a laboratory of the Faculty of Civil Engineering. However, at present there is little information available about timber joints reinforcement, and the design standards (e.g. [3]) give few guidelines. For more information – see [4, 5].

Test Samples

All the test samples were made of spruce wood. A few nondestructive tests were carried out before the start of static tests in the press. The test samples were weighed on a laboratory scale, their moisture and dimensions were measured. The thickness of the annual rings and the slope of grain were also measured. The density was determined on the basis of measured values. The average moisture was 12,4 *%*. The average value of apparent density reached 480 kg/m^3 (with standard deviation 88 kg/m^3).

It was necessary to adapt the dimensions of the test specimens to dimensional possibilities of the laboratory machinery. Thus, the specimen length was 450 *mm*, and the diameter was 120 *mm*. The bolts made of high strength steel (category 8.8) were used. The connection plates were made of steel

S235. The plates had a thickness of 8 *mm*, length of 290 *mm* and width 80 *mm*. Holes in steel plates and timber with diameter 22 *mm*, respectively, 20 *mm* were used. The holes distance to the free end in the timber was 140 *mm* ; in the steel 50 *mm*. Several specimens were made without reinforcement. The others were reinforced in a various way (with special washers, screws, steel plates and nails etc. – see Fig. 10).

Course of Tests

The specimens were subjected to a simple tension test (see Fig. 9). The tension force (samples were loaded parallel to the grain) was increased gradually. The displacement rate choice of the press jaws was optimal because the failure of all the specimens appeared in a time-boundary 300 ± 120 *sec*, which corresponds to the current European standard [3]. Test parameters were the same for all the specimens.

At first, unreinforced specimens were tested. The average value of carrying capacity in tension was 67 *kN* (with standard deviation 15 *kN*). All the testing specimens were damaged by splitting. The embedment underneath the bolts grew during loading, and the crack was initiated. During the next loading, the crack grew rapidly and uncontrolled until the final damage. The sample failures were caused by reaching the critical tensile stress perpendicular to the grain.

Fig. 9 Laboratory press (left), a sample with modified washers in the press (right).

Reinforcement

The reinforcement design was based on the first series test results. The reinforcement relates to the timber in the connection area. The challenge is to avoid the splitting failure mechanisms. The reinforcement is supposed to have two basic effects: tensile stresses perpendicular to the grain are transferred and the embedding capacity of the reinforced timber area increases. Several different reinforcement methods were tested - applying modified washers, common wood screws (one or two under each bolt), BOVA plates and applying steel bands.

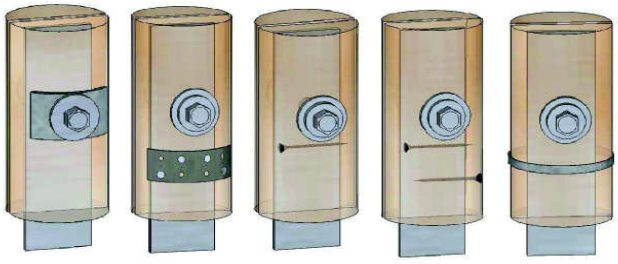

Fig. 10: Reinforcement methods: (from left) modified washers, BOVA plate, one screw, two screws, steel band

For the modified washers approach, the washers were made from a steel plate with thickness 8 mm, category S235. The dimensions of these plates were 60 *mm* to 100 *mm*. Holes with a diameter 22 *mm* were used. The washers had been rounded to fit tightly to round timber sample, and the wood in the area of the bolt was clamped firmly. BOVA plate is a steel plate with a thickness of 2 *mm* and dimensions of 40 to 120 *mm*, provided with holes for nails. The plate was fastened to a sample with four nails. Plates were bent according to shape of the sample.

For the common wood screws approach, the tested screws had a diameter of 5 *mm* and length of 90 *mm*. One or two screws were located under each bolt (in the direction of loading). The screws were oriented perpendicular to the grain. The last method is to tighten the end of the samples with a steel band. The band has a thickness of 0,9 *mm* and width 9 *mm*.

Results

The average carrying capacity in tension of the samples with modified washers was 72,7 *kN*. Cracking and subsequent growth were decreased. In the case of samples with screws, during the sample testing, no failure due to the crack occurrence was observed. Displacement was increased up to the failure. All the observed failures were caused by the plug shear. The average carrying capacity in tension of these samples was 72,4 *kN* (with standard deviation 19 *kN*). Decreased rates of cracking and subsequent growth were observed on the reinforced samples. Furthermore, plug shear failures were observed in the case of reinforcement by applying wood screws.

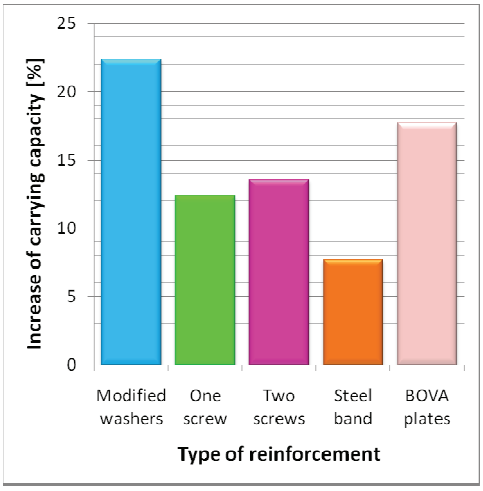

Fig. 11: Comparison of effectivity of reinforcement methods

Fig. 11 shows that reinforcing by means of the modified washers and BOVA plates demonstrates the highest increase in carrying capacity. In terms of implementation simplicity, reinforcing using two screws appears to be the most effectual.

Summary

The reinforced samples were able to absorb around 20 % more of the pressure before cracking than the unreinforced ones. Both of the reinforcing methods are economically profitable due to the usage of affordable parts. However, as the number of samples is small, the presented results are prone to a statistical error. Due to the relatively high carrying capacity dispersion of the round timber and the bolted joints with the slotted - in plates it is reasonable to consider using some of the fully probabilistic methods e.g. [6, 7, 8] for the reliable and safe design and assessment of this type of structures and joints.

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Developmental Aspects of Regional Airports in the Czech Republic

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Keywords: airport, international airport, regional airport, developmental aspects, IATA, RWY

Abstract. The aim of the article is the comparison of development aspects of regional airports of the Czech republic. Only international airports have been chosen, specifically airports given the IATA code (IATA – International Air Transport Association). The selection of airports was influenced by the following factors – the condition of the air transport and the length of the take-off and landing tracks. After mutual comparison, all international airports with regular and irregular trade transport were chosen. The concerned airports are: Brno – Tuřany Airport (BRQ), Leoš Janáček Airport Ostrava (OSR), Pardubice Airport (PED) a Karlovy Vary Airport (KLV). Václav Havel Airport (PRG), which, as the capital airport, would considerably influence the assesment of the observed values, was deliberately not included in the listing. The individual airports are assessed due to the influence of the parameters of the take-off and landing tracks, namely the length of the tracks (the length of the track needed for airplane take-off under standard conditions, i.e. not including the influence of the airport altitude, airport reference temperature and the longitudinal inclination of RWY) and the parameters of the radionavigation and lighting equipment. Other followed aspects are the population number of the given city (or cities placed near the airport), location towards the city center and its transportation connection. Another observed aspect is the influence of competing airports from near abroad on the development of the airport. The intention is to confirm or disprove the idea that the best equipped and situated airport (the airport with the largest potential), should show the best performance, i.e. the number of dispatched passengers and the amount of transported cargo load.

Introduction

This paper aims to compare the developmental aspects of regional airports in the Czech Republic. Only international airports were included in the selection, namely airports with an IATA code (IATA – International Air Transport Association). The following factors affected the selection of airports: air transport volume and the runway length. All public international airports with scheduled and non-scheduled commercial traffic have been included in the selection, these airports being The Brno – Tuřany Airport (BRQ), Leoš Janáček Airport Ostrava (OSR), Pardubice Airport (PED) and Karlovy Vary Airport (KLV). The list intentionally excludes the Vaclav Havel Airport (PRG), which, being the airport of the capital city, would have excessive impact on the evaluation of the monitored statistical data. In terms of individual airports, the author evaluates the impact of runway parameters, reference field length and the parameters of radio navigation and lighting equipment. Other monitored aspects include the population of the respective cities (or cities where the airport is located), the airport's location relative to the city centre and its transport connection. The last monitored aspect is the impact of competing foreign airports from across the border on the regional airport's development. The aim is to prove or disprove the idea that the airport with best equipment and location (airport with the greatest potential) should exhibit the best performance in terms of the number of passengers throughput, number of movements and the cargo throughput.

Definitions

Airport (Aerodrome) – a defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft. [1] An airport is a territorially defined and appropriately landscaped area including aeronautical buildings and airport facilities permanently intended for take-offs and landings of aircraft and the associated aircraft movements. [2] RWY/Runway – defined rectangular area on a land aerodrome prepared for the landing and takeoff of aircraft. [1] Aeroplane reference field length – the minimum field length required for take-off at maximum certificated take-off mass, sea level, standard atmospheric conditions, still air and zero runway slope, as shown in the appropriate aeroplane flight manual prescribed by the Civil Aviation Authority or other certificating authority of another state or equivalent data from the aeroplane manufacturer. [1] IFR – Instrument flight rules [3]

Regional Airports Of The Czech Republic

Brno-Tuřany Airport. City: Brno; Population: 380 000; Region: South Moravia; IATA Code: BRQ, ICAO code: LKTB; RWY: 2650x60 m; transport connection: the city and the airport are connected through a regular bus service; railway connection: no direct railway connection, indirect connection through the station in the city (bus line ends at the station); road connection: D1 – the core motorway of the Czech Republic – is located in the vicinity (north) of the airport, with D2 motorway connecting to it south of the airport (direction south to Slovakia); location relative to the city centre: 7.5 km SE; competing airport: Vienna/Wien (VIE), 155 km, 110 minutes' drive (R52-E461-A5-A24-A4) and Bratislava (BTS), 145 km, 90 minutes' drive (D2)

Leoš Janáček Airport Ostrava. City: Ostrava; Population: 295,000 (Ostrava agglomeration 560,000); Region: Moravian-Silesian; IATA Code: OSR; ICAO code: LKMT; RWY: 3500x63 m; transport connection: the city and the airport are connected through a regular bus service; railway connection: no direct railway connection, railway connection is currently under construction, scheduled to commence operation in 2015; road connection: D1 – the core motorway of the Czech Republic – is located 13 km north of the airport, with R48 high-speed road located 6 km south of the airport (direction to Frýdek-Místek); location relative to the city centre: 24 km SW; competing airport: Katowice (KTW), 140 km, 95 minutes' drive (D1-A1) and Cracow/Kraków (KRK), 185 km, 120 minutes' drive (D1-A1-A4)

Pardubice Airport. City: Pardubice; Population: 89,500 (182,500 including the population of Hradec Králové); Region: Pardubice; IATA Code: PED; ICAO code: LKPD; RWY: 2500x75 m; transport connection: the city and the airport are connected through a regular bus service; railway connection: only through the station on the main railway line of the Czech Republic; road connection: only local road network, high-speed road linking the city with Hradec Králové and provisional end of the D11 motorway (Prague – Hradec Králové) located north of the city; location relative to the city centre: 3 km SW; competing airport: Wrocław (WRO), 195 km, 170 minutes' drive (E67)

Karlovy Vary Airport. City: Karlovy Vary; Population: 50 000; Region: Karlovy Vary; IATA Code: KLV; ICAO code: LKKV; RWY: 2150x30 m; the city and the airport are connected through a regular bus service; railway connection: no direct connection, only indirect connection through the train station in the city (however somewhat complicated); road access: I/6 road (Praha–Karlovy Vary) is located north of the airport, conversion to a high-speed road is being planned, the city is well connected by high-speed roads going westwards (Cheb, border with Germany) and to the north-west (however, the high-speed road soon connects to the regular road network, location relative to the city centre: 3,8 km SSW; competing airport: Dresden (DRS), 165 km, 125 minutes' drive (B95-A4) and Nuremberg/Nürnberg (NUE) 216 km / 135 minutes' drive (R6-B299-A93-A3-A6)

The list of competing airports only includes international airports. The biggest natural competitor for the regional airports of the Czech Republic is the Vaclav Havel Airport (PRG) in Prague as the airport of the capital. In terms of competition, its impact on the monitored Czech regional airports is identical.

Table 1 – Basic technical parameters of regional airports in the Czech Republic

airport	IATA code	ICAO code	RWY		Reference field length	PCN	IFR
			Length [m]	Width [m]			
Brno-Tuřany Airport	BRQ	LKTB	2,650	60	2,242 m	48/R/A/X/T	CAT I
Leoš Janáček Airport Ostrava	OSR	LKMT	3,500	63	2,914 m	50/R/B/W/T	CAT II
Pardubice Airport	PED	LKPD	2,500	75	2,151 m	47/R/B/W/T	IFR
Karlovy Vary Airport	KLV	LKKV	2,150	30	1,692 m	54/F/A/X/T	CAT I

Evaluation In Terms Of Technical Parameters, Regional Demography, Transport Infrastructure And Competition From Airports From Across The Border

Individual airports were evaluated in terms of the parameters of the runway, reference field length (field length required for take-off under standard conditions, i.e. excluding the impact of aerodrome elevation, aerodrome reference temperature and longitudinal runway slope) and parameters of radio navigation and lighting equipment. Each monitored parameter of the relevant aerodrome was assigned a score of 1 to 4 (1 being best, 4 being worst).

Other monitored aspects include the population of the relevant city, location relevant to the city centre and its transport connections and the impact of competing airports from across the border on the development of the regional airport.

Brno-Tuřany Airport. Brno's population was the largest of the monitored cities; however, the score is 2 as the population of the Ostrava agglomeration is larger. In terms of transport connection, Brno is by far the best, both in terms of national motorways, and also in the combination with the connection to the city centre. Brno is exposed to the highest level of competition, as it competes with two major airports of two capitals: Vienna (21,999,926 passengers in 2013) and Bratislava (1,416,010 passengers in 2012).

Leoš Janáček Airport Ostrava. The Ostrava agglomeration has the largest population. It has excellent transport connection thanks to the national motorway; however, connection to the city centre is the worst of all monitored airports. In terms of the combined evaluation of the transport connection, Ostrava's score was 2. The Ostrava airport is exposed to competition from two fast-growing and easily accessible airports in Poland: Katowice (2,544,198 passengers in 2013) and Krakow (3,647,616 passengers in 2013).

Pardubice Airport. Pardubice (including the inhabitants of Hradec Králové) has the third largest population of the monitored regions. Transport connection in terms of the national motorways goes only one way to D11, connection to the city centre through local road network is excellent. In terms of the combined evaluation of transport connection, Pardubice's score was 3. The Pardubice airport only competes with one poorly accessible airport in Poland: Wroclaw (1,920,179 passengers in 2013).

Karlovy Vary Airport. Karlovy Vary is the smallest regional city with an international airport in the Czech Republic. Transport connection in terms of the national motorways is the worst of all the monitored airports; the connection to the city centre through local road network is sufficient. Karlovy Vary airport competes with two German airports: Dresden (1,754,139 passengers in 2013) and Nuremberg (3,309,629 passengers in 2013).

Overall Evaluation Of Developmental Aspects

The above data from all six monitored developmental aspects was used to prepare an overall evaluation table showing the potential of each airport. All aspects have statistically equal weight, i.e. 20% for each monitored aspect.

Table 2 – Overall evaluation of the developmental aspects of the airports in the Czech Republic

IATA code	RWY	Reference field length	IFR	Population	Transport connection	Competing airport	Total score	Ranking of airports by development potential
BRQ	2	2	2	2	1	4	13	2
OSR	1	1	1	1	2	3	9	1
PED	3	3	4	3	3	1	17	3
KLV	4	4	2	4	4	2	20	4

Performance Evaluation Of Regional Airports In the Czech Republic (2009 – 2013)

Performance evaluation of individual airports in the monitored period (2009 – 2013) examines the parameters of passenger throughput, total aircraft movements and cargo throughput. All data are available on the official website of each airport. [5], [6], [7], [8]

Table 3 – Cumulative evaluation of the performance of individual airports (2009 – 2013)

airport	IATA code	ICAO code	passengers	movements	cargo (t)
Brno-Tuřany Airport	BRQ	LKTB	2,393,382	140,065	27,533
Leoš Janáček Airport Ostrava	OSR	LKMT	1,408,226	75,090	10,111
Pardubice Airport	PED	LKPD	485,728	9,259	1,646
Karlovy Vary Airport	KLV	LKKV	429,943	8,419	233

Table 1 – Basic technical parameters of regional airports in the Czech Republic clearly shows that the Leoš Janáček Airport Ostrava has a runway with the best parameters and equipment of all regional airports in the Czech Republic, the difference being quite significant compared to other airports that have shorter or even narrower runways and worse radio navigation and lighting equipment. In terms of technical parameters, the Ostrava airport has an excellent position. The reference field length (field length required for take-off under standard conditions, i.e. excluding the impact of aerodrome elevation, aerodrome reference temperature and longitudinal runway slope) is relatively high, allowing the operation of almost all aircraft with no restrictions in terms of takeoff weight, or with minor restrictions for the largest aircraft types (A 340, B 777 etc.).

However, the results shown in Table 3 – Cumulative evaluation of the performance of individual airports (2009 – 2013) show that the most successful regional airport in Czech Republic is the Brno-Tuřany Airport which, compared to the airport with the largest development potential (Leoš Janáček Airport Ostrava) reported within the five-year evaluation period a higher number of passengers (by 985,156 passengers, i.e. 70% more passengers), a higher number of movements (by 64,975, i.e. 86% more aircraft movements) and higher cargo throughput (by 17,422 tons, i.e. 172% more cargo throughput). In addition, the Brno-Tuřany Airport is exposed to the highest level of competition, because it competes with two major airports of two capitals – Vienna and Bratislava – which have great transport connection to Brno.

The results of the performance evaluation of the Pardubice Airport and Karlovy Vary Airport correspond to their levels of development potential. Cargo throughput of the Karlovy Vary Airport is lower, which is due to the fact that the airport started handling cargo only in 2011.

Conclusion

The aim was to prove or disprove the idea that the airport with best equipment and location (airport with the greatest potential) should exhibit the best performance, i.e., number of passenger throughput, number of movements and the amount of cargo throughput. This idea has been disproved as the most successful airport in the Czech Republic is Brno-Tuřany Airport which, compared to the airport with the largest development potential (Leoš Janáček Airport Ostrava), reported significantly better performance in terms of the monitored parameters within the five-year evaluation period. The results of the performance evaluation of the Pardubice Airport and Karlovy Vary Airport correspond to their levels of development potential.

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Preservation, Reconstruction or Conversion - Contemporary Challenge for Historic Urban Areas and Historic Buildings

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Keywords: historic buildings, historic urban area, reconstruction, conversion

Abstract. The problem of preservation, reconstruction and conversion of historic urban layouts and historic buildings have been discussed in the article. Although some of the urban layouts and structures are not monuments by formal means, they are often being well protected by local law (Local Development Plans). Both the quantity of the original structures (very few remained original - many objects within the layout have been already converted) and the quality of the original substance and architectural layout - to little space, many elements which need reconstruction - allow to raise a question: Does preservation or reconstruction still make sense, and does conversion should be allowed. Several case studies have been discussed: Wolf's Throat in Gliwice (Glaubenstatt) - urban village layout set up by Germans in 1941, design for house conversion in Wolfsthroat and also Szobiszowice (Schobischowitz) in Gliwice - one of the urban neighborhoods layout set up by Germans before the II-nd world. Authors of the article are practicing architects: theory versus practice have been discussed.

