

The research of heritage values of historical towns of the Czech Republic

Jan JEHLÍK; Jiří PLOS; Miroslav CIKÁN

Keywords: urbanism, heritage value, historical town, geographic information system (GIS), map file

Since 2016, a five-year project entitled *Origin and Attributes of Historic Values of Historic Towns of the Czech Republic* has been underway in cooperation between the Faculty of Architecture of the Czech Technical University and the Institute of Theoretical and Applied Mechanics of the Czech Academy of Sciences. The result is a reconstruction of geometric relationships arising from the hypothesis of medieval urban surveying, a methodology of identification and protection of phenomena essential for the urban authenticity of heritage towns, maps of attributes of the complex identity of selected urban heritage reservations, and an exhibition summarizing the research together with a critical catalog. Six selected towns were analyzed using complex maps with professional content, and twenty towns were analyzed using location maps with professional content. The research work is organized into sections, subsections, and sheets linked through a basic database. The section *Basic Information on the Town* contains an initial information base individually describing each town in terms of its historical development, an analysis of its layout, and photo documentation of the environment. The second section *Basic Map File* contains sets of thematic GIS layers recording significant phenomena, resp. a reconstruction of their appearance in the past. The third section *Partial Map Files* contains an interpretation of the database and, using the principle of “overlay”, shows the quantitative differences in selected phenomena and attributes. The fourth section *Algorithmic Analyses* applies suitable mathematical models to the structure of towns using a GIS base, demonstrating the transformations of the material and non-material structure of the historical core. The fifth section *Expert Analyses* contains interpretations of the data based on general methods and theories applied in heritage care and urbanism. The sixth section *Evaluation* contains a method of evaluating the aforementioned analyses based on an expert and legal framework and shows ways to professionally evaluate individual projects and situations.

Illustrations: *Tab. 1. Maps of attributes of the comprehensive identity of a historical town; Figs. 1a–d. Telč, analysis of layout – demarcation of marketplace and streets (phase I of the project: basic data about the town): 1a – modification of southeast corner of marketplace, 1b – final modification of southeast corner of marketplace, 1c – northern demarcation of Hradební Street, 1d – unexplained modifications of marketplace demarcation; Fig. 2a–b. Telč, plan of the town “figure –*

background” (phase I of the project: topographic plan):

2a – comparison of buildings in the 19th and 21st centuries,

2b – comparison of public spaces in the 19th and 21st centuries;

Fig. 3. České Budějovice, basic map set (phase II of the project)

in a 3x3 matrix capturing the development of the town at different scales and at different stages. These are composite layers

at the landscape scale (top row of the maps), at town scale

(middle row) and at core scale (bottom row), reflecting

the situation in the 19th century (left column of maps),

20th century (middle column), and 21st century (right column);

Fig. 4. Litomyšl, analysis of the street network (phase IV

of the project: algorithmic analyses – space syntax)

Fig. 5. Jihlava, partial map set depicting the difference between

the built-up area in the 19th and 21st century (phase III

of the project: partial map sets – changes of phenomena;

Fig. 6. Jihlava, analysis of the town panorama – color resolution of homogeneous units (phase 5 of the project: expert analyses – analyses of the town image).

Using a topological analysis of the street network in the care of the urban value of settlements

Jana ZDRÁHALOVÁ

Keywords: urban structure, street network, Space syntax, Bill Hillier, Julianne Hanson, urban analysis, integration, choice

The article introduces the Space syntax theory and its methods to the field of heritage care and conservation, focusing primarily on the urban dimension of settlements. It presents the theoretical foundations and explains the main concepts, but it also points out to the limits of the Space syntax. The second part of the article demonstrates the case of Pelhřimov, a Czech town with urban heritage protection, and the use of the theory, showing its results and conclusions.

The Space syntax theory brings two main assets in comparison to the standard analytical tools used in heritage care. First, it can capture the urban settlement or any spatial arrangements of places as a whole. In the urban dimension, it extends the often-used analysis of the relationships between two essential places such as the main square and a castle or a railway station and the city center. Space syntax transforms the street network of a settlement into an axial graph and analyses its topological properties. In this way, it covers all places of the settlement at once. This quality is expressed as the configurational character of the theory.

The second asset is the ability to connect the spatial properties of the street network with the character of life in the spaces. It can predict the potential of individual places to capture the through-movement (called Choice in the Space

syntax theory) or a to-movement (called Integration). The distribution of activities in the city is related to the spatial arrangement and use of places.

A comparison of a city's road network in different periods allows us to monitor the position of topologically dominant places or their movement within the settlement. This way, we can study the shift of socially essential locations within the city, the formation of new centers, or the relationship between the historical center and the surrounding region.

The analysis of the street network of Pelhřimov in 1829 and 2020 demonstrates the shift from an even, radial system of streets into a street system of more expressed main roads with the other streets becoming secondary. The later street network creates new communication circuits that are complementary to the once single node corresponding to the historical center. The formation of the new bypass transport communication designed in the 1970s to protect the historical center from heavy traffic has significantly disrupted the connection between the west and east part of Pelhřimov. An increased quality of interconnection between the two parts of the town would help to overcome the separation and bring more people to the city center. In this way, through a regular, everyday contact with the historical center, the inhabitants can build a stronger and authentic relationship with the city and its historical parts.

Space syntax analysis extends known and used approaches to urban analysis. It can offer valuable arguments in heritage care, planning, and development, while preserving the historical spirit of the settlement.

