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HALYNA PETRYSHYN*, OLHA KRYVORUCHKO**, HALYNA LUKASHCHUK*, STEPAN TUPIS'*

THE PARK IN ST. YURI (ST. GEORGE) SQUARE – THE JEWEL IN THE EMERALD NECKLACE OF THE CITY OF LVIV

SKWER NA PLACU ŚW. JURY – KLEJNOT W SZMARAGDOWYM NASZYJNIKU LWOWA

A b s t r a c t

The most valuable parks in Lviv were designed by the famous city gardener Arnold Röhring, who managed to combine in the art of landscape design the different styles of the turn of 20th century. If the large parks of the city are under state protection, the smaller ones designed as public gardens, boulevards, gardens near the villas are constantly being rebuilt and destroyed. The results of the study of the park in St. Yuri Square in Lviv give grounds for considering this park an authentic monument of landscape art of the end of the 19th century, where its compositional structure and state of rare old-growth species of trees and shrubs are well preserved.

Keywords: Lviv parks, landscape design, public gardens, Arnold Röhring

S t r e s z c z e n i e

Najcenniejsze parki we Lwowie zostały zaprojektowane przez słynnego ogrodnika miejskiego Arnolda Röhringa, któremu udało się połączyć w sztuce projektowania krajobrazu różne style przełomu XIX i XX wieku. Jeśli duże parki miasta są pod ochroną państwa, mniejsze, zaprojektowane jako ogrody publiczne, skwery, bulwary, ogrody w pobliżu willi, stale są przebudowane i niszczone. Badania skweru na placu św. Jury we Lwowie dają podstawy do uznania go autentycznym zabytkiem sztuki krajobrazowej z końca XIX wieku, w którym struktura kompozycyjna i stan starodrzewu rzadkich gatunków są dobrze zachowane.

Słowa kluczowe: parki Lwowa, projektowanie krajobrazu, ogrody publiczne, Arnold Röhring

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1. Introduction

In connection with the growth of urbanization, the quality of life in large cities is increasingly determined by the degree of conservation of natural environment components, namely green spaces. The nature of urban green space changes under the influence of technogenic and anthropogenic impact, and the historic gardens and parks are becoming more vulnerable.

1.1. Urban development changes in the city of Lviv from the middle of the 19th to the early 20th century

In the second half of the 19th century, the slow territorial development of Lviv under Austrian rule accelerated. New development areas outside the city fortifications situated on the slopes of the Lviv basin along the main roads became prestigious for housing. The greenery design system – parks, boulevards, and squares that slowly move forwards on crop land that became part of the urban land in the process of secularization is formed at the same time. It also incorporated the post-industrial sites of the old brickyards, waste areas, and forests. The edges of the comb were crowned with numerous newly laid parks in the 1st third of the 19th century, most under the leadership of the Chief Gardener of the city Carl Bauer (the High Castle Park, redevelopment of the City park (previously the Jesuit's garden), and city promenades). The laying of the railway became an important city-forming factor from the 1860s. The western outskirts of the city, where the railway station was laid, became the focus of attraction of investment plans and started to be developed especially intensively[1]. Urban development of this part of the city continues with the incorporation of the vast new areas of villas and apartment buildings for rent – the Novyj Svit (Nowy Świat, New World) district with a network of boulevards, and the main public building became the imposing building of The Technical Academy (1873–1877 s., architect Julian Octavian Zacharievitch) [12, p. 170-181].

If we consider the spatio-temporal dynamics of the city green zone, we can see that throughout the 19th century together with the growth of city the green planting area also increases. In 1933 the area of parks and gardens amounted to 174.65 ha, and the total area of city gardens, parks and boulevards in the city of Lviv in 1948 amounted 256.8 ha. In them, more than 457 species, varieties and garden-decorative forms of angiosperm and 57 gymnosperm plants were collected and identified [13, p. 21-65]. In 2000, the area of green space has increased to 518 hectares. As of 2010, the area of all green spaces in the city in different categories was 33 286 hectares, including within the city – 4 419 hectares, or nearly 26% of the total area of the city [7, p. 332-338; 14, p. 417-423]. Unfortunately, comprehensive information on the species diversity of green spaces in the city today is absent, although it was studied in the 1980s. To date, considerable species diversity has been lost due to reckless management and a lack of ecological monitoring of green areas in the city.

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[1] Here traditionally housed the Church of St. George monastery, the manor of Metropolitan and Baroque gardens, the Church of St. Magdalene. The educational institution and the chapel of the order of the Sacré Cœur, the Carmelites monastery, and the Church of St. Elizabeth were founded there.

A characteristic feature of the landscape art of the 19th century was its mass character and versatility. A special feature is the development and typological differences of public gardens and parks. In European cities, together with broad city parks, squares, promenades and boulevards were laid lined with rows of trees, with places to relax. Parks started to appear in residential neighbourhoods as well together with factory-made, holiday, kids, sports, school, teaching, and recreation gardens and squares. The constant growth of public opinion expanded the palette of landscape solutions, the planned system of urban greenery and provided a framework for the protection and preservation of the natural environment.

1.2. The style of green space at the end of the 19th century – the beginning of the 20th century

The mid-nineteenth century was the next phase of change in garden design and stylistic changes in the design of gardens which led to the creation of the "naturalistic" style, also known as the calligraphy style, which is qualified as an environmentally-friendly movement. Its main goal was to create compositions based on natural elements, taking into account the surfaces of areas and natural vegetation. The composite structure of the calligraphic garden, according to ts name, was very carefully planned in the form of wide arcs and circles. Composite nodes highlighted groups of trees and bushes. In the calligraphic garden the opposites of geometry were harmoniously combined in freedom and the beauty of nature, and human activity took second place. The existing elements of the landscape: ponds, groups of old trees, natural stones and the like were adapted into the general composition. The natural shape of tree crowns and colour played an important role. In addition to harmonious green spaces, ornamental trees and shrubs were also used. On the spreading carpets of grass, flower gardens and rare trees with beautiful foliage, or groups of linked trees were located. In the late 19th century a new direction in architecture called historicism was crystallized which was characterized by the use of a certain style of past epochs or a combination of elements of different styles. Landscape parks were enriched in composition and more floral planting with bold colours were introduced. Urban greenhouses supplied more and more products for more intense seasonal decorating of green spaces. A large selection of annuals, local and introduced, enabled the creation of floral arrangements every time of bizarre forms – flowerbeds of simple symmetrical shapes, flat compositions or compositions with different levels of plantings, subsequently – coloured ribbons and whimsical elements along the alleys. The contrast of colours became very important in compositions. The following secession style did not imitate nature, it modified it artistically. The gardens were full of vegetation, and the designers tried in small areas to plant as many different species and varieties as they could, and the main plant material was mostly perennial [2; 5].

2. The aim of research

To investigate and substantiate the value of the park in St. Yuri Square in the context of the development of landscape art in Lviv and the relationship of its characteristics with European culture.

3. The present state of research

3.1. The activity of Arnold Röhring in Lviv

The large territorial parks of Lviv at the turn of the 20th century, which today occupy the status of nature monuments of local importance, are numerously described in the popular and scientific literature [4, p. 157-161]. The main role in the development of landscape architecture in Lviv and the region in this period belongs to the Chief Gardener (or the Inspector of City Parks) Arnold Röhring, who held this post for 30 years. He designed and laid all of the city's famous parks. The layout of these parks and the use of plant material combined the style features of the epoch at the turn of the century. In the 1970–1980s, reconstruction activities took place; the inventory of the city's green spaces was the especially valuable contribution of this period. However, there is much less information on smaller green areas, and especially on public gardens and villa gardens, and they, because of the condition of the plants, are the most under the threat of destruction.

Ill. 1. Anton Lange, *Jarmark pod Świętym Jerzym we Lwowie*, lithographed in Lviv workshop by Piller in the first half of the 1840s [22]

The Stryiskyi Park (previous name: The Kilinski Park)[2] (52 ha) was built in the years 1876–1879 on the former site of the 1st-Stryiskyi cemetery, which was closed in 1823. The edge in ancient times consisted of sandy hills, steep ravines and valleys. The Park consists of three differently planned parts, due to geomorphology areas: a forested part with a water

[2] In 1895 the monument to the hero-rebel Jan Kiliński – one of participants of the Polish uprising against Russia under the leadership of Tadeusz Kościuszko – was erected in the Stryjski Park. Hence, another name for the Stryiski Park is the Kilinski Park.

cascade and artificial castle ruins laid on a steep slope, a few gullies, shrouded serpentine trails, lower terrace formed around the pond with water birds, as well as a conservatory. The Park was characterized by large dendrological diversity: during the arrangement of the Park with picturesque groups some 40,000 trees and bushes were planted, including exotic species. In designing of the third part of the Park i.e. the upper terrace, which completed the establishment of the Park, Röring relied on the motives of the neo-classical compositions by the English architect Humphry Repton, enriched with the regular use of Baroque elements. In 1894 this terrace became the venue of a Grand Regional exhibition, where over a hundred pavilions in different historical styles were built, and the leitmotif of this project was the idea of progress – the exposition needed, as widely as possible, to reflect the success of the region in the social, economic and cultural spheres [3, p. 127-134]. The unifying element of the top of the stalls and Park area was wide tree-lined avenue – Corso. Stryiskyi Park was considered the most beautiful Parks in interwar Poland. Today there are more than 200 species of trees and shrubs, a greenhouse, a rock garden, sycamore and lime-tree alleys. Here one can find: red oak, tulip tree, magnolia trees, eastern white pine, Chinese lilac, Manchurian aralia, maidenhair tree, and others.

The Lychakiv Park (previous name: The Głowacki Park) (12.3 ha) was founded in 1894 in the north eastern hilly part of the city at the Lychakiv City customs post, where in the mid-nineteenth century, on the edge of the city there was waste land. The hills at this point were not wooded and there were strong winds. About 1884 the remains of the mill were dismantled, the sand and clay quarries were seeded, the paths that twisted along the ample slopes of ravines were landscaped, and the place began to be planted with trees, among which the most common are: Austrian pine, European birch, horse chestnut, maple trees, lime trees. The upper, level was arranged in a regular style.

Ill. 2. Postcard depicting the square before 1914 [22]

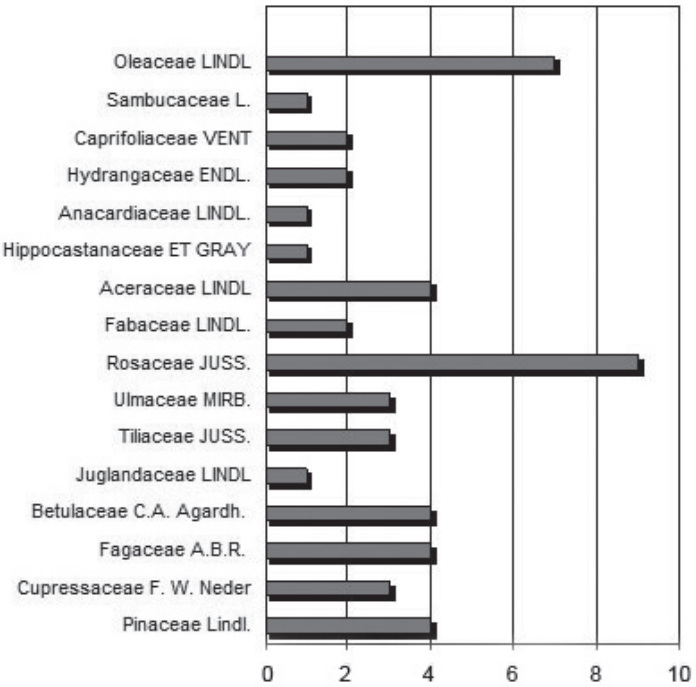
The Zalizni vody Park (The Iron Water Park, previous name: The Narutowicz Park) (19.5 ha) was laid out in 1894 (1905?) on the slopes of the ravine of the main river of the city – the Poltva river – and on two hills connected on the upper slopes by a flat

plateau. The Park includes access to marls, and this explains the emergence of numerous springs whose waters contain iron, which gave the name to the park. In the 19th century the Kaminsky pond was situated with a tavern, at the bottom of the park, where there are many water sources, as was the Franz Kratter German summer theatre. One of the springs was arranged with a well-room, the place became popular, and gradually the beech wildwood began to spontaneously turn into a recreational area. Then the city authorities decided to build a Park here. This was commissioned to Arnold Röhring, who did his best to preserve the natural landscape of the forest. It was also planned for the upper terrace to create a functional sanatorium "The Jordan Park", but the decision was changed and in the designated area in 1938 construction began (arch. T. Wróbel) on "Nowy Lwów". The main background of the Park, as before, is old beeches. Birch trees became the supplement to this background as well as hornbeam, larch, fir, pine, oak, poplar, willows, and other ornamental trees and shrubs. Most of the tracks traverse along the slopes or along the upper terrace of the park.

a)

b)

Ill. 3. Schemes of planning of the square, based on geodetic survey: a) 1923, b) 2015 [20]



Ill. 4. Quantitative distribution of kinds and varieties in accordance with classification on families (stocktaking H. Lukashchuk, 2015); classification of woody plants presented in accordance with the A. Takhtadzhyan [15]

The city gardener Arnold Röring supervised the project and carried out other projects in the modern sense in reconstruction of the parks, squares, promenades in the central part of Lviv.

The Ivan Franko Park (**previous names: The Jesuits garden, The City garden, The Kościuszko Park**). Its territory is 11.6 ha, and is the oldest city park in Ukraine. The park was laid at the end of the 16th century by Lviv burgher Sholtz-Volfovitch and was later rented by the Jesuits Order. In 1773 it became the City Park. The lower terrace of the City park (The I. Franko Park) underwent alterations in the late 19th century and was decorated according to Röhring's project with fancy flower beds located symmetrically relative to the axis of the central entrance of the University. The entrance to the main picturesque alley is decorated with a large cast iron vase (1839) The Park is a monument of landscape art of local importance.

The Liberty Avenue (**the Hetman Valley** (**ramparts**)). After the dismantling of the old city walls and the final vaulting of the River Poltva and its banks at the end of 1880, the Hetman ramparts were reconstructed into two parallel streets on both sides of the river with the city promenade between them. In 1888-1890 under Röhring's direction it was expanded into a boulevard and decorated with flower beds and planted trees. Part of the avenue near St. Mary's Square (new Mickiewicz Square) was decorated by planting lilac trees, called "the florist salon". At the turn of the 20th century, with the construction of a new city theatre – the Opera House and the monument to King Jan III Sobieski, the prospect achieved its completed form.

The Shevchenko Avenue (previous name: The Academic Avenue). This composition of rounded "islands" – flower beds and gardens – was built on the site of the old bed of the Poltva, which flowed through the centre of the street by the end of the 19th century. In 1886 this part of the river was vaulted and in the 1890s the Chief City Gardener Arnold Röhring designed a new boulevard: low-growing trees and shrubs were planted here. Over time, the vegetation has changed and the avenue subsequently obtained a solid linear composition and was filled with plants and tall trees. The current look of the Shevchenko Avenue was achieved in 1997 when the very old Berlin poplars were uprooted and ball maples were planted there. Moreover, at one end of the avenue a monument to the 1st President of Ukraine Mykhaylo Hrushevskyj was erected.

4. The description of research: Stylistic analysis and evaluation of the cultural value of the park in the St. Yuri Square in Lviv

The urban concept behind this park, which was laid at the end of the 19th century in St. Yuri Square, was to build a new identity and completion of the composition of the Novyj Svit (Nowy Swiat, New world) district. The planning combination of the previously laid gardens, such as the Technical Garden (at the Technical Academy – Lviv Polytechnic) and the garden of the Monastery of the Sacred Heart, as well as the proximity to the City garden (the Kościuszko Park) and the Metropolitan Gardens, created a public space[3].

"The new park in St. Yuri Square became better. The trees grew like weeds, and with them lilac, jasmine and other bushes. During my youth, St. Yuri Square and the side streets were a favourite place for trials and rehearsals of Ukrainian students and of Ukrainian and Polish choirs, out of which the primary substratum of the first rank of Ukrainian and Polish choirs, singers and conductors grew in strength" [9, p. 223-224].

The Park is located South-West of the historical centre of Lviv sloping to the East, to the centre of the plateau of the ridge of the Central European watershed (309–315 m A. G. M.). The vegetation includes tree and shrub groups. For over 120 years it formed a stable ecosystem with a rich floral diversity, resistant to anthropogenic stress.

The area of St. Yuri Square, together with the park borders and the monument on the UNESCO World Heritage List[4] – the Metropolitan Cathedral of St. Yuri – which is determined by the status of the monument and use, as well as with educational buildings of the Lviv Polytechnic National University, and the residential buildings of Ustiyanovich Street that form a circle of regular users.

The park in St. Yuri Square is depicted on historical maps and plans of Lviv starting from 1900. The complex of green areas in St. Yuri Square has witnessed various phases of restructuring and redevelopment of the square and forms a valuable cultural landscape.

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[3] For the first time the park in St. Yuri Square was mapped in 1900 (Source: *Plan Stołecznego miasta królewskiego Lwowa*, 1900, http://www.lvivcenter.org/uk/umd/map/?ci_mapid=128).

[4] Word Heritage List*: L'viv – the Ensemble of the Historic Centre*, 865-002 – Ensemble of St. Yuri – the Dragonfighter Church, Ukraine 1998, http://whc.unesco.org/en/list/865/multiple=1&unique_number=1632.

Legend:

Ill. 5. The dendrological plan of the park in the St. Yuri Square [21]

a)

b)

Ill. 6a, b. The park in St. Yuri Square (photo by H. Petryshyn, 2015)

Ordinary tree planting along the Lystopad Chyn Street (former Mickiewicz St.) began in the early 19th century together with laying of the prestigious street from the old town centre, which separated ownership of the Jesuits and the Basilians and was originally called "The Church of St. Yuri and Metropolitan chambers". After the transfer of the St. Yuri fairs from under the walls of the Church in the 1860s to Bema Square (now Prince Sviatoslav Square) this square long stood in ruins. In 1897 the main City Gardener and master of landscape art Arnold Röhring planned and laid out the park in St. Yuri Square, which has survived to our time in a somewhat modified form.

The area of the park is 1.78 ha. It has undergone several reconstructions which were accompanied by some losses. In the 1970s[5], the square was renovated and a circular flower bed and children's playground were added, and concrete was used for the curb elements. With time, losses accumulated: many beautifully blossoming bushes were lost, some floral arrangements were neglected, and improper care of trees caused the drying of certain types (e.g. holly maple). In 1990 the dendrological passport of the park was fulfilled. For this purpose an inventory of the park was conducted in St. Yuri Square authored by the architects T. Maksymyuk and S. Tupis. The data, however, have not been published[6].

According to Ukrainian legislation, a "square = small garden (park)" is considered a well-maintained greened plot of land within built-up areas. The layout of the small garden includes lanes, playground, lawns, flower beds, separate groups of trees and bushes. The "squares = small garden (park)" are planned for short rests for pedestrians and decoration of the architectural ensemble. In Ukraine's normative-legal acts, a "square" is an ordered plot of green space area from 0.02 to 2.0 hectares, which is an element of the architectural and artistic design of settlements, intended for short-term rest of the population[7]. However, the methodological regulation enters into legal conflict with the regulatory classification, and if the park has an area less than 2 ha, it cannot claim the status of a monument of landscape art[8].

To the end of 2014 the area had the status of the public park, a subordinate of the Galician district administration of Lviv. However, its stylistic and artistic value were not determined, it was not in State list in which the other buildings are in the category of protected monuments. The Security number of the monument is missing, there are no security board, security signs, and other information signs or labels. All this contributes to the lack of knowledge about the park.

Inventory and assessment of the state of the trees in the Park of St. Yuri Square.

An assessment of the green space in the form of inventory enables us to determine the biological and phytosanitary condition of woody plants, to assess the impact of anthropogenic factors on the state of green spaces, and to understand the changes occurring within the landscape[9].

At the Department of Urban Planning and Urban Design of Lviv Polytechnic, during practice with students-masters of the "Landscape architecture" specialization, studies on the park in St. Yuri Square in Lviv were conducted in the summer of 2013.

The aim of this work was to conduct an inventory and assessment of existing tree plantings within the park. The overall condition of the park is satisfactory. The herbage is in excellent condition, the environmental surface of walkways is partially destroyed and washed out by rain runoff. The hardscape is represented by old design 1970s benches in the centre of the park and along the paths. There are almost no urns. The favourite children's playground in the style of stone fortifications requires restoration. In the centre the decorative old lantern is also preserved.

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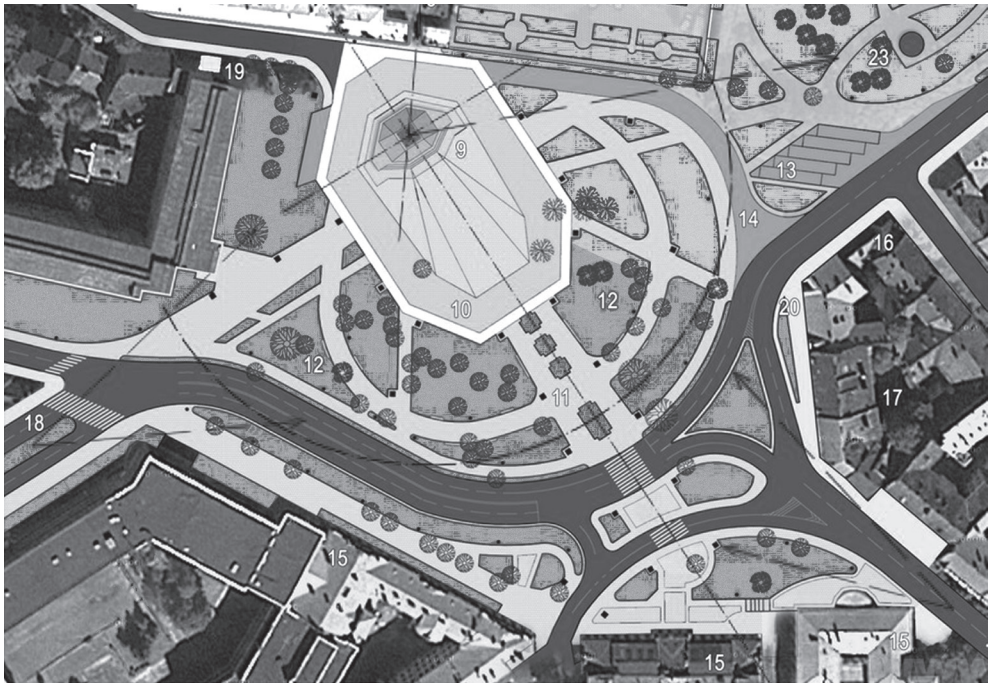
[5] After the construction of the Lviv Polytechnic Student's library, after the parks reconstruction project of the architects V. and I. Pavlov and V. Chertyk (Student`s Design Bureau of Lviv Polytechnic).

[6] Student's Design Bureau of Lviv Polytechnic, which halted activities very soon.