Introduction

Some of the historic urban districts remain heritage that should be preserved. Examples of spaces that need to be protected are usually historic city centers: most of their historic urban layout with its architecture: old buildings in different styles from different times represent great value.

However some of the urban districts are well defined, there are also urban districts that are extraordinary but do not play a major role in cities urban layout. And so the importance of that in the city scale might be missed. Also architectural features of some of the buildings allow for rising questions: Does conservatory protection make sense, and does preservation or reconstruction still make sense, and does conversion or demolition should be allowed?

In this paper two case studies have been described: both are examples of heritage that need intervention, but no simple choice is obvious to be decided while local law plays a major role for its future. A proposal for systematic qualitative and quantitative feature assessment tool has been presented for better understanding of the problem.

Theoretical Approach

Many great examples of protected urban districts are well recognized in Europe [1] Most of them are historic centers sided by the line of city walls and most of European cities with medieval origin have them. Historic buildings of great value are mostly listed and protected by local law, but still only those which are characteristic and original for the time, that it was built (according to the International Charter for the Conservation and Restoration of Monuments and Sites – THE VENICE CHARTER 1964) [2]. However there are also urban districts or sites that original design is not that old and also represent great value for today. Good examples might be: Welwyn city and Letchworth city keep their urban layout of garden cities (idea proposed by Ebenezer Howard in 1902). Although the urban layout is protected conservatory area, not all of the buildings are listed. There are also other realizations such as Falkenberg in Germany planned by Bruno Taut, started in 1912 - which is on UNESCO list.

Heritage is non-renewable in nature, *'an approach to conservation that preserves the best of the heritage but does so without imposing insupportable costs and which affects a rational balance between conservation and change* [3]. Many housing settlements represent great value and are part of our heritage but they are not monuments as other public buildings do. Some exceptional single family houses became monuments (such as house over the waterfall by Frank Lloyd Wright or villa Tugenhat in Brno by Mies van der Rohe) but that still is rather unusual. There are also many examples in f.e. Old Workers' Estates in Upper Silesia in Poland, but still proper preservation and revitalization of residential areas and buildings is determined by several means and not only by mean of technical renovation [4].

Most of different historical sites need special approach, and that can be done in appraisals. There are different ways of sites description, however there are common aspects that can be taken into account. A good example might be a proposal by English Heritage which underlines: Location and setting, Historic Development, Architectural Quality and Built Form, Open Space, Parks, Gardens and Trees, Character Zones, Positive Contributors, Locally Important Buildings [5]. Good research and honest appraisal may be helfpful in provision of truly sustainable urban regeneration, that should *'bring about a lasting environment in the economic, physical, social and environmental condition of an area*' [6].

Introduction to Gliwice

As Koshar [7] proves over the course of the twentieth century, Germans have venerated and maintained a variety of historical buildings and urban districts. Monuments and conservation were as important as German approach to monument conservation and design for new buildings and urban districts. And so it was in south Poland: since XVIIth century different parts of the region Silesia belonged to Germany, Austria and Poland depending on time and shape of states' borders.

Gliwice, one of the cities in Silesia is medium size city with ap 180.000 inhabitants located in the south of Poland. It' s origins date from XIIIth century. Gliwice have original medieval oval sized centre and it played and was surrounded by city walls which has been preserved till today. Some parts of city walls are still kept and are being protected. The medievial urban layout with characteristic round shape in the core is being protected by Local Development Plan as Conservatory Area: which means that special regulations for possible convertions or new design are set. There four ways of protecting buildings in Poland: an object might be listed in the register of monuments, acknowledgment as a historical monument, the establishment of cultural park or establish protection requirements in the development plan.

The Case Study of Wolf's Throat

Wilcze Gardło (Wolf's Throat) in Gliwice (Glaubenstatt) is an urban village layout set up by Germans in 1937-1941. Original urban layout has been designed by Rudolf Fischer in the village called Smolnica (Smolnitz) near the woods. It coverd almost 67 ha. Originally the estate was destinated for NSDAP, SA and SS nazi special forces. In 1939 only 26 inhabitants were there but over 1500 in 1961 and later on. Original design refers to old german village, but it has never been finished as planned. In 1975 it has been attached to Gliwice city and so it is till today. The main axis - Traktorzystów street leads to market place, surrounded by multifamily buildings. The basic built structure consist of semidetached houses set on plots of 1000-1300 sqm size. The plots are located in radial layout starting from the market place up to the playground area [8]. Entire village is protected by Local Law (Local Development Plan) and every new project for convertion, renewal or new building must obey those regulations and must be approved by local consevatory.

Fig. 1 Wilcze Gardło - Wolf's Throat in Gliwice (Glaubenstatt) - urban layout - location of the plot has been marked; source: Municipal geoinformation system: http://msip-mapa.um.gliwice.pl/

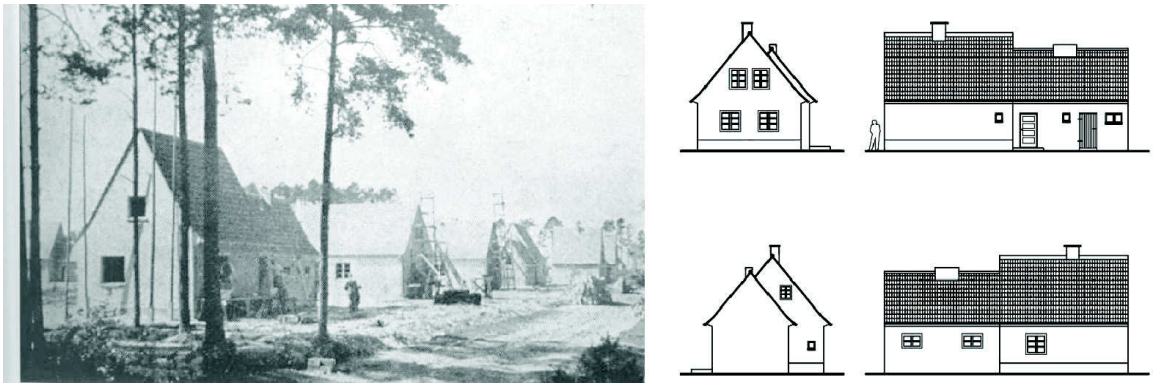

Fig. 2 Wilcze Gardło - Wolf's Throat - typical house [8]

There were 4 different types of houses characteristic for the site: all of them had pitched roof with barely no detail. Part of the building had sloping roof on one side and there were bathroom or kitchen with entrance zone.

Fig. 3 Single Family House by Magnolii street - existing house; image by Tomasz Bradecki

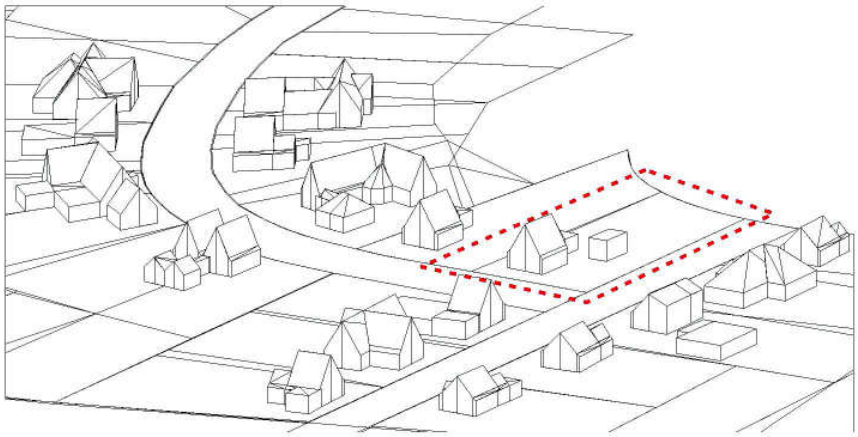

Fig. 4 Axonometric view - the plot marked and close neighbourhood; image by Tomasz Bradecki

The appraisal for the Wolf's Throat housing area has been presented in Table 1.

Tab. 1 Conservation area appraisal for Wolf's Throat in Gliwice case study - on the basis of English Heritage appraisal [5]

	aspect	*commentary*
1	Location and setting	Area, that is located in long distance to historic center of the Gliwice city; remains housing area on the outskirts of the city
2	Historic Development	Urban layout planned and built at one time; characteristic for one period
3	Architectural Quality and Built Form	Dense built form, average architectural quality, 4 types of houses
4	Open Space, Parks, Gardens and Trees	Soccer playground and open space in conservation area
5	Character Zones	Main axis with characteristic buildings, buildings' location on the plot and plot layout, street layout
6	Positive Contributors	Front elevations and houses' front: including fence type, elevation materials
7	Locally Important Buildings	Buildings that start and close the axis of the urban layout

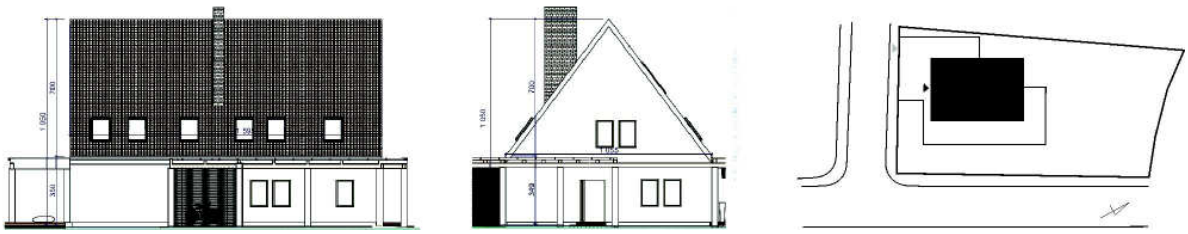

Fig. 5 Single Family House by Magnolii street - design; drawing by Tomasz Bradecki

Fig. 6 Single Family House by Magnolii street - design; drawing by Tomasz Bradecki

As the structural elements of the house are in bad condition (old brick, humidity) and so the design proposal suggested by the authors was to rebuilt the house in a form that resembles the existing. The design layout was a slightly bigger house located in same place on the plot as existing one, with pitched roof of the same angle, with roof overhang on the same height. The exterior materials proposal: roof tile and render were the same type and color as in the existing building. Also the size of the windows were narrowed to resemble the historic size. Although the design meets all that criteria, there is no simple decision: local conservatory decided, that according to the LDP [10] only reconstruction of the building means rebuilding it with the exact elevation width, roof height etc. and all parameters as the existing one. If we consider contemporary standards for rooms number size and basic need for total area 100-120 sqm as minimum in single family house - it exceeds the historic layout.

This case study shows, that setting conservatory standards and strict local law (LDP) may not always be successful solution. The plan allows only for building extension to the back side of the plot in its irrational scale and form which does not allow for design of the standard room size. Authors believe that design proposal is a good compromise and such concept would fit into historic urban layout even thought it is not reconstruction or preservation scheme.

The Case Study of Szobiszowice

Szobiszowice (Schobischowitz) in Gliwice - one of the urban neighbourhoods layout set up by Germans before the II-nd world next to *Nord* housing estate. Originally (*Petersdorf, Sobischowitz*) it used to be a village next to Gliwice and it became a part of the city in 1875. Some of the housing estates that were set on outskirts of Gliwice were designed in 1939-1944 period and were build for german workers or military forces. Szobiszowice are well known because of the historic radio tower, that has been built in 1934. One of the World War II starting incidents happened there: the false flag operation was performed by Nazi forces; today it is the tallest wooden tower in Europe.

Fig. 7 Szobiszowice (Schobischowitz) in Gliwice - location of the plot has been marked [1]

The housing estate located on aproximately 6ha site is sided by 3 different streets: Lubliniecka street, Polna Street, and Na Miedzy street (see Fig. 7). The triangle shaped layout has an axis with cul de sac which serves as the finish for Na Miedzy street. There were two typical semi detached house layouts characteristic for the site (see Fig. 8). However many of the buildings has already been rebuild with extension or converted with different architectural style and manner. Some of the extensions are visible from the front and change the original architecture of the building dramatically (see Fig. 9.). Original buildings are very small for contemporary standards (one half provides ap. 70 sqm) with relatively packed functional programme: small kitchen and toilet, living room and also very small area in bedroom on the second floor.

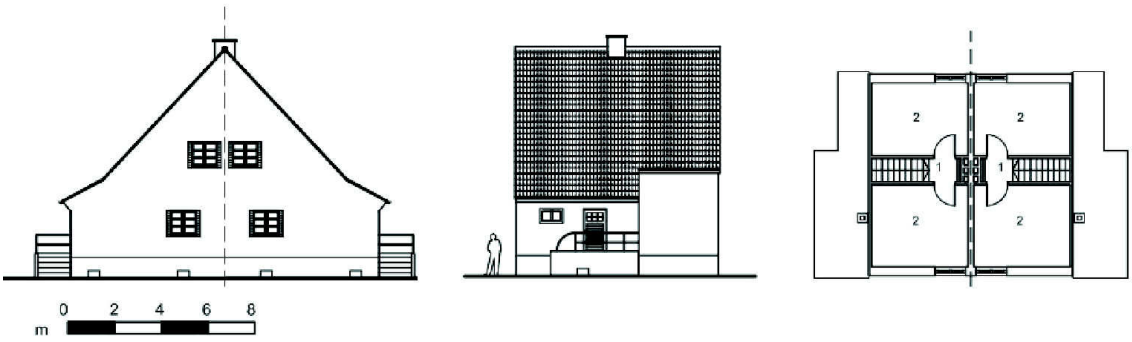

Fig. 8 One of the typical housing layouts in Szobiszowice; semidetached house

The appraisal for the housing area Lubliniecka, Polna, and Na Miedzy street has been presented in Table 2.

Tab. 2 Conservation area appraisal for Polna street 30 case study - on the basis of English Heritage appraisal [5]

	aspect	*commentary*
1	Location and setting	Area, that is not located close to historic center of the Gliwice city; remains housing area in the city
2	Historic Development	Urban layout planned and built at one time; characteristic for one period
3	Architectural Quality and Built Form	Dense built form with high density, average architectural quality, two types of houses
4	Open Space, Parks, Gardens and Trees	Park and open space close to area but no open space in research area
5	Character Zones	Cul de sac are, and plot layout
6	Positive Contributors	Front elevations and housess' front: including fence type, elevation materials
7	Locally Important Buildings	Buildings that start and close the axis of the urban layout

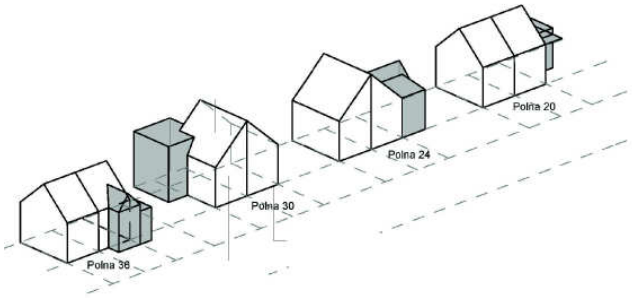

Fig. 9 Polna street axonometric view with the same housing types but every single one with different extension attached since 1990 and Polna 30 case study with extension proposal by authors

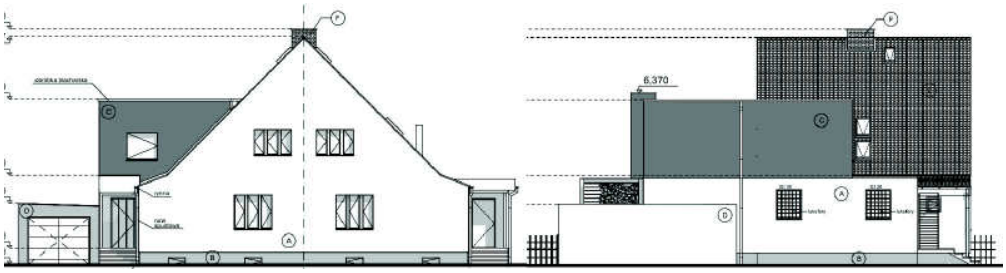

Fig. 10 Polna street 30 - case study design proposal

Fig. 11 Polna street 30 - case study design proposal and existing building

Design proposal suggested by the authors (see Fig. 10 Fig. 11) was adding a simple new form to existing one, but with no interference from the front. The LDP[11] allowed for such a solution and the project has been approved by local authorities and is under construction. However the conservatory policy set in local law was not obvious and easy to interpret and so special consultations were necessary. This case study shows, that contemporary solutions might be mixed with historical approach and still remain in harmony. Authors believe that this is a good example of a conversion of historic building which meets the conservatory standards.

Summary

Both design proposals presented in the article can be an example of an attempt how to compromise conservatory standards, local law and real needs. Although conservatory standards should play a major role in contemporary development, they must be faced with basic life standards which have changed over time. To strict policies will neither help to keep or protect the buildings which are not exceptional and won't become monuments. Therefore individual approach to every single case study is essential to provide reasonable and sustainable development for areas of great value.

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Historic Preservation and Planar Protection of Historic Seats in Olomouc Region

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Keywords: Historic seats, historic core, renewal, protection, historic preservation, historic reserve, heritage zone.

Abstract. The contribution is dealing with the historical reservations and zones, their declarations in historical seats of Olomouc Region and established conditions for their protection. The aim of this article is to describe the development of the planar historic protection in the historical seats of the mentioned region as well as the common and the diverse features for the protection and their practical performance.

Urban Engineering and Heritage Preservation

The City Engineering applies a multidisciplinary approach to the historical settlements in the Czech Republic [1]. In this regards it is also meeting closely the heritage preservation Both disciplines, despite their diversity and procedures must cooperate to achieve the objective, which should be the preservation of historic cores of urban settlements or their enrichment. This procedure provides great opportunities for the development of historic cities in the Czech Republic. To preserve them, but also to fix certain limits for their further development, there are applied different levels of heritage preservation.

Urban Heritage Areas and their Protection Zones [2]

The declaration of the historic centre of the city of Olomouc to become a heritage area was pronounced in 1971 and later it was modified in 1987. The declaration of the heritage centre of this city must have been no surprise, because in this case, a number of symptoms like a large area of the historical centre, antiquity, many cultural monuments, historical significance of the city, a combination of secular and spiritual authorities in the past (princely mansion, fortified town, the seat of government and church administration), etc. is co-existing f tin one place. The declaration was later continued by defining a protection zone of the heritage area and registering of selected cultural monuments on the UNESCO list. The establishment of the protection zones reservation has been problematic since the start, because it lacked determination of the conditions applied on heritage areas. Already in August 1987 an attempt was made to correct the dysfunctional situation when the District National Committee in Olomouc was asked to eliminate the occurred error and to correct and complete the decision. To remedy this, however, has never taken place and the consequences of failure conditions negatively impact (especially, when dealing with new construction) until today.