Illustrations: *Fig. 1. Map of the stable cadaster of Pelhřimov, 1829; Fig. 2. Orthophotomap of Pelhřimov, 2020; Fig. 3. Segment map of Pelhřimov overlaying the stable cadaster map from 1829. The reference criterion is choice. The color range includes red, orange, yellow, and green; the colors correspond to the values of the variable. Red represents the maximum value, green the minimum; Fig. 4. Segment map of Pelhřimov overlaying the current cadaster map from 2020; Fig. 5. Segment map of Pelhřimov overlaying the stable cadaster map from 1829. The monitored criterion is integration; Fig. 6. Segment map of Pelhřimov overlaying the current cadaster map from 2020. The monitored criterion here is also integration; Fig. 7. A commercial building, built on the site of a demolished block of houses, and the resulting free area, now used as a car park, disrupting the original structure of the fortification ring; Fig. 8. Pelhřimov, Humpolecká Street, inner bypass of the town redirecting traffic around the historic core, built in the 1970s. The street has an exclusively traffic character.*

Structure and shape. A morphometric/topological view of an urban structure and the issue of describing its character

Vít RYPAR

Keywords: urban structure, urban morphology, geographic information systems (GIS), basic map set

The topic of the article is the historical urban environment, specifically its urban structure in terms of the spatial arrangement of the city's building elements. The article focuses on an analysis of the morphology of urban structure and presents a procedure for describing its spatial qualities. Such a procedure should complement standard evaluations of historical meanings and aesthetic qualities of urban heritage (in the Czech professional environment, this is usually focused on characterizing the main features of a historical urban landscape: dominant features, compositional vistas and views, panoramas, building types, styles and materials, etc.). Complementing this traditional approach with the procedure presented in the article should lead to a more comprehensive grasp of urban qualities and more effective appropriate protection and conservation of building heritage, as well as to a more sensitive development of its settings.

The core of the article is the introduction of the system entitled basic set of maps, i.e. the arrangement of the monitored properties of the urban structure into a database in the geographic information system for the purpose of its effective analysis and description. This section presents and justifies both the recommended scope of mapping (in terms of monitored scales and time periods) and data sources (current and archival). This part is followed by an example of analyses of the basic set of maps and a suitable way of their use for evaluating changes in the character of the urban structure.

In the following part, the procedure of analysis that precedes the evaluation is given using illustrative examples. The final recommendations can be summarized in two theses: 1. The evaluation must take place over purposefully prepared map materials (see the content of the basic set of maps); 2. For the delimitation and specification of morphologically homogenous localities, the evaluation of the properties of the development in relation to the urban block is as important as is its evaluation in relation to the street space.

Illustrations: Fig. 1. Basic set of maps – a specialized database for the analysis and evaluation of an urban structure. An illustrative example of the map output of Jihlava showing three mapping scales (vertically) and three mapping periods (horizontally); Fig. 2. The main layers of mapping at a scale of 1:15,000 using the center of Pelhřimov as an example.

From left: roads, places, and built-up areas; Fig. 3. The main layers of mapping at a scale of 1:5,000 using the center of Pelhřimov as an example. From left: public spaces, city blocks, and city plots; Fig. 4. The main layers of mapping at a scale of 1:2,000 using the center of Pelhřimov as an example. From left: street spaces, overlapping public spaces, houses, house facades, and entrances; Fig. 5. Illustration of three types of analyses using the center of Pelhřimov as an example: 1. overlap: comparison of areas of city blocks in the first half of the 19th and 21st century with yellow marked decrease, 2. structure of city blocks: illustration of grain size of the relative extent of plots, 3. structure of street spaces: illustration of the density of inputs in relation to the length of the street edge.

Changes in the manner of use of a historic center

Michal KOHOUT; Šárka JAHODOVÁ;

Veronika PEŇÁZOVÁ

Keywords: historical cores, heritage values, urban values, transformations in use, identity, authenticity, adaptability

Historical cores are ensembles with a unique system of physical and spatial parameters describing the character of buildings and spaces (e.g. building height, floor area coefficient, percentage of built-up area, ratio of paved and unpaved areas, scale of plots, plot size, street network organization, street profiles, interface character, location and ratio of exceptional and common elements, etc.). These parameters also correspond to unique socio-economic characteristics (social, economic, legal, etc.) which, together with the other circumstances in which the historical core is embedded, come together to create the perceived value of the historical environment while at the same time tending to scribe into its physical form.

The article deals with the importance, classification, and possibilities of monitoring various ways of using historical cores, especially on an urban scale. It tries to capture characteristic phenomena and different modes of environment use (e.g. long-term living, performance of regularly recurring activities such as work, study, office visits, etc. or single trips by tourists), describe their dynamics, interrelationships, and differences in relation to the physical environment. The aim of monitoring these characteristics and their tendencies, however, is not historical or factual research itself, but to create a basis for informed management of the historical environment which aims to ensure that urban cores successfully fulfill their cultural, social, infrastructural, and economic role.

A deeper knowledge of these phenomena and

their dynamics, together with their coordination and regulation, can significantly assist in planning and creating a broader conceptual thinking process about the use and management of historic parts of settlements in the process of changing living conditions. It will make it possible to ensure the natural transformation of the heritage environment and to consciously search for and establish the optimal level of preservation of its physical form and life manifestations as well as its perceived identity and authenticity.

Illustrations: Fig. 1. Relationship between scale and spatial units; Fig. 2. Development of population per house – core vs. suburb in Telč, 1969–2011; Fig. 3. Development of the number of the ratio of inhabited and uninhabited houses in České Budějovice; Fig. 4. Development of the number of collective accommodation establishments within selected cities; Fig. 5. Development of the number of Airbnb units within selected cities; Fig. 6. Ratio of Airbnb visitors and guests of common collective accommodation establishments per capita and year.

Werkbund colony exhibition as a subject of heritage protection

Eliška PODHOLOVÁ VARYŠOVÁ

Keywords: Werkbund exhibition colony, Werkbundsiedlung, Svaz čs. Díla, interwar architecture, heritage protection, reconstruction of 20th century architecture, Weissenhofsiedlung, Baba housing estate, WUWA, Nový dům, Neubühl, Werkbundsiedlung Wien, functionalism

During interwar Europe, the exhibitions of the Deutscher Werkbund also addressed the housing crisis and the issue of housing reform for modern man. In several European cities, the local Werkbund presented exemplary housing estates of modern living as a manifesto of modern architecture and a contemporary view of architectural aesthetics, the structure of a residential house, and the use of new technologies and materials. The first exhibition of its kind was the Weissenhof housing estate in Stuttgart, organized in 1927 by the Deutscher Werkbund. After the exhibition, the houses became part of the city's housing fund, and the presentation of real permanent houses instead of exhibition exhibits inspired a similar exhibition in Brno in 1928 (Svaz čs. Díla), Wrocław/Breslau 1929 (Deutscher Werkbund), Zurich 1931 (Schweizerischer Werkbund), Vienna 1932 (Österreichischer Werkbund), and Prague 1932 (Svaz čs. Díla). After the exhibitions, the houses were rented or sold, and the real experiment of living in modern architecture began. The first building modifications and changes in the residents did

not take long to arrive. The relationship between the modern-minded population and the houses was soon affected by the political situation, and the first wave of emigration began in the 1930s. The original residents were often replaced by people with a more traditional mindset and taste, which became reflected in the appearance of the colonies. During the war, the colonies in Stuttgart and Vienna were hit by bombing, and the destroyed houses were replaced by new buildings after the war. In some places, the houses served the army or as accommodation for German officers or emergency housing.