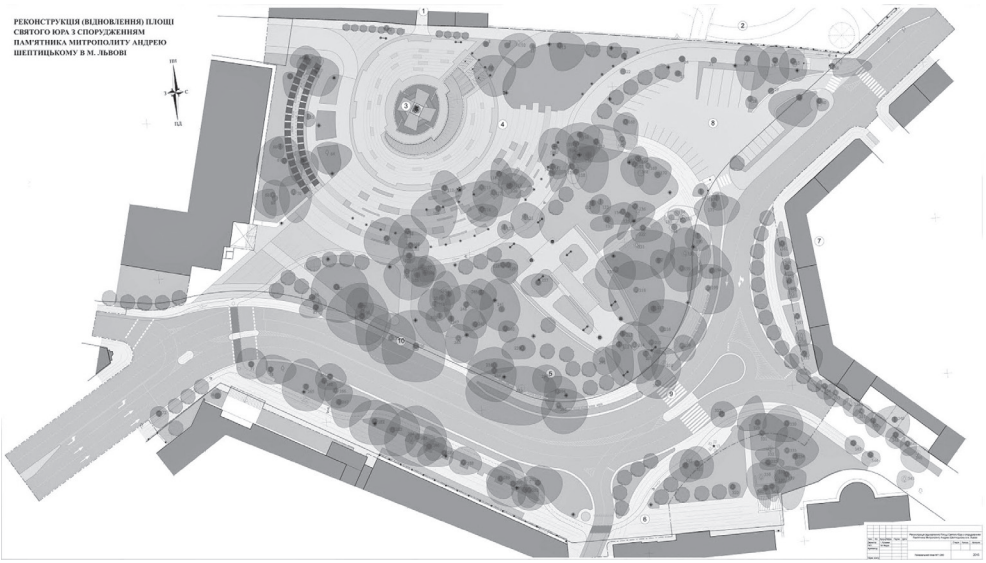
[7] The Ministry of Construction, Architecture and Housing and Public Utilities, Order "On approval of Rules of the maintenance of green spaces in settlements of Ukraine" dated: 10.04.2006, No. 105.

[8] The law of Ukraine On the protection of cultural heritage, dated: 8.06. 2000, # 1805-III.

[9] Instruction on technical inventory of green plantations in cities and other settlements of Ukraine. The order of the State Committee on Construction, Architecture and Housing Policy No. 226, from 24. 12.2011.



Ill. 7. The competition project for the “reconstruction” St. Yuri Square, 2014, Ukrdesigngroup [16]



Ill. 8. Amended project proposal for the “reconstruction” of St. Yuri Square, 2015, Ukrdesigngroup [18]

5. The results of research

The study identified a list of components for comprehensive improvement of the site

1. The planning scheme of the calligraphic-landscape style is preserved, which is in grouping of lawns with planted trees and bushes around a central round of herbage. The skill of Röhring was manifested in the skilful creation of scenic glades, where there are groups of trees of the first magnitude (30–40 m).
2. The park demonstrates the author's style of planting, i.e. that of Arnold Röhring, which was studied on the basis of a comparative analysis of cartographic material from his other park designs. The total number of coniferous trees – 37, deciduous trees – 146, deciduous shrubs – 51. Most of the trees in the park are old, ranging from 80 to 130 years, and they need protection and some "treatment". Evaluation of the quality status of woody species within the parks in St. Yuri Square indicates that the largest number of trees is in satisfactory condition – 163, the number of trees and shrubs that are in good condition is 44 instances, and unsatisfactory – 27 individuals.
3. The park is the richest in species diversity (in terms of 1 ha) among the parks and large parks of the city: 50 species and varieties of trees and shrubs from 32 genera and 15 families [15].
4. Unlike other plantings in Lviv there is a large accumulation of old-growth trees, which range from years old. The oldest tree in the park is an English oak (d 95–99 cm), which is nearly 150 years old, in excellent condition. A group of old growth trees of the first magnitude (European larch, Austrian pine, Norway spruce) with well-developed crowns are the most decorative elements of the park. These species are the structure-forming species of the park. During the reconstruction in the1970s an additional group of trees was planted: broad-leaved lime, Norwegian maple, Bosnian maple, black locust, and horse chestnut. Around the playground hedges were arranged which now need reconstruction. In the park there are practically no trees and bushes in the younger age group. Residents of the surrounding buildings are trying to solve this problem by planting individual species of shrubs and trees (e.g. common walnut).
5. The presented collection of rare species of woody plants includes some species which are unique among the city's parks. These are: flowering ash (*Fraxinus ornus L.),* European ash (*monoleaf*) (*Fraxinus excelsior 'Monophylla'*), Amur lilac (*Syringa amurensis Rupr*); of the olive family (*Oleaceae*), oriental beech (*Fagus orientalis Lipski*) of the beech family (*Fagaceae*), American linden (*Tilia americana L.*) from the family of Linden (*Tiliaceae*). These species are found only in the collection of the Botanical garden of Lviv's National Ivan Franko University.
6. In the park a large number of introduced plants have been used – the number of trees of exotic species (24 species) represent almost 50% of the total species diversity of the park. They are classified as "Botanical monuments of nature".

Evaluation of the quality status of woody species in the territory of the park in St. George's square indicates that the greatest number of trees are in satisfactory condition – 163 species. These are predominantly: Austrian pine, European larch, Norway spruce, large-leaved and small-leaved lime, horse chestnut, European ash, and others. Those in poor condition include species such as: European birch and ash-leaved maple. They are short-lived and require replanting of young specimens. The Bosnian maples in the centre of the park are in an unsatisfactory state. They have suffered from improper trimming and are infected by wood

decaying fungi. During the winter of 2014/2015 the frost killed a specimen of Rowan and two species of European larch. The bushes, which are physically damaged, are also in poor condition. The number of tree and shrub species that are in good condition is 44.

According to the results of a survey of the state of the planting of the park in St. Yuri Square, the following activities can be recommended:

– the conservation of the unique specimen, groups of rare old-growth tree species;
– the immediate measures are: pruning of small shoots and seedlings of trees, filling of the hollows in trees and repairing the physical damage to the trees, competent sanitary pruning of existing vegetation, and removal of dead wood[10];
– enhancement of the decorative effect of the park thank to the inclusion into its composition of decorative deciduous shrubs and ornamental tree species.

Risks to the Object are possible from increasing anthropogenic stress.

A special threat to the conservation of the park is the redevelopment of St. Yuri Square into a grandiose memorial complex in connection with the project of erection of the monument to Metropolitan Andrew Sheptytsky, dedicated to the 150-anniversary of his birthday, which is on 29.07.2015.

In connection with the plan to erect a monument to Metropolitan Andrew Sheptytsky in St. Yuri Square, there is the problem of the actual destruction of the park, although there are several other project proposals that do not affect the territory of this green oasis in the UNESCO buffer zone. The situation demonstrates the lack of power needed to solve these issues taking into account the views of citizens, in particular those among the scientific community. In the face of this the deputies of the City Council, the city that has the lowest percentage of public spaces in the list of per capita among similar cities in Ukraine, presents the Square and the park to the Curia of the Lviv Archeparchy of the UGCC in St. Yuri Square in Lviv "for the service of the Church"[11].

The conflict situation led to the withdrawal of the approval process of the project from the legal field. In terms of the All-Ukrainian competition to design a monument of Metropolitan Andrew Sheptytsky (announced 31.03.2010) the task has not been formulated for an holistic urban solution of the St. Yuri complex and adjoining areas and urban limits were not clearly defined for the installation of the monument. As a result the 1st place was not awarded to any of the projects, and the design by I. Kuzmak and M. Fedik (Ukrdesigngroup, Lviv), which took 2nd place (along with the design of O. Trofimenko and V. Didyuk in collaboration with M. Dzvonkovskii) needed substantial improvements. However, in the further design, the authors did not take into account the significance of the task and the complexity of its solution, and the jury's decision in the second round of the All-Ukrainian competition was ignored.

Kuzmak and Fedik's design contains a number of contradictions, both legislative and cultural. It has been presented at numerous public discussions – for example in the City Council, the Lviv Polytechnic (25.02.2014), the Lviv National Ivan Franko University (26.02.2014), the Ukrainian Catholic University (5.03.2014) and so on. The public and the experts indicated to the authors their violation of laws, regulations, and finally, a distortion

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[10] Sanitary pruning was carried out under the supervision of experts H. Lukashchuk and S. Tupis: 23 of the trees in poor condition were eliminate, and 4 need to be treated. http://zaxid.net/news/showNews.do?u_lvivskomu_skveri_svyatogo_yura_spilyuyut_dereva&objectId=1344909, online: 20.03.2015.

[11] 25.12.2014 during the extraordinary session of the Lviv City Council.

of the vision of the St. Yuri complex in Lviv. However, these comments were not taken into account leading to a number of violations that caused a wave of protests, public discussions, publications, and so on.

On the initiative of the public organization "Save St. Yuri Square" on 18th March 2015, four meetings of the Working group, with representatives of LGS, the Curia of the UGCC, the authors of the project, representatives of residents from the surrounding streets, Lviv Polytechnic, and activists was held. They attempted to find a compromise between the different visions of reconstruction of St. Yuri Square [20].

In analysing the project proposals of Ukrdesigngroup, we state the following:

– the area of St. Yuri was formed over the centuries as a crossroad on the watershed plateau, as the entrance to the cathedral, as a place for armed defence of the main entrance to the cathedral, and later, a market place, but it was always a "profanum" space, unlike the "sacrum" walled monastic complex;
– in the list of parks of the Halytskyi district of Lviv, which was approved by the decision of the Lviv City Council dated 26.01.2012 No. 1163 "On approval of the list and the boundaries of the squares of Halytskyi district of Lviv", the park in St. Yuri square with an area of 1.6357 ha was listed as one that requires a moratorium on changing the land-use purpose;
– in the proposed project of Ukrdesigngroup called "reconstruction", a full redevelopment of the area is offered including a change of directions of the streets. According to the project only 20% of the historic park in the St. Yuri Square is maintained, the rest disappears under pavement, driveways and parking lots, but it projects new decorative plantings, which should partially compensate for the total area of landscaping. The proposed plan displays a totalitarian megalomania and is contrary to the historically accepted construction logic the space surrounded by St. Yuri Church[12].

The project included neither the natural significance of the park nor any threats that could be expected by implementing the project, Prof. V. Kucheriavyj stressed:

– ecological and phytocoenotic aspect. The planted park with an area of 1.7 ha is a natural and anthropogenic ecosystem in which the relationship of root systems and crowns of trees and shrubs are closely intertwined creating a specific phytocoenotic field. The violation of these relations by reducing the area of the planting and its subsequent liquefaction will inevitably lead to the gradual loss of the park ecosystem. Encirclement of the plantings with a dead underlying surface with its draining climate will lead to the dehydration of the remaining, according to the project, piece of land;
– the violation of the town planning principle of the continuity of urban green spaces, which in recent years, due to the existing corruption of power structures, is constantly being violated;
– the planting of the park plays an important hygienic role: it absorbs a considerable amount of toxic emissions, filters dust, reduces noise, saturates the surroundings with phytoncides, sweet smells, and light oxygen ions;
– in the plan designed by Röhring the park is purely recreational and not for transit, as the new project wants to change it into. The park provides what is called in the West the rest "at the threshold of the home". The park today is a real holiday destination for residents

[12] An open letter of the Department of Urban Planning and Urban Design, National University Lviv Polytechnic, 26.12.2014, https://www.kafedrambd.jimdo.com.

of surrounding houses, students of the National University Lviv Polytechnic and pilgrims who visit St. Yuri Cathedral[13].

6. Conclusions

Two figures in the development of landscape art in Lviv are significant, but their work is poorly understood – Carl Bauer and Arnold Röhring. The parks left by Röhring are particularly valuable. He managed to combine in the art of landscape design all the styles of the turn of the 20th century: a naturalistic, calligraphic, historicism and Art Nouveau. Although the large parks are under state protection, the smaller ones such as squares, boulevards, city gardens and villa gardens are constantly being rebuilt and destroyed.

Today in the world of urban planning practice, the city is perceived as a living organism which is characterized by a logic of construction, well-established regularities of space, the value of its individual elements, the layering of cultures and numerous legislative and regulatory prescriptions. One should add another – international legal standards – which were signed by Ukraine in the context of entering into the European space, including in the field of monument protection activities and sustainable development of settlements.

Conducted in 2013 the studies of the park in St. Yuri Square gives grounds for considering the park as an authentic monument of garden and park art of the end of the 19th century. There is reason to give it the status of a monument of landscape gardening art of local importance, since it was founded in 1897 by the Chief Gardener of Lviv Arnold Röhring in landscape style, and its compositional structure and condition is well preserved. Here old species of trees and shrubs are concentrated which are rare in Lviv.

The Department of Urban Development end Urban Design of the National University Lviv Polytechnic appealed to the City Council, and the Mayor of the City with a proposal to request the Cabinet of Ministers of Ukraine to grant the status of the monument of landscape gardening art of local importance to the park in the St. Yuri Square. With this we join together in saving this valuable natural monument, which is the contemporary of Metropolitan Andrew Sheptytsky and at the same time a type of environment that presents historical and artistic value to future generations.

The standoff continues[14].

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[13] Dr. Sc., Ukrainian dendrologist, the ecologist, Prof. V. Kucheriavyj, the member of the International Federation of landscape architects (IFLA), National forestry University of Ukraine, the head of the Department of Ecology, Landscape Architecture and Landscape Management, presentation on 18.03.2015, https://www.facebook.com/savesquare.

[14] Page of the public charity organization “Save the Square of St. Yuri”, which declared mission: We advocate for a worthy commemoration of the life of Metropolitan Andrew Sheptytsky, erection of the statue to him and the restoration of the existing square https://www.facebook.com/savesquare.

Ill. 9. St. Yuri Square, 29.06.2015 [23]

7. In addition…

8.05.2015. The Executive Committee of Lviv City Council has decided to streamline St. Yuri Square, which will be the execution of the improvement works of St. Yuri Square: repairing the road surface and sidewalks in this square and in Ozarkevych St. with landscaping, reconditioning of the system of public transport, reconstruction of the Square's outdoor lighting, the renovation of water supply network in this area, and so on. We hope that the struggle for the search for a compromise in the setting of the monument to Metropolitan Andrew Sheptytsky will be implemented by a worthy perpetuation of this Figure and preserving the cultural heritage of the city.

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THE PERIOD OF FLOWER CARPETS AND OTHER COLOURFUL GARDEN DECORATIONS, I.E. KINDS OF ORNAMENTAL SPECIES USED IN EUROPE AT THE TURN OF THE 20TH CENTURY

CZAS KWIATOWYCH KOBIERCÓW I INNYCH BARWNYCH OZDÓB OGRODOWYCH, CZYLI JAKIE GATUNKI OZDOBNE STOSOWANO W EUROPIE NA PRZEŁOMIE XIX I XX WIEKU

Abstract

Since the 16th century species of flowers imported from the New World to Europe have enriched botanical gardens, and later palace or manor gardens and public gardens. In the second half of the 19th and in the 20th centuries new flower forms appeared i.e. clumps, flowerbeds and flower decorations. These plant elements were particularly appreciated taking into consideration a quickly growing range of new species and flowering plants. They were also popularized by their creators, gardeners, owners and the users of the modern shaped gardens. In the descriptions of gardens available today, in treatises or many lithographies, we can find the flower forms and species planted in those days. The aim of this thesis is to present selected flower forms in Polish parks and gardens at the turn of the 20th century and specifying species and flower plants typical of certain solutions.

Keywords: flower forms flower clumps flower baskets and carpets ornamental plant species introduction landscape gardens

Streszczenie

Od XVI wieku gatunki sprowadzane z Nowego Świata do Europy wzbogacają program roślinny ogrodów botanicznych, później pałacowych, dworskich, miejskich publicznych. W II połowie XIX i w wieku XX zaznacza się szczególny rozwój nowych form kwiatowych, m.in. kwietników, klombów kwiatowych, ozdób kwiatowych. Te elementy roślinne zyskują na wartości ze względu na szybko powiększającą się w tym czasie ofertę nowych gatunków i odmian roślin kwiatowych. Są również popularyzowane przez ich twórców, ogrodników, właścicieli i użytkowników budowanych/kształtowanych w nowatorskim duchu ogrodów. W dostępnych dzisiaj opisach ogrodów, traktatach czy na wielu litografiach można odnaleźć wzory form kwiatowych oraz stosowane wówczas gatunki. Celem tej pracy przeglądowej jest zaprezentowanie wybranych form kwiatowych w polskich parkach i ogrodach przełomu XIX i XX wieku i wyszczególnienie typowych dla określonych rozwiązań gatunków i odmian roślin kwiatowych.

Słowa kluczowe: formy kwiatowe klomby kwiatowe kosze i kobierce kwiatowe gatunki roślin ozdobnych introdukcja ogrody krajobrazowe

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1. Introduction

Flower forms are the least permanent elements of a garden. They are only known from the literature on changing garden styles and gardening. These are compositions of ornamental plants such as flowerbeds, flower carpets, colourful flower borders, flower baskets or flower clocks. In the 19th century, the owners of gardens, gardeners and garden planners, using "novelty plants", changed the look of their gardens by introducing colourful garden decorations [25, 26].

Particularly appreciated are ornamental flowers, as "...they are beautiful and fragrant, but dumb witnesses of our domestic lives, sharing the rare periods of joy and frequent periods of sadness of our lives and making it easier" [18]. Many books appear which are available to a larger number of readers, magazines and gardening guidebooks presenting new garden techniques, methods of plant cultivation, especially for those imported from abroad, as well as newly adapted species. Archived and available texts and iconographical materials are an important source of knowledge about 19th-century garden decorations, their appearance, and the plants grown in those days.

This thesis presents selected Polish archived sources of literature in which the authors show "flower decorations" typical of landscape gardens. The study of 19th- and 20th- century writings, accompanied by numerous pictures and descriptions of these spatial elements, instructions for their planning and techniques, show the changes in garden styles at the turn of the century, focus on some characteristic species of plants, especially new ones introduced into gardens. The studies conducted enable us to depict the changes in the flower forms, the variety of ornamental plant species used at that time, and changing selections in the European gardens and parks of this period.

2. "Flower decorations" of the 19th and the beginning of the 20th century and their plants

In the 19th-century gardens new flower forms were introduced very slowly, both in private and in public parks such as on squares and boulevards. At the beginning they were combined with some other elements, e.g. with mixed clumps. They constituted flower borders, i.e. rows of the shortest plants surrounding higher forms placed in the middle (trees, bushes, tall perennial plants). They played the role of "the forward guard and they marked the edge of a beautiful flowerbed" [11]. They were willingly introduced to flower clumps created from elaborate perennial plants, e.g. from mallows (*Alcea*), larkspurs (*Delphinium*), mullein (*Verbascum*), cannas (*Canna*), and dahlias (*Dahlia*) which were mixed with seasonal plants, e.g. sweet pea (*Lathyrus*), snapdragon (*Antirrhinum*), bulbs such as tulips (*Tulipa*), iris (*Iris*), narcissi (*Narcisuss*) or pot plant species exposed in summer (angel's trumpets – *Datura*, different kinds of palms – *Cocos, Bismarkcia, Livistona*, dagger plant – *Yucca*, bamboo – *Bambusa*, banana – *Musa*, *Dracaena*, azalea – *Rhododendron*, giant rhubarb – *Gunnera*).

Mixed and flower clumps were to constitute a three-dimensional block presenting a changing system of bright colours over the whole season, in which the smallest, flowering species marked their borders. The following elements were important: stability, colour, the

period of blooming and the smell of planted ornamental plants. New species, especially those imported from abroad which appeared in the direct vicinity or nearby the house, constituted a part of it and they connected the house with the garden space [18]. They also appeared in the shape of colourful ribbons along roads and paths. If the ribbon was very long, it was suggested that it should be diversified by introducing "different" plants in certain gaps. These could be plants of flowers of different colour or height.

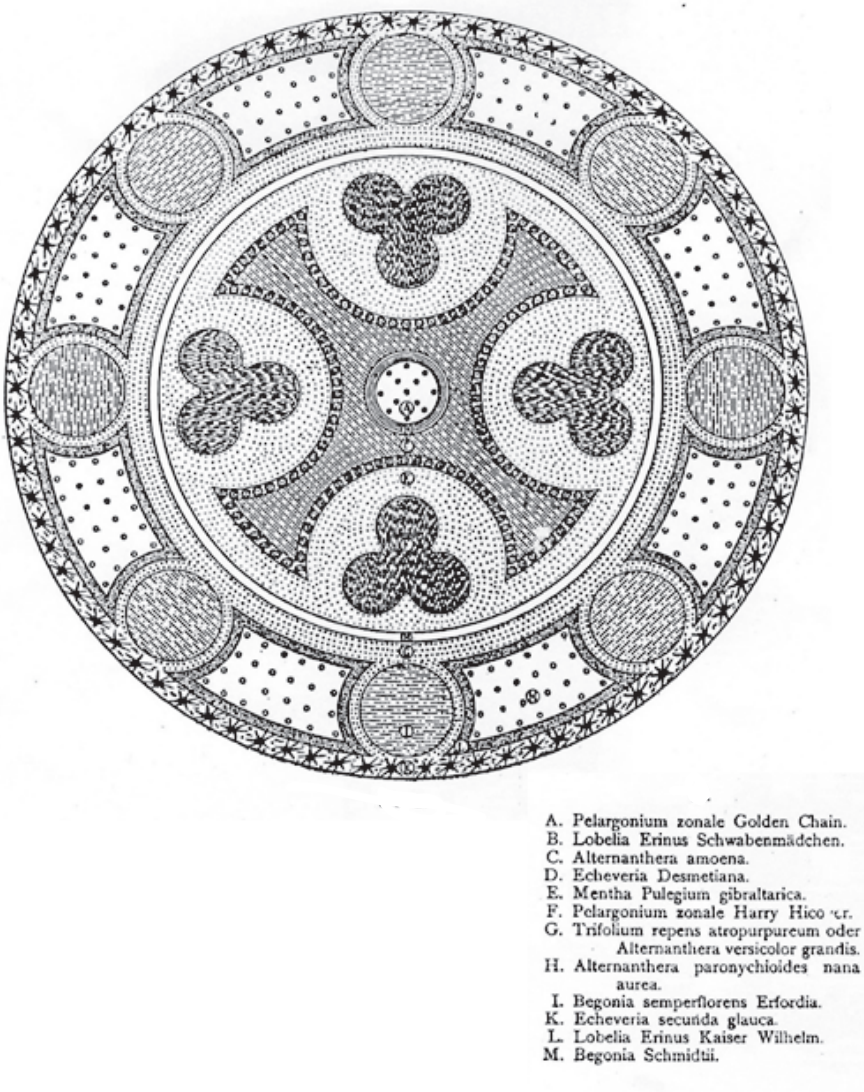
An example of double-row plantings is the following sets of plants presented by Jankowski [16], e.g. 1-line *Petunia hybrida grandiflora*, 2-line: *Allysum benthamii* or *Lobelia erinus*; the next: 1-line: stocks (*Matthiola*) in different colours and following them colourful asters (*Aster*) or garden balsam (*Impatiens balsamina*), 2-line: mignonette (*Reseda*) *or* Drummond's phlox *(Phlox drummondii)*. The triple-row are the following: 1-line: zinnia (*Zinnia elegants*) or snapdragon (*Antirrhinum majus*), 2-line: carnation (*Dianthus chinensis)* different species, 3-line: candytuft *(Iberis*), lobelia (*Lobelia erinus*), heartsease (*Viola tricolor*) or white full daisies (*Bellis perennis*). According to the author making such combinations is easy, but it "requires a detailed knowledge of the plant, its height and space needed for its growth, and the colour of flowers". In these colourful forms verbenas (*Verbena*), begonias (*Begonia*), purslanes (*Portulaca*), lobelias (*Lobelia*), nasturtiums (*Tropaeolum*), petunias (*Petunia*), phloxes (*Phlox*), fuchsias (*Fuchsia*), marigolds (*Tagetes*), dahlias (*Dahlias*), and mignonettes (*Reseda*) dominated [17]. Native ornamental species such as cornflowers (*Centaurea*), poppies (*Papaver*), wild carnations (*Dianthus*) and corncockles (*Agrostemma*) were placed in distant parts of the garden. "Distant flowerbeds can be created from common and field flowers", advised Czartoryska [11], adding that: "they should be planted in abundance". Jankowski [16] pointed out that "the main flowerbed should be in front of the windows and some others in the garden (...). Splendid and definitely the most beautiful plants should be planted there".

Flowering species organized in new forms and presented in a larger number decorated the interiors adjoining the palace or the mansion "to be admired and enjoyed by everyone" [18]. They constituted the "formal flower garden". In these places there appeared different garden decorations – flowerbeds in the form of flower baskets, stars, geometrical colourful planes with an elaborate decoration of various blooming species. They were to be *colours shining in the sun like a rainbow* as Jankowski wrote [16].