Lipník nad Bečvou historic centre was pronounced the heritage area as one of the last one in the Czech Republic. The fact, that it happened relatively late, does not mean there is reduction of historic and architectural qualities of the city, as because at the same time Plzeň and Brno was pronounced then later on there were Kolín and Příbor. Lipník has been on the list of cities proposed to be declared since the mid-seventies of the 20th century, but, probably originally it was intended only for protection through heritage zone, the preserved graphical plotting range of the future heritage dates from 1985 [3].

To ensure the new heritage areas (and similarly for the other cities mentioned) there was an obligation determined: *" When procuring the planning documentation, the importance of functional and spatial structure of the city must be strengthened and the scenic value must be protected, while the historical floor plan and corresponding urban structure should be respected in the heritage area and the corresponding urban structure..."* As extremely prudent, better visionary appears the condition that: *"In the heritage area, the buildings, urban spaces and areas can only be used in accordance with their capacity possibilities and their historical value of the reservation."* Other conditions related to the design works and implementation of projects emphasised on: "*The respect to the heritage value of the heritage area, individual premises and their dependences and urban areas and surfaces. "*As an important requirement appears to be that: *"When a new construction in the heritage area, the architectural relationship to the cultural monuments and their premises must be taken into an account, it is necessary to continue in building in the view of their volume and surface composition and environment and to accomplish their units by the adequate means of contemporary architecture."*

Four years later in The District Office in Přerov, the Department of Culture, published *"In order to protect the heritage area, in agreement with the Department of Construction and Land Use Plan of the Municipality of Lipník nad Bečvou, the decision to determine the protective zone of City heritage area in Lipník nad Bečvou."* The conditions of the pre-set protection have generally been appropriate to the objectives for which they were claimed the height of new buildings and the mass breakdown should have been build on the scale height of the existing buildings in urban heritage area and surrounding buildings in the protection zone; also, the significant visual axes and vistas of the historic centres should have been respected and preserved. Also the existing street network should have been taken into an account. The instruction of the reasons for defining a protection zone is also rather understandable. *"The establishment of a protection zone Lipník means an increased monitoring of the protection of the historic core from the adverse effects of an intervention especially in construction activities in the established protection zone."* The protection zones were more formally defined, nevertheless, in practice there is no application of the decision because allegedly in this case the negotiated definition was not in compliance with the applicable legal framework, and therefore is invalid [4].

It may seem that the chances of showed that there are still some reserves, as we can be convinced by the prepared declaration of Luhačovice to become a heritage area. On the other hand, there are also sad cases where the heritage protection was reduced or completely eliminated, examples is the city Horní Slavkov ort he city Planá (near Mariánské Lázně).

In the area of Olomouc region is not space for pronouncing a new urban heritage areas and therefore we must protect historic city very good on this present day. The cities such as Horní Slavkov and Planá are sufficient warnings.

City Heritage Areas and the Protections Zones

The proposal to declare the historic core of the city Prostějov as a heritage area was drawn by the Brno department of the State Institute of Monument Preservation and the Protection of Nature (SÚPPOP). The graphic supplement dates on December 1984. Since Prostějov at that time belonged to the South Moravian Region, the declaration a heritage area in Prostějov was declared by a decree of the Regional National Committee, unlike other areas in the later declarations, when it was ordained the Government of the Czech Republic, as well as due to changes in the way declaration. For Prostějov, there were preparations to be declared a heritage area and concurrently, the indication of its protection zone was being prepared, as we can learn from the letter as of December 28, 1989. The intended protection zone should have been rather extensive. That was probably one of the most essential reasons why the announcement of the zone has never come true. The intended size, however, could be justified. The protection zone was supposed to involve largely relatively intact streets and squares with quality architecture, dating from the last quarter of the nineteenth century until the first half of the twentieth century. Some buildings would certainly withstand the strict standards imposed on the cultural heritage, but the declaration was not

pronounced for various reasons. In 1990, the debate about the declaration of the protection zone continued in which the Chief Architect of the District National Committee (later the District Office) actively took part in, who pushed through removing of Rejskova street from the protection zone and its direct integration into the heritage zone, as Rejskova street is one of the most representative parts of the city. To promote such legitimate requirement was still possible, because the heritage area was declared on November 20, 1990. Though, that did not happen. On the contrary to the positive input, however, the department of the Chief Architect disagreed with the condition to maintain the hight of the buildings of the protection zone, arguing that the low building area is supposedly worthless. The resulting contradiction is rather crucial as it reveals two different perspectives on an urban planning of the city. A representative of the region sees the room for the new, higher constructions and the existing low-floor is understood as something obsolete, provincial and even rural, perhaps as a potential area for possible investments. Therefore, the heritage care started to be afraid of the loss of the real face of the character of the city, the removal of its peculiarities and depreciation of close and faraway views. The newly submitted decision to declare a protection zone bears the date November 20, 1990, which evokes the idea of kind of coordination between the announcement of the heritage area and protection zone, but the protection zone was not declared at the end, thereby the best opportunity to strengthen the extensive conservation of historic parts of the city and prevent the realization of disruptive interventions in the immediate vicinity of the historic city centre was wasted. The negotiations of the concerned parties then continued throughout the entire first half of the nineties. Out of the conditions that were supposed to be applied within the protection zone we can highlight the essential ones from the perspective of the heritage care: *"Preserving and cherishing the character of individual buildings in urban and originally suburban parts, keeping urban planning scheme of regulation of the 20th - 30th years of the 20th century (shapes of the squares, a regular grid, etc.), prioritizing when dealing with traffic routes maintaining the individual residential blocks and other buildings.*" Over time, eventually, the effort to define a protection zone of urban heritage conservation area in Prostějov just trailed off. At the turn of the millennium, the department of the State Institute of Monument Preservation in Brno processed the so called "Revision of heritage preservation zone boundaries in Prostějov" that would include the most valuable parts from the urban and architectural point of view from the project of the protection zone. However, even this option of the range of the planar protection was not approved [6].

The urban heritage areas in the Olomouc Region were declared by the decree of the Ministry of Culture of the Czech Republic. Namely, there were the heritage areas in Branná, Hranice, Litovel, Mohelnice, Přerov Šternberk, Štíty, Šumperk, Tovačov, Uničov and Zlaté Hory. Then, in 2003 there was declared another heritage area in the city Potštát [5]

As well as for Prostějov, the protection zones of the heritage areas were prepared for other cities like Šumperk, Mohelnice, Přerov, Branná a Tovačov. In Branná, the protection zone does exist; nevertheless the protection is not taken into an account in practice. In Přerov, the protection area is a functional part of the planar heritage protection area of the city. The protection zone appropriately follows the heritage area, in size it is not excessive, if necessary though, it exceeds the River Bečva, it contains even the monuments of villa housing, and also it protects the environment, which could be rather difficult under certain circumstances to defense from the heritage preservation point of view.

On July 2, 1993 the Department of Culture of Šumperk District Office annulled their former decision to declare a preservation zone of the heritage area in its entirety for the alleged legal defects.

In Tovačov, the protection zone of the heritage area was defined in 1995. The decision on the establishment of the protection zone contains among the border classification also the identification of the standard conditions, which must be kept within the boundaries.

City Heritage Areas and the Protection Zones

The determination of the conditions for the planar protection through the heritage reservations (in our case it is Lipník nad Bečvou) and the protection zones is not fundamentally

indistinguishable. In all cases of the declaration - the statement or the definition (i.e, where the conditions of the protection were set), the emphasis is put on keeping the height of new buildings and its mass division so that it followed the vertical scale of the existing buildings, on the use of individual premises and areas according to their capacity and technical conditions and in accordance with their historical value of the reserves and zones; next to the respect of the outstanding visual axes and vistas of the historic centres, respecting the existing street network, squares and structures (square shapes, regular grid), etc. **All such conditions are aimed at one goal - to preserve the character of our historic houses and to prevent the damage or destruction of their elements and the entire structure.** The conditions are not infeasible and a proper state and municipal administration and good designers, as well as the planners can seamlessly work with them for the benefit of residents of historic settlements and their visitors.

Summary

The paper aimed to bring the issue of the preparation and supporting the idea of the planar protection of chosen cities in the Olomouc Region and conditions of such protection.

The planar protection of the historic mansions in the monitored region was not a cakewalk. Behind the preparation of the proposals for the protection of each individual sites we can find a large amount of work of people who participated in the researches of the cores of the cities and building-historical surveys of individual buildings, contractors of maps and graphic materials, persons preparing regulations, decisions or orders. Despite these efforts sometimes, for various reasons, the whole demanding task vanished, and it did not end in a successful evaluation, which subsequently have enabled the transformation of towns with significant adverse effects for the city. Despite these potential failures, the whole work expended in a huge benefit for a thorough understanding of urbanism of the most valuable historic mansions of the Olomouc region and for the efforts to maintain its character and uniqueness.

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Sustainability of Development of Prefabricated Housing Estates – Model Solution of Housing Estate Devínska Nová Ves, Bratislava

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Abstract. The regeneration of prefabricated housing estates is particularly topical issue in Slovakia. Of the total number of 1.78 million dwellings, more than 600,000 are located in prefabricated panel buildings, representing a third of all dwellings in Slovakia. Large prefabricated housing estates were built in the period 1960 – 1990, which means that many of them have already exceeded the projected 50-year life span. Ensuring the sustainable development of prefabricated housing estates and the architecture of prefabricated panel buildings is not only a professional theoretical challenge, but also a current topic of present practice.

Introduction

Definitions of the terms sustainability, sustainable construction, sustainable architecture, guide us primarily to adopt a philosophy of sustainability as a philosophy of a certain model of behavior and consequently a lifestyle. This means rethinking many of our environmental attitudes and behaving in such a way that our needs do not conflict with the needs of future generations. It is primarily the redefinition of needs, interests and demands that are placed on the contemporary architecture. In relation to the architecture of prefabricated housing estates, it is not only necessary to realize the fundamental aesthetic and architectural values of the original apartment buildings, or whole housing estate, but also the opportunities that this type of housing can offer in relation to the current demands of its users. Therefore, it is necessary to examine the actual condition of existing prefabricated architecture for adaptation to the current demands.


Fig. 1, Fig. 2: Prefabricated housing estate Dlhé diely in Bratislava, Slovakia. Photo: Andrea Bacová.

Prefabricated housing estates were built in the period 1960-1990 as a direct effect, or a part of the significant industrialization of cities. The growing industry caused the influx of population from rural areas to cities, which in turn prompted an acute shortage of housing in the cities. Large housing estates with prefabricated panel buildings responded to these needs by its urban concept, architecture, operation and construction technology. Centralized management of society meant centralized planning of housing estates with all its advantages and disadvantages. More than half a century of operation of these residential structures entitles us to objectively evaluate it and take a professional attitude on *how to further ensure the functioning of the prefabricated housing estates and its prefabricated buildings?* Results of the long-term research that has been carried out by the

Institute of Architecture of Residential Buildings at Faculty of Architecture STU in collaboration with the Faculty of Civil Engineering and the Austrian Academy of Sciences confirm the need for a complex renovation. Under the term "complex renovation" we understand *such structural, technical and architectural changes that lead to an increase in the architectural value of a prefabricated building and overall more aesthetic environment. The objective of complex renovation is an extension of life span of prefabricated buildings and housing estates within the sustainable development.*

In addition, it is necessary to acknowledge and preserve its values because: "prefabricated housing estates are an important part of the European cultural heritage that represent ideas of modern architecture and modern urbanism of the second half of the 20th century with all advantages and disadvantages." [1] They are an indispensable symbol of housing culture for a large population. Also for this reason, it is necessary to approach the renovation of prefabricated housing estates in a way that the original architectural values are not only maintained but also positively developed in the whole process. "Effective and proven form of sustainable development is the concept of a compact city, which is associated with the intensification of the existing urban structure, the use of available space within the built-up area and the limited scope of new development outside urban areas." [2]

Urban and architectural values of prefabricated housing estates

Urban concepts of majority of housing estates followed the principles of the Athens Charter, distances between buildings were designed in order not to overshadow each other and amenities were designed according to the technical-economic indicators. Besides the apartment buildings, kindergartens, schools and the necessary green spaces were built. Sufficient free space between buildings allowed for public green areas in many places, which is seen as a positive element in hindsight. These moments can be considered as the positive signs and urban value of these residential structures.

Architecture of prefabricated apartment buildings was created in the process of search for a universal building, which would meet housing requirements of broad social layers. Its principal features and values are: simplicity, moderation, proportionality, tectonic balance (ratio of solid walls and window openings, vertical and horizontal elements), color clarity and appropriate rhythm of windows. Later, separate architectural elements were developed - balconies, loggias and entrance canopies - also in a very simple, minimized form. More significant enrichment of new architectural elements occurred in the 80s of the 20th century according to the postmodern principles. These trends were reflected in the fragmentary position in prefabricated housing estate Dlhé Diely in Bratislava (T.Gebauer, P.Paňák, L.Kušnír et al.). *Values of prefabricated panel architecture lie in its minimalistic volume expression that matched the requirements of universality, standardization and prefabrication of construction.* The floor plans of prefabricated apartment buildings also fulfilled the requirements of versatility and flexibility in an excellent way. The layout of 3 bedroom apartment on the area of approximately 75m^2 fulfilled the needs of a family of 4 with the minimal requirements on the size of individual rooms. At present, 1 or 2 bedroom apartments are being built on the same area.

Urban concept with optimal density and plenty of green spaces, architectural moderation along with practicality and versatility of layouts constitute essential values of prefabricated housing estates.

And the future…

At present, only the basic technical renovation of prefabricated buildings is carried out, which is mainly focused on thermal insulating, replacement of windows, renovation of roofs and other technical components of the buildings. The mentioned form of renovation is subsidized by the State Housing Development Fund, which offers favorable long-term loans. Although this type of renovation has undeniable positive effects, it cannot be considered as complex. In the process of a

complex renovation, from an architectural perspective, the focus is on that part of the renovation, which will contribute to the restoration and enhancement of the architectural values of a prefabricated apartment building. This concerns in particular facades, window openings, balconies, loggias, entrance spaces and connection of ground floor with street. The unique opportunity and potential for altering the architectural expression of prefabricated apartment buildings lies in the roof superstructures as well as additional constructions of gable walls.

The optimal situation for such an approach is when the prefabricated apartment buildings are temporarily uninhabited and thus allow for more radical interventions. But in our conditions, this is a rare situation. Such a unique renovation was recently carried out in Rimavská Sobota, where the prefabricated apartment building was completely renovated (2013 GutGut).



Fig. 3, Fig. 4, Fig. 5: Completely renovated prefabricated apartment building in Rimavska Sobota, Slovakia. Photo and visualizations: GutGut.

If we want to contribute to the improvement of the process of complex renovation in our conditions, it is necessary to adjust the process of a complex renovation for specific conditions. Private ownership (more than 90% of apartments) complicates the situation in the sense that it is necessary to come to an agreement with more entities and for this reason it is necessary to have good management for preparation of investment. Setting up the financial plan and the progress of renovation is the most important step in order to successfully meet the requirements of sustainable development.

The process of renovation should be focused on *such construction, technical and architectural changes that lead to an increase in the architectural value of prefabricated apartment building and an overall more aesthetic environment.* These are also the requirements of the above defined complex renovation. Prefabricated panel architecture can be considered as a sustainable only if the process of its renovation is focused on the restoration of architectural values.

Positive interventions

Therefore, let us concentrate on the essential positive interventions that appropriately affect the renovation process. Within the research Regiogoes we verify new models of living in the border region of Bratislava with spatial overlap to Austria. Part of the research is also the revitalization of the prefabricated housing estate Devínska Nová Ves, whose potential we follow in two basic levels - urban and architectural.

Urban characteristics of the housing estate Devínska Nová Ves allow for improvement of existing living conditions by addition of new residential structures that will provide the environment with higher spatial, functional and operational quality. In our research project we focus on intervention that contributes to the humanization of wider environment by forming segmented and differentiated exterior spaces. The concept of applied research begins at urban level - by designing public, semi-public and semi-private spaces and continues to architectural level - in the form of newly designed apartment buildings with generously dimensioned loggias, terraces and balconies.

Researched locality - housing estate Devínska Nová Ves is designed around basic compositional axis - Eisnerova street, which forms the core street space and spatial backbone of the entire housing estate. In this section, two research sites were selected - Entrance Gate and Meeting Point, both of them create endpoints of Eisnerova street. *Entrance Gate* is a gateway to the housing estate Devínska Nová Ves. At present, this area is occupied by a petrol station and heating plant. The area is deteriorated and unused and in addition it is also affected by the proximity of railway line.

The role of the feasibility study in this locality was to create a progressive urban structure, which will impress residents and visitors by its attractiveness, eliminate the negative effects of the railway line and create spaces for meeting. The designed apartment building shields the exterior residential areas from the noise from railway by its shape and location, while at the same time, it provides a number of semi-private spaces within its volume for adequate social interaction. It is the semi-private spaces that create a good structural basis for the formation of social ties. Its quality is reflected in good neighbor relations, which have a significant impact on the participatory care of common areas. Research has verified that the good architectural concept can be a springboard for the creation of social ties, which will form the basis of voluntary activities that improve common residential environment.

In addition, it can be assumed that these activities are naturally extended to the original structure of existing housing estate, where there is enough space around the apartment buildings. Although this process requires an urban regulation, we assume that for its successful fulfillment it is necessary to use primarily the means of social participation.

Fig. 6, Fig. 7: The overall visualization and detail of the apartment building in the Eisnerova Street in Devínska Nová Ves - architectural study. Author: Dominika Podolská, Consultant: Branislav Puškár, Institute of Architecture of Residential Buildings, FA STU.

The second researched locality *Meeting point* forms the border between the old village Devínska Nová Ves and the prefabricated housing estate. Here meets the original area of traditional family houses with an extensive structure of higher prefabricated apartment buildings. Public spaces for cultural and social activities are absenting here. The subject site is bounded by apartment buildings, family houses, a cemetery and a department store. In this position, the center of the whole housing estate Devínska Nová Ves was proposed already in the original zoning plan of the 80's of 20th century. But it has never been built. The areas in the housing estate are lacking a square as a strategic public space.

In the feasibility study for the site Meeting point, we focused on choosing proper scale of new buildings which contributed to the elimination of negative impact of large impersonal spaces of housing estate structure. We focused on sensitive accenting and defining of the square, which creates sufficiently human space, integrated into the area of existing housing estate. Research confirms that the formation of a common joint space enhances the feeling of home, identification with place and also increases the representativeness of the whole area. An important factor in design of the site Meeting point was to maintain the visual contact with the natural environment of Devínska Nová Ves. This fact distinguishes it from other housing estates in Bratislava and creates an important added value for living that can also positively influence mental and health state of its residents: “Man is inherently part of the natural environment and its normal and natural state is to

be healthy. Therefore, each of us has its self-healing mechanisms whose functioning is dependent on the natural aspects.“ [3]

The proposed urban concept uses strictly diagonally defined urban structure that visually distinguishes the new space. Diagonal deployment of the structure creates a sharply defined boundary between the new "prefabricated" and the old "brick" part of Devínska Nová Ves by using different scale, features and differentiation of common areas. Ground floors are designed higher, taking the space of the first two floors. Above this level, attractive semi - private spaces are designed that encourage the formation of social interaction among residents. The roof of the plateau is covered with vegetation, which makes it more pleasing for high-rise views. The abundant supply of apartments, which allows for selection of a variety of single and multi-storey apartments for different social groups (singles, young families, seniors, business travelers) contributes to the social differentiation.