The first art-historical and heritage interest in the exhibition settlement began to appear slowly in the 1950s, but real heritage protection usually did not arrive until the 1970s. An exception is the Stuttgart Weissenhof, which has been protected as a heritage property since 1958. Along with heritage protection, a general renovation of the housing estates in Stuttgart, Vienna and Zurich began in the 1980s, where the houses are in the ownership of a single owner (state, city, or building cooperative). These pioneering reconstructions were one of the first of their kind. They also provided proof of the difficulties of restoring interwar architecture – the issue of waterproofing flat roofs, insulation of the facades, window restoration, etc. At the same time, the questions arose of to what degree the original building materials should be preserved, and how to adapt residential buildings to current living standards.

In the 1990s, reconstructions also began with private owners in the colonies in Prague, Wrocław, and Brno. Efforts to preserve at least a model house or apartment, already evident during the renovations in the 1980s, also began to expand. In 2006, a museum was opened at the Weissenhof in the Corbusier double house; it had undergone a second reconstruction which in many ways corrected the “transgressions” of the previous one.

In the 1990s, the reconstruction of the Scharoun hotel house in Wrocław was started, and the reconstruction and rebuilding of Prague’s Baba housing estate also began with better or worse results. In 2011, the City of Wrocław launched a supportive financial program for heritage renovation of houses to correct private renovations and motivate owners. The major renovations of the 1980s also started ongoing maintenance in Zurich, and the second general renovation took place in Vienna in 2012–2016.

Information and experiences are being successfully shared through conferences and publications as well as due to such organizations like ICOMOS and DOCOMOMO; in recent years,

efforts have also been made to better connect all six Werkbund colonies to the European *Netzwerk der Werkbundsiedlungen* network. This international inspiration is what is helping to resolve reconstructions and seek out the delicate balance between preserving the authenticity of interwar architecture and satisfying the demands for modern contemporary living.

Illustrations: Fig. 1. General view of the Weissenhof colony in Stuttgart, 1927; Fig. 2. View of the Weissenhof colony, Stuttgart, 1927; Fig. 3. Terraced houses of J.J.P. Oud, view from the garden, Weissenhof colony, Stuttgart; Fig. 4. Terraced houses of J.J.P. Oud, Weissenhof colony, Stuttgart, 2015; Fig. 5. Double house by Le Corbusier and Pierre Jeanneret, today the colony museum, Weissenhof housing estate, Stuttgart, 2015; Fig. 6. L. Mies van der Rohe apartment building, Weissenhof colony, Stuttgart, 2015; Fig. 7. L. Mies van der Rohe apartment building, Weissenhof colony, Stuttgart, 1927; Fig. 8. Plan of the Nový dům colony in Brno, 1928; Fig. 9. Model of the Nový dům colony, 1928; Fig. 10. Nový dům colony, view of Jaroslav Grunt’s three-story house, Brno, 1928; Fig. 11. Jaroslav Grunt triple house, Nový dům colony, Brno, 2016; Fig. 12. Nový dům colony, view of the J. Syříš house (left) and the series of houses consisting of the double house of J. Všek and the houses of M. Putna and H. Foltýn, Brno, 1928; Fig. 13. Nový dům colony, view of the J. Syříš house (left) and the series of houses consisting of the modified double house by J. Všek and houses of M. Putna and H. Foltýn, Brno, 2014; Fig. 14. Nový dům colony, view of the triple house of Bohuslav Fuchs, Brno, 1928; Fig. 15. Bohuslav Fuchs’ triple house and Josef Štěpánek’s double house, Nový dům colony, Brno, 2016; Fig. 16. WUWA colony in Wrocław, view of terraced houses, Adolf Rading tower house in the background, 1929; Fig. 17. Hans Scharoun hotel house for singles and childless couples, today Park Hotel, WUWA Colony, Wrocław, 1929; Fig. 18. Adolf Rading tower house, today a student dormitory, WUWA colony in Wrocław, 1929; Fig. 19. Hans Scharoun hotel house, today Park Hotel, lobby, WUWA colony, Wrocław, 2016; Fig. 20. Plan of the Neubühl Colony in Zurich, 1929; Fig. 21. Gallery of PQ type apartment building, Neubühl colony, Zurich, 015; Fig. 22. Werkbund colony in Vienna, double house of A. Loos and H. Kulka, 1932; Fig. 23. Adolf Loos and H. Kulka double house, Werkbund colony, Vienna, 2012; Fig. 24. Werkbund colony in Vienna, terraced houses of G. Rietveld, 1932; Fig. 25. Gerrit Rietveld terraced houses, Werkbund colony, Vienna, 2012; Fig. 26. Plan of Baba housing estate, 1932; Fig. 27. Palička Villa by Marta Stama, after reconstruction, Baba housing estate, Prague, 2018; Fig. 28. Čeněkův dům by Ladislav Žák, after reconstruction, Baba housing estate, Prague, 2018; Fig. 29. Zaorálek Villa by Ladislav Žák, probably 1933–1934, Baba housing estate, Prague; Fig. 30. Zaorálek villa by Ladislav Žák, after illegal reconstruction, Baba housing estate, Prague, 2018.