Flower baskets – *corbeilles*, i.e. flowerbeds in the oval or the round shape placed on the lawn were bordered by low edgings – wickery, steel or metal matting, and in the later period by ceramic tiles or boxwood. "Rich people use cinder together with sea shells to surround the flowerbeds" [1]. The inside of the flowerbeds was filled with short flowers while in the middle there were placed higher plants. There were planted *the most beautiful and the rarest species* [11], i.e. narcissi (*Narcisuss*), forget-me-nots (*Myosotis*), pansies (*Viola*), love-lies-bleeding (*Amaranthus*), stocks (*Matthiola*), asters (*Aster*), zinnias (*Zinnia*), lobelias (*Lobelia*), carnations (*Dianthus*), lupines (*Lupinus*) and as a hoop stick there were used: nasturtium (*Tropaeolum majus*), morning glory (*Ipomoea purpurea*), ivy (*Hedera helix*) and clematis (*Clematis ssp.*) [15, 18, 28, 29].

Another popular form in European private and public gardens were **flower carpets** – flowerbeds of a geometrical decoration, based on a circle, oval, or quadrangle and placed on a flat area, frequently in a depression or in a characteristic elevation of the area to make the image visible (Ill. 1). "They surround palaces of aristocracy or fill up the public parks of capital cities and larger world cities and the variety of plants, the harmony of colours, the

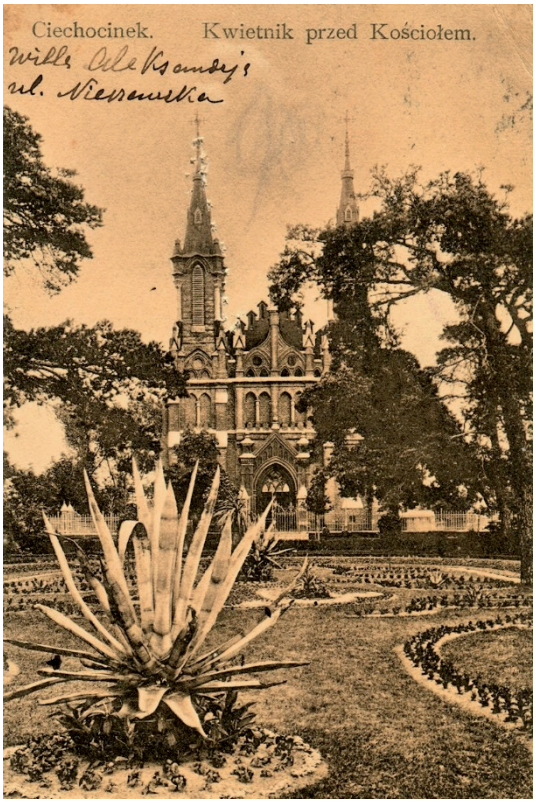
elaboration and the creativity of the image...display the extraordinary taste and imagination of their creator" [28]. They constituted a complicated pattern by contrasting short species of flowers with decorative leaves giving a permanent colourful effect during the whole season. [Flowerbeds] "...organized with deciduous plants and some flowery, dense and short with long lasting blooming, present a colourful mosaic during the whole summer until the first frost in a permanent form. Looking at such a flowerbed, one thinks of a flowerbed made of colourful threads" [16].



Ill. 1. Picture of the flowerbed with the list of plants according to Götze 1910 (Source: K. Götze, *Album für Teppichgärtnerei und Gruppenbepflanzung*, 2, Aufl. Erfurt: L. Möller, 1897)

Decorative motifs were kept smooth, because the plants grown were of the same height. Sometimes higher, single plants were placed, frequently in flower pots (Ill. 2 and 3). They were placed in the middle or in the vicinity of the flowerbeds. These were exotic plants such as agava (*Agava americana*), dwarf palm (*Dracena indivis*), banana (*Musa enseta*), date palm (*Phoenix reclinata*), chinese fun palm (*Livistona chinensis*), or monthly rose (*Rosa chinensis semperflorens*) which were moved to a conservatory in winter [22].

The most important species used in the flowerbeds, also called mosaic or tapestry, included the following: parrot leaf (*Alternanthera amoena*), calico plants (*Alternanthera versicolor*), pussy-toes (*Antennaria dioica*), painted nettle (*Coleus blumei*), licorice plant (*Gnaphalium lanatum*), bloodleaf (*Iresine herbstii*), beefstake plant (*Pyrethrum parthenium* subsp. *aureum*), purple shiso (*Perilla nankinensis*), and cotton lavender (*Santolina chamaecyparissus*). Among



Ill. 2. Agaves – plants in pots on flowerbed in Ciechocinek (Poland). Postcard from 1905 (Source: author's collection)

Ill. 3. Flower clumps In Regent's Park. Postcard from 1900 (Source: http://dakotaboo-vintage-postcards.blogspot.com/2012_06_01_archive.html, online: 2.02.2015)

the blooming plants the following were used: whiteweed (*Ageratum*), begonia (*Begonia*), geranium (*Pelargonium*), heliotrope (*Heliotropium*), marigolds (*Calendula*), dahlias (*Dahlia*) and a group of plants blooming in spring such as scilla (*Scilla*), primrose (*Primula*), snowdrop (*Galanthus*), forget-me-not (*Myosotis*), tulips (*Tulipa*), hyacinths (*Hyacinthus*), narcissi (*Narcisus*), pansies (*Viola*), daisies (*Bellis*) or leopard's bane (*Doronicum*) [4, 29]. The plants were grown densely and in contrasting colours to make a complicated pattern visible from a far distance. The main design rule for these flower decorations was to create clear lines and colourful spots based on a symmetrical and axial layout.

Thanks to Prince Hermann Ludwig Henrich von Pückler-Muskau and Humphry Repton, in the 19th and 20th centuries, special forms of flower carpets such as the **arabesque, cornucopias, flower clocks** or **figural ornaments** built on an iron construction, e.g. pyramids or poles, became popular [23, 27]. They constituted very attractive, but at the same time short-lasting decorations of private and public spaces. The best place for the exposure of arabesque forms and floral clocks were sloping areas such as cliffs and hillsides. Both arabesques presenting plants, animals, heraldic and flower clocks with a face of a digital floral decoration, constituted large, spatial forms which survived throughout the 20th century [22]. They became a characteristic element of urban and spa parks. Groups of ornamental plants were shaped in a similar way as flowerbeds, and their background was always a lawn or grass.

In floral clocks and figural constructions decorative species were planted with leaves from the succulent group: *Echeveria secunda, Sedum carneum, var. Sphaerincola, Mesembrianthemum cordifolium* as well as *Ageratum mexicanum, Begonia semperflorens, Lobelia erinus, Viola tricolor* subs. *maxima* and *Pelargonium zonale* [16, 20, 23] (Tab. 1).

Table 1

Selected species of ornamental plants used in gardens and parks in the past

No.	Accepted names of ornamental plant species grown in the parks and gardens	
	19th – 20th centuries*	21st century**
1	*Agave americana*	unchanged
2	*Ageratum mexicanum*	*Ageratum houstonianum*
3	*Alternanthera amoena*	*Alternanthera bettzickiana*
4	*Alternanthera versicolor*	*Alternanthera pulchella*
5	*Antirrhinum majus*	unchanged
6	*Begonia semperflorens*	*Begonia cucullata* var. *hookeri*
7	*Celosia cristata*	*Celosia argentea* var. *cristata*
8	*Centaurea candidissima*	*Centaurea cineraria*
9	*Chamaerops humilis*	unchanged
10	*Chrysanthemum coronarium*	*Glebionis coronaria var. coronaria*
11	*Coleus Blumeii*	*Plectranthus scutellarioides*
12	*Corypha Australis*	*Livistona australis*
13	*Cuphea platycentra*	*Cuphea ignea*
14	*Datura fastuosa*	*Datura metel*
15	*Dracaena indivisa*	*Cordyline indivisa*
16	*Echeveria Desmetiana*	*Echeveria peacockii*

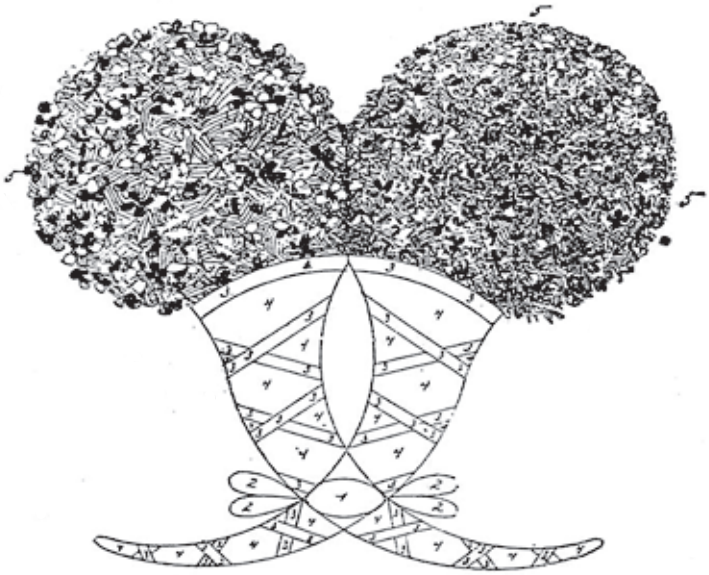
continued Tab. 1

No.	Accepted names of ornamental plant species grown in the parks and gardens	
	19th – 20th centuries*	21st century**
17	*Echeveria secunda*	unchanged
18	*Festuca ovina glauca*	unchanged
19	*Fuchsia hybrida*	unchanged
20	*Gazania splendens*	*Gazania rigens* var. *rigens*
21	*Gnaphalium lanatum*	*Euchiton involucratus*
22	*Godetia Whitneyi,*	*Clarkia amoena* subsp. whitneyi
23	*Heliotropium peruvianum*	*Heliotropium arborescens*
24	*Iresine acuminata*	*Iresine diffusa*
25	*Iresine Lindenii*	*Iresine lindenii*
26	*Cotyledon glauca*	*Echeveria secunda*
27	*Leucophyta Brownii*	*Leucophyta brownii*
28	*Lobelia Erinus*	*Lobelia erinus*
29	*Mentha pulegium*	unchanged
30	*Mesembryanthemum cordifolium*	unchanged
31	*Pelargonium peltatum*	unchanged
32	*Pelargonium zonale*	unchanged
33	*Pyrethrum parthenium*	*Tanacetum parthenium*
34	*Petunia hybrida*	unchanged
35	*Salvia patens*	unchanged
36	*Sedum glaucum*	*Sedum hispanicum*
37	*Senecio cineraria*	unchanged
38	*Santolina chaecyparissus*	unchanged
39	*Viola tricolor*	unchanged
40	*Yucca filamentosa*	unchanged
41	*Yucca recurva*	*Yucca recurvifolia*
42	*Zinnia elegans*	unchanged
43	*Helichrysum petiolare*	unchanged
44	*Perilla frutescens*	unchanged

* Naming by E. Jankowski, *Garden at the manor house*, T. 2. Edition by the author, Warszawa 1900; K. Götze, *Album für Teppichgärtnerei und Gruppenbepflanzung*, 2. Aufl. Erfurt: L. Möller, 1897.

** Naming by W. Erhardt, E. Götz, N. Bödeker, S. Seybold, *Zander. Handwörterbuch der Pflanzennamen*, Ulmer, Stuttgart 2008.

Flower decorations used at the turn of the 20th century, with an abundance of blooming flowers and elaborate leaves, improved garden quality and made the parks more attractive. The variety of species made it possible to learn about them, their morphological and decorative features, and their practical use, e.g. the methods for quick procreation, the conditions of their growth, and the possibility of their combination with other plants. n example is the **cornucopias** created from plants that were grown directly in the ground as well as from pot plants. The species planted in the ground marked the shape of the composition (Ill. 4). However, the "overflowing" bouquet consisted of blooming and deciduous plants grown and exposed to a certain area in pots, creating in this way a clear bulge. These flowers were more easily changed than those planted directly in the ground.



2. Lobelia Erinus Pearl lub Nertera depressa.
3. Echeveria secunda—u góry rogów mniejsze, ku nasadzie coraz większe.
4. Alternanthera atropurpurea, Antennaria tomentosa lub Spergula pilifera aurea.
5. Bukiety złożone z *roślin kwitnących*, jak: Begonie, pelargonie, ułanki, figlarze, płomyki, witułki ogrodowe, Reseda odorata aurea, spiralis, Machet, Alyssum Benthami compatum; z *traw:* Paspalum, Lagurus, Briza maxima i minima, Agrostis nebulosa, Stipa pennata; z *roślin liściastych*, jako to: Lonicera brachypoda aurea reticulata, Coleus, Achyranthes, Iresine.

Ill. 4. An example of flower decoration – a horn of plenty with the list of plants (Source: [17])

Nowadays, urban parks which were created at the turn of the 20th century constitute, as in the past, an important element of in the public space of European cities, and they influence the quality of lives of their inhabitants [2, 10, 14, 30, 31, 33, 35]. The flower carpets and plant decorations popular in the 19th and at the beginning of the 20th century are rarely used nowadays. The reason is economic, i.e. the cost of plant material or the high cost of their care [4, 13, 19, 24, 34]. In the modern design of urban greenery, designers and gardeners exchange the old forms for new and less expensive ones. These are usually different kinds of plant containers for creating plant compositions, simple flower beds, flower stone walls or roof gardens, and the construction of green walls and flower meadows [3, 5, 6, 12, 30].

However, research on the use and introduction of ornamental species in historic gardens and parks is still being conducted [14, 21, 22, 32]. Attention is paid to the compatibility of species to a specific period, flower form and the features of a historic building. In the course of time the variety of flower plants used has increased. In the garden market more and more elaborate species of old plants appear – most frequently those with bigger

flowers, inflorescence, and richer colours, marked by a longer period of flowering, and larger resistance to unfavourable growing conditions, diseases, or worms. Reproducing the 19th-century forms and garden decorations, it is possible to contemporise plant species, especially flowering plants.

3. Conclusions

In the past, the creators of parks and gardens searched for new plants to enrich their garden compositions, decorate, and raise the prestige of some buildings. In those days the main rule for creating different decorations and flower forms that were introduced to the private and urban areas was to use a broad range of the decorative species available on the flower market. Numerous plants came to Europe from the new continents. These were the following: French marigold (*Tagetes patula*), ageratum (*Ageratum houstonianum*), Mexican snow ball (*Echeveria elegans*), and agave (*Agave*) from Latin America, betony (*Stachys officinalis*), begonia (*Begonia semperflorens*), and yucca (*Yucca filamentosa*) from South America, geranium (*Geranium*), and gazania (*Gazania*) from Africa, perilla (*Perilla frutescens*), angel's trumpets (*Datura*), and cockscomb (*Celosia cristata*) from the Far East, and plectranthus (*Plectranthus)* from Asia and Australia. The plants were grown densely and were changed many times during the vegetation period (Ill. 5).

Ill. 5. Flower decoration in the shape of a clock found in the square in the centre of Lviv. The face of the clock constitutes two species of permanently blooming begonia (photo by K. Rojek, 2013)

Modern flower forms present simpler shapes, but the number of the species used in the green areas is much bigger than hundreds of years ago. For over 200 years the following plants have been popular: geranium, begonia, flossflower, echeveria, irezyna, stonecrop, and red everlasting plant [7, 8, 9] (Tab. 2). The managers of historic buildings, parks or places of historic interest, or the authorities of spa resorts maintain the tradition of decorating the important places of a locality, by introducing and recapturing the patterns of flower forms from the past, [19, 30, 32]. As in the past, flower forms represent a park, a garden or a town, and they are their seasonal decorations.

Table 2

The species of ornamental plants grown in modern floral forms*

No.	Species name	No.	Species name
1	*Ageratum houstonianum*	21	*Lobelia erinus*
2	*Argyranthemum*	22	*Lobularia maritima*
3	*Bacopa spp.*	23	*Nikotiana alata*
4	*Begonia semperflorens*	24	*Osteospermum ecklonis*
5	*Begonia x hybrida*	25	*Pelargonium grandiflorum*
6	*Calibrahoa x hybrida*	26	*Pelargonium peltatum*
7	*Calluna vulgaris*	27	*Pelargonium zonale*
8	*Canna spp.*	28	*Petunia multiflora*
9	*Celosia plumose*	29	*Petunia x hybrida*
10	*Coleus spp.*	30	*Primula spp.*
11	*Dahlia x hortensis*	31	*Salvia nemorosum/farinacea*
12	*Dendranthema*	32	*Salvia splendens*
13	*Gaura spp.*	33	*Sedum spp.*
14	*Gazania splendens*	34	*Senecio cineraria*
15	*Helichrysum lanatum*	35	*Tagetes erecta*
16	*Helichrysum petiolare*	36	*Tagetes patula*
17	*Heliotropium spp.*	37	*Verbena x hybrida*
18	*Impatins neu-guinea*	38	*Viola cornuta*
19	*Ipomoea batatas*	39	*Viola x wittrockiana*
20	*Iresine herbsti*	40	*Zinnia elegans*

* Species indicated on the basis of the offers available in the web catalogues: http://plantpol.com.pl/katalogRo%C5%9Blin-765.html#/page/1, http://www.lobanowscy.pl/k,1,Rosliny_balkonowe_i_rabatowe.html, http://diantpol.com/oferta.html

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EXPRESSIONISTIC FORM IN THE COSMOPOLITAN WORKS BY COOP HIMMELB$_{(L)}$AU

EKSPRESJONISTYCZNA FORMA W KOSMOPOLITYCZNYCH REALIZACJACH COOP HIMMELB$_{(L)}$AU

A b s t r a c t

This article aims to analyse selected projects by the Coop Himmelb$_{(l)}$au design group in the context of continuation of the expressionistic tradition. As the successor of the Austrian aesthetic culture, this world renowned design team is the creator of visual arrangements of different types of building enterprises in the spirit of a retreat from the classical architectural tradition. The artistic consequence seems to be characteristic of the design, although it balances between apparent deconstruction and fluid dynamic forms.

Keywords: Coop Himmelb$_{(l)}$au, expressionism, poststructuralism, open form, architectural composition

S t r e s z c z e n i e

Artykuł ma na celu dokonanie analizy wybranej części twórczości grupy projektowej Coop Himmelba$_{(l)}$au w kontekście kontynuacji tradycji ekspresjonistycznej. Ten posiadający światową renomę zespół projektowy, będąc sukcesorem austriackiej myśli estetycznej, jest autorem aranżacji wizualnej różnego rodzaju przedsięwzięć budowlanych utrzymanych w duchu odwrotu od klasycznej tradycji architektonicznej. Charakterystyczna wydaje się konsekwencja plastyczna, która jednak balansuje pomiędzy pozorną dekonstrukcją a płynną dynamiką formy.

Słowa kluczowe: Coop Himmelb$_{(l)}$au, ekspresjonizm, poststrukturalizm, forma otwarta, kompozycja architektoniczna

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1. The expressionistic association

The leader of the design group Coop Himmelb(l)au (further abbreviation: "CH" – author's note) said in 2002: "if we have failed to locate the roots of Expressionism in Austria, then we should hurry to make up for it"[1] [5, p. 500]. An overview of the work of the Austrian design group led by Wolf Dieter Prix leaves no doubt that it forms part of contemporary neo-expressionistic trends. The architecture proposed by CH is a consequence of earlier experiments intended to reinterpret the perception of urban space [7, p. 157]. These references to expressionistic architectural roots seem to justify the global nature of the group's creative activity, which have resulted in a number of global projects. The works that seem to be the most important from the point of view of formal innovation are primarily located in Austria and Germany. Dynamic expressionism owes a lot of development to the culture of these countries.

2. Disintegrative motives

Contemporary reminiscences of expressionism in architecture are most often manifested through the deconstruction of the compact form, which can be included in a broad cultural concept of poststructuralism. This trend is largely responsible for the disintegrative and dynamic threads. In CH's output it evolved from an extremely endogenous version, for example the famous Viennese superstructure from 1988, to a more exogenous form. In other words, the decentralized architectural composition is gradually being replaced by forms recognizable as apparent vectors directed inside, or at least remaining in a state of shaky imbalance. This can also be illustrated by using the theory of Oskar Hansen, which uses the concept of "open and democratic forms" and "closed and authoritative forms" [3, p. 7]. Also according to these terms an extremely pluralistic omnidirectional form is gradually gives way to a concentrated form.

3. Between "open form" and "closed form"

A building which is part of architectural poststructuralism is the multiscreen cinema building *UFA Kristallpalast* (Ill. 1) at Saint-Petersburg Street in Dresden. The main aim of a project was land use of a trapezium-shape square which is situated next to the pedestrianized Prague Street. In accordance with the declaration of the author, the building that is the main element of the design was designed in such a way as to withstand the central perspective [4, p. 44], and therefore it opposes the basic doctrine of the renaissance aesthetic. This tenet is equated to the canon of form and the architectural tradition. Prix says the central perspective has lost its importance for humanity, and therefore it should be replaced by a multiplied perspective.

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[1] *Opening speech of the steirischer herbst* – speech held by W. D. Prix on October 24, 2002 in Graz.

Ill. 1. Verena Perius, Tom Wiscombe and the team, Cinema *UFA Kristallpalast*, Dresden, Germany, competition 1993, completion 1998 (photo by A. Serafin)

This was already promoted in the drawings of Giovanni Battista Piranesi according to Prix[2] [5, p. 200]. In fact the 18th-century utopias of the Italian artist brought visual multithreading of the architectural composition. This appears justified by the relativistic aspirations of classicism.

The lack of any references to classics, as well as the dynamism of shapes defining the architecture of the *UFA Kristallpalast* causes that "the building in Dresden could be regarded as a realization of one of the German expressionists of the early 20th century" [6, p. 353]. From the viewpoint of design, the aim of the project was a predefined structural and visual arrangement, but also, as the author says, a "contribution to a new definition of public space"[3] [5, p. 199]. In fact, the project should be seen both as an architectural composition which is dynamic but rather a "closed form", as well as an urban composition which was to function as an "open form", according to the statement of the author. Before the construction started, Prix had said: "The design for the Pragerstrasse in Dresden shows how we are able to create dynamics in the public space by twisting a building. Through our analysis of lines of vision and spatial sequences, the element of a cantilevering cloud structure forms: allowing freedom of movement straight across the square yet still creating an entry situation. The square is not closed but open. We will build the Cinema Centre from this design"[4] [5, p. 447].

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[2] *Architecture at the end of the twentieth century* – lecture by W. D. Prix at the city hall of Vienna in1998.

[3] *Ibidem*.

[4] *On urbanized landscapes* – statement made by W. D. Prix at the symposium organized by the Westfälischer Kunstverein Münster on November 1993.

The solution adopted was to merge the existing urban space while respecting its key elements, such as the late-modernist building blocks of flats, the main communication artery, and the shopping passage. The architect says: "The misunderstood East German urban development visions of the fifties and sixties went up there (...). From the very beginning, our key concern was the opportunity to create the passageway"[5] [5, p. 199]. Although the CH design group accumulates architecture in comparison to the earlier deconstructivist objects, in this case they advocate the concept of "open form" focusing on the urban aspects.