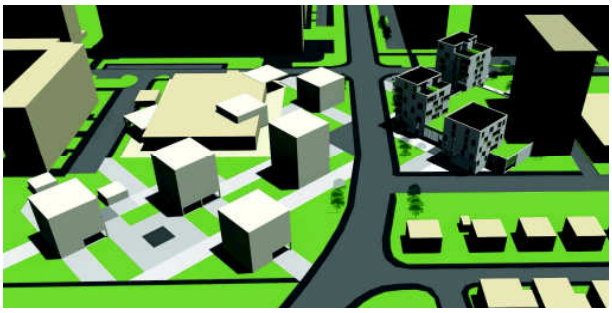

Fig. 8, Fig. 9: Urban concept and scheme of distribution of functions in the new multifunctional residential building in Eisnerova Street in Devínska Nová Ves in the area of Meeting point. Author: Barbora Beláková, Consultant: Andrea Bacová, Institute of Architecture of Residential Buildings, FA STU.

Conclusion

Architectural intervention in the areas of prefabricated housing estates is often adapting to its environment, thereby creating compromise solutions. But prefabricated housing estates are a vital and dynamic part of cities and therefore they require innovative housing solutions. The question remains how to ensure the sustainable development of housing estates and architecture of prefabricated buildings. The solution may lie in such concepts in the areas of housing estates that will cleverly take into account the social aspects of living for different minority groups of residents. Designing human common areas, suitable for social adaptation to the environment, will create strong social ties over time. Not only in relation to the environment, but also in positive interaction among its residents. These will evidently be the driving force for the sustainability of new ideological and architectural concepts of housing.

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Sustainable Construction in the Conservation Area

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Keywords: Attic, residential houses, loft space, environmental context, Socialist Realist architecture.

Abstract. Contemporary large cities have valuable historical centres from an architectural point of view, which are protected by the Heritage Offices. There can be found a lot of underused lofts under the roofs of those houses, and this is the place where we can find suitable premises for the recovery of the existing environment in its entire environmental context. A sensitive attic unit implemented into the existing generously built roofs in houses following the style Sorela is feasible. Sorela has been widely applied in newly emerging urban areas as for example Ostrava and its suburb Poruba which has been started to be built according to a building plan by Vladimír Meduna since 1951.

Introduction

In most of our cities there were built the housing estates which have always been subject to criticism of professional and general public. In recent years the approach has changed and there are also positive feedbacks not only on the civic amenities, which correspond to the structure of the population, but also on the currently grown greenery. In urban areas, the interest in new housing units, especially in the historic centres of cities increased. However, these apartments must comply with the modern trends, this means that they should be dealt with using the latest technologies and materials that will ensure the internal environment prescribed by the legislation [6]. People prefer variability of disposition of their apartment, where possible even unusual solutions.

Today´s common problem of historical town centres seems to be little room and the inability to enlargement of existing flats or creation of new flats. The solution can be found under the roofs of houses where much underused room can be found. The space under the sloping roof formerly did not used to be used for a permanent dwelling of people, but mostly served just as a completion of the construction and protection from the weather, or through their shape and structure shape it made the architectural expression of the building.

The implementation of loft conversions gives the opportunity to create unusual premises often in a very attractive environment without thickening of the existing development. In terms of strategies for sustainable urban development the renovation of the existing buildings and redevelopment of existing settlements is an essential aspect. The emphasis in the solution of the design of attic premises must be given to the technical state of the existing building being renovated, further on its capacities and the purpose of the future building works as well as on the technical conditions of existing pipelines and facilities.

A sensitive attic implemented into the existing roofs in houses in the style Sorela is a demanding engineering discipline. The first step to do this is carrying a detailed survey of the existing building including the available archival drawings. Residential buildings in the centre of the city district of Poruba usually have six floors, with a multifunctional parterre in the continuous urban row house. Conservationists shall ensure that the overall impact of the terraced houses and they shall not allow the use of any significant elements into the roof planes, such as skylights, terraces and large windows.

History

After World War II there was the division of powers in Europe. Especially after the February power coup in 1948, the Communist Party came to power and so the former Czechoslovakia came under the influence of the USSR. The Soviet designs began to be enforced violently into all areas of life. The architecture pushed the style under the communist ideological dictate of the socialist realism, today called Sorela [3]. Architecture became a centrally managed art which must be understood by the working people and which must fulfil workers with pride of their victory, success at work and must reflect the love towards the Soviet Union. Following the example of the Soviet Union, the architectural work turned to historicist, classicist forms, emphasizing the monumentality of buildings in our environment.

Fig. 1, 2 Ostrava-Poruba, a set of residential buildings called Arc (Socialist Realist architecture)

Sustainable Development

The sustainable development is targeted process involving a comprehensive set of procedures which comply with generally applicable environmental policies. Its basic principles incorporate broader aspects that can be summarized in three key environmental areas:

- the quality of the environment, friendly use of natural resources,
- economic efficiency and limitations,
- social and cultural context.

Even in the preparatory stage of the design of the building, selection of components and especially the choice of material [1], [2], it is important not to neglect the basic environmental principles. In terms of building materials we prefer recyclable materials. The general principles of sustainable building construction bring new requirements that especially include:

- reducing the overall energy performance of buildings from the implementation of the project until its demolition,
- reducing the material intensity with the possible use of recycled and raw materials,
- the impact of construction on the environment throughout its existence,
- dominance of modernization and refurbishment over demolition.

The environmental concept sees one of the major challenges of sustainable construction and sustainable development of settlements in the protection and preservation of open space and the structure of existing residential units. Better use of the existing premises, not only in the heritage city centres leads to:

- limiting urban sprawl and avoiding fragmentation of rural land
- remediation of the areas damaged by the demolitions involving new technology of soil cleaning,
- adaptation and regeneration of the existing environment.

In terms of strategies for sustainable urban development of urban buildings the reconstruction and redevelopment of existing settlements is an important aspect, which corresponds to the effort to use attic space for building new flats.

Implementation of a Loft Conversion

The View of the Conservationists

In 2003 Ostrava-Poruba was declared an urban conversation area. Department of Monument Preservation of the Ostrava City Council provided a number of restrictions for implementation of a loft conversion.

Acting as the heritage supervision during the repairs and reconstructions of built-ins in terms of conservation care we especially pay the attention to the sensitive design and implementation, which will not allow the degradation of roof areas of buildings and protected monuments. There have always been put high aesthetic demands on the roof as a distinctive architectural element. For important buildings the roof became the culmination of a distinctive architectural expression.

The shape of the roof with the valuable truss preserved, type of covering and method of laying, above roof features such as dormers, chimneys and other accessories have always formed an impressive complex. Especially in the historic centres of cities is the roofing material the important means of expression [7].

Preparation and Implementation

Built-ins into existing buildings are difficult engineering tasks. Only after assessing the investor's requirements, the building office and conservationists we can proceed to the first solution of the loft space design.

The first step was a thorough survey of the existing building, which was initiated by studying archival drawings. This was followed by a static on-site survey and assessment of the technical parameters [4], [5] of the existing building.

The realized residential house is located in the heart of the city district Poruba and it is designed as a multifunctional one with parterres, where the commercial premises are located. The basement house with six floors above ground is located in a contiguous urban row house. The building was built in the 50s of last century in the architectural style of "Sorela".

The conservationists only allowed skylights. On the other hand, it was necessary to keep all the currently unused chimneys and maintain the overall character of the terraced house.

At the same time it was not possible to choose the option where the thermal insulation would be placed over the rafters and thus gain more interior space. The terraced house situated in a conservation area does not allow even the slightest deviation from the height or shape of the roof planes of even one ordinary object, it would cause a significant disruption of the appearance of all the houses in the street. For this reason the more common option of installing the insulation between and under the rafters was chosen.

The structural system of the house: a modified skeleton of reinforced concrete (structural system T 15-52) with brick siding of brick blocks. The interior walls are made of solid and perforated clay bricks. The ceilings of a residential building are made of reinforced concrete prefabricated beams and ceramic inserts MIAKO.

The big advantage was the existing staircase that leads up to the attic and within the unchanged dimensions, the slope, the material, including window opening (for day lighting and natural ventilation of the staircase area) above the highest intermediate landing.

The construction works thus did not interfere with the existing common areas of the house and they were realized only in the loft, thus eliminating any nuisance of the lower levels residents by the noise and dust from the on-going conversions. This is very important when building works are carried out during the normal operation of the house.

The attic space is limited at the two longer opposite sides restricted by sloping roof planes on the two shorter opposite sides by brick gable walls. Due to the location of the object in the row houses it was not possible to use the gable wall to place the windows.

The roof is made up of wooden truss of purlin system with pillow block stools fully tied. Its saddle-shaped allowed relatively comfortable use of the loft space. The saddle-shaped roof over a

rectangular ground plan with an inclination of 35 °, is the oldest and most widely used roof shape in our region. The roof cladding is made of smooth metal roofing.

The wall plate of the roof truss is rather a kind of eaves beam placed on the columns. With this solution it was not difficult to meet the minimal headroom of 1300 mm in the residential rooms. With a width of almost 15 meters of the object and the existing slope of the roof planes it is not a problem to fulfil the requirement of minimum headroom of 2.3 m. For greater comfort and complexity of the suggestion of false ceiling there was actually designed the headroom of the room of 2.7 m.

To avoid overloaded existing ceiling and also not to cause the proposal to be unnecessarily tied up by supporting system of the building, the dry construction system using grating drywall structures was used. It was carefully designed and utilized the entire system including the floors of the same manufacturer, which guarantees the reliability of the structures and guaranteed by guarantees.

For horizontal ceiling design there was also used the drywall system, which was accompanied by a cassette ceiling with mineral square plates.

The Connection of the Technical Equipment

There were considered individually the distribution of the drainage system, water supply systems and gas distribution, both in terms of capacitive and in terms of the technical condition of existing pipelines.

The connection of the drainage system was not the problem. The requirement to increase the total capacitive of the hydraulic flow of waste water in waste and the convergent pipe was satisfactory. For internal drains the ventilation of a convergent pipe must have been maintained. The ventilation pipes had to be taken out 0.5 m above the plane of the roof, minimum spacing of the vent pipe from the windows is 3.0 m, in the case it is not technically possible to lead the vent pipe through the roof into the open space, we design an air admittance valve.

Internal water supply was much more variable for the design of each distribution. For the management of individual pipes there were used plasterboard cavities of the wall structures on one hand and spaces below the grid floor on the other hand. An evaluation of the current status of water supply, that is, material and dimensions of the existing pipeline was performed.

Dimensions of pipes for cold water distribution were sufficient. The hot water supply was designed by local heating method, which was resolved within a heat source for the residential unit.

When using natural gas as the energy for local heating of hot water and heating it was chosen a closed gas combined boiler (group C) with the gas flue outlet and the combustion air above the roof plane.

A substantial part of the existing surrounding residential buildings are connected to district heating. One of the reasons for choosing the local heat source in this case was that the original building was designed and approved as a whole in relation to the existing heat source. After connecting any new radiators the violation of the existing hydraulic systems may appear.

Summary

The roof conversions are important elements in the regeneration and reconstruction of residential units not only in heritage zones. Their implementation requires a conceptual and responsible approach from the first preliminary design phase of the construction. Construction works respecting the principles of sustainable construction in this case is a complex solution that meets the needs of today without weakening the ability of future generations to meet their own needs. The need to take into account the principles of sustainable development refers to our existing legislation, construction law, when we talk about the urban planning.

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The Fate of Former Military Complexes and Areas

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Keywords: Military Area, Military Base, Missile Base, Military Object, Casern, Cultural Centre, Museum, Transformation, Reconstruction

Abstract: Objects or parts of urban structures which no longer fulfill their original function are losing life and often become the neuralgic points of our living environment. We got used to - for example - dysfunctional industrial architecture finding new utilization and providing a reliable basis for creating museums or cultural centers. What is the situation with former military complexes and areas? Are they capable of providing a good starting point and spatial setting for a museum or cultural center as well? The examples of realizations Chinati Foundation in Marfa, Raketenstation Hombroich by Neuss and Kasárne/Kulturpark in Košice prove that they are. Three similar and yet different examples of former military areas and complexes conversions show the way it is possible to revive forgotten, lethargic and often almost dead objects and areas.

Introduction

The artificial environment created by humans for some particular function has always its limits depending on various aspects – often it is determined by economic conditions or constraints influencing a whole spectrum of human and social activities and behaviour. Not of less importance are the social, political or natural conditions. In case of disadvantageous setting of one or more of the factors often the life of a building, area, urban complex or even a town ends. They stopped serving the function they were formerly dedicated to. In some cases we are witnessing a consecutive assimilation and adapting to a new situation, though often this adaptation is undignified. As an example let's mention a characteristic transformation of former "houses of culture" from the socialistic era in the post totalitarian time in Slovak republic. The development of small business and market functions sometimes enabled culture to vegetate but sometimes completely pushed it away – in this process the building with partially preserved former function or brand new one survived. In extreme cases of inability to adapt to new conditions, not only speaking of the former houses of culture, we come across necrotic dysfunctional and empty objects or more extensive parts of artificial human environment. The distinctive neuralgic points of the environment are mainly industrial, traffic buildings or warehouses and areas or complexes. The question is which one of the mentioned cases is worse – degrading former honourable function, for example culture, and letting it survive in unworthy conditions of an inadequate adaptation without any chance to a better new life or the clinical death of architecture or urban complex with a potential of Phoenix. It's important to add that new adequate restart of an object which lost its former function is not always a rule in a world turning around according to the rules of economic feasibility. Despite indisputable qualities of industrial architecture which has an undoubtable potential to be converted to cultural and sometimes even other functions such as offices, housing etc. fulfilling such intent is usually supported by respect to values of the past, often almost sentimental, strong conviction and good financial background. A former factory, power plant or warehouse – above all the ones with a certain historical value, are according to the nature of their architecture directly predestined to a conversion to cultural function, they have an acceptable space setting and dimension limits. What is the situation with more or less specific military areas, which lost their former purpose?

As two characteristic cases we can present Chinati Foundation in Marfa, Texas (USA) and Stiftung Insel Hombroich in Neuss (Germany). An example which is a bit different is the Kasarne/Kulturpark Košice (Slovak republic).

Chinati Foundation, Marfa

Chinati Foundation resides in a small town *Marfa* on the south-west of Texas. The institution was established by a well-known American sculptor Donald Judd to present his own artistic work as well as the work of his colleagues – John Chamberlain and Dan Flavin. During the years the collections were extended by the works of further artists, currently the institution serves for creative stays of artists and sponsors artistic and educational programmes. Though the institution possesses several objects directly in Marfa, the most important part of it is a former military area Fort D. A. Russel on the town periphery. The history of the military area formerly known as Camp Marfa reaches to the year 1911, when the cavalry built the first camp south-west of Marfa. The military area served army with a break in the 30-ties of the 20th century. After that it served to different types of military units or even as a war prisoner camp during the World War II. The end of World War II also meant the end of the military base. In the year 1949 the army sold its properties and gave donated estates back to Marfa. Part of the objects serving to the army especially the officers' houses were easily usable for civil inhabitants, some objects were rebuilt to new functions serving the town, for example warehouses or housing for senior citizens. Bigger part of the area was deteriorating until the 70-ties of the 20th century when what now is the basis of Chinati Foundation was founded. For the successful transformation of a damaged area to a known museum and cultural centre an optimal constellation of multiple circumstances was necessary. The artist Donald Judd led the critique aimed against "the modern exhibition machinery wherein art works are time and again continually traveling to new places, often exhibited in not very ideal situations and always endangered of being damaged by improper handling" [1] for a long time as well as against museum architecture and the creators of museum buildings: „Forms' for their own sake, despite function, are ridiculous. One reason art museums are so popular with architects and so bizarre, is that they must think there is no function, the clients too, since to them art is meaningless. Museums have become an exaggerated, distorted and idle expression for their architects, most of whom are incapable of 'expression." That's why he also posed the question: „Why are artists and sculptors not asked how to construct this type of building?" [2] Judd's efforts to create an ideal museum had started in the 60-ties of the 20th century in New York by adapting at first small spaces for an exhibition of his own works and in the year 1968 by buying a whole five storey historic building. He intended to adjust it so that it would serve to exhibiting art. Since 1973 the artist buys several vast estates in Marfa, his effort culminates in the year 1979 by the acquisition of an extensive former military area Fort D. A. Russel – whole blocks of former military buildings and land with area of almost 1,4 km^2. The acquisition was possible thanks to its financial expedience. In the beginning he invests his own financial resources, later he continues with help from Dia Art Foundation. The area has an ideal potential to fulfil Judd's intents. His ambition was to provide to the works of contemporary art, not only his own, a fixed place where they could fully and uninterrupted in calm and ideal spatial conditions entwine their acting. Since the 70-ties Judd had been intensely dedicated besides visual art also to design of furniture and architecture. In the year 1979 he begins with Fort D. A. Russel reconstruction and creating artistic installations within the area, in the year 1986 an independent non-profit public funded institution Chinati Foundation was open. A big advantage for D. Judd was the size of the area enabling large exterior installations, for example his concrete sculptures, as well as the number and size of particular military objects providing potential for comprehensive installations of individual artists, whose work is included in the collection in separate buildings or groups of buildings. The architectonic character of Chinati Foundation was created by D. Judd by interventions in spirit of his minimalist conviction with effort to optimize the functioning which for the author is inseparably connected with furniture design and architecture. He respected the former

objects pretty much though. Judd works especially with the inner open space, light and the spirit in the interior.

Fig.1, Chinati Foundation Marfa, Former artillery shed and U-shaped army barracks. Project by D. Judd, Photo by Marcus Trimble [3]

Judd's intervention in Marfa brought life to a, after the departure of army gradually more and more drowsy, town. It stirred up the art life and D. Judd was successful at getting this town on the culture map of the world as an important visual arts destination. The presence of Chinati Foundation and also the cooperating Judd Foundation started art life in the town and other known cultural institutions were established there. For example Ballroom Marfa was created by adapting a dance room from the year 1926 to an exhibition space, under its conduction a world-wide known architecturally-artistic installation Prada Marfa was created, there are regularly festivals of visual arts, film and music organized in town.