The inconspicuous charm of panels; the regeneration of housing estates from the point of view of heritage care

Hana ŘEPKOVÁ

Keywords: Housing estate, humanization, regeneration, heritage protection, municipality, Ministry of Culture of the Czech Republic, Ministry of Regional Development, concept, regulation, color, subsidy, insulation

The article follows the path of Czech housing estates from ubiquitous gray to ubiquitous colors and compares the approaches of Western and Eastern Europe. The development of housing estates in Eastern Europe was completed in the 1990s, whereas in Western Europe this already took place at the turn of the 1960s and 1970s. Housing estates there were partially demolished from the 1980s and, most of all, humanized. Western European housing estates have been documented since the 1970s, major publications have been published since the 1990s, and a discussion on heritage protection for selected areas has begun. Czech housing estates have been documented since about 2005, with most of the existing literature on housing estates being published around 2015.

In Western Europe, housing estates are almost exclusively owned by the state or municipalities and are managed by housing companies. Regeneration here is carried out comprehensively in accordance with an architectural design for the entire area. After November 1989, Czechoslovakia did not accept the know-how offered by the European Academy and, contrary to recommendations, privatized houses and restituted lands in housing estates. Together with the post-revolutionary revaluation of property rights and the inconsistent application of laws, privatization is now one of the main reasons for the uncontrolled development of Czech housing estates. As a result, the state and cities have largely shifted responsibility for the condition of housing estates to their inhabitants. An even bigger problem than the appearance of the apartment buildings today is the deterioration of their civic facilities (with the exception of school buildings) and their degradation, the effort to replace them with disproportionately larger apartment buildings, and the concept-less development of green areas.

Housing estates are viewed by conservationists with the experience of a state administrative official. The Prague aggregates of Jižní Město and Severní Město, as well as Prague 6, present conceptual work with facades of prefabricated houses and the possibilities of regulating them in domestic Czech conditions.

Drawing from the above experiences and the ongoing results of research on modernist housing estates, the article also deals with several myths commonly held among the professional public. The myth that all housing estates are the same is confronted with research carried out under the auspices of the Ministry of Culture of the Czech Republic; the myths that all prefabricated houses have poor insulation properties and that thermal insulation irreversibly devalues prefabricated houses and prevents them from enjoying heritage protection are compared to experiences from abroad. The claim made by experts that the protection of prefabricated housing estates should have already started in the 1990s is compared with domestic considerations about their demolition in the 1980s and 1990s. The myth that a house's appearance is solely the responsibility of its owners is confronted with the provisions of the Building Act. A list of domestic subsidy programs is provided in which defects in panel structures were first consistently removed, followed by support for individual proposals for the insulation of houses, regardless of their position in the urban complex. This resulted in the Housing Regeneration Program, under the auspices of the Ministry of Regional Development, ambitiously serving to renew the archaic network of paths and dilapidated playgrounds and to supplement parking areas, something incomparable with programs applied to housing estates in Western European.

With the current fragmented ownership system of housing estates, any possibility of their comprehensive regeneration exists only in enlightened municipalities and a civil society where people are not only interested in a quality living environment, but are also willing to do something for them. A growing respect for the heritage of the past and thus the heritage of architectural modernity is a significant trend in Western Europe today. Illustrative examples include prefabricated houses in the Netherlands and France, originally proposed for demolition, whose recent renovation respecting the modernist character of the buildings has repeatedly won world awards in the Mies van der Rohe competition.

Illustrations: Fig. 1. Amsterdam, DeFlat Kleiburg. In the 2017 "Mies van der Rohe Award" competition, the Dutch scored with their approach to collective and socially responsible living. For the first time in its history, the jury praised the regeneration of a panel housing estate; Fig. 2. Koldům in České Budějovice, based on the design of architects Bohumil Böhm, Jaroslav Škarda, and Bohumil Jarolím, 'project 1958, realization 1964; Fig. 3. Labská Kotlina I, designed by architects Josef Havlíček and František Bartoš, Hradec Králové. The premises are part of the city's heritage zone; Fig. 4. Wrocław, Plac Grunwaldzki, detail of the facade of the tower house by architect Jadwiga Grabowska-Hawrylak,

project 1968, realization 1978; Fig. 5. Prague 8, Bohnice housing estate, northern facade of the house on Mazurská Street, realization of the facade 1999; Fig. 6. Prague 8, Bohnice housing estate, view onto the facade of the house on Řešovská street, realization of facade insulation 2001; Fig. 7. Prague 8, Ďáblice housing estate, design 2001; Fig. 8. Prague 8, Ďáblice housing estate, detail of a fifteen-storey panel house with a free ground floor and a high order of facades; Fig. 9. Dresden, Gorbitz housing estate. The house was inscribed on the list of architectural heritage after a complete renovation, with only the loggia and facade panels intact; Fig. 10. London, Robin Hood Gardens. A media campaign to save the premises has been running since 2008. In 2015, the British Ministry of Culture and the heritage office of Historic England definitively rejected the proposal for inclusion on the heritage list; Fig. 11. Suburbs of Paris (France), Sarcelles Lochères housing estate, postcard – around 1960; ; Fig. 12. Berlin (Germany), Hellersdorf housing estate, Roteviertel area. Elevators and new entrances are the same for the entire block. Facades are in muted shades; Fig. 13. Hellersdorf housing estate, Gelbeviertel area. The designs are simple but of architecturally high quality, always respecting the modernist character of the premises; Fig. 14. Berlin, Gropiusstadt housing estate, modest basic colors of the facades in gray and white with color accents; Fig. 15. Berlin, Hellersdorf housing estate, Grabenviertel. The loggias in the picture are made of blue glass concrete with wooden handrails, the overhanging balconies with square floor plan respect the modernist character of the buildings; Fig. 16. Prague 6, Petřiny housing estate, realization of thermal insulation and color of facades on Šantrochova Street, circa 2004; Fig. 17. Unfortunately, broken lines on the gables of prefabricated houses can still be found in many Czech housing estates: 17a. Kadaň, view from the town hall tower, 17b. Příbram, a tower house with loggias; Fig. 18. Prague 8, Bohnice housing estate, Poznaňská Street: 18a. South facade, the same colors are used for entire expansion units, designed by Ladislav Lábus, realization of thermal insulation 2001, 18b. detail of facade; Fig. 19. Louny, student design by Hana Šilhanová awarded at the Urbanita 1986 exhibition; Fig. 20. Prague 8, Bohnice housing estate, eighteen-entrance house on Poznaňská Street (northern facade, view from Lodžská), house owned by the Prague 8 district then privatized after insulation, realization of insulation and colors by Ladislav Lábus, 2001; Fig. 21. Litomyšl, Komenského náměstí square, modifications of the banks of the Loučná river by Josef Pleskot; Fig. 22. Prague 6, Červený vrch housing estate, renovated 2003–2006; Fig. 23. Gdynia, Lelewa Street, Design Trafic, Białe bloki, realization of the facade design for thermal insulation 2017; Fig. 24a, b. Prague 8, Invalidovna experimental housing estate: 24a. restoration of the original color, realized in 2001, different colored strips of masonry replaced the corrugated tin sheet, 24b. the color does not correspond to the concept but is close to the aesthetics of the time of origin; Fig. 25. Prague, Jižní Město, Háj housing estate, Borošova Street. All metal elements of the facade were aligned with the new entrances. The glazing of the vestibules was