4. Dynamics of expressionist form and function

Another important implementation in both urban and architectural point of view, is one of the sectors of the residential estate *Gasometer* (Ill. 2), founded in the Viennese Erdberg district. The composition of the complex consists of four cylindrical forms that are the result of adaptation of the buildings originally incorporating gas tanks. All the segments were built in 1899 and have now been adapted for a new function by different design teams. In addition to CH, the buildings were revitalized by Jean Nouvel, Manfred Wehdorn and Wilhelm Holzbauer. In addition to the adaptation of one module, architects from CH proposed a separate high-rise building, in order to ensure visibility in the silhouette of the city [10]. The new object took the shape of a flat skyscraper sheltering the original segment

Ill. 2. Wolf D. Prix, Josef Weichenberger and the team, Apartment house in the *Gasometer* complex, Vienna, Austria, project 1995, completion 2001 (photo by A. Serafin)

[5] *Architecture*..., *op. cit.*

of the north-east. Prix explains: "The shield is a part of the *Gasometer* project, which is an important urban design project because as a new centre, it creates a field of tension with the old centre of Vienna, where new architecture can originate. The shield is a symbol of the new content of the *Gasometer*"[6] [5, p. 377]. The implementation proves that even objects subject to conservation restrictions may become the substrate for a modern expressionism. This trend also confirms the dynamism covering the issues of the aforementioned architecture, ranging from its aesthetic treatments to the functionality-supporting technological solutions. According to the designer's declaration, the apartments in the *Gasometer* complex represent tendencies of increased mobility, by introducing specific telecommunications solutions[7] [5, p. 480]. However, the vertical section of the height dominant with its numerous broken lines make the dynamic expression of this architecture as well as symbolically "opening it up" to other urban areas.

5. Art and architecture, as an image of modern society

As far as the arts are an expression of a social voice, Prix delivered the words: "Step by step, architecture is becoming one of the most controversial topics of our time and is beginning to replace the fine arts as the thorn in the flesh of society. This discussion disregards society's loss of three-dimensional forms of expression through the rejection of contemporary architecture, which not only results in the horrifying destruction of creativity and energy, but also, sooner or later, in the speechlessness of the third dimension"[8] [5, p. 69].

The extension to the Academy of Fine Arts (Ill. 3) is the design for a new pavilion containing the painting, sculptural, photographic studios, as well as printing and a multimedia room. The project supplemented the plot of land in the Maxvorstadt district of Munich, where the building of the university has been situated since the second half of the 19th century. The massive new bay window references the existing building, although it subtly crosses the original building frontage specified by the west wing. The composition with its distinctive bay window and glass-to-metal panels remain Russian avant-garde architecture from the nineteen twenties. In the same way it differs from the historical form of the pre-existing academy building. Another distinctive element of the building layout are the aisles designed as diagonal ramps located in the atrium. They bridge the different parts of the building. The aim for the designers was to create a kind of energetic space for the varied artistic activity at the academy [9]. The associations of Cubo-Futurism seem to justify the arrangement of architecture in a city where the Expressionist painting signed by "Der Blaue Reiter" group was born.

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[6] *On the added value of form. Wolf D. Prix in conversation with Roland Kanfer* – an interview that first appeared as Stars denken mehr in Bau & Immobilien Report on December 2003.

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[8] *The end of space is the beginning of architecture* – one of the programmatic texts from 1993 by W. D. Prix.

Ill. 3. Frank Stepper, Hartmut Hank and the team, extension of the *Academy of Bildenden Künsten*, Munich, Germany, competition 1992, completion 2005 (photo by A. Serafin)

6. "The Cloud" – back to the centralized form

The most recent CH projects most commonly demonstrate the liquidity of form. The shapes of the building "BMW Welt" (Ill. 4) located in Milbertshofen Munich symbolize the final step on a path that the latest architecture has traversed in analogy to the transition from the philosophical thought of Jacques Derrida to Gilles Deleuze. Referring to the theory of "the fold" in terms of Baroque aesthetics, Deleuze writes that it generates an expressive form, a so-called "gestalt", or infinitely variable line that means the curve with a unique set of parameters [1, p. 39]. Prix himself refers to the theory of "gestalt" perception, which is also associated with Expressionism. The architect draws attention to the fact that "many Viennese architects have a baroque interpretation of gestalt, whereby gestalt is not form, but the imprint of an idea in the material"[9] [5, p. 489]. Therefore, the building for the Bayerische Motoren

[9] *Acceptance speech for the Grosßer Österreichischer Staatspreis* – speech held by W. D. Prix on December 13, 2000 in Vienna.

Ill. 4. Wolf D. Prix, Paul Kath, Tom Wiscombe and the team, commercial museum complex *BMW Welt*, Munich, Germany, competition 2001, completion 2007 (photo by A. Serafin)

Werke is the medium of an idea which is expressed by smooth and dynamic architecture. This is due to the fact that the CH designers reject arbitrary solutions. Prix declares that only complex architectural solutions should be involved for big architectural problems [2, p. 7]. However, in this case, the architectural form is not quite as expansive as in earlier CH structures. This form is more centralized and does not have as recognizable deconstructive elements, and neither does the dynamic Baroque composition.

7. Conclusions

The opinion that "expression in architecture means an emphasis laid on gravity, or its negation" [8, p. 41] seems to be fully reflected in all CH projects. The analysis of the works

of this design group allows us to declare that, being so characteristic for their design activity profile, poststructuralism is the variable. It manifests itself in various forms, depending on factors such as the purpose, location, or conservation in terms of architectural heritage. Review of the long-term activity of the project team, however, exposes a subtle change in the approach to the design over the years. According to Hansen's dialectic, it can be concluded that the form of poststructuralism has gradually lost its dogmatic openness, while gradually neutralizing its expansiveness. The conclusion is that questioning the fundamental assumptions of the classic is no longer a challenge for contemporary architecture. At the same time, the architecture is still able to be expressionistic.

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ERNESTYNA SZPAKOWSKA-LORANC*

L'ESPACE PIRANESIEN

L'ESPACE PIRANESIEN

A b s t r a c t

Analysis of the space in the series of figures Carceri by Gianbattista Piranesi and the use of the model of this space in contemporary architecture.

Keywords: *Aronoff Center, Carceri, Coop Himmelb(l)au, Peter Eisenman, Euralille, Rem Koolhaas, The Light Pavilion, Daniel Libeskind, Micromegas, Piranesi, Lebbeus Woods*

S t r e s z c z e n i e

Analiza przestrzeni w serii rycin Carceri Gianbattista Piranesi oraz wykorzystania modelu tej przestrzeni w architekturze współczesnej.

Słowa kluczowe: *Aronoff Center, Carceri, Coop Himmelb(l)au, Peter Eisenman, Euralille, Rem Koolhaas, The Light Pavilion, Daniel Libeskind, Micromegas, Piranesi, Lebbeus Woods*

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In 1742 Piranesi began to draw a series of sketches of prisons: *Invenzioni capric. [ciose] di Carceri*, (*Prisons for the imagination*). The theme of the figures was not unusual at that time. Prisons often appeared in theatrical sceneries. (Piranesi himself drew *Carcere Obscura* a few years before.) The uniqueness and peculiarity of these drawings[1] is based on their aesthetics. "Cropped, implicitly labyrinthine spaces filled with: bridges, arches, stairs, porches, columns ... make up a captivating scenery, without revealing its beginning or end, presenting itself as an architectural metaphor" [14, p. 65]. Over the years they inspired an endless list of artists – graphic designers, architects, filmmakers, comic book illustrators, writers – Victorian revivalists, surrealists (including Dali), Maurits Escher, Fritz Lang, Situationists, Hugo[2], Borges, Eco ... According to Dariusz Kozłowski they are architectural pretexts as a sets of prototypes from the World Museum of the Imagination [10, p. 14]. The "dark brain of Piranesi" fascinates nowadays among others Lebbeus Woods, Daniel Libeskind, Rem Koolhaas, Peter Eisenman and Coop Himmelb(l)au, who present various ideas in the form of labyrinthine, panoptical, open space, oneiric and thus devoid of time, the logic of perspective, the continuation of space, and references to the natural elements – "the dream of stone".

The *Carceri* are associated with Piranesi's interest in architectural fantasies used as the means of formal analysis at that time. Therefore the *chateau* interiors from his other drawings, with sculptural vaults, massive columns, and rich architectural details are the basis of the prison spaces, where the arcs of vaults interspersed with wooden structural elements are accompanied by twisted, surreal staircases, bridges, ramps, galleries and balconies. Hanging ropes, rags, prisoners' silhouettes, and different traces of destruction replace the details. In the later sketches, the drawing manner is increasingly distinctive, the spaces more complex, and there are more and more impossible elements – falsified perspectives and optical illusions [24, p. 12-14].

Lebbeus Woods is invariably indicated as the modern successor of Piranesi with his biomorphic and mechanomorphic forms presented in "mythical spaces" [14, p. 147]. Like Piranesi, Woods drew rather than built. Through his drawings, Piranesi criticized the dogmas of classicism, and Woods in his dystopic visions showed the commercial face of contemporary architecture – the conformism of architects who agree to create mindless, flashy forms, merely to maintain the current world order. Mystery machines, fantastic cities, aggressive, biomorphic buildings – the "anarchitecture" of Woods, full of tensions, cuts, broken, damaged and oddly arranged elements triggers attraction and fear at the same time – feelings of pleasure and disgust [17]. The only work of Woods built is The Light Pavilion (together with Christoph A. Kumpusch) in Steven Holl's Chinese Sliced Porosity Block[3] –

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[1] The first album was probably published in 1745 and included 14 etchings dated 1742 by Piranesi himself, who was 22 years old then. The second edition was published in 1761. It had a different title (Carceri d'invenzione di G. Battista Piranesi) and included 16 drawings. Two were added and two swapped. Piranesi also "improved" the graphics. He dimmed them, added lines and details of building elements, making them similar to torture instruments. These "corrections" may actually be regarded as copyright changes not necessary adjustments, because – according to Marguerite Yourcenar – if anything matches the virtuosity of the second version or exceeds it, it is probably only the first version. The essayist favors rather the influence of Rembrandt, preromantism, the attempt of clarifying the idea or changes in the perception of crime, and the concept of justice [23, p. 23].

[2] Victor Hugo saw in them the image of the interior of the Tower of Babel – the expression of human arrogance, the chimeric project leading to inevitable failure and confusion.

[3] The building of Steven Holl in Chengdu, China (2007–2012) with an area over 310,000 m^2 of office, residential, commercial and service spaces (including hotel, restaurants, cafes). Five towers

Ill. 1. G. Piranesi, *Invenzioni capric [ciose] di Carceri*, figure VII (Source: J. Wilton-Ely, *Piranesi as Architect and Designer*, Yale University Press, New York 1993)

four levels of viewing platforms connected by open staircases and supported by sloping, "broken", highlighted beams and columns, changing colours with the Chinese calendar. The structure placed several levels above the ground in one of the buildings of the complex is open to the interior of the square and surrounded on three sides with glass walls, visually continuing its space *ad infinitum*. It is an experimental space, experienced never before like the one of Piranesi, created without the logic of orthogonal, geometric design – "somewhere between traditional architecture and the virtual environments of cyberspace". Its sole purpose is to give a new experience, just like reality provides it – "new challenges to our abilities to understand and to act"[4].

The *Carceri* also present open spaces. Piranesi's drawings have little in common with the real nightmare of prison, the essence of which is closing an individual in a small space like walling in a tomb, The space was "coloured" by poverty, death, vermin and tortures in the Romantic era, and "enriched" by the uniformity of barracks and the hygiene of execution in the twentieth century. *Caprices on prisons* is more an oneiric work – a dream devoid of time (the autonomy of individual figures shows the lack of plot in Piranesi's narrativity) with a "smooth" space, accompanied by "the impression of flight, intoxication coming from touching or exceeding the threshold of impossibility", terror close to ecstasy and "the terrible, inevitable beauty". Margerite Yourcenar sees it as "the dream of stone". The stone is indeed the main material of the Prisons, completely devoid of fauna, flora and other terrestrial elements except for the fire but not open – only forming clouds of smoke – "light and shapeless" [23, p. 31].

Thus the nightmare of the Piranesi's prisons is a nightmare close to the Panopticon – a labyrinthine and yet open space in which avoiding noises and the gaze of observers is impossible – the absolute lack of any privacy and shelter. Manfredo Tafuri sees it as an infinite space without any centre, corresponding to the evolving, Enlightenment society. The world of traditional, ancient values was demolished – with its order and reason – and transformed into the absolute irrationality. The *Carceri* predicted alienation – the "global, voluntary alienation in collective form". "But the prison, precisely because infinite, coincides with the space of human existence" [20, p. 18]. The human mind in Piranesi's works leads simultaneously to its freedom and condemnation[5]. The *Carceri* were critical acts towards the surrounding reality.

The architecture of Peter Eisenman has the same function. "Architecture must be capable of questioning both the traditional way of expressing meaning and of solving the

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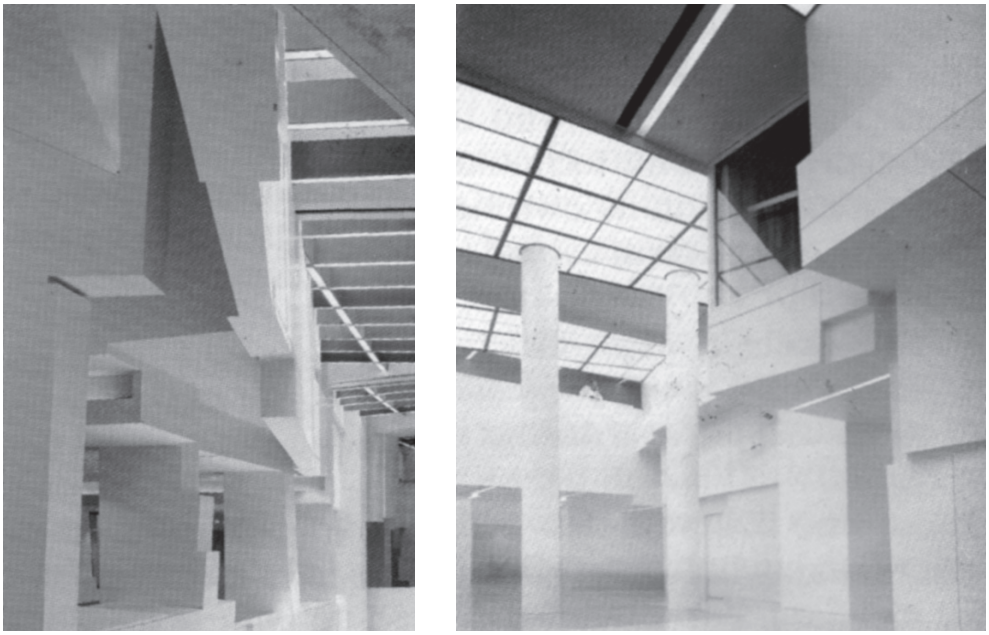
surround a multilevel square (formed on the basis of Du Fu's poem) with symbolic water gardens – skylights. Above the square in three openings in the buildings three pavilions are located: The Pavilion of History by Steven Holl Architects The Light Pavilion by Lebbeus Woods and the Local Art Pavilion [18].

[4] L. Woods, the description of the project [11].

[5] The failure of resistance against the upcoming changes illustrates according to Tafuri the scene of tortures in the figure II – a fatigued "Superman" surrounded by a bland crowd. At the same time it is known that Piranesi didn't want to show the horror of prison tortures. Only in one drawing is a group of tortured people clearly presented. In the rest of the drawings only tools and small figures in the background appear – torture victims, executioners, and an indifferent audience. These prisons, where there is no time or living nature, closed cells with unsafe here stupidly happy residents, the bottomless abyss with no way out are not ordinary prisons but hells, according to M. Yourcenar [23, p. 41] and M. Tafuri [20, p. 18-19].



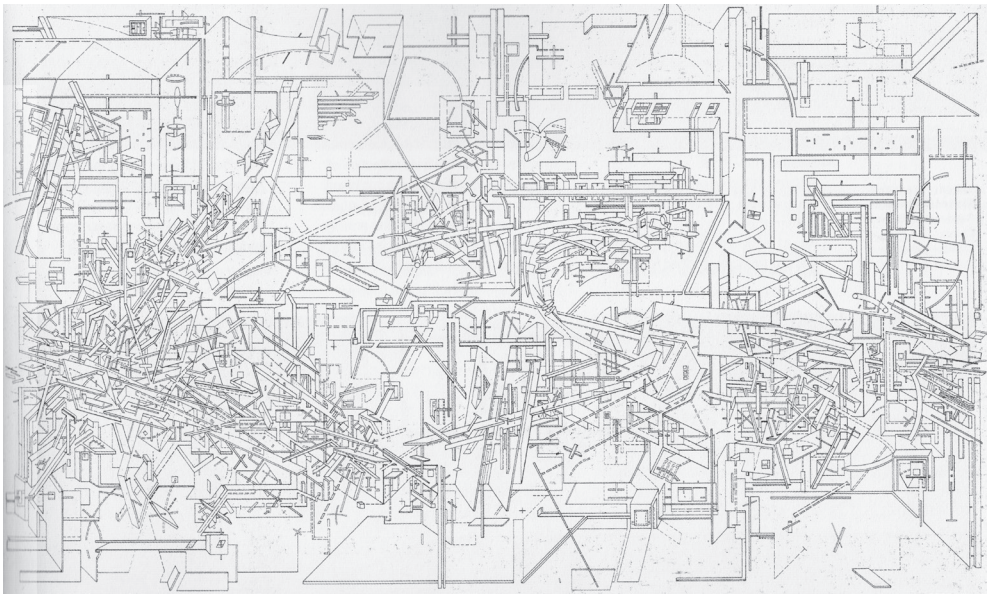
Ill. 2. P. Eisenman, Aronoff Center for Design and Art (Source: L. Galofaro, *Digital Eisenman: An Office of the Electronic Era*, Birkhäuser Architecture, Basel 1999)

problem of function. And thus both the social function and its modes of legitimization"[6]. Eisenman draws his way of thinking and forms from Piranesi, transforming them and interpreting in his own act of creation. Various analogies with the *Carceri* may be traced in the example of the Aronoff Center of Design and Art (1988–1996, Cincinatti, Ohio), the reconstruction and extension of the college of design, architecture, art and planning. Its new section accommodates exhibition spaces, offices, studios, a library and a theatre. Its aesthetic stems from its context – the flowing of the surrounding landscape lines and the curves of the existing building. The new school building was created in cooperation with its staff, students and patrons. It challenges the process of contemporary education and its present alternatives, preparing its students to play a significant role in society, to avoid "artificiality and inconsistency". Instead of planning an architectural monument the architect of the Aronoff Center created a building that is supposed to be the result of an evolutionary design process with which users may fully identify themselves [5, p. 11]. Its central space – a hall with a staircase, formed out of intersecting, crashed and dynamic elements in different colours, places its user in a situation of constant discovery instead of explicitly directing their sight and giving a sense of security and spatial orientation. Piranesi used perspective to introduce the viewer into his space – "to reconnect the fragments of a puzzle that proves to be, in the end, unsolvable" [22, p. 26]. Eisenman on the other hand uses modern multimedia technology to create a space that "a body measures and feels", continuous, variable and surprising, a space in which colour emphasizes contrasts and "dematerialises spatial tension" [5, p. 14-18].

[6] From an interview with P. Eisenman, 1997 [5, p. 11].

Buildings of institutions educating in the field of art, which through its form are supposed to sensitize its students and have a broad influence on their perception of the world, are excellent buildings to use the model of the "Piranesian" space of the *Carceri*. It was applied by Eisenman, Coop Himmelb(l)au and also Thom Maine. "41 Cooper Square" (New York, 2004–2009) is a building of the School of Fine Arts combining faculties situated once in three different buildings. It houses: laboratories and educational rooms, exhibition spaces, an auditorium, a hall, multi-purpose spaces, and service facilities. The architecture of the building reflects the ideas of the Cooper Foundation – thorough and innovative education in the fields of art, architecture and engineering. Just like the building standing previously on the site, it was to be distinctive and innovative, and this means not just the modern technologies used in its construction and energy saving solutions, but also its architecture. Its central communicational space creates a kind of "vertical piazza" – a place of social, intellectual, and creative exchange – formal and informal, shaping the academic environment. A grand staircase, surrounded by a construction shaped as a concrete, reticular funnel and placed inside, leads through four levels. Bridges connecting rooms of various functions above it intersect and pass in the space of a glass atrium. Vertical transportation is also possible by lifts, but not all of them stop at each level, making it necessary to change and thus creating more movement [7].

In Piranesi's, "the unparalleled freedom of etching here matches the daring spatial play of an architect escaping from the limitations of conventional perspective" [24, p. 12]. Delusions not due to incorrect perspective, but the construction of a perspective impossible to receive unambiguously – a world enclosed and mathematically infinite at the same time [23, p. 35].



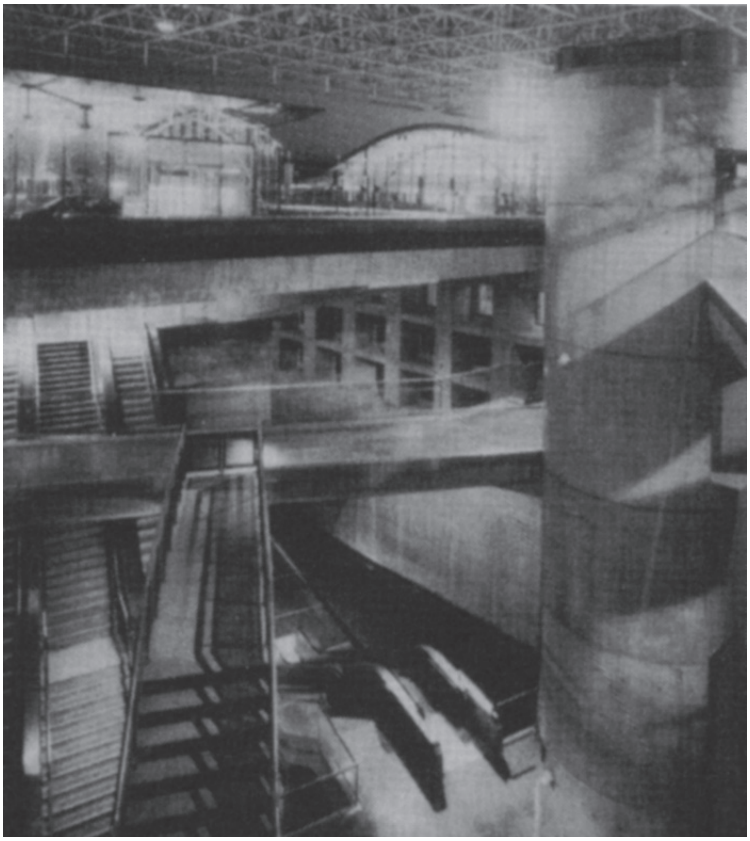
Ill. 3. D. Libeskind, *Micromegas* (Source: N. Spiller, *Visionary Architecture, Blueprints of the Modern Imagination*, Thames & Hudson, London 2006)

Daniel Libeskind's drawings make such an impression. The series of "Micromegas" graphics (1979) shows twisted, free compositions with accumulated architectural elements which do not play the role of spatial signs but rather "post-apocalyptic tableaux" create an infinite space without any centre or borders, producing feelings of uncertainty and confusion. Without any scale or the ability to read any close or distant plans it is impossible to identify the viewed space and to assign it to the world of real things or not. Libeskind also used such spatial tricks in his Jewish Museum in Berlin, producing private and collective palimpsests, creating an experience that is always an attempt of presence lived in the presence – "even if it is the presence of absence", such as the experiences of exile or death [17, p. 152-153; 16, p. 40].

Sloping ramps and columns, walls of varying plans and divisions, freely positioned openings, glass partitions not limiting the space running "to infinity" are visible in all of Coop Himmelb(l)au's architecture and in the expansion of the building of the Munich Academy of Fine Arts they combine zones with different functions (workshops for painting, sculpture, photography, media, and printing) – university departments. The building (1992–2005; the extension of the academy built in 1876) is located at the junction of the facades of the *Leopoldstraße* and *Akademiestrasse* buildings, various shattered buildings of the *Schwabing* district, and the green spaces of *Leopoldpark* and *Akademiegarten*. The form of the building corresponds to its purpose – the diverse ways of creativity – and its context, creating a series of interpenetrating spaces between the park and municipal buildings: the glass façade and the academy gate, a courtyard, the terraces of studios and the gate to the park [2]. "We want an architecture to have more. Architecture that bleeds, that exhausts, that whirls and even breaks. Architecture that lights up, that stings, that rips and under stress tears. Architecture should be cavernous, fiery, smooth, hard, angular, brutal, round, delicate, colourful, obscene, voluptuous, dreamy, alluring, repelling, wet, dry and throbbing. Alive or dead. Cold – then cold as a block of ice. Hot – then hot as a blazing wing. Architecture must blaze!" we read in the manifest of the Coop Himmelb(l)au group [13, p. 462].