Stiftunf Insel Hombroich, Neuss

Stiftunf Insel Hombroich is located on periphery of town *Neuss*, in northern Rheinland – Westphalia. The unique institution dedicated to art and culture consists of three main parts – the former Museum Insel Hombroich area, newer part Raketenstation Hombroich, created from a former NATO missile base and the part Kirkeby-Feld, located in centre between the two other. Stiftung Insel Hombroich as a connection of these three parts was established in 1997, its development started in the first half of the 80-ties of the 20th century. That is when a real estate agent and art patron Karl-Heinrich Müller started to materialize his dreams and create an asylum for friends of art and nature in spirit of Cézanne's principle "art in parallel to nature" [4] by building the area Museum Insel Hombroich in natural environment around a classicist villa located near the river Erft. The museum was open in 1987. In 1994 K.-H. Müller bought a nearby former NATO missile base, what enabled a radical development of the facility. *Raketenstation Hombroich* formerly served as a part of NATO air defences. After the end of cold war the NATO basis was cancelled. For K.-H. Müller this vast 13 hectares area provided an ideal spatial setting for expansion and philosophical extension of Museum Insel Hombroich. Halls, hangars, ground mounds and observation tower were reconstructed and rebuilt; the area was complemented with further objects and art installations, creating the area visual expression. Besides Erwin Heerich who imprinted character to the former Museum Insel Hombroich, other internationally accepted artists and architects - Raimund Abraham, Tadao Ando, Oliver Kruse, Katsuhito Nishikawa and Alvaro Siza were invited. In the area there are several objects by E. Heerich – archive and library, residential house, Kloster and Fontana Pavilion, which have architecturalized forms of author's art works such as the ones in Museum Insel Hombroich. They are concretists' sculptures with simple principles deriving their expression from consistent reduction of materials and proportions. The objects are connected by used material –

brickwork from recycled bricks in the exterior, the interiors are simply plastered. Alvaro Siza created the Siza Pavilion serving as Institute of Architecture, exhibition and congress spaces. A. Siza in the spirit of the basic principles of his work remains with poetic simplicity; as the basic means of expression just like E. Heerich he uses brickwork on the exterior and for his work typical plain white walls in this case combined with wooden floors and ceilings in the interior. Raimund Abraham created the sculptural Abraham Gebäude characteristic by its volumes. Besides musicians' and composers' residences it serves as a chamber concert hall, studio and musical library. Within the complex we can also find a museum by Tadao Ando Langen Fundation with the status of an independently functioning institution. The museum is focused on modern oriental art, a diverse nature of the collection is reflected by the exterior expression of the object; T. Ando used traditional materials for his work, he combines volumes of two partially sunk concrete blocks dedicated to modern art exhibition and a glass pavilion with inserted concrete block dedicated to Japanese art exhibition. The object expression is emphasized by natural environment in which the object is situated and a water surface on which the glass volume of the museum partially levitates. In the area there are several sculptures and spatial installations by Katsuhito Nishikawa, Oliver Kruse, Erwin Heerich, Michael Growe, Heinz Baumüller and Eduard Chillid.

Fig. 2, Raketenstation Hombroich, Archive and library (1999-2000) and residential building (1999-2001), Architect: E. Heerich, Photo by Stiftung Insel Hombroich [5]

Raketenstation Hombroich not only serves as a museum but above all it is a creative platform, extension of the idea of artists working in a complex which started already in the Museum Hombroich. Visual artists, writers, composers and scientists of various nations coming from various cultural environments live and work here.

Kasárne/Kultrupark, Košice

Kasárne/Kulturpark Košice was created by adaption of former military object – former Casern of CPT Jaroš on the Skladná Street in Košice. The objects were built into a valuable historical park, so called Saffron garden. The complex of buildings on a 3 hectares plot was constructed in the end of the 19th century. The transformation of the casern to a cultural centre was realised especially as a part of the Košice European Capital of Culture 2013 event; Kasárne/Kulturpark was the biggest financial investment within mentioned event. The current form of Kasárne/Kulturpark stems from the winning competition entry of the studio zerozero (architect Irakli Eristavi) in the architectural competition organized at the turn of 2009-2010. The concept of Kasárne/Kulturpark as a wide-range cultural centre operated with several factors. The basis was an advantageous location in a broader centre with direct connection to the very centre and intentions to create public spaces – urban area, so called forum on the border of cultural centre and town. The forum creates an area defined by a grid, in the competition entry consisting of variously defined pixels, variable platforms for different

types of activities and events. As the architect says in the description: “The grid is a clue to particular programmes, activities location and doesn’t prescribe their architectural form.” [6] Unfortunately the reconstruction due to owners’ relationships couldn’t include complexly the whole area, Kasárne/Kulturpark is created by three main objects (out of six main objects of the former area) named Alfa, Bravo, Charlie and several smaller pavilions also named in spirit of the international military phonetic alphabet. The navigation point of the complex from where the major part of the area is visible and from where the names of the objects are projected onto their facades is called Zulu. The architectural face of Kasárne/Kulturpark is a combination of white simplicity of reconstructed historical objects and simplicity and purity of the new forms of added pavilions and public spaces. All this is colored by the greenery of the historical park.

Fig. 3, Kasárne/Kulturpark Košice, Charlie and Bravo buildings (2013), Architect: I. Eristavi, zerozero, Photo by K13 [7]

In Kasárne/Kulturpark ateliers, workshops, studios, classrooms found their place; in the main building Alfa we find two multifunctional halls used for concerts, theatre performances, lectures and conferences, at the same time there are two smaller multifunctional dance halls, sound studio and video studio. A separate part of the complex is created by exhibition spaces. Within the complex there also is a kids and youth library and a creative factory Steelpark. There is also a Pavilion for residents – Lima which serves as a background and art workshop for residents and performers working and performing in the complex. By transforming the casern a complex background for creating, presentation and support of art and contemporary creative, authentic and experimental culture was created. The aim of the cultural centre is to provide space for creating and presenting multi-genre artistic production of high quality.

Similarities and Dissimilarities

Despite the common starting point of all three examples – they all are conversions of former military areas, these examples are very dissimilar. Chinati Foundation and Raketenstation Hombroich are by its location on a town periphery in natural environment and by the importance of the town Marfa in a diametrically different situation as Kasárne/Kulturpark which is a part of a dense urban structure near to the very centre of Košice and it uses this location to the full. This fact is reflected in better or worse possibilities to acquire the area as a whole and the financial expedience of such acquisition. This is where the benefit of advantageous and simply acquirable eccentrically located and often enormously vast areas which for the reason of atypical location and excessive dimensions are less marketable steps up. In case of Chinati Foundation and Raketenstation Hombroich the eccentric locations and dimensions of the areas didn’t represent an obstacle to the intents of their founders; we can say that on the contrary, calm and nature distant form the city make the areas thrive. In the particular examples we can see a different level of

interventions into existing complexes. It is determined by the importance or value of architecture which serves as basis for the transformation. In case of Raketenstation Hombroich we cannot talk about a strong architecture as a basis for the new function. Positive is rather the spatial setting and nature; this is what the founder K.-H. Müller is aware of and despite reconstructing some of the former objects he mainly brings many new objects, often almost sculptures, which set the new nature of the institution. In Chinati Foundation the existing devastated architecture didn't bear exceptional values, the founder and author D. Judd makes full use of the values of the existing basis though and intervenes to the area in a very distinguished way. The author's approach is very present but at the same time it is respecting the existing, the autonomous approach can be seen especially in the exterior installations of the artistic works. In case of Kasárne/Kulturpark there was an existing urban and architectural basis of high quality with a strong potential. It was properly used and complemented by an autonomous author's approach in form of small pavilions and the design of public spaces and greenery. The way of financing of the particular examples differs as well. It set the limits of possible and impossible and defined the elementary start line and approach. Whilst Kasárne/Kulturpark is supported by public resources – European Union funds mainly complemented by state and municipality financing, Chinati Foundation and Raketenstation Hombroich are supported mainly by private investments, foundations and donors.

Despite many differences of mentioned examples, every building is a unique original coming out from a different start point, it is necessary to come back to the start and point out what is the connection between these three and that is the new life. New life is always sublime but in this case it applies even more, just as it is mentioned in the basic characteristic of Kasárne/Kulturpark: "Before only the stamping of military boots and severe commands were heard here. Today everything is different; solely the dancers and artists are "marching" here." [7]

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Conversion Of Industrial Hall Buildings

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Abstract. Ostrava as a post-industrial city has many brownfields, black fields and industrial areas. Brownfields are one of the most important problems, which today's cities have to solve. Regeneration of them and then reintegration back to the city organism are very time-consuming and expensive. Theme conversion of listed industrial hall buildings, the assessment made solutions, converting three historic buildings, the former power station. Looking at the history of the buildings, the technical condition before reconstruction. Using qualitative analysis used to evaluate the progress of our selected objects. Using the principles of similar objects in other post-industrial cities and their historic buildings.

Introduction

The former industrial area Trojhalí is located in the former coking plant Karolina near the centre of the city of Ostrava. Trojhalí includes two indoor type objects, the former electric switchboard and a power plant Karolina. The set of buildings is a unique industrial monument, describing the prosperity and strength of the great industrial complex. " The complex covers an area of about 60 hectares. This is a large, predominantly free terrain, which was created by demolition of the industrial complex. The industrial activity of the area was finally terminated in 1985-1986. When disposing of the objects only the aboveground parts of the buildings were removed. The foundations and underground spaces as well as a variety of sumps with residual fillings were largely left under the surface of the ground. " [1]

The history of the objects

The power plant Karolina was built in 1905. It is a single-nave rectangular hall with a gable roof with a central risalit and a steel truss. The building is of a representative character of an architectural composition with the axial articulation of facades, brick filling lizens, plaster surfaces and decorative colored glass blocks. The power plant was shut down in the 1980s together with the coking plant Karolina.

The energy exchange no. III is located behind the hall of the power plant. The monumental two-nave hall was built later in the 1920s. It served as a blower into blast furnaces of Žofín smelter, where gas as a by-product of metallurgical production was used. The subtle steel riveted construction lined with bricks is based on a robust reinforced concrete retaining wall. On the front façades there are wide and narrow windows, placed symmetrically. The interspace between the naves contains pillars and there are skylights in the entire width of the mansard roof .

150 years of heavy industry operation caused massive large-scale contamination. "The situation changed in 1997 when the Government decided to provide a state subsidy for the decontamination of the territories of Karolina. Simultaneously, the operation of the blast furnace plant of Vítkovice ironworks was terminated. This led to the improvement of air quality and abolition of the sanitary protection zone. " [2]

Decontamination of the Karolina site ran until 2005, for almost 7 years. After that the territory was monitored for further 3 years. Finally the success of the rehabilitation was confirmed. The total

volume of extracted earth reached 794 085 m^3. "This was also the first case of a successful conversion of such a large territory afflicted with such massive contamination to a qualitatively higher level of use. Quite a wide range of modern rehabilitation technology was used on the rehabilitation of the site. And it was complicated by the fact that the location was in a dense urban area."[1]

Conversion of the halls

The reconstruction of Trojhalí began in August 2012. Both buildings were being reconstructed at the same time. The original price of the reconstruction was CZK 330 million. The contract was won by a company with the entry investment of CZK 150 million. The project was carried out by Gemo Olomouc company according to a project documentation of the architect Josef Pleskot. The architect conceived the whole area as link between the historical centre of the city and the lower Vítkovice areas. The entrance corridors of the objects are directed to this axis and allow the visitors to go through. The building of Dvojhalí, the former energy exchange no. III., serves as a covered square, and the hall of the power plant Karolina was converted into a multifunctional sports centre with a bar. The buildings were cleaned of the additional construction work to its original state. The total usable area is 10 500 m^2.


Fig. 1, 2 Trojhalí (photo: Lenka Kolarčíková)

The soil around the power plant building was removed up to the original level of the surface, with the intention to expose the ornate bases. Around the object, public space consisting of residential staircases and gallery was created. The cladding of the power plant is made up of white bricks in combination with roughcast brickwork. The bricks were chemically cleaned and impregnated with a hydrophobic substance. Damaged pieces were replaced with new ones. Due to the annual operation of the sports centre a new roof with thermal insulation was made. The existing windows were replaced with new aluminium ones. There was no need for heat insulation of the walls thanks to their sufficient width of approx. 90 cm. The object is heated by hot water with heat exchanger station. The central part of risalits was newly plastered, including the columns and the existing stained glass was due to significant damage replaced by replicas using authentic technology- glass blowing.

Inside the hall there are two multi-purpose sports fields with sports floorboards. The walls were fitted with new plaster. In the middle of the layout a two-storey block with sanitary facilities for the physically disabled and a background for the buffet was inserted. The block is covered with large format square panels of enamel plates. Some of the painted pieces come from the art symposium named Enamel Art.

Both objects were newly undermined and interconnected. As a result, a new basement area was created, which is now used as a communication node with a reception and sanitary facilities to both objects. Both objects are adapted to barrier-free use.

From the basement communication we can use a generously large ramp to get to the cathedral space of the two naves. According to the concept of a roofed square the inner space was restored to a simple construction with no specific function. The reconstruction was conceived with care. The damaged windows and skylights were replaced with the same type of fillings -armored glass. The floor as well as the new constructions of the gallery and entry ramps were made of cast concrete. The object is not heated, so there is no insulation or ventilation.

The supporting structure of the building consists of steel riveted framework, which is preserved in good condition. During the reconstruction the surface corrosion was removed by sandblasting. All steel elements were provided with high-quality anti-corrosion coating.

Before the project implementation, the redevelopment of the whole area of Karolina was considered, but it was discovered that the soil in the area was still very highly contaminated. It was necessary to excavate the contaminated soil and clean up the area. The project needed to consider the tilt of the buildings due to mining subsidence area. It required further costly measures to clean up the contaminated soil.

Fig. 3, 4.: Trojhalí (photo: Lenka Kolarčíková)

The project documentation was created at a time when the Karolina Shopping Centre with large underground garages was not yet built up. It was found out during the implementation that the construction of the shopping centre including the garages raised the groundwater level and there would be a danger of frequent flooding of the basement section. Because of this it was necessary to convert the basement floor construction from the classic foundation tank made of hydrophobic concretes to the white tank. The change of the base conditions made the construction more expensive by tens of millions.

The owners of the renovated area are: Trojhalí Karolina special-interest Association of legal entities, members of the Association Lower Vitkovice area, the statutory city of Ostrava, and the

Moravian-Silesian region. 85 % of the project was funded from EU fund for regional development and the rest of the funds was provided by the city of Ostrava. The total cost of the original 150 million increased to CZK 170 million due to the changes of the base conditions. A minimum of 8-12 people is needed to operate the building.

Between the buildings a street with glass skylights for illumination the basement corridor was created. The street forms a bridge between the historical centre and the lower Vitkovice area. Not only the solution of height levels but also ingenious insights highlight the value of this new public project.

The Conclusion

It is possible to use industrial objects of hall type if we find their new functionality. An architect supplements necessary technology and enables the re-use of historical buildings with new features. This can extend the period of use of the object.

"The conversion of historical buildings is usually a combination of several ways of working with the space and structures. The intention usually requires constructional- historical research clarifying the historically valuable construction and parts of the object, and then the study aims to fill the space with new features. " [3]

The conversion of Trojhalí with the transformation to the public space and sports facility will enable active use of the objects, which will extend their life to next 100 years at least. Make the conversion can be considered a prime example of saving industrial hall buildings in the Czech Republic. It is a decent preservation of an architectural monument from the peak of the industrial era in the Ostrava region for generations to come.

Many thanks to Mr. Ing. Petr Šnejdar for the provided information and the time devoted.

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Automobile in the Disposition of Energy-saving Houses

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Keywords: Automobile, garage, architecture, house disposition, thermal protection, linear heat transfer coefficient, thermal transmission coefficient.

Abstract. In the disposition of energetically economic houses, automobile abandons its stereotype held for so many years according to which it was placed to rest "under one roof" with other residential and utility rooms. However, this diagram shows a range of collisions manifesting with difficult building details, with occurrence of thermal bridges and thermal relations. This results in increased financial demands for drafting efficient thermal-insulation layers or higher demand for energy consumption necessary to heat up the building. Generally, architects and structural engineers are not sufficiently aware of the fact that at the same time this is a factor that provides higher potential for faster ageing of car bodies and chassis when cars are parked "inside the house" than in means of transport parked in open carports or in an open space.

Introduction

The topic of garages has been thoroughly covered by Štikar [7] and garage ventilation by Drkal [3] and [4]. This Paper focuses on garages without heat sources situated in family houses or residential buildings. They are unheated spaces.

Unheated Spaces According to the Czech Norm CSN 73 0540

Unheated buildings or unheated zones in buildings are covered by CSN 73 0540 Thermal protection of buildings – Part 2: Requirements. [1] The norm defines required and recommended heat transfer coefficient values for buildings with prevailing project temperature within the interval of θ_{im} = 18° C to 22°C, Table 1.

Table 1 Required and recommended heat transfer coefficient values for buildings with prevailing project temperature θ_{im} within the interval 18°C to 22°C, incl. [1]

Construction description	Thermal transmission coefficient U [W/(m^2·K)]		
	Required values $U_{rec,20}$	Recommended values $U_{rec,20}$	Recommended values for passive buildings $U_{pas,20}$
Ceiling under unheated attic with roof with no thermal insulation	0.30	0.20	0.10 to 0.15
Ceiling and inside wall of heated to unheated area	0.60	0.40	0.20 to 0.30

The norm CSN 73 0540 also states that horizontal structures with a floor function above the outside environment and above unheated spaces such as garages must meet requirements concerning the heat transfer coefficient in Table 1 and requirements of floor structure contact temperature decrease. Thermal insulation layers are usually placed favourably on the cooler side. The norm also states that interior walls separating heated and unheated spaces, e.g. garages, must meet

requirements concerning the heat transfer coefficient. Efficient thermal insulation is usually placed on the side of the unheated space.

The norm CSN 0540 also includes required and recommended values of linear and point heat transfer coefficient of thermal relations between the structures, Table 2.

Table 2 Required and recommended values of linear and point heat transfer coefficient of thermal relations between the structures [1]

Type of linear thermal relation	Linear heat transfer coefficient [W/(m·K)]		
	Required values ψ_N	Recommended values ψ_{rec}	Recommended values for passive buildings ψ_{pas}
Outer wall continuing onto another structure, e.g. a ceiling above unheated space	0.20	0.10	0.05

This shows that CSN 73 0540 concerns issues of the unheated garage space location in relation to heated space of the house as well. At the same time, the norm provides tools for solving them.