naturally left full; Fig. 26. Prague, Jižní Město, Háj housing estate, Tererova Street, realization of facade insulation circa 1998. The modest design of the facades of the corridor house reveals inspiration from the Berlin experience; Fig. 27. Zlín, Jižní svahy I and II housing estates. The cladding of the corners of apartment buildings with a brick strip is replaced on the Jižní svahy II premises by brick-colored gables; Fig. 28a, b. Bordeaux, Grand Parc, winner of the 2019 Biennial Mies van der Rohe Award: 28a. appearance of the housing estate before renovation, 28b. and after its renovation.

The Imperial Hall of the Bučovice Castle in the 20th century – documentation, restoration and presentation

Zdeňka MÍCHALOVÁ; Jan VOJTĚCHOVSKÝ; Lucia KRAJČÍROVÁ

Keywords: restoration, renaissance wall painting, renaissance stucco, 1950s, Bučovice, Miroslav Bösward, Antonín Erhardt, František Fišer, František Sysel, National Cultural Commission, State Heritage Administration

The interiors of the castle in Bučovice, built in the last quarter of the 16th century by Jan Šembera Černohorský of Boskovice with the help of the Imperial antiquarian Jacop Strada, are an exceptionally high-quality example of Mannerist art in Moravia. The representative areas lost their original purpose with the change in the castle's function and were used to store the archives of the Liechtenstein accountant from the end of the 18th century until the end of World War II. The utilitarian use of the most valuable premises of the castle continued for a while after the war. After the castle was assumed by the National Cultural Commission, the building was one of those that were earmarked with priority to be opened to the public. In the case of Bučovice, this was supposed to be the establishment of a museum of Renaissance housing culture in the castle interior, so the first stage was the restoration of representative rooms on the ground floor. The rich file material and historical photo documentation now permits us to reconstruct the course of the extensive restoration with relative accuracy. The method by which the hall was to be restored and presented was created by representatives of post-war heritage care institutions; first the National Cultural Commission, later the State Heritage Administration, then the State Heritage Office for Moravia and Silesia and the Regional National Committee in Brno.

Restoration began in 1952 in the Imperial Hall, where the richest decorations (stucco statues, reliefs, murals, and panel paintings mounted on the vault) were preserved. The works were

commissioned to the Prague cooperative Tvar (Shape), which was established in 1948 as an institution associating artists and restorers. The head of the restoration section, architect František Mayerhoffer, designed the first concept of the restoration intervention on behalf of the cooperative. The work itself was carried out by sculptor Miroslav Böswart and painter Antonín Erhardt, who presented his experience with restoration work in Italy and Germany. The first phase of the restoration involved the cleaning of the stucco decorations, and it was decided that minor additions to the damaged statues would be made. A conservation procedure with neutral retouching was carried out on the grotesque painting of the vault. The first year of the work, however, saw a fundamental change in the restoration team. The painter Erhardt left Bučovice under unclear circumstances and was replaced by the painter Kutílek and other unnamed collaborators of the Tvar team. The new workers repaired the bezels behind the stucco figures, where extensive areas were overpainted, as well as the paintings in the window niches where serious problems later appeared. Eventually, cooperation with the Tvar cooperative was completely terminated, and in 1954, František Fišer, one of the most experienced experts in the field of mural painting, was called to the site; he expressed significant criticism of the previous work. The criticism was particularly targeted towards the use of incorrect fixation, which caused the colored layers in the window frames and the background of the lunettes to fall away. In addition to repairing the stucco decorations, the Imperial Hall underwent three restoration works on the paintings within a short time: neutral retouching, extensive repainting, and repair of incorrect fixation. František Fišer's work was not entirely satisfactory either, however, which is why František Sysel continued to repair the lintels in the 1980s. His work, however, remained unfinished. Other modifications to the hall, such as the replacement of the Renaissance doors or the replacement of the original brick floor with marble, were motivated by an effort to present the property as best as possible but did not respect the authentic details. In the end, the representatives of the participating institutions themselves declared this to be a demanding event in post-war Moravia with which there had been no previous experience.

Illustrations: Fig. 1. Bučovice State Castle, Imperial Hall, decoration from the 1680s, view of the vault and the south wall; Fig. 2. Ibid. (Bučovice State Castle), Imperial Hall, overall view of the northeast corner; Fig. 3. Ibid., view of the vault with the missing panel image. The picture shows the damage to the paintings by careless sweeping; Fig. 4. Bučovice State Castle, door and portal of the Imperial Hall,