Searching for the origin of the *Carceri*, Margarite Yourcenar indicates the biography of Piranesi, who survived the plague at a young age. She writes that primarily the fever sharpened the perception of the artist to the limits of hyperactivity – almost torture. This could have caused his stunning impetus and mathematical folly, but also the simultaneous attacks of agoraphobia and claustrophobia, the fear of the enclosed space of prisons, which might have dictated the *Carceri* to Piranesi [23, p. 25].

In *l'Espace Piranesien* Rem Koolhaas has found a link between the open space of prisons and the network communication of Euralille. This new shopping centre and the TGV station in Lille, added to the existing railway station (1989–1995), connects the historic centre of the city with its suburbs. The square building measuring 50 × 50 m and 25 m high is a "shell" covered with glass, containing the "urban chaos" of the living city – people and vehicles moving in all directions. In the vast space similar to the one of the *Carceri* one can see only the structure and movement: stairs, ramps, elevators, TGV tunnels and the local metro and also access routes for a three-level car park and a highway. Tafuri describes Piranesi's *Carceri* as a metaphorical, labyrinthine journey without end. In the Koolhaas'es building this journey receives the literalness of the realized object and paradoxical notion. *L'Escape Piranesien* is real – made of metal, glass and concrete, but instead of clarity and conciseness helping passengers moving in this transport hub, which would be consistent with its essence, it creates a kind of horror by adding the element of a labyrinth to the "beloved" themes of Koolhaas: density and size [9, p. 320-331; 8].



Ill. 4. R. Koolhaas, *l'Espace Piranesien* (Source: N. Temple, *Disclosing Horizons, Architecture, perspective and redemptive space*, Routledge, London 2007)

The basis for the richness of the narrative references of contemporary architecture to the figures of *Carceri* should be probably looked for in the depths of the human psyche. Thomas de Quincey in his *Confessions of an English Opium-eater* (1821) gave the *Carceri* as the best example of architectural visions that drive him to the state of excitement under the influence of opium. It is therefore neither a rational architecture nor pure functionalism, but one the creation of which is accompanied by a euphoria similar to the ecstasy while creating music or dance. The architecture not "analogous to the salon conversation in stone, but a unique symbol of faith" – "a passionate expression transferred into the stone of his ideological credo ...", which in the works of Eisenman, Maine, Woods, Libeskind and Rem Koolhaas communicates novelty, experiment, variability and the dynamics of movement. The fever that Piranesi "balanced" in the rest of his works. "Without the Views and the Antiquities the phantasmagoric world of the Prisons would have seemed too polite and artificial to us, we could not recognize the reality from the elements appearing in the dream, like an obsession. On the other hand, without the almost demonic boldness of the Prisons and in the seemingly classic Views and Antiquities we could not hear the deep song – visual and metaphysical at the same time – of the meditation on the life and death of forms" [23, p. 15, 16].

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ZDZISŁAWA TOŁŁOCZKO*

AT THE CONFLUENCE OF ART NOUVEAU AND ECCLECTIC EARLY MODERNISM IN RIGA'S METROPOLITAN ARCHITECTURE

U ZBIEGU ART NOUVEAU I EKLEKTYCZNEGO WCZESNEGO MODERNIZMU W ARCHITEKTURZE METROPOLITALNEJ RYGI

A b s t r a c t

The aim of this paper was to draw attention to the coincidence of streets intersections ending, in general, in corner buildings making up typical and picturesque parts of the townscape of the 19th c. European cities, including the central quarter of Riga. This type of town-planning establishments perfectly compose with the art and aesthetics of *Art Nouveau* in Riga. An additional and very important component of the town-planning-architectonic solutions is the decorative finial of the corner houses (not only in *Jugendstil*, but also the Latvian national romanticism) creating a harmonious composition in respect of art and town-planning, ideally completing the townscape of this Baltic metropolis.

Keywords: Latvia, Riga, Cracow, New York, London, Berlin, history of architecture and city-planning, Art Nouveau, Modern Art, Jugendstil, National Romanticism

S t r e s z c z e n i e

Celem prezentowanego artykułu jest zwrócenie uwagi na koincydencję zbiegów ulic zakończonych na ogół wyraźnymi narożami, tworzącymi typowe, a jednocześnie malownicze, fragmenty krajobrazu dziewiętnastowiecznych miast europejskich, w tym również śródmieścia Rygi. Tego rodzaju założenia urbanistyczne doskonale komponują się ze sztuką i estetyką Art Nouveau w Rydze. Dodatkową i jednocześnie niezwykle ważną komponentą rozwiązań urbanistyczno-architektonicznych są umieszczone na narożach ozdobne zwieńczenia (nie tylko w stylu Jugendstil'u, ale także łotewskiego narodowego romantyzmu) komponujące się wspólnie i harmonijnie pod względem artystycznym i urbanistycznym, uzupełniając znakomicie pejzaż tej nadbałtyckiej metropolii.

Słowa kluczowe: Łotwa, Ryga, Kraków, Nowy Jork, Londyn, Berlin, historia architektury i urbanistyki, Art Nouveau, Modern Art, Jugendstil, Narodowy Romantyzm

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The title of the essay requires some explanation from the formal point of view and as to the substance. The work contains *eo ipso* double coding included in the title of the essay whose contents and structure is the architecture of Riga's *Art Nouveau*, best known in Latvia as *Jugendstil*, in Poland as *Secession*. The word secession means, as commonly known, separation, breaking away, disassociation of the new styles, i.e. *Modern Art*, which in the intention of its creators was to be a dissent from the historical or canonical rules of historical or neo-historical styles. *Art Nouveau*, however, through the nearly twelve years of it existence, despite enormous and overwhelming success of the style, was never a style consistent in its artistic and creative ideology. Its architecture, with specific metaphysics and symbolism, created an unprecedented for the turn of the century (19th and 20th) unique yet pluralistic ontology and gnosiology of art at the brink of the Great War, marking the modern epoch. In other words, breaking with the classical typology was not completely lasting and permanent. Nevertheless, *Art Nouveau* emphasised the decorative and the ornamental, and the artists and architects competed with each other in creating new forms of artistic expression the aim and ambition of which was to discard, or reduce drastically, the historicism and its tradition of many ages. And yet, the creators of *Art Nouveau*, *Jugendstil*, or the so-called Young Poland style in Poland, did not completely break up with the past. They were critical of conservatism but did not deprecate the tradition. And this is where the double coding in style lies, which we find in the art of *Jugendstil* in the architecture of Riga[1].

The present essay is an attempt at extending the knowledge of the less known aspects of Riga's *Art Nouveau* in Poland. The main aim is to unveil the interdependencies between the art of *Jugendstil* broadly speaking and town-planning design in this style *Jugendstil*[2]. One of the first complex and pioneering-scientific works on the *Art Nouveau* architecture in the Polish architecture is the article by two authors, Renāte Čaupale and Zdzisława Tołłoczko, *Secession and modernism in Riga. Half a century of Latvian architecture – a pearl in the European cultural heritage.* Part I. *On the threshold of sovereignty (Secesja i modernizm w Rydze. Pół wieku architektury łotewskiej – perłą europejskiego dziedzictwa kulturowego.* Część I. *U progu suwerenności*[3]. The present text is an extension of this article by – how characteristic of similar ones of those in Riga to ones we find in Paris, Berlin, Budapest or Prague– corners of the apartment buildings (most often formed at right angle, they are like

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[2] M. Wallis, *Secesja*, Warszawa 1984, p. 98-108; K.J. Sembach, *Art Nouveau. Utopia. Reconciling the Irreconcilable*, Köln 1991; G. Fahr-Becker, *Secession*, Königswinter 2004, p. 179-194; M. Costantino, *Art Nouveau*, London 1994; S. Grosa, *Art Nouveau in Riga*, Rīga 2003; J. Krastiņš, *Pa Rīgas jūgendstila pēdām / Sur les traces de l'art nouveau a Riga. Guide. Following the Traces of the Art Nouveau in Riga*, Bruxelles 2003, p. 176.

[3] R. Čaupale, Z. Tołłoczko, *Secesja i modernizm w Rydze. Pół wieku architektury łotewskiej – perłą europejskiego dziedzictwa kulturowego*. Cześć I. *U progu uzyskania suwerenności*, Czasopismo Techniczne, z. 13-A/2005, p. 3-25; *Pamiatniki isskustwa Sowietskowo Sojuza. Biełorussia. Litwa. Łatwija. Estonia*, Moskwa 1986; *Riga und seine Bauten*, Riga 1903; L. Benevolo, *History of Modern Architecture*, vol.1, London 1960; H. Saalman, *Haussmann: Paris Transformed*, New York 1971.

wedges cutting into the development of part of the old city and modern city centre) that create a singular intersection of streets often, though not always, making up star-shaped squares from which run streets, boulevards, avenues etc., etc. in radial pattern. Place de L'Étoile in Paris (Georges Haussmann, 1852–1870) is an obvious example or 'Les Grands magasins du Printemps' in Paris (Paul Sédille, 1882–1889). There is no such beautiful town planning solution in Riga but it should be remembered that the efforts to create a town planning ideal were always accompanied by construction impetus independent of its art merit and aesthetics. This was well understood by the father of modern town planning Ildefonso Cerdà Suñer and his followers, G. Haussmann in particular. One of the first examples of a modern ideal city – a completely new city planning design – is Washington D.C. designed by Pierre Charles l'Enfant. However, towards the end of the 19th century this capital was overgrown with dense development. On the one hand, the second half of the 19th c and the 20th c itself professed the technical, constructional and social progress, on the other hand this period valued the tradition, old habits and customs. And as ages ago, it adapted itself to the needs of the inhabitants, to the economic conditions and territorial structure. In other words, being has always determined consciousness not only economic but also aesthetic. In our context, the form of architecture and construction is determined by functions which in turn are determined by ownership relations. In other words, what frequently decides of a project is a plan which is adapted to the cadastral survey or a building lot, which is accompanied by the intrinsic financial value. On the other hand, various theories and avant-garde ideas are derivative in nature, sometimes added *ex post.* Therefore the present remarks refer to historical cities in which innumerable examples of this double coding are implanted. Riga is exactly such a case. This medieval city founded in 1201 outstandingly illustrates the accumulation of layers and growth of the urban tissue, which like tree rings unveils the development of successive stages of the expansion of the city and its building culture. And, as in the case of similar old cities, their location was determined by economic, geopolitical, geophysical and natural conditions as well as conditions not necessarily rational, rather spontaneous. Architecture is determined not only by cold technical calculation but also feelings *Kalós Kagathós*, aesthetic intuition, interpreted by "style is the man", and architecture an eternal, invariable mirror of each time.

The historical centre of Riga was entered in the UNESCO World Cultural Heritage list in 1997. The entered objects include both the oldest ones, dating back to the 13th to 14th centuries found in the old town, but also those from the 19th c., Hanseatic, in Riga's suburbs, representing the styles from the classicism to *Secession*[4]. Of such magnificent certificate cannot boast, for instance, New York, founded as New Amsterdam. Obviously, the potential and area of both metropolises are incomparable, but there is a considerable *iunctim* of the centres of the two cities. In the centre itself the corners of great apartment buildings were designed and planned more or less consciously, located at the intersection of principal streets and avenues. Let us mention, then, two examples of this kind of characteristic and extremely picturesque townscape accents of architecture and construction. They date back to two closely related albeit different epochs, but they are united by a special identity and similarity despite the geographic remoteness. To put things figuratively, what is meant here are the sections of such great importance for the image of the city centre, whose arrangement uncannily resembles the "Pischinger cake", made up of buildings designed on the plan of triangle, the buildings giving the impression of being an ornamental piece of this cake.

[4] *Miasta marzeń: Ryga*, Warszawa 2009, p. 15.

Fig. 1. Flatiron, Fuller Building. New York

One of these examples is the Flatiron Building, erected in 1902, based on the design of Daniel Hudson Burnham in the *Beaux-Arts* style. This multifunctional skyscraper was located at the intersection of Broadway and 23rd Street in Lower Manhattan. It is a typical example of an extremely attractive architecture of the period (early modernist). From the point of view of the object of the present essay, however, primarily it is an outstanding example of adaptation and accommodation of architecture in which the idea and form of the building is determined by the building lot. And it is this principle, and practice, actually, that was followed at the turn of the 20th c., continuing in this way centuries-long practice of utilising the invaluable building grounds of large cities. The other example is Northern Gate Building in Riga, best illustrating this construction custom and tradition, respecting the historical context of the old city. This multifunctional edifice was designed by Andris Purviņš and Andrejs Graumanis and executed in the years 1998––2004. It, too, was planned on a triangle and located at the intersection, or more precisely, at the corner of Brīvības Street and Cēsu Street. This project, in the spirit of the late post-modernism, is to a certain extent a continuation of such city planning and architectonic ideas of the olden days[5] (Fig. 1, 2).

Obviously, the proportions between the two cities could be compared to the relation between David and Goliath. All the same, without risking much, analogies in style, city planning and aesthetics, socio-cultural aspects even, between the two metropolises can be easily pointed out. In the same way as New York was at the turn of the century the largest business centre in the USA, Riga was the largest centre of industry and commerce as well as the largest port of the Russian Empire. In the second half of the 19th c. the social structure of Riga changed from predominantly German into gradually native Latvian population. The boom of the reign of Alexander II lasting till the fall of tsar Nicolas II fuelled the rapid

[5] H.J. Cowan et al., *Najwspanialsze budowle świata. Arcydzieła architektury i sztuki budowlanej*, T. Howells (red.), Warszawa 2003, p. 104-105; A.S. Alexiou, *The Flatiron. The New York Landmark and the Incomparable City that Arose with it*, New York 2010; P Gössel, G. Leuthäuser, *Architecture in the Twentieth Century*, Köln 1991, p. 11-79; J. Krastiņš, I. Strautmanis, *Riga. The Complete Guide to Architecture*, Rīga 2004, p. 220.

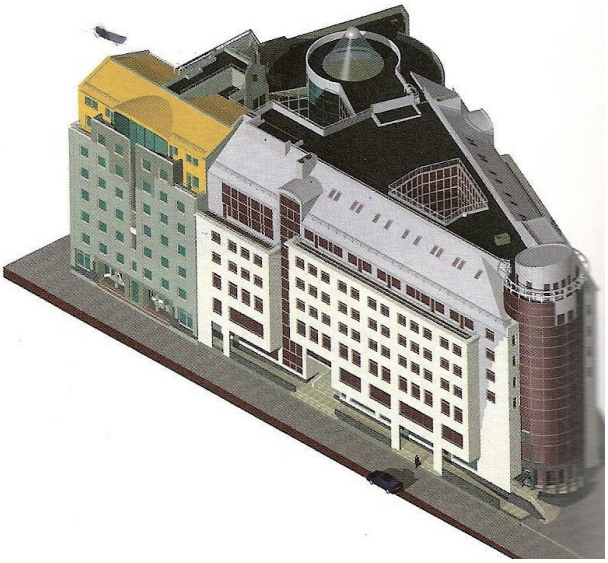

Fig. 2. Northern Gate Building. Riga

growth of wealth of the city and its building expansion. Suffice it to say that in the years between 1885 till the end of the tsars Russia in 1917 the population of Riga grew from ca. 175 thousand to half a million. What was of great importance for the city's urban development in 1860s and 1870s was the demolition of the medieval fortifications and walls, which were replaced by boulevards and avenues built up with splendid edifices in the Neo-Gothic and Neo-Renaissance styles, followed by the spirit of *Jugendstil* and *Secession*. The creator of the modern Riga Johann Daniel Felsko (1813–1902), an architect and city planner, gained unforgettable glory. His pioneering and modern urban planning projects greatly contributed to the creation and full bloom of *Art Nouveau* in Riga's architecture[6].

Jugendstil and its architecture creates in the city centre a huge complex of over eight hundred buildings in this style, or its stylistic filiations. As Renāte Čaupale and Zdzisława Tołłoczko point out elsewhere, Riga's *Art Nouveau* differs from western European models in, for instance, Belgium or France. The most numerous references to *Secession* can be found in the works of Michail Eisenstein, although this architecture was permeated with the late historicism with elements of eclecticism extremely freely interpreted. Generally speaking, it is an architecture of traditional solids, with the traditional arrangement of windows and ornamentation. The fact that these ornaments are secession ornaments can be recognised only from very close, from a distance they are uncannily similar to decorations resembling historicism, for which broadly understood expressionism was not completely alien.

[6] Z. i T. Tołłoczko, *Johann Daniel Felsko (1813–1902). Architekt i urbanista – twórca nowoczesnej Rygi*, [in:] idem, *Architectura sine historiae nihil est. Z dziejów architektury i urbanistyki ziem Łotwy*, Kraków 2013, p. 173-183; D. Lāce, *Johana Daniela Felsko jeguldījums dzīvojamo ēku celtniecībā 19. gadsimtā*, [in:] *Archiektura un maska Rīga. Idejas un objekti*, Rīga 2004, p. 82; D. Bruģis, *Historisma laikments*, [in:] *Latvijas mātkslas vēsture*, Rīga 2005, p .206-207.

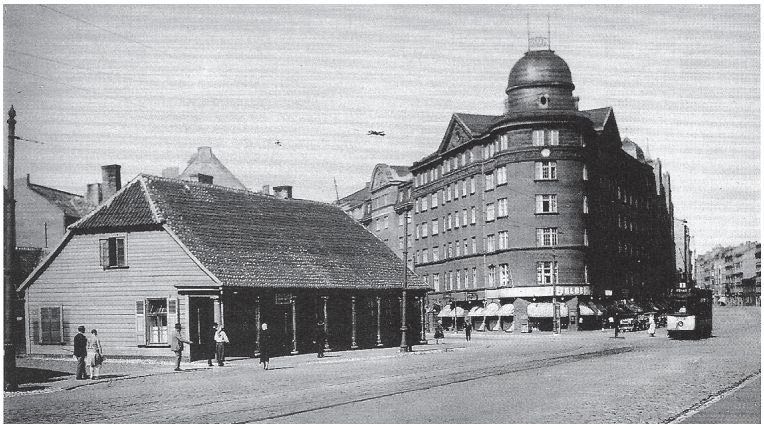

Fig. 3. The Dwelling House on the corner of Alexander and Miera Street.
Riga. G. von Tīzenhauzens, 1913 (destroyed)

The atmosphere of this architecture is invariably related with the Baltic-Nordic culture, represented by, to mention but a few, Edvard Grieg, Stanisław Przybyszewski, Johan Julius Sibelius, August Strindberg and Henrik Ibsen. The tone of cosmopolitan *entourage* was given to the city by the original native art of painting, full of nostalgia and pensiveness, which does not mean that the Riga of the time seemed a temple of sadness and melancholy. The city reverberated with life, and welfare and affluence did not mitigate enthusiasm and admiration for art[7]. The lively interest in culture is proved by the existence of several theatres: German, Russian and Latvian later on. Riga's inhabitants did not despise other forms of entertainment, including liking of good wine and varied cuisine, which were proof of stable favourable financial-economic circumstances and satisfying existence. It is in this period of time that a few hundred of dwelling houses were built, which are a concrete proof of the culture of *fin de siècle* and extraordinary prosperity, of which we are reminded by some photographs[8] (Fig. 3, 4, 5).

The economic expansion of the Baltic countries went together with growing interest in revitalising the national consciousness and ethnic culture of Latvians. This is why the *Jugendstil* trend, international to some extent, in its Latvian version originated the native architecture based almost entirely on the national and folk tradition, which this filiation of style was called in Latvia *National Romanticism.* This trend is characterised by elements

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[7] M. Culot, *Belgium. Red steel and blue aesthetic*, [in:] *Art Nouveau Architecture*, *op.cit*., p. 79-102; *Miasta marzeń: Ryga*..., *op.cit*., p. 149-165; F. Loyer, *France. Viollet-le-Duc to Tony Garnier: the passion for rationalism*, [in:] *Art Nouveau Architecture*, *op.cit*., p. 103-136; Z. and T. Tołłoczko, *Architektura i film czyli o mniej znanym ojcu słynnego reżysera i teoretyka kina (Architekt Michaił Eisenstein, 1867–1920)*, [in:] idem, *Architectura sine historiae*..., *op.cit*., p. 251-261; I. Latham, *Germany. Jugendstil: the early morning of the Modern Movement*, [in:] *Art Nouveau Architecture*..., *op.cit*., p. 171-196; R. Čaupale, Z. Tołłoczko, *op.cit*., p. 3-25; S. Raša, *Mihails Eizeņštein. Tēmas un symboli Rīga Jūgendstila arhitektūra 1901–1906* / S. Rush, *Mikhail Eisenstein. Theme and Symbols in Art Nouveau Architecture of Riga 1901–1906*, Rīga 2003.

[8] J. Lejnieks, *Rīgas Arhitektūra / Architiektura Rigi / Riga's Architecture*, Rīga 1989, p. 31 i n., 68 i n.,106 i n.,109 i n.

Fig. 4. Otto Scharz's Café, the interior of wine and oyster room. Riga. XIX/XX c. (postcard)

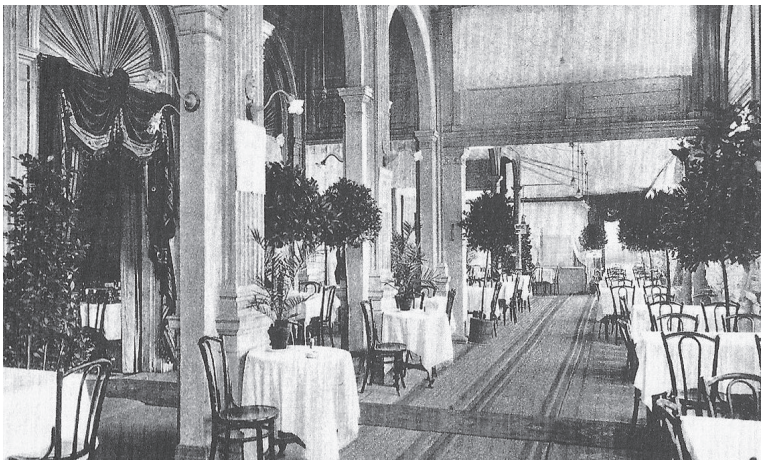

Fig. 5. A winter restaurant in Wohrmann's Garden. Riga. 19th c. (destroyed)

of applied decorative art which drew its inspiration from the folk art of building. In this style we find the tendency of the consistent use of natural construction materials, including popular ornamentation as an active motif of shaping the façade. Some buildings of the period in Riga do not have the ornaments typical of Europe but is associated with the Latvian spiritual values[9]. Nevertheless, regardless of the patriotic and national ambitions, the Latvian

[9] Z. and T. Tołłoczko, *Z zagadnień narodowego romantyzmu w architekturze Helsinek i Rygi na przełomie XIX i XX wieku. Przyczynek do dziejów historyzmu i eklektycznej secesji w sztuce około 1900*, [in:] idem, *Architectura sine historiae...*, *op.cit.*, p. 263-300.

architecture, especially that of Riga, continued to draw from the experience and impulses flowing from Berlin[10].

The architecture of New York, Berlin, or Riga – despite ambitious and broadly reaching plans of introducing order to city planning of these cities – continued to be characterised by dense development, which the early modernists protested against attempting a less compact city planning, new settlements in particular. But it is this dense, even tight development that constituted the compact tissue of the historical cities at the threshold of modernism. This old substance of urban developed, which used to meet with criticism especially in the first half of the 20th century, due to the elimination of coal-fired heating, now has electrical or gas, or some even more ecological heating systems. In this way something like revalorization or revitalisation of the development of the old Riga took place and the city recovered its old grandeur and splendour[11]. *Jugendstil* and its mutations added to Riga's architecture a new vigour and a new dimension of style[12].