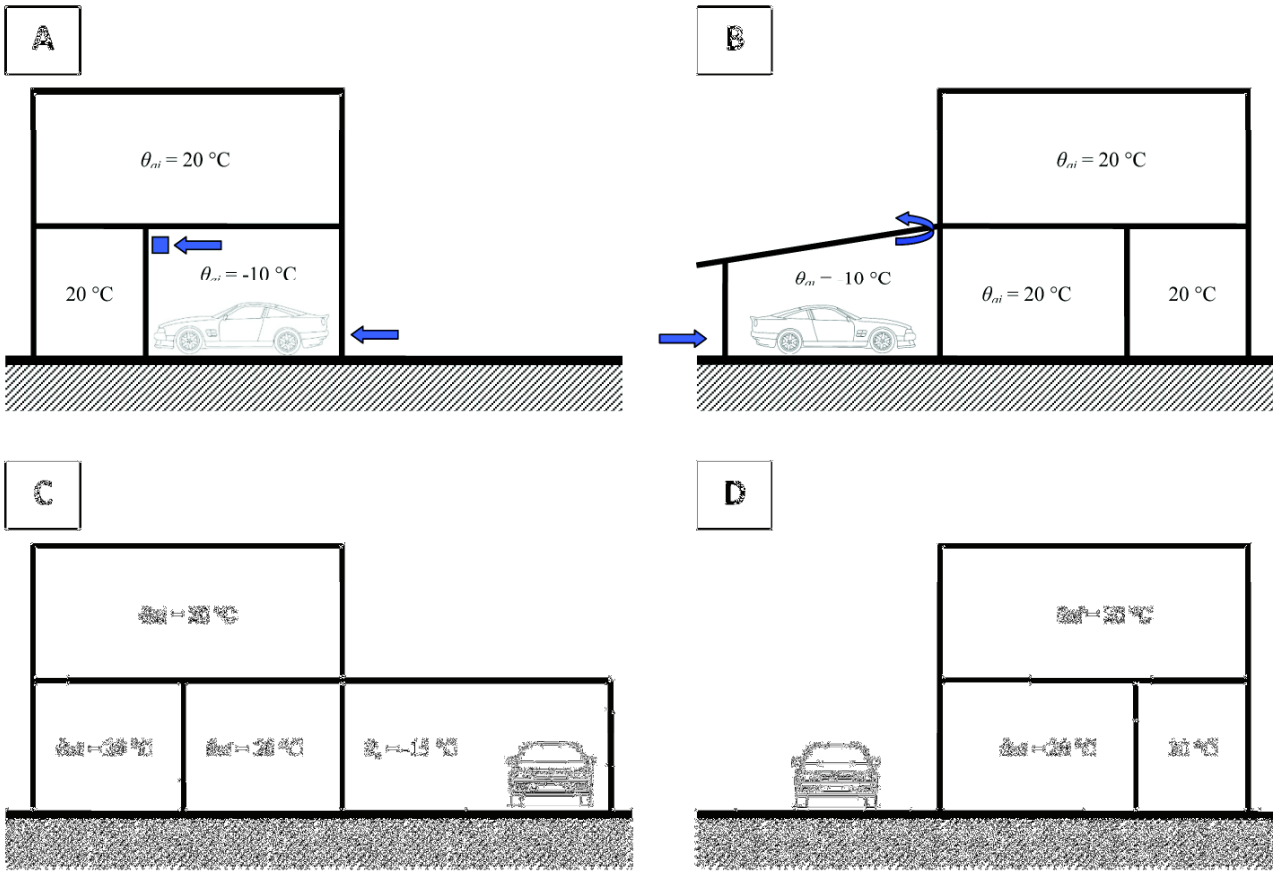


Fig. 1, A diagram of garage parking in a family house and garage ventilation
A – Garage is part of the house disposition, B – garage is before the house ground plan, C – the garage parking is under a carport, D – vehicles are parked in open space

Garage as an Unheated Space

Why is it necessary to view garage as an unheated space? We know that an automobile needs fuel to run its compression-ignition engine or spark-ignition engine. Burning fuel produces exhaust fumes. Their amount is reduced to a minimum by means of a catalytic converter. Nevertheless, situations may occur when the garage environment can become contaminated in an enclosed space and without the necessary fresh air inlet. The main hazardous substances in automobile exhaust fumes are gases CO, NO_x, SO_2, cyclic hydrocarbons, aldehydes, unburned hydrocarbons and lead. Substances such as pyrene derivatives or soot have carcinogenic effects. [2] Continuous air flow prevents occurrence of harmful or dangerous concentration of gases or transport of exhaust gases into other parts of the building. The entire free space of ventilation apertures is defined in CSN 73 6058. [2] The ventilation aperture size required for one parking spot in garages for personal vehicles or vans and two-wheel vehicles is minimum 0.025 m^2. In garages for trucks and special cars, buses, tractors and self-propelled machinery, the required aperture size is 0.045 m^2.

With permanent air flow with no adjustments, temperature may drop to the level near outside temperature. This results in significant cooling of building structures on the surface as well as in their core. Fig. 1 shows diagrams with examples of garage placement.

In diagram A, garage is part of the house disposition. Due to ventilation, the air temperature is on the level near outside temperature. This results in increased heat flows. That is why it is necessary to put thermal insulation on interior walls and ceiling of the garage. If the outer walls do not get insulated, a linear thermal relation will occur. In case of inefficient ventilation, this manner of garage parking may cause water vapour condensation on cool parts of the car body or chassis.

Example “B” is more appropriate. Again, it is necessary to insulate the enclosure house wall. Increased attention should be paid to the contact of the wall with the house roof.

Example “C” presents a garage created as an open carport. This concept of a garage is very frequent. In case of point mounting of roof elements to the wall, it is necessary to eliminate point thermal bridges. [5]

Example “D” represents open parking, i.e. garaging with no way of protecting the automobile against weather conditions.

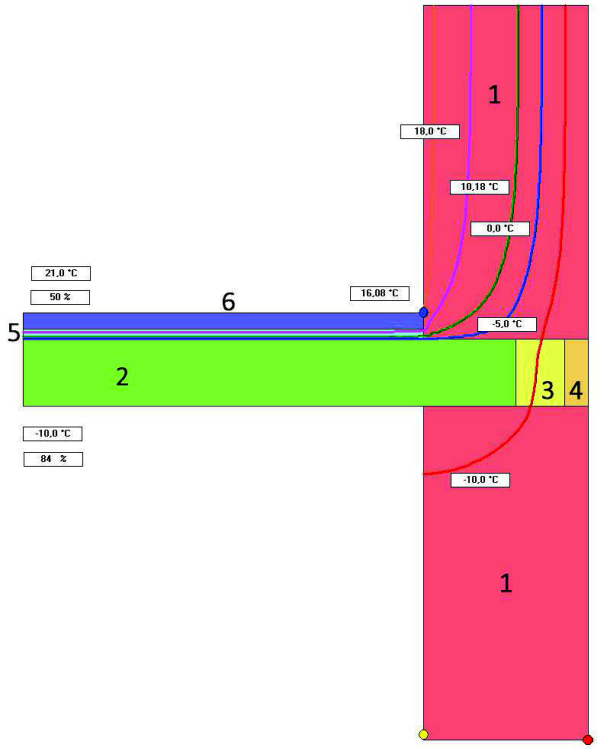
Calculation Assessment

Assessment of the thermal condition of the garage is shown on three examples. The assessment used a calculation program AREA [6] which assesses thermal situations using the two-dimensional thermal field method. We show the detail of the contact of a ceiling structure with a vertical wall for example. The calculation has been carried out in marginal conditions with the following interior air parameters: $\theta ai = 21$ °C, $\varphi ai = 50$ % and outer environment parameters: $\theta e = -10$ °C, resp. $\theta e = -15$ °C a $\varphi e = 84$ %.

Table 3 Materials used for structure modelling

No.	Name	Heat transfer coefficient λ [W/(m·K)]	Specific thermal capacity c [J/kg·K]	Volume weight ρ [kg/m^3]	Diffusion resistance factor μ [-]
1	Brickwork	0.088	1000	650	10
2	Reinforced concrete	1.740	1020	2500	32
3	EPS - polystyrol	0.035	1270	25	50
4	Full burnt bricks	0.860	900	1800	9
5	Sound insulation in the floor	0.038	800	40	1
6	Simple concrete	1.230	1020	2100	17

The structure composition is shown in Table 3. Numbers were assigned to individual materials with applicable characteristics; these numbers are used in the description of details concerned, Fig. 2-4. Details are equipped with isothermal lines which define the structure condition in a stationary condition.



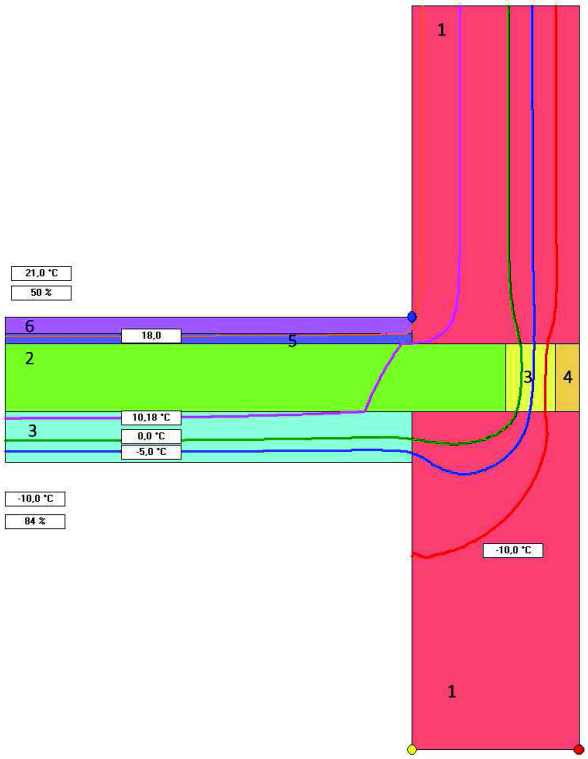
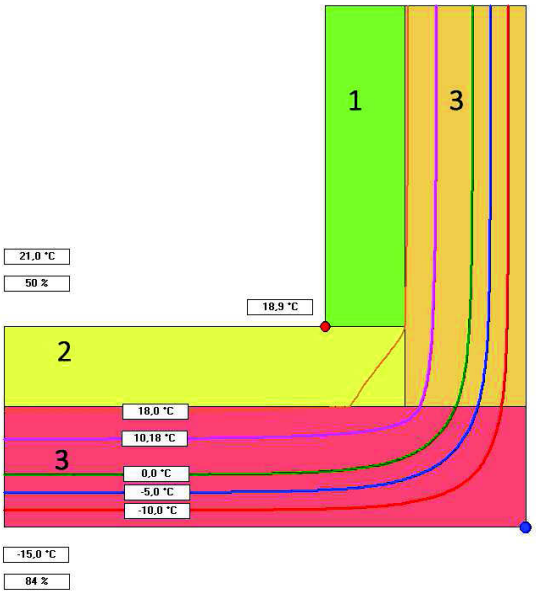


Fig. 2, Thermal fields of the ceiling and wall above the ventilated garage with a ceiling with no thermal insulation (left).
Fig. 3, Thermal fields of the ceiling and wall above the ventilated garage with a ceiling with thermal insulation (right).

Detail 1 has brick cladding with very good insulation capability. With thickness 500 mm it shows $U = 0.17$ W/(m^2·K) The ceiling is reinforced concrete, 200 mm thick. The edge of the ceiling board is equipped with a thermal insulation agent of EPS, 150 mm wide. A 30 mm layer of sound insulation of fibre material is placed on the board. On this layer, there is a separation layer of polyethylene foil and a 50 mm distribution layer of simple concrete. Under the ceiling, the garage environment with natural ventilation with calculation temperature θ_e = -10 °C. Temperature difference $\Delta\theta$ = 5 K considers the condition of the interior garage climate against the outside temperature. The calculation showed that in the critical spot, temperature in the place of contact of the horizontal and vertical structure reaches θ_{si} = 16.08 °C, which is above dew point θ_w = 10.18 °C, Fig. 2. In the garage, surface temperatures tend to be around θ_{si} = -10 °C. This may cause a collision in intermediate periods. During these, in freezing days and in cases of sudden heat-up, ventilation may cause condensation of warm and moist air on cool surfaces in the garage

Detail 2 has a similar composition as Detail 1. Increased heat losses from the insufficiently $\lambda = 0.038$ W/(m·K), the lower face of the ceiling. In the critical spot of this Detail, this adjustment provided increase in interior temperature to θ_{si} = 18.84 °C, Fig. 3.

Detail 3 consists in free placement of the parking spot under the building. The cladding is enclosed in thermal insulation in both the vertical and horizontal plane with λ = 0.038 W/(m·K), thickness 300 mm. Here, the temperature is the highest in the critical spot and reaches θ_{si} = 18.90 °C, Fig. 4.



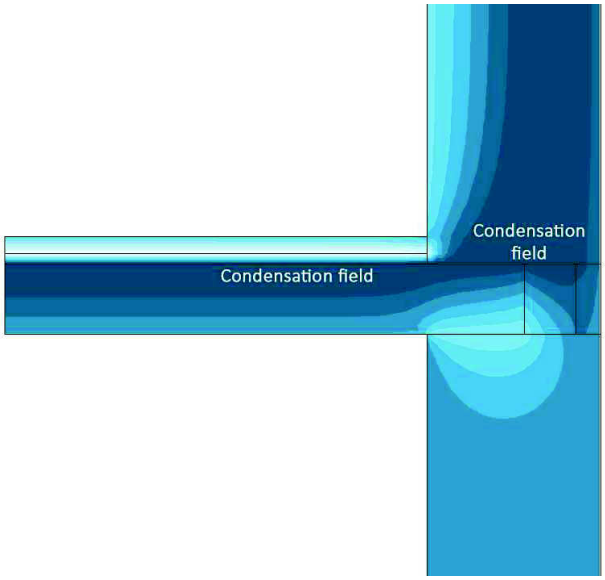


Fig. 4 Temperature field of the ceiling and the wall above the free garage space (left).
Fig. 5 Moisture field with a diagram of condensate occurrence from Detail 1 (right).

Analysis Response in Architectural Practice

This knowledge leads the architect to wonder and consider them when designing a building. We can encounter good results abroad. In new houses in Austria and Germany, the tendency to park personal vehicles under carports is prevailing. Fig. 6-9 show several examples from Gleisdorf, Styria (Austria).

Fig. 6 Parking an electromobile under a carport with photovoltaic panels (left). Photo: J. Chybík.
Fig. 7 A complex of houses with automobiles parked under a carport (right). Photo: J. Chybík

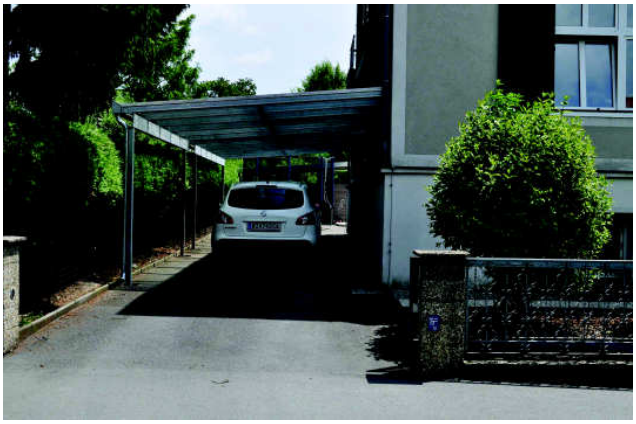


Fig. 8 A light carport made of metal and glass (left). Photo: J. Chybík.
Fig. 9 A carport by a residential building (right). Photo: J. Chybík.

Summary

The analysis presented the issues of the contact of heated and unheated spaces. It used examples of garages designed within their inclusion into a residential building disposition. It has been proven that in terms of temperature and moisture, personal vehicles are best located under an unheated carport. Such location facilitates vehicle manipulation, prevents water vapour condensation on the top of car body and chassis. It eliminates undesirable energetic and temperature-moisture phenomena which manifest in increased demand on building heating.

The carport also reduces heat emitting from the car body. In the cool of the night, condensing is prevented on car body and glassed surfaces. In extreme weather conditions, vehicles are also protected against hailstorms. In winter, vehicles are spared frosting and effect of snow layers.

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40-year Development of Ecologically Conscious Architecture in Slovakia

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Keywords: sustainable architecture, ecology, Slovakia, architecture development

Abstract. The year 1973 was a breakthrough year in the development of architecture. It triggered a crisis in society as well as the end of a period of relative prosperity and wasting of energy, which until then did not constitute a limiting factor. The crisis has forced to seek a new and more efficient architecture. The following decades were each in their own way characteristic particular in how architects approached to reduce the energy consumption of buildings and how they resolved the relationship of the building to the surrounding and the environment at all. This paper maps ecological ideas in architecture in Slovakia on the background of broader context.

Introduction

The second half of the 20th century has brought number of changes to Slovak architectural scene. Changed economic and political conditions in the country after 1989 were the significant stimulus. Abroad forming thoughts and movements focusing on reducing the energy consumption of buildings and on friendly relationship with the environment, have reached our territory with a slight delay. Over time designers acquired these ideas and implemented them in their designs.

Now, let me briefly introduce the broader global context, providing the foundation for the whole idea of current sustainable design. The oil crisis in 1973 was the strongest stimulus for re-evaluation and a re-assessment of the previous energy wasting building concepts. It triggered the need to seek for alternatives in construction, introduction of austerity measures and a new and more efficient architecture.

Years following the oil crisis immediately until the early 80s can be described as the period of searching. First of all it was about finding new sources of energy, which would have been a substitute for fossil fuels. The ambient energy and renewable energy sources has become an alternative to fossil fuels. Solar energy, as the main energy source for building performance has taken dominant position. Reducing the energy consumption of buildings has been achieved either by passive solar house design, such as architectural concept and efficient use of energy delivered to the system or through the application of active solar system in terms of solar collectors. Requirements on the effectiveness of the solar technologies, such as the slope and orientation, had an essential impact on the form and expression of nascent solar architecture.

Second decade could be defined from the early 1980s until 1992. Global threat of depletion of energy and mineral resources as well as environmental crisis has been still current, though not imminent. Architects therefore generally sought to design architecture that would have been less dependent on energy. A significant progress has meant the use of solar energy, especially by passive methods and by a holistic approach to architectural design. While in the first decade architects, designers and engineers struggled with various technical problems, in this period the building technologies and procedures were improved. Thus sustainable architecture could have been understood more comprehensive.

Globally, years 1992 and 1993 represent significant milestones of sustainable architecture development. These years allocate the beginning of the third decade. In 1992 two essential events happened. Situation regarding the environment led to the United Nations Conference on Sustainable

Development in Rio de Janeiro. The second event was the European Congress of the International Union of Architects (UIA) on *Eco-logical* architecture in Stockholm and Helsinki. The next UIA World Congress was held in Chicago in 1993. The issue of liability of architects in relation to sustainable development has been discussed and a document the Declaration of Interdependence for a Sustainable Architecture has been adopted here in which sustainable architecture was officially recognized. Previous deviancy has become a trend in the development of architecture.

While the previous three decades were characterized by designing and building environmentally conscious architecture, the fourth decade, which began roughly with the new millennium is about the necessity to be concerned about sustainability. General trend known as sustainable development occurs. It seeks to face the global problems and challenges continuing from the previous periods. Development of sustainable architecture continues through both the architectural design and through the ongoing world conferences, appropriate documents and standards, European Union strategies, recommendations of Architectural Council of Europe (ACE), charters and directives. One of the most important documents adopted at the European level is the European Directive on the Energy Performance of Buildings 2010 as part of the 20-20-20 strategy, which obliges to design passive or nearly zero energy buildings.

Brief characteristic of the broader context provides an overview of the most important events and ideas forming the development of sustainable architecture. Each of the four decades are in more details described in the first part of our paper *Our 20-year Long Journey Towards Meeting the Objectives of the European Strategy for Year 2020*, published in the journal of last year's conference in Naples, which focused on environmental design for innovation in the post-crisis world. [1]

The ideas of sustainable architecture design reflected from the worldwide events to the Slovak architectural scene. However their enforcement is noticeable with a certain time delay.