1899; Fig. 5. Detail of the rib of the vault of the Imperial Hall, watercolor: A.W., 1900; Fig. 6. Imperial Hall, northwestern lunette – Diana, condition before restoration, 1951–1952; Fig. 7. Ibid., southwestern lunette – Emperor Charles V, condition before restoration, 1951–1952; Fig. 8. Ibid., vault – painting of Odysseus' Return, František Hala, 1952; Fig. 9. Ibid., vault – painting of Siren Luring Odysseus, 1580s, condition after restoration, 1956; Fig. 10. Ibid., view of the vault and the south wall, after completion of the first phase of restoration, 1953; Fig. 11. Ibid., southeastern lunette – Europe, after completion of the first phase of restoration, 1953; Fig. 12. Ibid., southwestern lunette – Emperor Charles V, after completion of the first phase of restoration, 1953; Fig. 13. Ibid., northwest lunette – Diana, after completion of the first phase of restoration, 1953; Fig. 14. Ibid., northeast lunette – Mars, after completion of the first phase of restoration, 1953; Fig. 15. Ibid., frame of southwest window restored by František Fišer – current condition; Fig. 16. Ibid., frame of southwest window before repair, 1953; Fig. 17. Ibid., detail of the retouching by Antonín Erhardt on a grotesque painting of the vault; Fig. 18. Imperial Hall with tapestry installation, shot from the Czech film *Centennial Beauty* (1955); Fig. 19. Ibid., northwest lunette – Diana, after completion of restoration, 1956; Fig. 20. Ibid., southeast lunette – detail of peeling painting, 1956; Fig. 21. Ibid., 1969; Fig. 22. Ibid., south wall with newly fitted doors, 1956; Fig. 23. Imperial Hall, detail of a medallion in the window frame with probes made by František Sysel in the 1980s.

The Na dlážkách sculpture gallery in Telč

Ondřej HNILICA, Adam SEKANINA

Keywords: sculpture gallery, baroque, iconography, fraternities, Telč, Society of Jesus

The article focuses on an area of research interest taking place as part of the project NAKI II entitled *Telč and the Jesuits, the Order and its Patrons*. This is an ensemble of exterior early modern sculptures which are arranged into a certain gallery. The statues line the path from the core of present-day Telč to the Old Town to the “ancient” Marian shrine of the Church of the Mother of God. These are seven solitary statues (Guardian Angel, Archangel Michael, St. John of Nepomuk, St. Mary Magdalene, St. Wendelin, Archangel Raphael, St. John the Baptist) and a pair of figures of the Annunciation (Archangel Gabriel and the Virgin Mary) in front of the gate to the cemetery near the church. The spatial location on the shore of the Old Town Pond and their only partial integration into the built-up area forms part of the phenomenon of the “sacralized landscape”. This phenomenon, with its many layers of meanings, must now be reconstructed in order for us to

understand it today. The statues line a certain “holy path”, one of the basic types of this phenomenon, the intention of which is to prepare and stimulate pilgrims to its destination, the enigmatic depiction of Our Lady of Telč.

After a summary and critique of the historiography, the study focuses on uncovering the most probable scenario concerning the issue of the ensemble's dating and authorship. It implies that the sculptures must have been created in the years 1742–1749 by the sculptor Kaspar Ober, originally from Questenberg. The second part of the article deals with the sculptures in terms of their iconographic and iconological analysis. After a brief description, the meanings of the individual figures are summarized, both in general and with regard to the Society of Jesus, since it is assumed that the idea of the sculptures originated from the Order. The study also attempts to connect the sculpture gallery with the local burgher sodality of the Purification of the Virgin Mary, which was under the spiritual administration of the Jesuits. Thanks to a remarkable source, namely the Brotherhood Handbook which is about fifty years older than the sculptural ensemble, we believe that it is possible to identify the townspeople, who were its members, as possibly the ones who ordered the sculptures. This hypothesis would be supported today by the indistinct letters on the pedestals of some of the statues. As members of the sodality, these burghers could have participated in the communal work while stimulating their own piety and that of the pilgrims, but also thus providing an opportunity to represent themselves socially.

The unifying meaning-creating aspect of the individual figures in the ensemble is not only their obligatory function as a model and likeness, but also their closeness and accompaniment in everyday life and, of course, their meanings and roles in the history of salvation. The objective was, among other things, to evoke in the recipient the idea and desire to follow these patterns and guides and therefore to better prepare for the reception of the sacraments and to enable a better reception of divine grace through the local depiction of grace. Apart from these arguments, it has unfortunately not yet been possible to find an explicit document verifying the hypothesis presented.

Illustrations: Fig. 1. View of the Old Town and Telč from the southeast, second half of the 19th century, Marie Kužel; Fig. 2. Kaspar Ober, statue of the Guardian Angel, 1742–1749, part of the sculpture gallery Na dlážkách, Old Town, Telč; Fig. 3. Kaspar Ober, statue of the Archangel Michael, 1742–1749, part of the sculpture gallery Na dlážkách, Old Town, Telč; Fig. 4. Kaspar Ober, statue of St. John of Nepomuk, 1742–1749, part of the sculpture

gallery Na dlážděch, Old Town, Telč; **Fig. 5.** Kaspar Ober, statue of St. Mary Magdalene, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 6.** Kaspar Ober, statue of St. Wendelin, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 7.** Kaspar Ober, statue of the Archangel Raphael, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 8.** Kaspar Ober, statue of St. Jan the Baptist, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 9.** Kaspar Ober, statue of the Virgin Mary, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 10.** Kaspar Ober, statue of the Archangel Gabriel, 1742–1749, part of the sculpture gallery Na dlážděch, Old Town, Telč; **Fig. 11.** *Manuale, To gest: Rukowět Bratrstwa Očisťování of the Virgin Mary (Handbook of the Brotherhood of the Purification of the Virgin Mary in Telč), title page, published by the Jesuit Printing House in Prague, factor Jan Kašpar Muxel, 1689; Fig. 12.* Pilgrimage path Na dlážděch with the Church of the Mother of God, Old Town, Telč; **Fig. 13.** The main altar of the Church of the Mother of God in Telč, around 1690–1735, anonymous, David Lippart and Ignác František Titz.

The “Kopal” glassworks in Mnichovo Hradiště.