However, the aim of the present essay is not another description of *Art Nouveau* typology in Riga, but the intention is to show some singular examples, less commonly known solutions in which architecture and city planning combine with tradition and progress into one. In other words, it is an embodiment of the idea of double coding, a harmonious composition of modernity – *Modern Art* and the conservative. Riga's *Art Nouveau* reflects (as in a lens) this coincidence which can be observed in the architecture and planning of the network of streets, and whose unquestionable decoration are the corner houses, frequently finished with an acute or truncated angle. Such 'corners' of buildings are particularly picturesque and they emphatically correspond with the whole townscape of the city centre, while being used for commercial purposes, mainly those of presentable and luxurious shops, or smart restaurants etc., etc. And here are some examples of such buildings (usually multifunctional) erected on a triangular plan, which not infrequently have a mixed style manner, i.e. *Jugendstil* and *Eclecticism*: apartment building, Raiņa Street 1, Robert August Pflug, 1877; Bank, Krišjāņa Barona Street 3 and Elizabetes Street, Jānis Alksnis, 1911; Bank, Krišjāņa Barona Street 14 and Elizabetes Street 14/1, Ernests Pole, 1909–1910; multifunctional building, Marijas Street 11, Konstantīn Pēkšēns, 1897; multifunctional building, Krišjāņa Barona Street 13/15, Jānis Alksnis, 1904; multifunctional building, Tērbatas Street 7, Konstantīn Pēkšēns, 1899; multifunctional building, Eduarda Smiļģa Street 5/1, Jānis Alksnis, 1903[13]. This dense and compact

Fig. 6. Apartment building, plan. Riga. A Pflug, 1877

[10] Z. Tołłoczko, *Architektura i społeczeństwo. Przegląd zagadnień budownictwa i urbanistyki w Niemczech odnokoło roku 1850 do około roku 2000. Od późnoromantycznego historyzmu do późnego socmodernizmu*, Kraków 2005.

[11] S. Cantacuzino, *Re/Architecture. Old Building / New Uses*, New York 1989.

[12] J. Glancem, N. Foster (Słowo wstępne), *Historia architektury*, Warszawa 2002, p. 166, 164-167.

[13] J. Krastiņš, I. Strautmanis, *Riga. Complete Guide...*, *op.cit.*, p. 94, 108, 113, 148-150, 263; J. Krastiņš, *Secesyjna metropolia. Ryga w międzynarodowym kontekście*, [in:] *Sztuka około 1900*

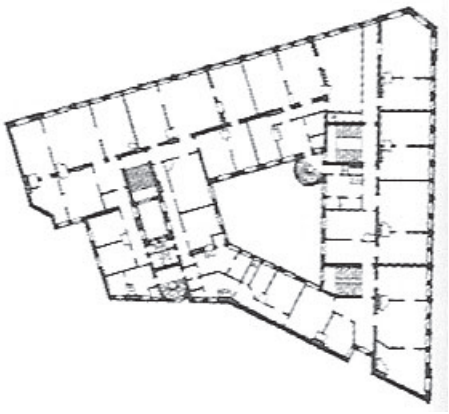

Fig. 7. Multifunctional building, plan. Riga. K. Pēkšēns, 1897

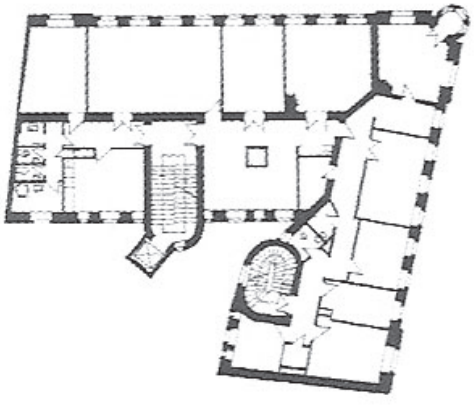

Fig. 8. Multifunctional building, plan. Riga. J. Alksnis, 1903

street network in which such corners are revealed is shown in the projections (mainly of basement). Let us select some examples of such plans illustrating this city-planning-aesthetic mosaic of the development of the centre. On the one hand, the renewed houses are pleasing to the eye, on the other hand a kind of nostalgia is evoked for the atmosphere of historical cities gone forever. And to make a random selection of the projections of objects such as: apartment building A. Pfluga, 1877; multifunctional building K. Pēkšēns, 1897; multifunctional building J. Alkisnis, 1904 and multifunctional building J. Alkisnis, 1903 (Fig. 6, 7, 8, 9).

The plan projections of these buildings were and still remain extremely characteristic, giving the cities additional townscape values. But there is in Riga's townscape an outstanding object, the multifunctional building in Smiļģa Street 5/1, J. Alkisnis, already mentioned, with its special location on the plan resembling a wedge or a clothes iron. Similar reminiscences in style and aesthetics and city planning analogies are observed owing to Jānis Krastiņš and Ivars Strautmanis, whose building in Riga, erected in 1903 is compared, *toutes proportions gardées*, with Daniel H. Burnham's Flatiron Building in New York from 1902[14]. Therefore, a comparative analysis should

Fig. 9. Multifunctional building, plan. Riga. J. Alksnis, 1903

w Europie Środkowej. Centra i prowincje artystyczne, Materiały międzynarodowej konferencji zorganizowanej w dniach 20–24 października 1994, P. Krakowski, J. Purchla (red.), Kraków 1997, p. 167-169.

[14] J. Krastiņš, I. Strautmanis, *Riga. Complete Guide...*, *op.cit*., p. 263; J. Krastiņš, *Rīgas Arhitektūras Meistari 1850–1940 / The Masters of Architecture of Riga 1850–1940*, Rīga 2002, p. 222-235; G. Fahr-Becker, *Secesja*, *op.cit*., p. 213-312; J. Krastiņš, *Vācu Arhitekti Latvijā 19. gs. un 20. gs. sākumā / Deutsche Architekten in Lettland im 19. und anfang des 20. Jahrhunderts*, [in:] *Vācu*

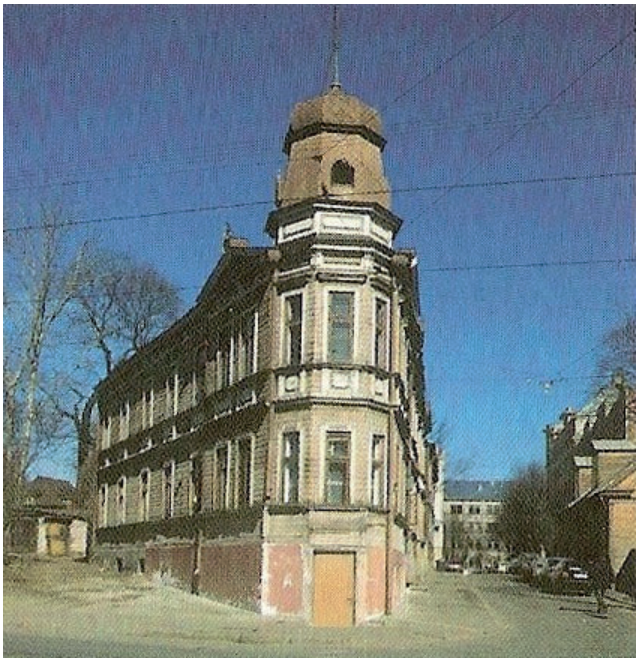

Fig. 10. Multifunctional building. Riga. J. Alksins, 1903

Fig. 11. Multifunctional building. Riga.
H. Scheel, F. Scheffel, 1902

Fig. 12. Multifunctional building. Riga.
K. Felsko, 1902

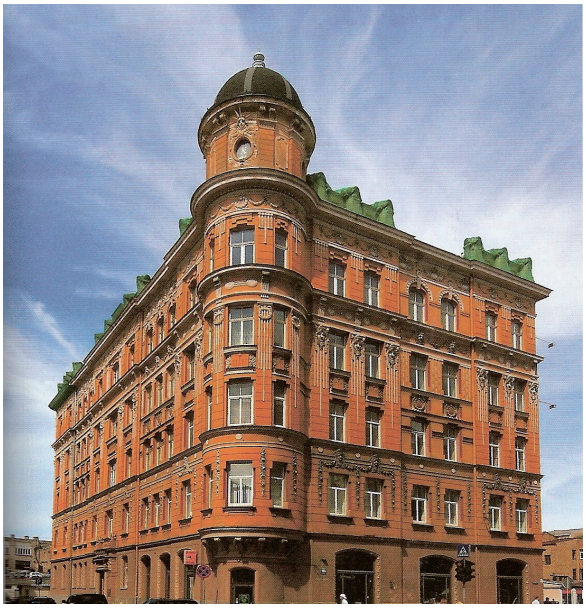

Fig. 13. Multifunctional building. Riga. A. Witte, 1904

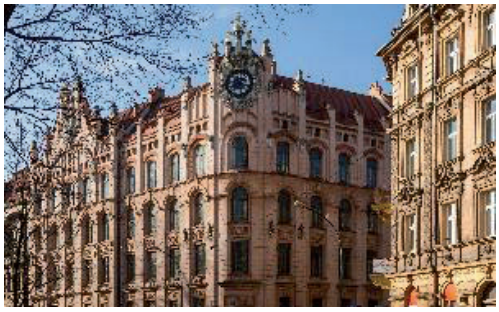

Fig. 14. Trade and Economic High School. Cracow. J. Zawiejski, 1904–1906

Fig. 15. Ohrenstein's building. Cracow. J. Zawiejski, 1911–1913

be made within the East-Central Europe, considering the same style of the art and epoch, studying some objects in Riga and Cracow in Poland. What is meant here are Riga's buildings such as: multifunctional building, corner of Smilšu Street 8, Heinrich Scheel and Friedrich Scheffel, erected in 1902; multifunctional building, corner Baumana Street 20 and Krišjāņa Barona Street, Karl Felsko from 1903; multifunctional building, corner, Brīvības Street 105,

Arhitekti Latvijā / Deutsche Architekten in Lettland, Rīga 2013, p. 92-97; idem, *Heinrihs Šēls (17. 05. 1829, Hamburgā – 13. 04 1909, Rīga) un Fridrihs Šefels (1865, gadā Liepājā – 1913, gadā) / Heinrich Scheel (17, Mai 1829, Hamburg – 13, April 1909, Riga) und Friedrich Scheffel (1865, Liepāja – 1913)*, [in:] *Vācu Arhitekti…/ Deutsche Architekten…*, *op.cit*., p. 126-133.

August Witte, from 1904, compared with the parallel building of this type in Cracow, e.g.: the Trade and Economic High School at the corner of Kapucyńska street 2 and Podwale, built in the years 1904–1906; Ohrenstein building at the corner of Dietla Street 42 and Stradomska Street 27 from the years 1911–1913 – both objects designed by Jan Zawiejski[15] (Fig. 10, 11, 12, 13, 14, 15).

To remain with the common features of *Jugendstil* in Riga and Cracow, the convergence of artistic means applied in the architecture of both cities should be mentioned. This means and artistic factor of a symbolic value are manifested by the globe at the top of two houses – the metaphor of commerce, industry and the shipping trade. These are found at the corner of Teātra Street 9 and Vaļņu Street in Riga (architects Heinrich Scheel, Friedrich Scheffel, 1903–1904; sculpture – August Volz)) and "The House under the Globe" ("Dom Pod Globusem") at the intersection of Długa Street 1 and Basztowa Street in Cracow (architects Tadeusz Stryjeński, Franciszek Mączyński, 1904–1906; sculpture – Konstanty Laszczka). The building in Teātra Street 9 is obviously and eclectic compromise of style, where proportionally selected elements of Neo-Renaissance, Neo-Baroque and *Art Nouveau* function together. In other words, the work of H. Scheel and F. Scheffel is a contemporary echo of Neo-historicism and modern architecture. On the other hand, "Dom Pod Globusem" designed by T. Stryjeński and F. Mączyński, is one of the most interesting examples of the early Modernism, and at the same time, an exemplification of the *Vienna Second Secession*, or an absorption of the Berlin school of architecture of the turn of the 19th c. The monumental decorative element in the shape of the globe in both examples indicates that we have to do with an aesthetic-artistic convergence and double coding of meaning[16] (Fig. 16, 17).

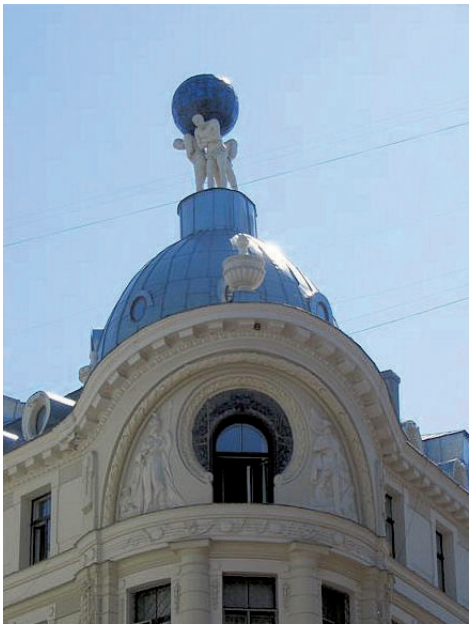

Fig. 16. Multifunctional building, elevation fronting. Riga. H. Scheel, F. Scheffel, 1903

[15] J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 54; J. Krastiņš, *Rīgas Jūgendstila Ēkas / Art Nouveau Buildings in Riga / Ceļvedis pa Jūgendstila Metropoles Arhitektūru / A Guide Architecture of Art Nouveau Metropolis*, Rīga 2007, p. 20-23, 58-59, 304-305, 362-363; J. Purchla, *Jan Zawiejski architekt przełomu XIX i XX wieku*, Warszawa 1986.

[16] J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 32; Z. Tołłoczko, *Główne nurty historyzmu i eklektyzmu w sztuce XIX wieku*, Tom I, *Architektura*. Podręcznik dla studentów wyższych szkół technicznych. Wydanie drugie uzupełnione i poprawione, Kraków 2011, p. 180, 385; J. Krastiņš, *Rīgas Jūgendstila Ēkas*..., *op.cit*., p. 34-35; R. Čaupale, Z. Tołłoczko, *op.cit*., p. 6-7; Z. Beiersdorf, J. Purchla, *„Dom Pod Globusem"*, Kraków 1997; Z. Tołłoczko, *Architektura i społeczeństwo*..., *op.cit*., p. 32-63; J. Purchla, *Jak powstał nowoczesny Kraków. Studia nad rozwojem budowlanym miasta w okresie autonomii galicyjskiej*, Kraków 1979.

Fig. 17. „Dom Pod Globusem". Cracow. T. Stryjeński, F. Mączyński, 1904–1906

The turn of the 19th c was characterised not only by the trend towards progress and innovation but also appreciation for plastic values of the decorative and traditional-historical detail. And thus in Riga, and in other great centres of architecture, developers, designers and city-planners assigned themselves something like a *pluralistic randez vous* at the inevitable approach of modernism and the first forerunners of the radical avant-garde and the start of the international style. This kind of compromising eclecticism can be illustrated by Neo-Gothic (something like medieval revivalism) references and their artistic filiations in two objects. One is Bank Rossija located at the corner of Smilšu Street 1/3 and Šķūņu Street, designed by Nikolajs Proskurņins in 1906 and the other one a multifunctional building in Brīvības Street 85, by Eižens Laube in 1912. This building, a continuation of the tradition of Riga's Gothic, may be rightly regarded, following Jānis Krastiņš's opinion, as one of the best examples of *Perpendicular Art Nouveau* combined with the German expressionism, represented by the continuity of multi-century relations with the Hansa and the complex culture of Northern Europe and the natural influences of the Orient in the great sea ports. E. Laube's masterpiece in question may be a significant example, a forerunner of those expressionist inclinations that preceded the achievements of Fritz Höger an architect from Hamburg, such as: the building of "Hamburger Fremdenblatt", erected in the years 1925–1926 (Hotel Ramada Renaissance now) in Hamburg. This type of Hanseatic-Nordic associations can be detected many times in other examples in Riga[17] (Fig. 18, 19).

[17] J. Krastiņš, *Rīgas Jūgenstila Ēkas*..., *op.cit*., p. 52, 212-213; J. Krastiņš, *Rīgas Arhitektūras Meistari*..., *op.cit.*, p. 194-209; Z. and T. Tołłoczko, *In horto latericio. Rozprawy z dziejów architekto-*

Fig. 18. Bank Rossija. Riga. N. Proskurņins, 1906

Fig. 19. Multifunctional building. Riga. E. Laube, 1912

nicznych szkół amsterdamskiej i hamburskiej, Prace Komisji Urbanistyki i Architektury 4, O/PAN w Krakowie, Kraków 2000, p. 35-72; P. Bacciarelli, *Fritz Höger. Hanseatischer Baumeister 1877–1949*, Berlin–Kreuzberg 1992, p. 109-111; J. Krastiņš, *Vilhelms Bokslafs (12. 10. 1858, Rīga – 09. 03. 1945, Poznaņā) / Wilhelm Bockslaff (12 Oktober 1858, Rīga – 09 Marz 1945, Posen)*, [in:] *Vācu Arhitekti.../ Deutsche Architekten...*, *op.cit.*, p. 162-171.

A different *modus operandi*, unlike *Perpendicular Art Nouveau*, was followed by Arthur Moedlinger, Friedrich Wilhelm Seubertlich and Theodor von der Osten-Sacken in the bank of Riga (now "Parex") located at the byword corner of Smilšu Street 3 and Mazā Smilšu Street. As in many cases of similar city-planning establishments, also here the high truncated corner makes up the main façade of the building. It may be as well to remember that this structure was completed in 1910, which means it started the twilight of *Jugendstil* and another renaissance of classicism. In fact, it is this building of the bank that serves as an example of the eclectic retrospective with substantial elements of Neo-classicism, in which it does indeed resemble the well known building "Goldman & Salatsch" in Vienna, by Adolf Loos from the years 1909–1911[18] (Fig. 20, 21).

Fig. 20. Bank "Parex". Riga. A. Moedlinger, H. Seuberlich, T. von der Osten-Sacken, 1910

In the kaleidoscope of abundance and variety of Riga's *Jugendstil* architecture we must not omit one of the major representatives, so characteristic of the Latvian architectonic culture, that is *National Romanticism*, which although an extremely original trend itself, was not, however, devoid of the influences of *Art Nouveau*. The interest in national romanticism was manifested in various ways, including urban planning, which is proved by the shape of buildings' corners in exactly this style. On the one hand, structures with features of both *Modern Art* and Neo-classicism were built in the city, on the other hand, construction *à rebours* was practised, *melange* of *National Romanticism* and *Jugendstil.* As a significant example of such architecture and city planning let us refer to the multifunctional building in Alūksnes Street 5 and Krišjāņa Valdemāra Street 18, completed in 1910 based on the design by Augusts Malvess[19] (Fig. 22).

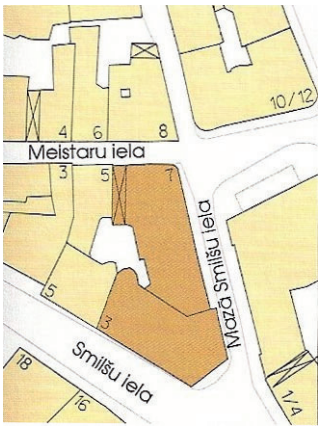

Fig. 21. Bank "Parex". Riga. A. Moedlinger, H. Seuberlich, T. von der Osten-Sacken, 1910

[18] J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 65; J. Lejnieks, *Rīgas Arhitektūra*..., *op.cit*., p. 52-53; J. Krastiņš, *Rīgas Jūgenstila Ēkas*..., *op.cit*., pp. 66-67; G. Fahr-Becker, *Wiener Werksaette 1903–1932*, Köln 1995, p. 68-90; P. Gössel, G. Leuthäuser, *Architecture in the Twentieth Century*, Köln 1991, p. 88-89,64; Z. Tołłoczko, *Główne nurty*..., *op.cit*., p. 271-275,380; L. Münz, G. Künstler, *Adolf Loos: Pioneer of Modern Architecture*, London–New York 1966; Z. Tołłoczko, *Wybrane problemy współczesnej estetyki architektonicznej*, Kraków 1995, p. 152; B. Gravagnuolo, *Adolf Loos – Teoria e opera*, Milano 1981.

[19] J. Krastiņš, *Rīgas Arhitektūas Meistari*..., *op.cit*., p. 250-257; Z. and T. Tołłoczko, *Z zagadnień narodowego romantyzmu w architekturze Helsinek i Rygi na przełomie XIX I XX wieku. Przyczynek*

Fig. 22. Multifunctional building. Riga. A. Malvess, 1910

The multitude, diversity and great variety of architectonic-planning solutions of corners and accompanying intersections of streets, boulevards and avenues (squares less frequently) in the townscape of Riga gives the impression, we might say, of *déjà vu* derived from Berlin rather than Paris. And in this way we come to the beginning of the end of the present story at whose very essence is encapsulated in the unique charm of the traditional-conservative network of streets constituting the social and cultural heart of the city centre. It is the less known architecture of the great Riga that is a memorial to this bourgeois, in fact, aesthetics. It is seemly therefore to at least have a brief glance on some examples of this construction style which has survived till now, and whose lion's share did not survive to the mid 20th c. in Berlin. In Berlin or Hamburg this *esprit* of the bourgeois architecture disappeared completely, in the fires of the II World War and only old photographs remind us of, for instance, no longer extant development of Leipziger Platz, Potsdamer Platz, or Kurfürstendamm. *Belle Époque* actually was gone irrevocably, however, those who are searching for the rudiments of the old – Mediterranean in this case – style, reminiscences of the atmosphere and aesthetic feel can easily find such architecture in the centre of Riga which evaded the horrors and ravages of the war. In almost unchanged shape and decorations have the monuments of the great bourgeois architecture, the powerful trade and industry in Riga survived, whose aesthetic expression was the convergence of historizing eclecticism and *Jugendstil*. And if we continue to consider the

do dziejów historyzmu i ektyczeklnej secesji w sztuce około 1900, [in:] idem, *Architectura sine historiae*..., *op.cit*., p. 288-289.

Fig. 23. Apartment building. Riga. R.H. Zirkwitz, 1899

Berlin parallels, the first to come to mind is the residential building in Vīlandes Street 11 and 13 and Vidus Street, designed by Rudolph Heinrich Zirkwitz in 1899. In this object there are pronounced influences of *Art Nouveau* and, in parallel, predominant accents of "Wilhelmian Neo-Baroque" represented by Paul Wallot, Ludwig Hoffmann, Peter Dybwad, Friedrich von Thiersch, Richard Lucae, Friedrich Hitzig and Julius Karl Raschdorff[20] (Fig. 23).

The maxims of the "Wilhelmian Neo-Baroque" are found owing to the cultural relationship of the German Baltic tribe as well as native architecture of Riga, whose historizing-modernist filiations manifested by absolutely magnificent, extremely elegant edifices – symbols of the grand financial circles and industry. At the turn of the century they were distinguished by the pluralism both social and aesthetic, a community of ethical and economic attitudes and, at the same time, an international, cosmopolitan bond between art and architecture. An illustration of art thus understood, in which eclecticism played a major role, was the architecture in this style for which the terminal end was brought about by the turning point of this century – the year 1914. The model of the cosmopolitan in Riga's architecture is the corner apartment building, also multifunctional, at the intersection of Vīlandes Street 16 and Vidus Street 11, designed by Konstantīs Pēkšēns, erected in 1910. It is an unusual and imaginative compilation of various styles, from *Jugendstil*, elements of the perpendicular mannerism to clear accents

[20] J. Krastiņš, *Rīgas Jūgendstila Ēkas*..., *op.cit*., p. 80-81; P. Dolgner, *Historismus. Deutsche Baukunst 1815–1900*, Leipzig 1993, p. 115-120; C. Mignot, *Architektur des 19. Jahrhunderts*, Köln 1994, p. 162-163; J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 201.