1. Beginning of Ecologically Conscious Architecture

Neither the oil crisis nor the reports of depletion of mineral resources have not been taken very seriously in our country initially. The reason consisted in a different political situation than in industrialized countries and all the threats mentioned were considered to be the crisis of capitalism. Thus saving of energy was not needed. Over time, thoughts of environmental design from abroad have been acquired by several of our architects and enthusiasts. In the first decade, until the early 80s discussions of informal groups of intellectuals have been organized. They began to deal with the issue of energy efficiency, use of alternative energy sources and the environmental situation and sought to draw attention to the imminent crisis of energy and resources. Another group was formed by enthusiasts who practiced alternative lifestyle and building style. All ongoing activities were however just theoretical. First elements of ecologically conscious design were implemented to study tasks proposed by the Association of Slovak Architects, e.g. use of solar energy in the design of a city hotel (architects I. Matušík and I. Matušík Jr., 1981) or use of solar energy for recreational purposes (authors F. Zeman, P. Návrat, 1981). These were also just experimental projects, none of which was realized. The publication Solar Energy and Its Use elaborated under the leadership of professor M. Halahyja and published by Alfa publishing house in 1983 was the first tangible result of this period. It was the first publication on the issue of ecologically conscious architecture in Czechoslovakia.

2. More Complex Understanding of Sustainable Architecture

In the early 1980s, the interest focused mainly on the sun as an alternative source of energy. The following period has therefore experienced a more realistic development of environmentally conscious architecture in Slovakia. Several solar and experimental projects were designed, which aimed to reduce the energy consumption of the building through the use of solar energy. Methods applied were appropriate shape and spatial solution supporting low energy consumption, use of energy from the environment, return to the use of local materials and building traditions and later

the use of active solar systems, which have been transforming solar energy through solar collectors. Mastering technical problems and reconciliation of more applicable methods triggered the rise of greater number of architectural projects striving for a sustainable design approach.

Fig. 1, Project of Experimental family house, designed in 1984 for the Agrokomplex Nitra exhibition to promote the use of alternative energy sources. [3] Architects J. Bóna, J. Keppl, R. Špaček

Some projects were designed for a specific customer, e. g. Multipurpose facility for the use of solar energy for Elektrosvit in Nové Zámky (1986) or Experimental family house designed for the Agrokomplex Nitra exhibition (Fig. 1) (architects J. Bóna, J. Keppl, R. Špaček, 1984) [3]. Slovak architects took part also in domestic and international architectural competitions, e.g. Energy-efficient residential building in Pécs (architects D. Klein, P. Komár, M. Bogár, 1989). Other projects were the outcomes of research projects, such as the Low-energy solar house in Košice (Fig. 2), (architects J. Keppl, V. Šteffl, 1998) [4]. All of these projects have had common signs of ecologically conscious architecture. Those are, besides the methods mentioned above, the protruding glazed areas, sloping roofs or facades and their appropriate orientation towards the cardinals in order to capture the greatest amount of sunlight. Despite the fact that all of these projects remained unbuilt, they meant a significant progress for architecture of the 1980s while presenting real prospects of sustainable architecture.

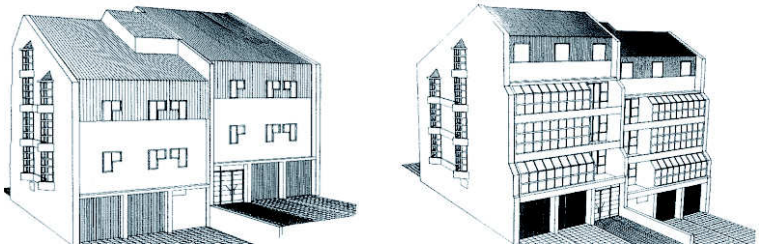

Fig. 2, Projects of Low-energy solar house in Košice. [4] Architects J. Keppl, V. Šteffl

One of the first built Slovak sustainable houses were designed by architect L. Kušnír. First Experimental residential house was built in 1987 in Valtice (Fig. 3). The aim of the experiment was to verify the properties of the new building system and the energy savings of the proposed facilities for active and passive use of solar energy, thus complex energy savings. New compositions of outer walls have been tested from the thermal insulation aspect, as well as new constructions of window openings, concept of ventilation of dwellings using windows recovery units, thermo-reflective wallpapers with the ability to reflect the thermal radiation and many others. [5] [6]

Fig. 3, Experimental residential house in Valtice. [5] Architects L. Kušnír, I. Jankovich, M. Vanek

The second Experimental apartment building designed by architect L. Kušnír and his coworkers was completed in 1991 in Holíč (Fig. 4). Here, the successful elements of experimental house from Valtice were applied. The aim of this experiment was to verify floor heating system in dwellings by heat gained from the solar collectors. An appropriate architectural shape and concept, such as sloping of the southern part of the building with protruding greenhouses corresponded to its solar concept. Both apartment buildings were built to verify the non-conventional elements and their impact on the expression of architectural design. While the apartment building in Valtice was not intended to be a prototype for future residential solar architecture, the house in Holíč was meant to be a prototype of a residential building for rural settlement structures. [5] [6]

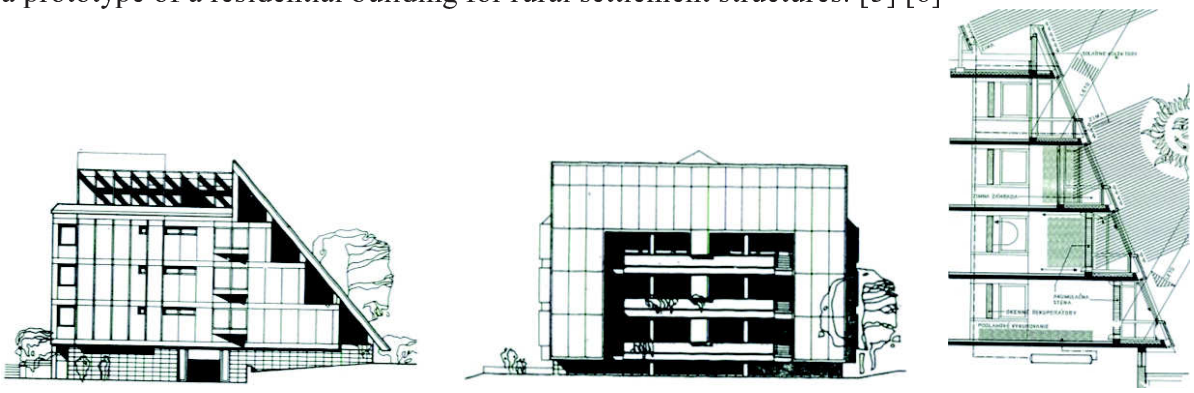

Fig. 4, Experimental apartment building in Holíč. [6] Western elevation, Southern elevation, Section. Architects L. Kušnír, M. Kiaček, B. Hnát, I. Kubík

Among the architectural design of family houses, the Solar house in Levice designed by architect Š. Drapčat (1990) (Fig. 5) is worth to mention. The location of the house on the southern slope allowed using both active and passive solar systems by shaping, inclination, orientation and materials used. Solar collectors provided hot water for both the house and the pool, located within the building. [7]

3. From the Periphery to the Centre of Interest

The change of political situation in our country has had an significant impact on the 1990s architectural design in Slovakia. After 1989 a number of interesting ecologically conscious projects has been designed. The new situation facilitated access to information, allowing to derive ideas and solutions from abroad, where the sustainable design was far more progressive. In Slovakia several projects have started, following the national and international interests, such as the international project of Brundtland City, which aimed at reducing energy consumption by half by 2030.The town of Rajec was selected for this project among other Slovak applying towns.

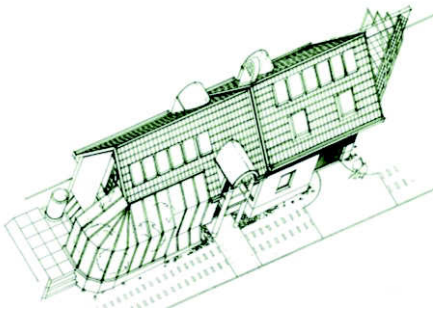

Fig. 5 , Solar single family house in Levice. [7] Architect Š. Drapčat

Continuing from previous decades, the aim of sustainable design to reduce energy consumption of the buildings, particularly through the use of solar energy proceeds. Thanks to the official recognition of sustainable architecture, this intention has started to be applied not for family houses

only, but also for public buildings design. Architects E. Schleger and L. Liesler incorporated these ideas in their design of indoor swimming pools and halls. Among all of their projects abroad, a Solar collector house for Neresnica swimming pool in Zvolen (1992) (Fig. 6) has been built in Slovakia. The authors have formed their solar architecture as a combination of passive and active solar systems. The basic passive principles applied were orientation to cardinals, respect strength and direction of wind, microclimate quality, shape and layout of the building, the area of the transparent parts of the building and used materials. Equally important was the heat gain from sunlight through procured greenhouse stored in storage mass construction. Thanks to this greenhouse energy the architects managed to save about one-third of the energy demand for heating. The solar collectors for heating and hot water were designed. With the total area of 577.5 square meters they represented the largest collector area in Slovakia at that time. [8]

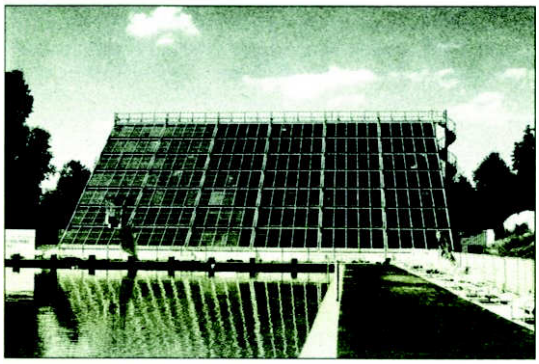

Fig. 6, Solar collector house for Neresnica swimming pool in Zvolen with the area of 577.5 square meters of solar collectors. [8] Architects E. Schleger, L. Liesler

Monitoring of energy savings was the starting point of most architectural designs in the 90s. Energy-eco-house in Hontianske Nemce (1995), designed by architect I. Hojsík as well as authors published reflections on this topic testify the importance of energy savings. Already in 1985, based on his research results at the University of Massachusetts in the United States, architect has proposed several series of energy houses and apartment buildings such as earth houses or flats applying energy efficiency in their internal zoning. The proposed experimental houses, however, managed to be tested only partially, after a self-building of a modified house from the series of earth houses. [9]

In sustainable architecture design also the formal expression and ecology of construction was emphasized. Traditional natural building materials such as wood and clay have been rediscovered. In sustainable design the economic savings, environmental impact, recyclability of the materials and the aesthetics and architectural design of buildings from natural materials have been considered. One of the first projects of experimental clay house was designed by architect H. Pifko in 1995. At a Family house in Hamuliakovo he applied all gained knowledge of the proposal of environmentally conscious architecture while following the traditional regional architecture.

Over time, sustainable architecture became more complex, relying on high-quality materials and new technologies, available information from abroad and also on domestic research results. The building of National Bank of Slovakia in Bratislava (1997-2002) (Fig. 7) designed by the architects M. Kusý and P. Paňák is an example of such an architecture . Architects inspired by structures from abroad designed the bank with an emphasis on reducing the energy consumption of the building, while using modern materials and technologies. [10] The formal expression of the building was one of the main priorities as well. This building, as the first intelligent building in Slovakia, started the design of technologically advanced buildings, that have been hiding their ingenious proposal inside. In the following years, the interest in energy-efficient houses has increased and first low-energy and passive houses have been built.

Fig. 7, National Bank of Slovakia in Bratislava, the first intelligent building in Slovakia. Architects M. Kusý, P. Paňák

4. Standardization of Sustainable Architecture

In a few years the sustainable architecture in Slovakia began to be perceived more intense and has become a standard in architectural design. Often, the award-winning architecture was the one designed in green quality. The Office building of Unipharma company in Bojnice serves as an example. Building designed by architect J. Keppl was awarded which the prestigious award of Slovak Architecture, Building of the Year 1999, precisely for its ecological concept. The building has been designed with the aim to reduce its energy requirements. The architect sought to achieve the environmental aspects of the building by using conventional building materials and suitable spatial concept, without implementing over-sophisticated technical equipment and technology, which are the essential elements of intelligent buildings. [11]

Fig. 8, Office building of Unipharma company in Bojnice, Building of the Year 1999. Architect J. Keppl

At present, sustainability in architecture is being discussed almost constantly. Conferences, standards and government regulations provide the basic framework. Various associations and organizations dealing with this issue raise awareness of people and promote the development of sustainable architecture. International green building certification systems developed already in late 1990s evaluate the complexity of building' sustainability. Constantly growing market of low-energy houses, passive or active houses, zero energy buildings or architecture of natural materials and their various combinations is the response to these impulses. Passive wooden-straw family house on the northern slope in Melčice - Lieskové from Oximoron studio is an example of energy-efficient building made of natural materials. The requirements of investor were passive house design independent of public distribution, built from ecological materials and using local resources. Overall, the house is up 90% composed of organic and renewable materials. The family house design is based mainly on passive solar gains but photovoltaic and photo thermal panels will also be installed. [12] The building was nominated to ARCH magazine Award 2013, indicating the progress of sustainable architecture.

Fig. 9 Passive wooden-straw family house on the northern slope in Melčice - Lieskové. [12] Oximoron Studio (M. Šichman, B. Meluš)

Summary

Brief overview of the forty year development of sustainable architecture reflects changes in architecture on the background of social and economic events and environmental influences. The presence of sustainable architecture is miscellaneous and its future certainly promising. Low energy has already become a necessary standard. How we deal with sustainable architecture in the future, remains questionable. We have the opportunity to draw lessons from previous periods in order to achieve the current sustainable requirements, but whether we utilize it, remains equally questionable.

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Sustainable Landscape Between Buildings

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Abstract. Currently, there is a tendency in architecture to search for solutions implementing the assumptions of the sustainable development paradigm. A number of them are components of architecture, which in the future will certainly affect urban planning and architecture to a much greater extent.
An issue of great significance is the need to integrate sustainable system elements with the spatial structure of environmentally friendly architectural facilities and complexes in order to achieve harmony between the built and natural environment, which is a basis of sustainable development. In this article, the author would like to solve the problem of how to design buildings, housing estates and towns so that their impact on the environment will be acceptable, i.e. will not exceed the possibilities of natural environment regeneration.

Introduction

The contemporary model of life, highlighting nonchalance towards Nature, has led to a wasteful exploitation of raw materials, the production of pollution and toxic waste, expansive use of soil and waters and, in consequence, natural environment degradation. Moreover, the progressing urbanization leads to the development of transportation and uncontrolled occupation of areas for development, thus drastically reducing the size of biologically active areas. This creates significant threats to both human development and natural environment, which is already finding it hard to neutralise and absorb the waste and pollution. As hindering the development is inadvisable, or simply impossible, it is necessary to make it sustainable.

In the field of shaping architecture as an important element of sustainable development including the ecological, economic and social aspect, it is necessary to introduce a number of changes – starting with a change in the system of values and needs, through a change of the quality of social spaces and structures, and finishing with a change of users' and designers' mentality. This generates changes in design goals. Currently attempts to improve the environment are already being made, especially in the context of reducing the consumption of energy and raw materials, application of renewable energy sources and a reduction in the emissions of greenhouse gases to the atmosphere. However, it is still necessary to enhance care over the quality of the environment and to improve the quality of urbanized areas' landscape by changing the approach to the management of land, biologically active areas and surface waters, which leads to the process of sustainable development of areas around buildings.

Use of urban space and structure for the purposes of improving the quality of built environment

Impervious surfaces in towns, such as streets, pavements, downtown squares, car parks as well as building roofs, hinder the development of biologically active areas by worsening the natural hydrological management. Rainfall on urbanized areas is usually discharged to rain sewage systems, which results in their complete loss and in the context of global shortage of clean water for household use, creates a situation that poses a significant threat. Rainwater should therefore be treated like goods of nature, a precious raw material, and not like sewage waste, whereas biologically active areas, which develop thanks to rainwater, should become a public good.

A priority for sustainable activities undertaken on the premises of housing estates and towns is to eliminate impervious asphalt, concrete and plastic surfaces in order to obtain a greater biological diversity as well as to improve hydrological, microclimatic and landscape conditions. There are numerous possibilities of sustainable land development. Their common feature is primarily the minimization of man's influence on natural environment and his intervention in the soil morphology and landscape, which involves attempting to restore naturally occurring processes that consist in:
- infiltrating the biologically active areas which need to be designed and maintained as well as increasing their share in the total surface area of urbanized terrains and systems of pipes, drainage, open and closed ditches so as to enable the flow and absorption of water.
- retention related to the designing of open or underground water reservoirs, depending on the level of investment and land development as well as development density. Other elements of land development which are important for retention include absorptive ditches, wells, water holes, retention ponds, gardens and greens with plants resistant to temporary flooding with rainwater, integrated in extensive systems for urbanised areas drainage, swamp ecosystems, which at the same time purify water or systems of flower beds directly connected to drainage systems as well as adsorption reservoirs for periodical inundation, purification or evaporation of rainwater [1].
- transpiration and purification that consist in applying properly selected species of plants, the so-called plant passageways, which are a natural system of filters on retention and adsorption areas [2].

The solutions can be divided into three basic groups:
- landscape solutions, related to the shaping, protection and development of biologically active areas and water management, which consist in designing systems of infiltration, retention, transpiration and purification of waters in a particular area,
- technical infrastructure solutions, related to sustainable design of drainage systems and the surface of transport roads and other hardened areas,
- architectural solutions involving design of natural green elements integrated into the structure of facilities in a form of green roofs, terraces, walls and elevations.

When related to the context of place and integrated into the systems of housing estates and town space, the landscape solutions take a form of greens, public parks, housing estate parks and landscape gardens, playing a role of recreation areas. Their major function, related to infiltration, retention, transpiration and purification, requires large surface areas, so they are created on the edges of built-up areas and, in consequence, constitute an element linking the urbanised and natural landscape, which does not mean, however, that they are not adjusted to and created in densely developed areas.

The slowing down and reduction of rainwater flow is related to the threat of creating a malarial microclimate and multiplication of mosquitoes, therefore it is important to enable the area airing and purification, first of all by using the existing wind rose, applying the properly selected elements of small architecture and adequate location of buildings.

Architectural solutions in the context of shaping a microclimate of urbanised areas play a more complex function. On the one hand, they are a building element (for example facades, roofs) and, on the other hand, similarly to landscape solutions, they are fragments of biologically active areas of housing estates and towns [3, 4].

Both landscape and architectural solutions are supported by technical infrastructure solutions, which should be based on a natural hydrological cycle.

Examples of constructions

A characteristic and most known example of sustainable shaping of area development is BedZED housing estate, built on reclaimed post-industrial areas in the district of Beddington in London (Fig. 1), in which the basic assumption was to erect buildings that are energy self-sufficient and, therefore, do not emit pollution into natural environment and to restore biologically active areas the size of which would equal the surface from the time before the housing estate was built. It

was achieved by replacing technical solutions with natural ones, integrated into the structure of buildings, such as the use of natural greenery on building elevations as shading elements, designing green roofs and gardens on roofs – sky gardens, and leaving maximally big natural green areas between buildings (Fig. 2). Where it was impossible, pervious surfaces were applied so as to enable infiltration and retention of water in the area [3, 5].