The growth and fall of a Czech factory “for all kinds of raw materials needed for the Jablonec glass industry”

Jana TICHÁ

Keywords: glassworks, glass semi-finished products, Mnichovo Hradiště, Petr Kopal, Jablonec glass industry / Jablonec goods, employee houses

The Kopal Glassworks complex was established on the outskirts of Mnichovo Hradiště in the 1920s and focused on the production of jewelry and small toiletry, decorative, and chandelier glass. At the time, it was one of the few Czech companies in the Jablonec industrial sector. At first, Petr Kopal, the founder of the glassworks, only traded in Jablonec goods; in 1920, however, he began the construction of his own glassworks. His glassworks was a more modern type and represented minor but not insignificant competition to German producers in an economic struggle exacerbated by national pressures. Documents stored in the archives of the Mnichovo Hradiště Building Authority testify to the construction of the glassworks and the development of the complex in terms of their administrative and bureaucratic processes. These documents also enable us to follow the construction and, partially, the usage of a colony of employee houses with 13 flats, built near the glassworks by Petr Kopal. Insufficient information is available on the economic importance of the glassworks; the most shared source

is the archive of the Museum in Mnichovo Hradiště, containing correspondence from Petr Kopal from the period after the cessation of production in 1931, and reflecting his futile efforts after its restoration. The necessary context can only be added in general, based on analogies and developments in the field; Petr Kopal started the construction of the glassworks at the moment of the biggest boom of the Jablonec industry, but after initial successes he suffered significant financial losses for the exposed branch, in 1927. These losses weakened him so much that he could no longer face the economic crisis after 1929, which had a huge impact on the Jablonec industry which was 90% dependent on exports. Petr Kopal sought to resume production in the glassworks until 1937, but his efforts were opposed by state regulation of the glass industry, as well as by professional groups trying to eliminate competition. In 1938, Kopal's glassworks was auctioned off and production was resumed by the company Linka and Sons, one of the few Czech companies in the Jablonec industry that moved production inland after the German occupation of the border. At the beginning of World War II, however, its operation was stopped due to a lack of raw materials. After the war, the glassworks was nationalized and glass production ceased. After 1989, the factory returned to the descendants of the last director of the glassworks as part of the restitution process. Today, the glassworks serves as the headquarters for the ECOGLAS company as a manufacturer of technical glass optics. Although the four decades of socialism and utilitarian adaptations of recent decades have resulted in the complete loss of the technology and the obscuration of the architectural appearance of the glassworks' buildings, they barely affected its material layout. Most of the glassworks' structures are also preserved, as are relics of the facade solutions. The heritage value of the glassworks is thus quite high, and potential construction and architectural rehabilitation of the complex is feasible.

Illustrations: Fig. 1. Mnichovo Hradiště, Petr Kopal's glassworks on Jiráskova Street, overall view from the east, 1930s; **Fig. 2.** Founder and first owner of the glassworks in Mnichovo Hradiště, Petr Kopal; **Fig. 3.** Plan for the construction of a glassworks in Mnichovo Hradiště, drawn up in March 1920 by Karel Salač; **Fig. 4.** Mnichovo Hradiště, glassworks complex on Jiráskova Street, development of construction: 1) metallurgical hall, 1921, 2) workshops and various rooms, 1921, 3) residential and administrative building No. 600, Kopal's Villa, 1921, 4) shed by the farm building, 1921, 5) coal shed, 1921, 6) warehouse, 1921, 7) carriage shed, 1923, 8) rooms for bead kiln, 1923, 9) building for cutting and stringing beads, 1923, 10) garage, 1925, 11) house No. 601 with flats for workers, 1921,

12) room for pans (unrealized), 13) porter with worker spa and with flat on 1st floor, further workshop rooms and rooms for chopping and threading corals, warehouse raw materials and finished products, and workshops for the production of fireclay pans (unrealized), 14) storage for chemicals and finished goods (unrealized), 15) wagon, (unrealized); **Fig. 5.** Mnichovo Hradiště, glassworks complex on Jiráskova Street – planned and current state; **Fig. 6.** Plan of the residential (administrative and economic) building, today's house no. 600, 1921, prepared by Karel Salač; **Fig. 7.** Mnichovo Hradiště, house no. 600, the headquarters of the glassworks director and the only construction of the factory complex still preserved/renovated in the original artistic concept of the factory complex; **Fig. 8.** Detail of the western facade of administrative and residential building No. 600, the only building of the glassworks complex with preserved architectural articulation and decorative details; **Fig. 9.** Plan for the construction of a glassworks on plot no. 7413, 740 and 7392 in Mnichovo Hradiště. View from the southwest, 1:100, prepared by Karel Salač in Turnov, in March 1920; **Fig. 10.** Mnichovo Hradiště, Jiráskova Street, main facade of the glassworks in its current appearance, view from the west; **Fig. 11.** Plan for the construction of the glassworks, sections of factory buildings, 1920, prepared by Karel Salač; **Fig. 12.** Interior of the northeastern runner, which, due to its current unusability, has escaped modernization; **Fig. 13.** The interior of an insulated treadmill is a clear illustration of the manner and extent of deterioration of the buildings by modern interventions; **Fig. 14.** Mnichovo Hradiště, the former Petr Kopal glassworks complex, truss of the metallurgical hall, current condition; **Fig. 15.** Colony of workers' houses No. 627–633 on the southern side of Jiráskova Street, completed in 1923, view from the north.

Experience with stone consolidation with epoxy resins

Petr KOTLÍK

Keywords: consolidation of stone objects, conservation, epoxy resin, penetration, impregnation, viscosity, technological process

The article draws on the author's many years of experience to summarize the method of epoxy resin impregnation, is used for the consolidation of stone objects. Epoxy resins are characterized by excellent adhesion to most materials, including silicates. The biggest problem with using epoxy resins to consolidate porous materials, however, is their higher viscosity and the resulting difficult penetration. In the article, the author tries to list the criteria for the appropriate technological process and the successful use of epoxy resin impregnation in heritage and restorative practices. By using suitable organic solvents, the viscosity can be reduced, subsequently improving the penetration

into the pores. The application of epoxy resin solutions requires an efficient impregnation method; impregnation under reduced pressure is most suitable. It can also be done using a simple method inside a plastic package. The author demonstrates the application of the method on specific cases of sandstone sculptures. It turns out that even after more than 25 years after impregnation by the epoxy resin, the sculptures treated with this method are in very good condition and require only routine maintenance.