Fig. 24. Multifunctional building. Riga. K. Pēkšēns, 1910

of early-modernist, especially in the dome at the top eof the building. The object deserves special attention owing to its specific note and aesthetic tone of the orientalizing architecture. Such atmosphere announced in architecture the arrival of *Art Déco* with its interiors (Fig. 24).

In Riga, in turn, we meet another example of an architecture extremely monumental, of huge dimensions but multifunctional, in the spirit not so much of the Wilhelmian mannerism as the French *Second Empire*. This impressive building is a certain novelty and a variation of Michail Eisenstein's work, an object probably least reminiscent of the typical characteristic, features of the *Art Nouveau* movement in this architect's achievements. However, due to its location in Alberta Street 13 and Strēlnieku Street 4a, it is appropriate to include this exceptional case in Eisenstein's creative work. After all, it basically did not differ from a modernised version of neo-historicism. Eisenstein completed this work in 1905. Unfortunately, as a result of numerous alterations, the building lost much of its original interior, although the solid itself of the building, decorations and detail were carefully restored and partly reconstructed in the years 1999–2002.

Another example of an architecture in which eclectic aggregates are mixed together, which could be defined as distinct illustrations of both the 'style of the Second Empire' and of the 'Second Reich of Germany', that is the Wilhelmian mannerism, equally well, is the building at the corner of Brīvibas Street 61 and Gertrūdes Street, designed by Aleksandrs Vanags, and completed in 1912. In this structure the Neo-renaissance influences together with *Art Nouveau* ones can clearly be seen, but what is an important decorative element and sculptural composition is reference to Neo-classicism which in those years once again regained its popularity of everlasting classicism. The building, originally multifunctional, for forty years served the Soviet administration of the military, and next was headquarters of the infamous KGB[21].

[21] J. Krastiņš, *Rīgas Jūgendstila Ēkas*..., *op.cit*., p. 104-105; idem, *Rīgas Arhitektūra Meistari*..., *op.cit*., p. 210-221; J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 173.

Fig. 25. Riga Pārdaugava Mutual Credit Society Bank. Riga. J. Alksnis, 1913

It can be thought a malicious snigger twist of history that the monumental building of Riga Pārdaugava Mutual Credit Society Bank situated at the right angle at the intersection of Kaļķu Street 15 and Vaļņu Street can be considered a symbol of other times and political systems. This, so to say, metaphor of the capitalist free market is a work of Jānis Alksnis, built in 1913. It is one of the first frame structures of reinforced concrete to be built in Riga, but it is not the pioneering technological solution that matters here, it is the form and compromise between the influences of the early modernism and historising compilation composed of the Neo-Baroque, Neo-classicism and *Perpendicular Art Nouveau.* It need not be emphasised that this and other intersections of streets ending with corner houses impose a very specific but popular in the 1850s *modus operandi* that is the crowns of these buildings ornamented with tambours of various height, which support the domes or cupolas. To a great extent this type of architectonic *'emploi'* in Riga resembles the late Wilhelmian style, and as far as the style and ornamentation as well as the form of domes and cupolas, and also town-planning solutions go, one is reminded of the building (and its dome in particular) of Kaiser-Friedrich-Museum (now Bode Museum) located *'in situ' am Ecke Museumsinsel*[22] (Fig. 25).

What is, to some extent, an integral part of these town-planning solutions, whose essence is planning corner houses (often at the acute angle) at the intersection of streets in the central quarter of Riga are extremely decorative crowns. It is these finials that constitute the characteristic contents and artistic expression of the buildings' entire solid. And again, the repertoire of forms, *decorum* and ornamentation make up an extremely rich and varied palette of artistic propositions. As a matter of fact, and strictly speaking, the essence of this architecture in Riga lies in the compilations composed between *Art Nouveau* and the early modernism. This is why the repetitions of style have a historising character and seem to be

[22] Z. Tołłoczko, *Architektura i społeczeństwo*..., *op.cit*., p. 32-33; J. Krastiņš, *Rīgas Jūgendstila Ēkas*..., *op.cit*., p. 40-41; J. Krastiņš, I. Strautmanis, *Riga. Complete Guide*..., *op.cit*., p. 40; J. Lejnieks, *Rīgas Architektura*..., *op.cit*., p. 54-55.

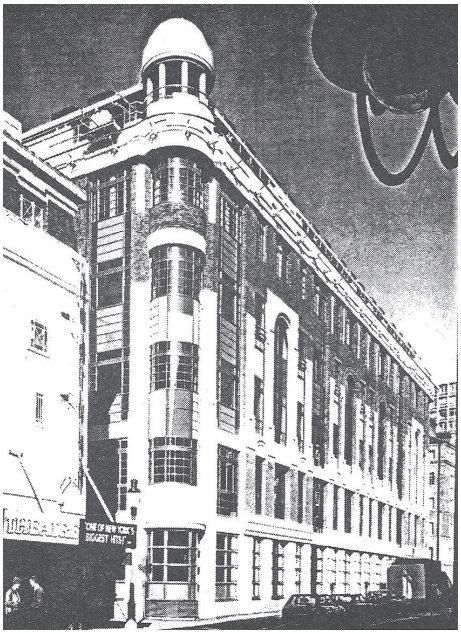

Fig. 26. Drury House. London. F. Robinson, 1988–1989

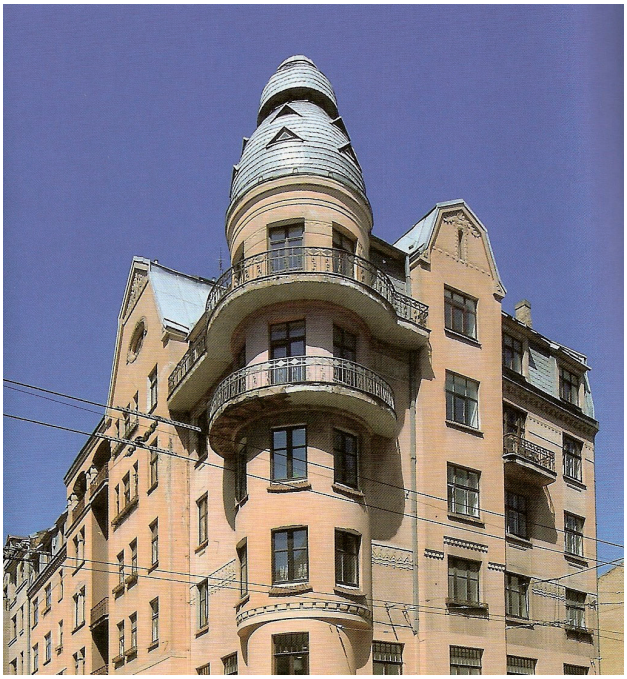

Fig. 27. Multifunctional building. Riga. A. Vanags, 1911

"a performance in a new opening and arrangement". This new revivalism in style in the post-modernist version this time together with nostalgia for the architecture of the late 19th c. can be illustrated by, inter alia, Drury House in London, designed by F. Robinson in the years 1988–1989. The similarity with the building in Riga designed by Aleksandrs Vanags in 1911 is striking[23] (Fig. 26, 27).

The presented considerations are outside the main trend of Riga's *Art Nouveau*, in other words, they are a kind of *pendant* to the number of over several hundred of objects. On the other hand, the idea of this study was to distinguish cases of a common configuration and morphology of these corner intersections of streets, with the predominant impressive crowns, which effected in the impression of harmony together with an inclination towards and being accustomed to *decorum*. Let us mention, then, a few examples of this particular *genre* and its filiations: multifunctional building, Avotu Street 2 and Aleksandra Čaka Street, Friedrich Scheffel, 1911–1912; multifunctional building, Lāčpiēša Street 21 and Akas Street, Rudolf Philipp Dohnberg, 1910; multifunctional building, Brīvības Street 88 and Šarlotes Street, Konstantīns Pēkšēns, Ernests Pole, Jānis Alksnis, 1910 (Fig. 28, 29).

Fig. 28. Multifunctional building. Riga. K. Pēkšēns, E. Laube, 1910

[23] J. Krastiņš, *Rīgas Jūgendstila Ēkas*..., *op.cit*., p. 294-295; Z. Tołłoczko, *Wybrane problemy*..., *op.cit*., p. 128; Ch. Jencks, *Architektura postmodernistyczna*, Warszawa 1987.

Fig. 29. Multifunctional building. Riga. R.P. Dohnberg 1910

And to conclude, it is only proper to highlight the invaluable contribution of architects, and especially the nestor of the scientific research literature on the subject – professor Jānis Krastiņš from the Faculty of Architecture and City-planning of the Latvian University of Technology, as well as the merits of the staff of the Museum of Architecture of Latvia in Mazā Pils and the newly created (2009) Museum of Secession as part of Réseau Art Nouveau Network to the preservation of the *Jugendstil* architecture monuments. Although the Riga institution cannot boast of such abundant collection as, for instance, the museum in Płock, nevertheless, this small museum was located in Alberta Street 12, which has not only a symbolic significance because much of the original interior decoration has been preserved in this apartment building, but also because this building was designed by a co-creator of Riga's *Art Nouveau* – Konstantīns Pēkšēns and his close associate Elžens Laube. This structure, which housed the studio of both architects, artists, the 'founding fathers' of the *National Romanticism Style*, was built in 1903. This place has an almost magic significance, particularly because the huge complex of Riga's architecture in *Art Nouveau* style is commonly known in the Baltic countries as the 'great outdoor *Jugendstil* museum[24].

[24] J. Krastiņš, *Rīgas Jugendstila Ēkas*..., *op.cit*., p. 108-109; A. Balcere, *Old Riga Illustrated Guide*, Riga 2009.

TECHNICAL TRANSACTIONS | CZASOPISMO TECHNICZNE
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THE ARCHITECTURE OF WINE MANUFACTURING AND COMMERCIAL SITES IN CENTRAL EUROPE

O ARCHITEKTURZE ZAKŁADÓW PRODUKCJI I SPRZEDAŻY WIN W EUROPIE ŚRODKOWEJ

A b s t r a c t

The vast majority of industrial implementation does not show signs of efforts towards high aesthetic quality. However, in a changing market, an increasing number of companies are turning to reputable architects in the search for interesting and innovative projects. In terms of advertising, marketing and image building also via architecture. Studies show that a high number of companies producing wine in Central Europe now combine production with sales and advertising, and creates their image based on high quality modern architecture.

Keywords: *wine manufacturing and commercial sites, the architectural form of the manufacturing site, viticultural centre*

S t r e s z c z e n i e

Zdecydowana większość realizacji przemysłowych nie przejawia znamion starań o wysoką jakość estetyczną. Jednakże w zmieniającej się sytuacji rynku nadmiarowego coraz więcej firm zwraca się do renomowanych architektów o niestandardowe, ciekawe i nowatorskie opracowania. Chodzi o aspekty reklamy, marketingu i budowy wizerunku również przy pomocy architektury. Przeprowadzone badania wykazują, że wiele firm produkujących wino w Europie Środkowej łączy obecnie produkcję ze sprzedażą i reklamą, a także tworzy swój wizerunek w oparciu o dobrą, nowoczesną architekturę.

Słowa kluczowe: *zakład produkcji i sprzedaży win, forma architektoniczna zakładu produkcyjnego, centrum winiarskie*

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1. Introduction

The highly developed countries of affluent post-industrial societies are developing an economy based on knowledge. As far as the material production in these regions is concerned, these societies are steering away from energy-consuming, material-consuming and environment-threatening technologies and means of production, also including, to a considerable extent, the mining and raw materials industries. Instead, emphasis is put on the development of production with a more limited expenditure on materials and with a considerable contribution of technical thought and innovation. These countries are also characterised by great expenditures on scientific research and the implementation of innovations, as well as considerable effort associated with balanced growth, including renewable energy. There is also a considerable percentage of people employed in the creation, processing, distribution and commercialisation of information, estimated at from 25% up to as much as 40% of professionally-active people, depending on the role of a given country or region in the international, global division of labour. In highly developed European countries the production of foodstuffs, i.e. agriculture, farming, fruit-growing, and agricultural food processing are treated as a strategic sector and a national interest. Special care and protection is expended on these domains which includes:

- customs barriers associated with non-European Union products,
- subsidies to specific products or general subsidies to agricultural activities,
- tax allowances,
- special professional privileges,
- extensively organised promotion and advertising activities in the country and in the region[1].

The wine production industry is intensively developed and promoted in many European countries. The culture of wine is developing; traditions, customs and festivals of wine are created and cultivated. Moreover, regional enological tourism is being established[2]. In this

[1] Of course, this approach also has a political background, strongly emphasised by peasant parties, as well as its economic price. It is estimated that were the protection barriers and the appropriate subsidies to be abolished, the price of foodstuffs in the European Union would reach the same level as the prices at the open global market of food production. This in turn would involve a general decrease of the prices of food by almost 30%.

[2] A good example of the establishment of tradition and customs in viticulture is the *Beaujolais nouveau* (sometimes referred to as *Beaujolais primeur*). This nouveau, light, tart red wine from the Beaujolais region, located to the north of Lyon in France, took the world by storm, and the uncorking of this wine became a global festival, because more than 50% of the production is exported. Therefore this is proportionally the greatest quantity among all French wines. The ritual of tasting the recently mature wine spread to all continents. The beverage is flown by planes to non-French and non-European consumers, whereas higher quality drinks are transported by ships. It is everything that quality wine is not because it is early, sourish, poor in tannines which yield peculiar and refined sensations and it is not appropriate to be stored for long periods of time. Therefore its producers made recourse to advertising to enhance its value considering the lack of quality as compared with Bordeaux wines, other Burgundy wines, certainly champagne, as well as Languedoc wines which are slightly less renowned, but which boast ancient traditions. The nouveau wine is held in contempt by connoisseurs, who consider it a mere marketing product, *Beaujolais nouveau* became almost a world-wide celebration of wine. The beginning of this celebration in France dates back to 1951. Since 1985, the period when the new vintage enters the market, was established as the third Thursday of November,

case, production is increasingly associated with selling and tasting, with restaurants which serve products, and with other forms of advertising of the alcoholic beverage. In consequence, this contributes to the emergence of a new type of tourism – enotourism (wine tourism) – associated with viticulture[3]. In such cases, the aesthetic and impression-related factors of the manufacturing sites is lavished with special care, and the design of such structures is entrusted to renowned design offices and to distinguished architects[4].

The following presentation of these trends refers to six structures associated with the production, advertising and consumption of wine in Hungary, Austria and Slovenia. The following sites will be discussed:

- the site of the French company *AXA-Millésimes* in Disznókő near Tarcal in the Tokaj region of Hungary;
- the Claus Preisinger site near Gols, in Burgenland, eastern Austria;
- the *Hill* site of Leo Hillinger near Jois, also in the Burgenland region of Austria;
- Erwin Sabathi's site in Pössnitz in Styria, southern Austria;
- the *Loisium* (a wine centre, a hotel with a spa) site of Karl Steininger near Langenlois in Wachau, Lower Austria;
- the *Marof* vinyard, in Mačkovci near Murska Sobota in the Prekmurje region of Slovenia.

2. The *AXA-Millésimes* wine manufacturing and commercial site in Disznókő near Tarcal, Hungary

The viticultural tradition of Hungary dates back as far as to antiquity, when a part of the present-day Hungary belonged to the Roman Empire. In Poland, it is supposed that Hungarian wines became more widely known from the times of Casimir the Great. With the course of time they became a considerably popular part of Sarmatian cuisine, and our country became one

and the celebration in many countries of the world (in Poland since 1995) begins already on the Wednesday evening. Today, the greatest recipient of this wine is Japan, which last year consumed almost nine million bottles. The United States, with their two million bottles, take second place as far as the consumption of this beverage is concerned. The *Beaujolais nouveau* tradition has become an economic blessing for the region, which, however, pushed far from prominence lesser-known but more noble wines which are produced there.

[3] In the course of the last dozen or so years we have been dealing with viticultural tourism – the known as enotourism (wine tourism). Enotourism is a compound of two words: *(o)eno-*, a prefix derived from the Greek word for 'wine' – *oinos*, (the Latin equivalent of 'wine' is *vinum*) and the word *tourism*. Such trips consist in the visiting of the places associated with the production of wine (vineyards, processing plants, viticultural farms) and participation in various events with a viticultural profile (tasting ceremonies, presentations of wines, festivals of wine etc.) or learning new things about the culture associated with the production of wine.

[4] Modern wine production sites were produced by world-famous architects including: Frank Gehry – the *Marqués de Riscal* vineyard in the La Rioja region in Spain; Norman Foster – the *Bodega Portia* in Ribera del Duero in Spain, Mario Botta – the *Chateau Faugeres* in Sâint-Etiènne in France as well as the *Petra* in Suvereto (Tuscany) in Italy; Álvaro Siza – the *Adega Mayor* in Herdade das Argamassas near Campo Maior in Portugal, Santiago Calatrava – the *Bodegas Ysios* in Camino de la Hoya (Laguardia) in Spain, Zaha Hadid – the *López de Heredia Viña Tondonia* in Haro (the La Rioja region) in Spain or Renzo Piano who designed the *Rocca di Frassinello* vineyard in Gavorrano Grosseto in Tuscany in Italy.

of the principal recipients of Hungarian viticultural products. Carts filled with barrels of wine known as *węgrzyn* (Hungarian wine) drove through Slovakia. Some regions and cities of northern Hungary owed their development to the trade with the Commonwealth of Poland and Lithuania. We imported the greatest amounts of wine from the Eger region. The principal city of that region flourished thanks to the selling of their wines to us, especially their dry red wines. This alcoholic beverage was also imported from the Tokaj region, located ca. 80 km to the east, a viticultural centre located at the confluence of two rivers – Tisa and Bodrog. This wine was imported in slightly lesser quantities – it was exclusively white, more refined, and more expensive.

Tarcal is located 6 km to the east of Tokaj. On its outer edge, there is the Disznókő[5] estate, which comprises 140 hectares of vineyards. At the beginning of the 1990s, when Hungary saw the transformation of its economic system, it was privatised and sold to the French company *AXA-Millésimes*. The French restructured and modernized the estate. They erected a new wine production site and also expended efforts toward advertising and promoting their products. Within the context of these activities a creative, original, well-recognisable direction was embraced for the new site. This direction was freshly discovered in Western Europe thanks to the international Expo held in 1992 in Seville. The Hungarian pavilion at the Expo, designed by Imre Makovecz in the spirit of Hungarian organic architecture, achieved considerable success, and the Western architectural world "discovered" and appreciated a less-known but original, creative movement, full of fantasy and fairy-tale allegories[6]. The French commissioned Imre Makovecz's student and, in a sense, collaborator, to the task of designing the project. His name is Dezsö Ekler, and in the years he 1993–1995 designed and erected the plant in the spirit of Hungarian organic architecture (Ill. 1).

The production building is a two-storey building. The central element which integrates the whole is the space of internal communication, set upon the plan of an arc (Ill. 2). On each side elements which house the production and storage facilities are located by fours, arranged perpendicularly to this space, in a comb-like arrangement. The overground part comprises rooms set up for the production (fermentation) of wine (Ill. 3); the underground part contains the area where wine matures and is stored (Ill. 4).

In the realisation of the project traditional materials were used – brick walls, a wooden construction for the roof, an external shingle cladding, and an internal covering with planks. A colour scheme which is typical of the architecture of the region was applied – the sandy colour of the plaster, wood which is partially natural in colour, and partially painted in light blue, including the woodwork of the windows and doors (Ill. 5).

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[5] The Disznókő vineyard is characterised by a centuries-old tradition and the high quality of its products. According to the Hungarian wine classification system, the first ever wine classification system in the world, the vineyard was recognised as a first-class vineyard as early as in 1772.

[6] The Hungarian organic architecture developed in the period of late modernism, in the 1970s, primarily due to the activity of a Budapest architect, Imre Makovecz (1935–2011), and the group of architects who formed the so-called Pécs group. It is characterised by strong allusions to tradition, to folk architecture and local materials, allusions to history, legends, traditional stories, fantasy stories and fairy-tale allegories, by rich symbolism and expression, dynamic, frequently smooth forms and lines as well as vibrant colours. This architecture presents dragon's eyes, peacock's tails, strongly emphasised, lofty roofs, towers and gables of wood. This trend developed locally in Hungary and gained local recognition. The structures primarily include cultural buildings, sacred and sports buildings. However, Hungarian organic architecture was discovered by wider audiences in 1992, during the international Expo in Seville, for which Imre Makovecz designed the pavilion which represented his country.

Ill. 1. View of AXA-Millésimes' wine production facility in Disznókő near Tarcal in Hungary – arch. Dezsö Eclair, 1995 – as of 2013 (photo by M. Złowodzki)

Ill. 2. Main circulation area for AXA-Millésimes' wine production in Disznókő near Tarcal – as of 2013 (photo by M. Złowodzki)

Ill. 3. Wine production hall at the AXA-Millésimes' wine manufacturing facility in Disznókő near Tarcal – as of 2013 (photo by M. Złowodzki)

Ill. 4. Cellar for the maturing of wine at the AXA-Millésimes' manufacturing plant in Disznókő under Tarcalem, as of 2013 (photo by M. Złowodzki)

Ill. 5. Details in the inside of the AXA-Millésimes' wine manufacturing plant in Disznókő under Tarcalem – as of 2013 (photo by M. Złowodzki)

Care has also been expended to develop the area and other structures. A restaurant serving wine to accompany the meals was established in the residence of the pre-war proprietors – a building dating back to the final years of the 19th century. A retail and wholesale outlet was set up in one of the old cellars, dug in the slope.

These activities yielded the desired result. The production site enjoys considerable popularity. The wines that are produced, although they cannot be counted among the least expensive ones, sell very well considering the excess local market. Considerable numbers of people visit the restaurant and there are also many who are eager to visit the production site itself. The latter is welcome to visitors.

3. The Austrian wine production and commercial sites

Similarly as in the case of Hungary, viticulture in present-day Austria has a long tradition. The first references to viticulture in Austria may be found as early as ca. 700 BC. The time of the Roman Empire and then the rule of the Habsburg monarchy are considered to be the periods in which viticulture flourished.

Today, in spite of the fact that Austria contributes to merely about one percent of the total production in the world, Austrian wines enjoy a very good reputation among connoisseurs. This is mainly owing to the production structure – the majority of production sites are small

farms (half of which have a land area of less than 5 hectares) which emerged on the basis of farms with a varied agricultural activity, or newly-established vineyards which have a regard for the high quality of their products[7]. The majority of vineyards specialise in native grapevines, selectively adapted to climatic conditions and soil type. Quality is also ensured by a general return to traditional, frequently eco-friendly, viticultural methods and manufacturing wine with the application of modern devices.

3.1. The Claus Preisinger wine production and commercial site near Gols, located in the Burgenland region of eastern Austria

In 2009, on the eastern coast of Lake Neusiedl (*Neusiedlersee*), on the Goldberg hill near Gols, away from the urbanised area, within an 18-hectare vineyard, a wine production site was established[8]. The structure, designed by a Viennese architectural office known as *propeller z*, set in the spirit of the deconstructivist architecture with reference to ecological values, was designed according to the principles and the ways of thinking and of perceiving the world of the owner of the vineyard. It is also an example of the application of traditional local materials and traditional architectural solutions. The design of the building was based around the idea of contrast, which refers to the form, the construction, as well as to the materials that were used. The application of the principle of bipolarity translates itself into relations with the surroundings – the structure is located on a broad, non-built-up area; it has no direct points of architectural reference; it creates the impression of a solitary building (Polish: *soliter*[9]), alienated in space.