Fig. 1 BedZED – sky gardens on the top of buildings (Photo by J. Ciechanowski)

Fig. 2 BedZED – natural green areas between buildings (Photo by J. Ciechanowski)

Currently there are more and more examples of such housing estates, e.g. Heerlen near Mastricht, Theodor Korner Strasse in Graz, Wilhemsburg Mitte in Hamburg and others. In Theodor Korner Strasse housing estate the high standard is reflected in the use of natural local materials and functionally designed flats with green terraces on building roofs. It is also visible in the integration of buildings into the existing green areas and leaving maximally big biologically active areas in a form of lawns, green roofs and surfaces hardened with pervious materials [3].

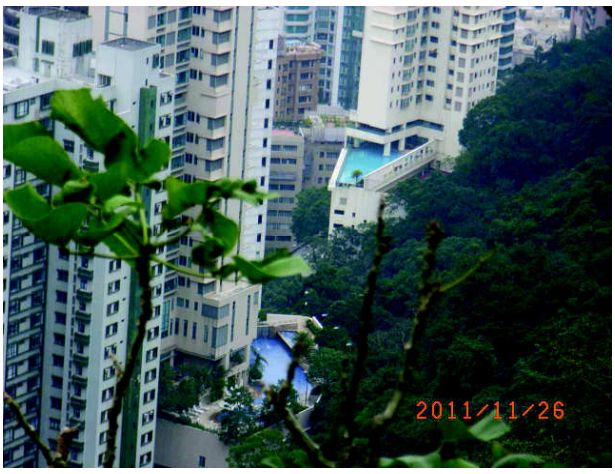

Fig. 3 Hong Kong – green enclaves in a big city (Photo by B. Majerska-Palubicka)

Fig. 4 A downtown park in one of Hong Kong districts (Photo by B. Majerska-Palubicka)

Such activities are a consequence of the sustainable life concept, which assumes favourable conditions for both man development and the existence and development of natural environment, e.g. by leaving ecological corridors for fauna on built-up areas in order to ensure animals a possibility of moving between their typical habitats. This takes place both in low plot ratio areas and in the centres of big towns, where green enclaves (biologically active areas, gardens, parks, water reservoirs, fountains, green roofs and building elevations as well as greenery on the ceilings of

underground structures and others) incorporated in urban development systems are an important element which improves the local microclimate (Fig. 3, 4).

Sometimes building elevations in the centres of big urban agglomerations are an extension of public recreation areas in the vicinity of which they are located. This is the case in Fukuoka (Japan), where green areas with small architecture elements – an amphitheatre, a system of paths and contemplation spots have been created on the elevation of ACROS building having a terrace construction. There is also a possibility of going out directly into the biologically active area of the elevation, whereas from the side of a busy downtown street the building forms a part of the big-city development (Fig. 5, 6) [6].

Fig. 5 ACROS Fukuoka – a green elevation (Photo by B. Majerska-Palubicka)

Fig. 6 ACROS Fukuoka – an elevation from the side of the street (Photo by B. Majerska-Palubicka)

Benefits resulting from sustainable development of urbanised areas

In sustainable design the ecological, social, economic and aesthetic aspects, resulting from sustainable development, are equally important. For this reason, the benefits resulting from activities related to sustainable development of urbanised areas should be considered in a broader range of aspects important from the point of view of sustainability:

Ecological benefits:

- reducing the effects of hydrological cycle disturbances caused by any human intrusion in natural environment,
- extension of biologically active areas as well as increasing the biodiversity and, in consequence, the development of fauna and flora on urbanised areas,
- reduced risk of floods and uncontrolled inundation of areas,
- reducing the effects of the phenomenon of urban heat island, improvement of the microclimate and air quality on urbanised areas.

Social and economic benefits:

- ensuring an accessible and user-friendly environment, the infrastructure of which integrates into the environment context, which is related to the regulation of the Preamble of the Conference on Environment and Development, stating among others that human beings have a right to a healthy and creative life in harmony with nature,
- improving the quality of housing estate and town areas with regard to aesthetics and functionality,
- reducing the demand and consumption of water owing to its re-use for the purposes related to household needs and irrigation of green areas,
- lower expenses for the systems of optimal microclimate maintenance inside buildings thanks to the improvement of town environment microclimate (temperature, humidity, air cleanliness),

- reduction of incidence of allergies and respiratory system diseases among the inhabitants and improvement of their physical and mental state,
- increasing the efficiency of work and reduction of absence,
- improving the quality of living on urbanised areas.

Aesthetic benefits:
- human-friendly social spaces that create a safe and healthy living environment,
- innovative, highly aesthetic architectural and building solutions with elements of green roofs, terraces and elevations.

Summary

In the context of environmental threats caused by excessive consumption, the spreading of urbanisation and transport system extension, the designing of sustainable land development becomes an important process enabling the lost balance between the natural and built-up environment to be restored. Care over biologically active areas as well as collection and utilisation of rainwater is a way to ensure sustainable development of urbanised areas, bringing ecological, social and economic as well as aesthetic benefits, which fulfils the basic requirements of sustainable community development.

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From Functional Areas towards Metropolitan Structure: Public Space in Sustainable Development Context

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Keywords: Public space, communication, social-cultural and material values, city – polis, built environment, brownfield, deteriorated locality, urban fallow, modern era built heritage, sustainable development, sustainable life, architecture, civil engineering, urban planning

Abstract. If sustainable life on Earth is the goal (today), the Mankind cannot head towards it living in cities that are not sustainable. Localities that have lost the ability, unduly frequent in our cities, call the nature and causes of the phenomenon to be revisited. Once perceived in a city context, brownfields appear as places where the city failed: the communication, both material and social-cultural values´ exchange – that is the fundamental principle of a city - reduced and finally stopped between the locality, its surroundings and the polis. Identified as a platform for the communication, public space creates the basic framework of a city – the metropolitan structure. Vital public space claims to be the base of sustainable development of a city thus: the paper verifies the hypothesis and provides essential description of functions and types of public space. Principles and methods of its formation are demonstrated on examples in a nutshell. Eventually, the paper contributes both to the positive and to the normative theory of urban public space. Richly documented both in literature and the author's own work, commonly accessible reality of the built environment is the platform of explorative research plan of the paper. New, revising conclusions do not result from new findings on the situation, but from new perspectives on familiar issues. The same platform allows easy verification of hypotheses and new explanations.

Localities that Have Failed to Be Sustainable: State of Affairs and Nature of the Problem

Dilapidated, abandoned and derelict buildings and sites are highly visible phenomenon of European cities and landscapes of the late twentieth and early twenty-first century. Named industrial heritage, urban fallows, deteriorated neighborhoods, brownfields or socially excluded localities, they represent values on the one hand and loss of them on the other. After all, it is about the same in any case: lands and buildings that have lost the original function and have not found a new one, not used, abandoned and shabby, often a source or an epicenter of social-pathological effects, safety and hygiene hazards. Harming both people, society and environment, they are places where the city failed to work. They are dead localities where the processes that represent social-cultural basis of a city have ceased: the communication – an exchange of values between the site, its surroundings and the community has declined until it stopped. At the beginning, the limitation interferes in cultural-civilizational area as a rule: knowledge transfer and development fall among the first typically, the deficit affects transfer and sharing of other social-cultural values, too; the decline of economical exchange follows. In material realm, the flow of capital, raw materials, media and labor force in one direction and produced goods and earnings in the other go down. Loss of control over wear and tear and dilapidation of the locality together with negative social impact are the consequence. Finally, the people´s motion between the site and the city disappears – perhaps with an exception of pathological phenomena such as vandalism, larceny or criminals´ and socially excluded individuals´ and groups´ refuge. Health and safety risks have been already mentioned as concomitants of the situation: they amplify the exclusion of the locality and strengthen the communication barriers.

It is worth noting that all the characteristics mentioned fit no less tightly to an industrial brownfield than to a deprived neighborhood. At the same time, any of the characteristics is the inverse to an essential principle both the idea and running of a city – of polis – are based on

Hypothesis: Public Space is the Basis of Sustainable Development of a City

On top of the two common aspects of all the processes of built environment localities decline or non-sustainable development - universality regarding the original use and denial of the basic principles of polis – there is a third one in addition: all the processes take place in a public space. Public space is a platform for communication in an urban, or broadly in a built environment context, whether it is the physical public space of a city [5], or the public space of social, cultural and civilizational interactions [4], amongst them the economical, administrative, political, and also intellectual in the broadest sense are to be emphasized. Starting maybe from general application of the press, at latest from development of electronic communication technologies (electric telegraph in 1836 and 1839) and later digital media networks, social and cultural-civilizational interactions partially leave the physical platform; but even in the future they will probably not leave it completely. All kinds of communication between different parts of built environment - and among the people, the community and the society - sometime take place in the immaterial virtual public space, more often and in all cases at least also in physical public space of the city or of the built environment respectively: let it be termed as urban public space in a simplified way.

In chapter 1, a brownfield has been introduced as the negative to sustainable development of built environment: the relation provides particular definition of sustainable development of built environment – a negative one - whilst the "classic" Brundtland Report definition [6] turns out to be useless being too general regarding the case: A city development process is sustainable if it brings no decline and abandonment in a city – a locality – an enclave scale. Brownfields – as shown in previous chapter – indicate a deficiency in communication as a general rule. On the other hand, vital public space can be identified with well-functioning communication basis of the city. There is a hypothesis thus: Vital urban public space is the basis of sustainable development of a city. Derived logically from the above facts and definition, the hypothesis appears rather strong.

Reality: the Hypothesis Confronted

First look as well as a thorough examination of an urban-development plan, which can be regarded as a traditional one in retrospect, indicates focus of the planners´ attention: it is an individual functional area and a plot - their functions and uses. Failing repeatedly in the future conditions´ and circumstances´ forecast, executive urban planning orders to the land owners how to deal with their property – now as well as in distant future. Moreover, in this approach that is a strange relict of modernist era, an urban public space is perceived only as "what remains between the functional areas".

A collection of case studies of sustainable – or non-sustainable development of localities is provided by modern European cities that we live in [2]. They provide examples of achievements of two essential urban planning approaches: one of them is described above, the other focuses on urban public space predominantly. The second used to be applied generally until the fall of modernist era or to the end of so called long 19th century, e.g. till WWI, the first has been ruling urban development since. Recent situation of cities at the east of Germany provides clear comparison of results of the two approaches: As a result of economic imbalance of original and new federative lands, the cities in new lands of reunited Germany face dramatic decrease of inhabitants´ number. Nevertheless, the population that remained is not dispersed regularly: as a result of urban public spaces´ competition the inhabitants are concentrated along the historical – in 19th century and earlier set streets and squares, whilst housing estates, carefully planned and built after the WWII and providing both higher comfort and wealthier environment, are abandoned.

During 20th century cities exceeded the borders set by the boom of long 19th century. Industrial and workers´ districts started to represent a “gap” between prospering central business districts and new, modern-planned residential neighborhoods at outskirts thus. Soon after, due to its negative externalities, the production started to be perceived as undesirable in “the gap”. Together with the industry, other production entities have moved away to new mono-functional localities further at the periphery. Unable to create vital urban public space, the “ghost towns” came up inhabited not more than 8 hours a day, whilst land speculation started in “the gap” [1]. As a result, last inhabitants of “the gap” lost their original workers homes: what remained there was the grid of urban public space – to serve as a base for new, high-end real estate development in a short time. The gentrified localities of the original “gap-ring” are becoming a ”good address”, saturated with all the benefits of well-functioning, well dimensioned and well equipped urban public space of the 19th century origin – unlike the new, in modern manner at the outskirts planned and built districts: some of them will turn to brownfields rather soon.

Urban public space of today has been inherited by majority: this regards its scope and even more when evaluating the public space´s primary significance within a city context. Established in 19th century or – more often - earlier, public space of European cities´ centers is both vital and highly appreciated today. As a principle, it is preserved as a valuable patrimony, and if some needs to change it occur, they consist of taking the space from motor transport back to the people most often. The history as well as the functioning of the inherited public spaces of the cities´ centers indicates both their sustainability and their significance for the sustainability of the city. Another part of the urban built bequest is the workers´ settlements – residential groups and districts dated back to the period before WWII and earlier. Low-cost approach provided a public space in these localities, which is limited both in dimensions and in benefits offered. Nevertheless, whether by means of gentrification or by successive incumbent upgrading, public space of these neighborhoods appears to be adaptable to the needs and expectations of 21st century inhabitants [3]. At the end, the regenerated and revitalized public space of these “gap localities” proves to be more attractive than the one of the post-WWII residential settlements, planned by methods of recent urban planning that focuses on functional areas dominantly. More successful in competition of the two, the pre-WWII residential groups´ public space appears to be more sustainable, indeed.

At last, particular topic regarding the inherited urban public space are the production plants. Squeezing out the original urban or agriculture function, factories gradually occupied vast territories at city outskirts: area of the enclave often competed with the original territory of the city. Initially, following the original street grid or roads´ network, a space has been left free between production buildings. However, public was excluded from use of the space, the “streets" did not bear adequate urban functions as a rule. Over time, the development of production and related technology often erased the outdoor spaces: they were absorbed by the adjoining halls, which have grown to unprecedented proportions. Consequently, regeneration procedure principles can be induced: in order to re-vitalize a brownfield, the public space network and functions are to be restored – and the same has to be undertaken as soon as first symptoms of the production decline appear so as to prevent further deterioration and decay of the locality. Nevertheless, the opportunity is ignored most often so far …

Urban Public Space

Even today, extending their variety and filling them with new purposes, functions and ways of use, urban public space reflects traditional forms of squares, streets, promenades, parks, ... New and unexampled are the forms of virtual public space - the communication media, the Internet and social networks. Nevertheless, neither significance, nor richness of forms nor physical development of urban public space is oppressed or restricted by the "immaterial competition". On the contrary - new types of parks, equipped with playground furnishings and new "urban" sports´ facilities emerge in cities and public spaces are equipped with urban furniture that creates unparalleled conditions for

relax and social activities recently. Urban public space opens and integrates previously separate functions – as an example, boundaries between areas for pedestrians and mechanical transport disappear. It is adapted to the needs of different types of users: for instance, trails with a surface adapted for convenient movement of cyclists and skaters are created within promenade areas. Traditional forms of urban public space are exposed to competition - and successfully react by a renaissance of alleys and urban greenery in general. Public space is expanding - into the interior of adjoining houses of public institutions, to private buildings and to their lands. Public institutions complement their essential roles and purposes by social and community functions: new types of interior public spaces are created to accommodate them, for example, in schools, in galleries and in offices. Social recreation areas occupy the territories, originally dedicated to technical facilities - river embankments in cities are an example. There is no doubt that urban public space remains a fundamental part of built environment and a "showcase" of a city: its significance, scope and benefits provided are increasing, and even more is expected spontaneously.

Three core functions of urban public space result from its role of a platform for various forms of physical, social-cultural and social communication. First, the urban public space is a place of consumption of the benefits of the city - material perquisites, social-cultural and social experiences. Consumption is a form of communication: some create and provide benefits and experiences whilst the others adopt and enjoy them, whether it is traditional amenities - shops, services, schools, theaters, entertainment venues, galleries, sports facilities - or informal social and cultural activities - happenings, street theater and street art, community nooks and playgrounds, "flea" and farmers' markets - or traditional promenade in festive days. Security that even today remains a benefit, which provides a city, a place of identity, social contacts or shared cultural experiences of everyday life are objects of consumption, too. Second, urban public space mediates - physically and mentally conveys the consumption of benefits, perks and experiences described firstly. Social-cultural activities and urban benefits that take place both in adjoining buildings and in the open public space itself are made accessible thus. Naturally, the civil engineering works both of the public space and the adjoining ones - their architectures and experiences, provided "by themselves" - are accessed and interpreted by the urban public space, too. Interpretation of construction works, or rather of architecture is a specific and extremely important part of mediative role of public space: the paper shall come back to it later when explaining the relation between construction work, architecture and public space. However, production, delivery, acceptance and exchange of benefits, perquisites and experiences request to be provisioned, too: supply of energy, water, people, material, ... is finally the third function of urban public space. Concisely, it is possible to speak about benefits - mediation - and provisioning regarding the functions of urban public space.

The geometry of urban public space follows its functions: defined by the geometry of its structure, density and shaping of the grid – and by the profiles of particular places of the structure, the urban public space shall follow the fluxes and the focal points of social-cultural and material values´ communication within a city ceaselessly. Within a network of urban public space, other profile appertains to a quiet residential street or to a neighborhood nook, another to a busy boulevard or to a central square - and again another to the park adjacent. Regarding at least some of its functions, an urban public space profile includes not only the street or square, but also adjoining areas of reserved land - typically a private garden for example - and also interior spaces, where social-cultural activities, urban and "ordinary" services and retail take place. Although more or less reserved and limited in an access, all the above mentioned premises work as a public space regarding both mediation, benefits´ and provisioning function of an urban public space.

The structure of urban communication within a large and complex city – not to mention within built environment as a whole – is a multi-level one naturally. This refers to the urban public space structure consequently: its grid becomes 3-dimensional both conceptually and in reality. A city starts to be perceived as a metropolis – and its structure regarded as metropolitan thus. Spontaneously and instantly, the point of view begins to apply to small towns, too.

Construction work, architecture and public space: a particular contextual basis belongs to each of the urban public space functions. Regarding the design process and its bottom-lines, an architecture "by itself" is the bearer of the benefits´ function whilst the mediation function is bound to an urban space platform, to a wider context or "surroundings". The provisioning function, finally, bears the construction structure of physical public space primarily. Particular architectures shape the physical public space of built environment: this encompasses the architecture of buildings and related structures as well as the architectural equipment of public space represented by its surfaces, shapes, the so-called "small architecture" or "street furniture". Within the public space framework, or rather within the urban communication context, particular architecture appears to be a physical spatial structure created by man and persisting at a particular place, resonating with the social-cultural values of the environment: once positioned in public space – both physical and virtual - a built structure or a construction work becomes architecture. The resonance means mutual communication - providing and adopting of social-cultural values between the architecture on the one hand and the society and individuals present in the public space on the other. Intensity - "amplitude", or "+/- sign" of the resonance gives then, whether it is a marginal architecture, iconic object of art - or entity, producing mostly negative reactions. In all the cases, however, there are social-cultural values communicated. Architecture is both subject and object of the communication. Intensity and quality of the resonation interferes with the sustainability of the architecture. The mediating role of public space shall be revisited: Created by the surrounding architectures, the public space "creates" the architectures. As soon as exposed to the public space, even a construction work, originally conceived as a purely engineering one without conscious social-cultural ambitions, resonates social-cultural values spontaneously. And on the contrary: outside the public space architecture does not exist, there is no architecture if there is not enough social-cultural values communicated.

Conclusions

The focus on urban public space and communication base of the city reminds of both the fundamental responsibility and competencies of architecture and urban planning referring to sustainable development of built environment as well as sustainable life in general. It is appropriate to point them out in a situation when energy consumption of buildings, declining in most of industrialized countries, is regarded as a major contribution to sustainable development of mankind. The primary liaison between energy efficiency of the building as a cause and permanent or at least long-term sustainability of it as a consequence has not been established. *Regarding both sustainable development of built environment and sustainable life on Earth, the role of architecture persistent in vital public space proves to be essential.* Physical structure of a building has only a lifespan at its disposal that is limited inherently: potential improvements of energy efficiency or renewal of material substance of buildings derive only from the eligibility and prospects of the architecture.

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