Illustrations: *Fig. 1. Test sandstone block impregnated with epoxy resin, UCT premises, Prague-Dejvice, condition 35 years after impregnation; Fig. 2. Sandstone copy of a Baroque statue of an angel from the Marian Column in Jablonné v Podještědí, condition before impregnation; Fig. 3. Sandstone copy of an angel statue wrapped in a polyethylene net; Fig. 4. Sandstone copy of the angel statue during extraction of air from a plastic container; Fig. 5. Sandstone copy of the angel statue during vacuum impregnation; the liquid reaches the neck of the statue; Fig. 6. Sandstone copy of the angel statue during drying; Fig. 7. Statue of St. Wenceslas in Čestlice – state of damage; Fig. 8. Vacuum impregnation of parts of the statue of St. Wenceslas of Čestlice; Fig. 9. Statue of St. Wenceslas during the gluing of individual parts; Fig. 10. Statue of St. Wenceslas in Čestlice with artificial stone accessories (light areas); Fig. 11. Sculpture of St. Ludmila and St. Wenceslas in Sředokluky, condition 28 years after impregnation; Fig. 12. Statue of St. John the Baptist in Sředokluky, condition 26 years after impregnation; Fig. 13. Statue of St. John of Nepomuk in Kněžves, condition 25 years after impregnation.*

Issues of possible conservation and restoration of polymeric materials

Ivana KOPECKÁ; Eva SVOBODOVÁ

Keywords: synthetic polymers, conservation of plastics, degradation processes, conservation, restoration, ethical principles of restoration

Today, artistic and design works made of synthetic polymers are significantly represented in museums and galleries, whether they are art collections (paintings, sculptures), industrial arts (design, textiles), or technical collections (parts of machines and devices). The first problems with their conservation and restoration date back to about the last quarter of the last century.

This article deals with semi-synthetic or fully synthetic materials in the form of films, fibers, foam, or three-dimensional objects (with the exception of photographic materials, synthetic textiles, and synthetic binders of modern painting, since this issue is addressed by a number of highly specialized studies). It should be noted that even this defined

section of polymeric materials is extremely diverse. There is a vast amount of synthetic materials, and they degrade very quickly compared to mineral materials. The study of their degradation processes and attempts at their conservation and restoration is dealt with by many experts, since this area is still relatively little mapped in the context of fine arts.

The degradation processes of synthetic polymers differ from that of “classical” materials, and the demands on the knowledge of the restorer also differ. The restoration of synthetic polymers cannot be subject to the same criteria as the restoration of conventional materials, nor to the same ethical requirements. In particular, the requirement to preserve the original material or reversibility is in many cases unattainable. Even the qualification requirements for the restorer cannot be the same. The artistic skills of a restorer or conservator are, in this case, just as important as a theoretical knowledge of polymer chemistry. The article draws attention to the need for an interdisciplinary approach in finding ways to restore and conserve these non-traditional materials; it also draws attention to the fixed and irreversible life limits of some of them, given their physical and chemical nature. Ethical principles of restoration of synthetic polymer works while preserving their authenticity should be the subject of professional discussion in the future.

Illustrations: *Fig. 1. Antoine Pevsner, Head of a Woman, 1923. The process of degradation of a three-dimensional art object from nitrocellulose from its origin to the 1960s; Fig. 2a, b. Kuks, hospital, linings of allegorical statues of Religion and Sloth, details. The images show horizontal cracks caused by the insufficient interconnection of gradually steamed parts of the copy (they occur on a number of linings); Fig. 3. Kateřina Vincourová, Sunday, 1992. Example of a work of art made of polyurethane (inside is a polyurethane foam, outside is rubber mixed with acrylic paint). The furniture is said to have a “stone” appearance but is soft at the same time. The rubber on the surface degraded by the admixture of incompatible acrylate disintegrates, and the foam inside has already disintegrated; Fig. 4a, b. Richard Serra, Untitled, 1967. This is a rubber assemblage (metal frame, behind it is a red fluorescent lamp and on the frame are arranged strips of rubber mixed with colored polyvinyl alcohol). 4a) The rubber was originally red and green. Serra himself made the rubber by dripping latex of natural rubber mixed with PVOH onto the floor, then hung it dried on a fluorescent lamp. State of assemblage in the early 1990s. 4b) Detail of the condition of the rubber in 2012. An author's copy was subsequently created. Isoprene was replaced by black silicone rubber, colored only with carbon black, while the fluorescent lamp was replaced by an LED light source; Fig. 5. ABS polymer game console after treatment (left) and without treatment (right). Conservation of photooxidized acrylonitrile butadiene styrene (ABS) consists in removing the yellowing*

(H2O2 in the “Retrobright” mixture and then applying a protective coating with a mixture of nano TiO2 in tetraethyl orthosilicate). After accelerated aging, the surface turns yellow again and stains and cracks appear on the protective film. This preservation has only a temporary effect; Fig. 6. László Moholy-Nagy, Papmac, 1943, oil, plexiglass private collection. Consolidation of oil painting peeling off a plexiglass substrate (MMA). Various fixatives were tested: acrylates – Paraloid B67 and F10, alkyd: Regalrez with the addition of UV absorber Tinuvin, methylcellulose of different molecular weight; Fig. 7. Restoration of plexiglass, which here is part of the adjustment of photography; Fig. 8. Polyurethane foam (PUR, foam), detail: left – in good condition (consolidated), right – degraded (non-consolidated); Fig. 9. In the 1960s, Loris Cecchini and many other artists often used for their works of art polyurethane foam which they prepared themselves; Fig. 10. Zil armored sedan, 1950s – degradation of the galalith (casein formaldehyde) on the steering wheel; Fig. 11. Degradation of the nitrocellulose frame and cap of a crocodile leather handbag from the University of Rhode Island collection; Fig. 12. Naum Gabo, Linear construction – variation, nylon (polyamide), 1942–1943, Fig. 13. Jean Tinguely, Sculpture – chandelier, 1987. One of the moving objects, created mainly from scrap, Fig. 14. Jiří Novák, Speed, laminate, Prague – Strašnice. Recently restored sculpture in front of the Primary School in Rybníčky. Laminates, composite materials mostly based on fiberglass and epoxy or polyester resin, are among the countless modern materials that can be restored while preserving, respectively restoring the original materials.