The building has the form of an elongated quadratic prism of variable height, with slanting walls: the front wall and the back wall. Moreover, the façade of the building is tapered (Ill. 6). The building was distinctly divided into two parts. This aspect manifests itself

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[7] On the one hand, the great dispersion of small wine production sites may impair the process of introducing the product into circulation (export, trade), as well as render difficult the protection of the brand. On the other hand, such a situation contributes to the diversity of the final products and to the creation of beverages of an individualised character. Nowadays, after the period of mass production of frequently inferior-quality beverages, considerable emphasis is placed on the quality of the product. Criteria have been defined concerning not only the flavour, but also include the place of origin, the variety of the grapevine, the progress of the production cycle, the ingredients that are used in the nurturing of grapevines, the production of wine etc. In order to protect the quality and the brand of the wine, *DAC* (*Distructus Austriae Controllatus*) regulations were introduced, prepared by the specialists in the winemaking field (*inter alia* international committees, cooperative associations of winemakers, wine shops and the associations of producers).

[8] The vineyard stresses the great importance of native varieties of grapevines, among others: *Zweigelt*, *Blaufränkisch* and *St. Laurent*. The procedures for nurturing the plants are associated with natural methods of plant preservation, and production features traditional procedures of wine production.

[9] The Polish name *soliter* (from the French *solitaire* – solitary) refers to a stand-alone building located in a non-urbanised area or in the tissue of a city. The structure, however, is clearly unique, has peculiar features which form a contrast to its surroundings. The name *soliter* was adapted from the science of botany to refer to an architectural structure which stands out from its environment. According to the dictionary of the Polish language published by Polskie Wydawnictwo Naukowe, the word means a tree or a bush which grows solitarily. It is especially prominent in an open area and is distinguished by ornamental qualities (colour, habit, the shape and the form of leaves etc.) [http://sjp.pwn.pl/sjp/soliter;2575806.html, online: 20.11.2014].

Ill. 6. View of Claus Preisinger's wine manufacturing plant, site near Gols – as of 2013 (photo by K. Zawada-Pegiel)

in the construction, the materials that were used and in the distribution of functional zones. The front, overground, reinforced-concrete part of the building is a two-storey structure; the back, one-storey area is made of prefabricated plywood elements. The front part, on the ground floor, houses the entrance zone with the exposition zone, the office and the common rooms[10]. The first floor houses the tasting zone with an expansive view of the vineyard and the surrounding landscape, including an internal footbridge which offers a view of the production hall. The manufacturing zone was located in the one-storey hall, whereas the underground part houses the warehouse and packing zone.

The division in terms of functionality and construction has also found its expression in the application of matte and shiny, smooth and pressed, warm and cool, grey and coloured finishing materials. The production area was lined with strips of wood, whereas the entrance zone features concrete lining of the shuttering (Ill. 7). Both materials constitute a coherent arrangement by defining the functional zones of the structure; whereas the purpose of setting up of strips of larch wood and a form of lining concrete at 45°, the tapering of the form of the building and its maximum window exposition (the opening of a vista towards the lake) is to achieve a lightness in the building and produce the impression that it is levitating above the ground.

[10] Apart from the exposition of products and awards received owing to the high quality of the beverage, viticultural sites eagerly present architectural award statuettes in the exposition zone – e.g. the awards for the design of the building, the realisation of the design, the design of the interior of the winery and the materials that were used. The winery which is here discussed received an award in the *Bauherrenpreis 2010* competition from among the 114 buildings and structures that entered the contest. The prestigious award of the Austrian Architects Association is presented in recognition of distinguished merit in the field of architecture – the contribution of new architectural solutions and the creation of remarkable buildings associated with a perfect collaboration with investors.

Ill. 7. The external façade of Claus Preisinger's wine manufacturing plant, site near Gols (photo by Herth Hurnaus; source: http://www.dailytonic.com/claus-preisinger-vineyard-by-propeller-z-at, online: 19.02.2015)

3.2. Hill – Leo Hillinger's wine production and commercial site near Jois, in the Burgenland region in eastern Austria

In 2004, in the area of the city of Jois, a modern wine production site was established within a vineyard[11]. Its owner, Leo Hillinger, who belongs to the generation of young Austrian producers and who continued family traditions, combining the traditional, multigenerational viticultural method with the use of state-of-the-art technology for wine production and a new marketing strategy. This line of thinking manifests itself both in activities whose aim is to create a brand of wine, as well as in efforts to increase the recognisability of the company and the product. Consequently, these activities contributed to the creation of a distinctive logo for the company and the architectural form of the manufacturing site. The Viennese office – *gerner°gerner plus* – was commissioned with the task of designing the site. When they designed the site, the architects, who pursued the trend of organic architecture[12], attempted to create a symbiosis between the existing natural environment and the newly-designed production site. They skilfully used the features of the area by inscribing a considerable part of the ca. 2000 m^2 site into the slope of a mountain. Only a small area in the form of a horizontal quadratic prism was designed to create the impression of levitating above the ground.

The structure, designed upon an L-shaped plan[13], was divided into two legible functional zones. The shorter, front part of the building is a two-storey reinforced-concrete quadratic prism which is glassed in from the front, juts out to the front on the level of the storey,

[11] The design for the structure was completed in 2001, whereas the structure itself was completed in the years 2003–2004. In 2008, the structure received the second *Best of Shop Architecture Award 2008 in AIT*, one of the leading German-language periodicals devoted to interior architecture.

[12] Organic architecture is an offshoot of the modernist trend. It makes references to family values, tradition and culture, climate, and the features of the region. This trend puts great emphasis upon the possibility of embracing innovative, energy-saving solutions.

[13] The name of the owner, HILLINGER, became a point of departure for the design of the site: the plan of the building alludes to the shape of the letter "L" as well as to the name of the vineyard – HILL, also spelt as HI⌋⌋, which is an abbreviation of the name and a trademark.

supported by two V-shaped pillars. The ground floor of this part houses the administration of the site, whereas the first floor constitutes the showy entrance part which communicates with a glassed-in staircase (Ill. 8), as well as the tasting zone and the conference zone with an external terrace.

Ill. 8. The entrance area of Leo Hillinger's wine production, site near Jois – as of 2013 (photo by K. Zawada-Pęgiel)

The second, longer, crosswise part of the site – the production and warehouse zone – was designed in such a manner as to make it invisible from ground level. The acute gradient of the slope was taken advantage of and it is there that the production facilities have been located (Ill. 9). The area was formed in such a way as to make it resemble a steep slope. As far as the earth-covered roof is concerned, grass was planted there (there were also plans to plant grapevines there). This part of the building received further exposition thanks to eight sloped roof windows in the form of truncated pyramids facing the north.

The zone where the wine matures was exposed at the juncture of both of these zones. The former zone is crossed by a footbridge which links the tasting room with the conference room. The colour scheme of the interior of the entrance zone, with its great glassed-in area which forms a framework for the vista of the surrounding area and Lake Neusiedl (*Neusiedlersee*), features white, grey and dark, warm wood tints. The production area uses steel and polished concrete.

The structure, situated on the top of a hill, against the backdrop of the vineyard, attracts attention with its wide, "screen-like" panorama of the valley, thus becoming a landmark in the area. Moreover, the owner promotes his products by undertaking a range of various activities. He allows visitors to visit the structure and see the production process, offers wine-tasting opportunities and the sale of wines. The latter are also sold in factory outlets. Considerable

Ill. 9. The production zone at the Leo Hillinger factory, located near Jois – as of 2013 (photo by K. Zawada-Pęgiel)

Ill. 10. Icon Hill – red wine bottle designed by Zaha Hadid (source: http://creoflick.net/pl/creo/Designerska-butelka-na-wino-Zahy-Hadid-1980, online: 21.11.2014)

emphasis is placed not only on the quality of the wine produced but also on the distinctive packaging, and meticulously designed bottles and labels. In 2009 the so-called *Ikon Hill* – a high-quality red wine in a limited collection of bottles and packaging (999 pieces) was produced, designed by the well-known and recognised architect, Zaha Hadid[14] (Ill. 10).

3.3. Erwin Sabathi's wine manufacturing and commercial site in Pössnitz in the Styria region of southern Austria

The vineyard in Pössnitz was established in 1938 by Johann Sabathi[15] – the grandfather of the present-day owner – Erwin Sabathi. With the appearance of subsequent generations the vineyard gradually increased its assets and the quantity of wine produced. It also gained a considerable number of recipients, including those outside the region. The turning point in the history of the development of the vineyard is when it was taken over (in 1992) by the present-day owner, Erwin Sabathi, whose motto is "above all else, quality". The owner embraced the strategy of the company which concentrates farming on as many varieties of grapevine as possible, management of the vineyard, and the production of wine in conditions which are as natural as possible[16], using modern technology. Therefore, in August 2004, a new wine manufacturing and retail site was erected[17], designed by Igor Skacel from Graz, according to the tenets of organic functionalism (Ill. 11).

The object was located on a steep, southern slope which facilitated the location of a considerable part of the building underground. This in turn allowed forms which overlap in various ways to project forward, starting from the top-most supply zone – the initial stage of production – to the bottom-most zone – the entrance zone – and the final stage – the sale of the prepared product – from the southern side of the two-storey building, which assumes the form of a square. The arrangement of the structures unequivocally indicates the functional

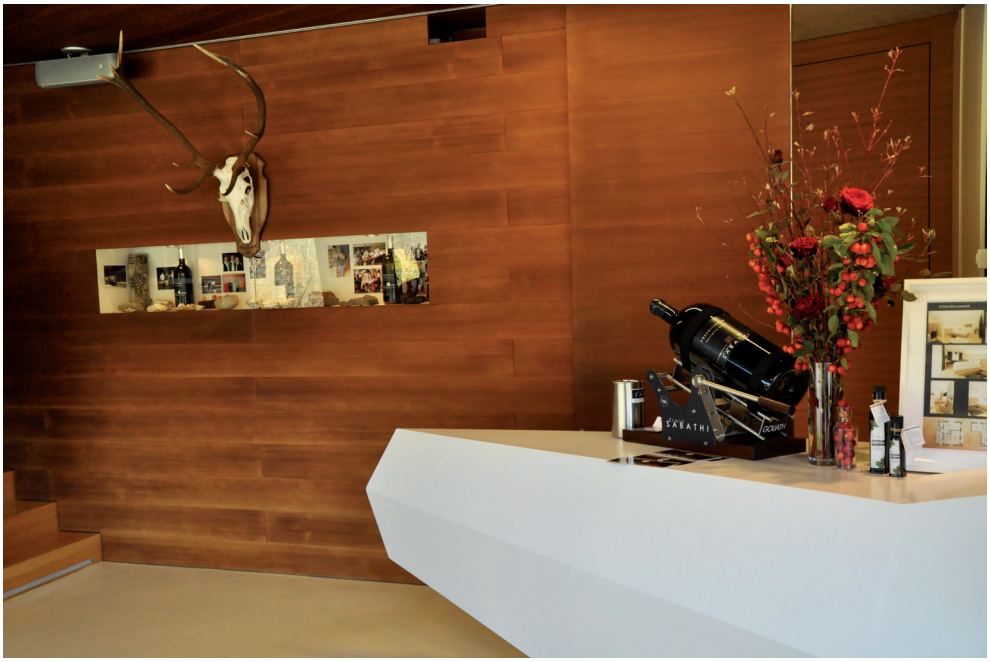
[14] Zaha Hadid is a world-famous British architect of Iraqi descent, recognised as the representative of deconstructivism. She is the author of many structures which are distinguished through their unique, dynamic form, e.g. the building of the depot of the *Vitra* factory in Weil am Rhein in Germany, the Museum of Modern Art in Cincinnati in the United States of North America, the *Riverside* museum in Glasgow in Scotland, the *Hajdar Alijew* centre in Baku in Azerbaijan, the *Bergisel 2002* ski jump in Innsbruck in Austria and many more. Apart from architectural design, Hadid does project design, interior design (e.g. the project of the interior for the Nela Barret shop in Tokyo, the futuristic interior of the interior of the Stuart Weitzman shop in Hong Kong) and applied art design (e.g. the shoe design for the Lacoste company, the design of the *Viso*, *Manifesto* vases for the French company *Lalique*). She is the winner of the Mies van der Rohe award (2003), the Stirling award (2010), and the Pritzker award (2004).

[15] According to the extant historical data, family souvenirs and data, it is known that the viticultural traditions (the farming, maintenance of grapevines and the production of wine) of the Sabathi family date back a number of generations. The earliest accounts date back to 1650 and they mention the ancestor of the Sabathi family – Jerg (George) Sabathi [http://www.sabathi.com/geschichte.html, online: 20.06.2014].

[16] The natural methods of farming not only have a positive influence upon the image of the vineyard but they also confirm the quality of the beverage itself. Examples of this are the awards presented at prestigious wine festivals, e.g. in 2011, at the *Gault Millau* wine festival, the wine *Sauvignon Blanc 2009* from the vineyard in Pössnitzberg received 18,5 out of 20 points from the jury.

[17] In 2005, the building received the *Geramb 2005* (the mark of a good building) architectural award for the well-organised interior and the legible functional arrangement.

Ill. 11. Erwin Sabathi's wine manufacturing facility, located in Pössnitz – as of 2013
(photo by K. Zawada-Pęgiel)



Ill. 12. The entrance zone of the Erwin Sabathi wine manufacturing facility – as of 2013
(photo by K. Zawada-Pęgiel)

zones in the building. The entire layout was designed on the basis of "walking distance" i.e. the shortest amount of time needed to pass from one zone to the other. The northern side houses the grape supply zone; the part immersed in the slope – the processing, fermentation, maturing, bottling and storage zone; while the southern zone houses the entrance zone, the retail zone, the administration, and the shipping zone. The first floor houses the tasting zone as well as five comfortable rooms for rent.

In the realisation of the building two finishing materials were used: burnt wood and concrete. In the supply and export zones fair-faced concrete with an impression of boarding was used. The materials that were used allude to the oak barrels and the cool atmosphere which dominate the cellars. The colour scheme of the interior of the structure features contrasts – dark walls (wood) and the light floor and the furnishings (Ill. 12). A system of moving walls was employed in order to conceal the compressed rooms with irregular outlines i.e. the office, the kitchen and the toilets. The system of moving walls occludes the stairs which lead to the first floor with rooms for rent and to the tasting room, integrated with the green terrace. From here one enjoys a view of the hill and the vineyard thanks to the great glassed-in area and the mirror-lining.

3.4. Karl Steininger's *Loisium* (a viticultural centre with a system of historical cellars, a hotel with an extensive SPA zone) near Langenlois in the Wachau Valley in Lower Austria

At the outer edge of the city of Langenlois in Lower Austria is the Loisium complex. This is an example of presenting wine as a cultural phenomenon.

Karl Steininger, the owner of the vineyard, selected Steven Holl[18], a distinguished architect, to design the complex. The project involved three areas of activity. The first activity was associated with the adaptation of 900-year-old sections of the system of cellars to store wine and create a museum area there – an interactive museum of viticultural traditions. The second activity was associated with the realisation of a viticultural centre (wine gallery) linked with the system of cellars. The third activity was associated with the construction of a hotel with a relaxation zone which offers cosmetic treatment using the properties of grapes[19]. The development project was begun in 2001 and was divided into two stages. In 2003 the construction of the wine centre was completed and the system of cellars was adapted to new functions; in 2005 the hotel with the relaxation zone was erected.

[18] Steven Holl, an American architect whose works are designed in the spirit of postmodernism and deconstructivism. He received many awards; he completed a series of architectural words in the field of the fine arts: museums, galleries, exhibitions (e.g. the *Kiasma* Museum of Modern Art in Helsinki in Finland (1998)), residential complexes (e.g. the residential and service complex known as the *Linked Hybrid* in Beijing in China (2003–2009)), as well as educational institutions and campuses (e.g. the *Simmons Hall* dormitories at the Massachusetts Institute of Technology in Cambridge in the United States (1999–2002)). His architectural projects have also included the design of public amenities, office buildings (e.g. the building of the *Shaw* brokerage firm in New York in the United States (1992)), as well as the fields of spatial planning and urban design (e.g. the *Sliced Porosity Block* multifunctional complex in Chengdu in China (2012)). He is an academic teacher at the Columbia University in New York and an author of numerous scholarly works.

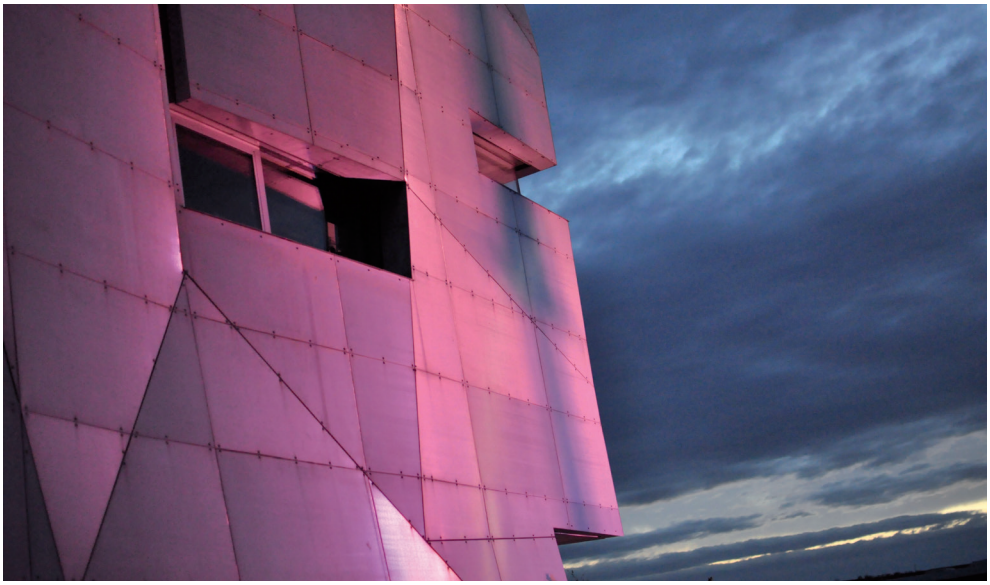
[19] Apart from the traditional beauty treatment procedures, the complex offers innovative forms of biological regeneration, including acupressure and enotherapeutical treatment in which products acquired from local grapes, e.g. the olive oil from the seeds of grapes, are used.

Ill. 13. Loisium – Karl Steininger's viticultural centre near Langenlois – as of 2013 (photo by K. Zawada-Pęgiel)

The viticultural centre is a cube, slanting by 5 degrees to the south[20]. This cubic shape is deformed by deep, irregular indentations (the irregular arrangement of the glassed-in linings repeats the sections with the projection of the cellars), in which the entrance to the building, the access to the terrace, and a row of windows of varying shapes are located (Ill. 13). The interior of the three-storey building was designed in such a way as to achieve the maximum amount of open space with a system of narrow passages in the form of galleries, ramps and stairs which link the particular floors of the building. The futuristic, cubic building houses a café with an external terrace, a shop with wines, liqueurs and regional culinary products, and a tasting zone. The uppermost level houses a seminar room, office rooms, and the access to the terrace located on the roof which offers a splendid view of the city and the surrounding area. In addition to the wine booth, the lower floor of the structure (level –1) houses the exposition zone as well as the entrance to the elaborate system of cellars. The historic cellars, incorporated into the modern concept of the vineyard do not so much perform the function of yet another place for a stage in the wine production process as an interactive museum of wine[21].

[20] The gradient of the form of the building continues the gradient of the underground ramp which connects the building with the wine storage zone.

[21] The underground route is furnished with interactive presentations which demonstrate the distinctive features of the site (farming areas, geology etc.) which greatly influence the taste of wine, the means of farming the grapevines, the history of viticulture in Langenlois, along with the presentation of the cultural elements which have to do with the viticultural tradition (the vintner's house with its furnishings, the influence of viticulture upon the vintner's life, the means of wine production from the last century), as well as the contemporary means of acquiring the beverage from grapes.



Ill. 14. Detail of the elevation of the Loisium building – as of 2013 (photo by K. Zawada-Pęgiel)

The external form of the building received a distinctive spatial and visual expression thanks to irregularly-arranged brushed aluminium plates. Their slanting arrangement and their deep glassed-in indentations constitute an interplay of light and shade (Ill. 14). This effect is enhanced by using two types of glass – neutral glass and glass produced by melting beer bottles, with a bottle-green colour – and night-time illumination. The wine gallery features subdued colours. The décor of the walls features chip boards with a light wood colour; the whole is enhanced by an impressive concrete staircase.

The second building is the modern four-star *Hotel Loisium* with a *wellness* zone, featuring an elaborate spatial form. As in the case of the wine centre, the concept of the form of the building was based on the transposition of the underground geometry of the network of cellars and the transformation of this system into the form of the building. The latter is set upon the plan of an open square with an internal courtyard which opens toward the vineyards and the wine gallery. According to their functions, the purpose of the great glassed-in areas is to integrate the interior of the structure with the external zone – the vineyards which stretch to the horizon. Moreover, owing to the maximum number of glassed-in surfaces on the ground floor, these areas give the impression that the building is levitating. The higher parts of the building are two-storey cubes which extend beyond the face of the ground floor. They are kept in one line, except the front façade which was elaborated upon and which constitutes an irregular line of design. The building is enhanced by a colourful façade. The outside of the building features a yellow colour scheme, whereas in the courtyard there are red and green tints. Moreover, the internal façade was enhanced by a see-through aluminium grid with variously sized cut-in apertures.

As far as the functional aspects are concerned, the building was divided into two parts. The ground floor comprises the following: the lobby, a bar, a restaurant, a wellness centre as well as conference rooms with auxiliary facilities. A heated swimming pool, which may be used throughout the entire year, is located directly adjacent to the building. The two top floors comprise 82 luxury rooms with large glassed-in surfaces overlooking the vineyards.

The complex enjoys great popularity and is frequently visited not only thanks to the products made there and the opportunity to see modern architecture[22] in the deconstructivist style designed by a world-famous designer, but also due to the desire to learn about the history of wine and viticulture as well as the cultural attractions which are organised in the historical and modern interiors of the vineyard.

4. The Marof Vineyard in Mačkovci near Murska Sobota in the Podravska (Prekmurje) region of Slovenia

Slovenia is a country which has an equally long viticultural tradition as the countries discussed above. German influence (the region was a part of Austria-Hungary and was known as Lower Styria – *Untersteiermark*) contributed a great deal to the kind of vines that are cultivated there. The restructuring of the vineyards, which were nationalised during the existence of Yugoslavia, and the modification of the technology contributed to the revival of the viticultural industry and the considerable enhancement of the quality of the wines. Today, we may register a gradual development of the viticultural industry, which is associated with the modernisation of the existing production sites and the construction of new ones.

We may distinguish three viticultural areas in Slovenia: the western area – Primorska, the south-eastern area – Posavje, and Podravska, which is located in the western part of Slovenia and which is the largest viticultural region. Despite the annual production of ca. 100 million litres, Slovene wines are not well-known beyond Slovenia because almost the entire production is directed to the local market and only 5% is exported. According to data provided by professional companies which research the viticultural market, about 70% of wines are quality and premium wines[23]. This high quality ensures that they may compete with the wines of southern Europe by receiving awards in prestigious, world-wide contests, e.g. the Slovene vineyard *Dveri-Pax* received the *Decanter World Wine Award 2011*.

The Marof vineyard is located in north-eastern Slovenia, in the Prekmurje region. The vineyard comprises an area of ca. 40 hectares of grapevine land extending over the local, smooth rolling hills. The vineyard comprises a small historical palace which was refurbished under the supervision of the Institute of the Protection of the Cultural Heritage of Slovenia, along with two farm buildings, adapted to new conference and hotel functions[24], and a new

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[22] The Loisium complex received a number of architectural awards. In 2003, it received the *AIA Design Award 2003 New York*, presented by the American Institute of Architects, and in 2006 – the *Bauherrenpreis 2006*, presented by the Austrian Architects Association (*Zentralvereinigung der Architekten Österreichs*). In the same year, it also received the *European Hotel Design Award* in the field of design, hotel furnishings, in the category of interior decoration and architecture.

[23] In Slovenia, the viticultural law strictly defines the rules concerning the selection of the varieties of grapevines, the production – the techniques of vinification, as well as the terminology itself. The classification of wines is defined according to the geographical and quality classification. The geographical classification involves three marks and indicates the geographical origin. The quality classification (three degrees) defines the quality norms which the wine must fulfil and the peculiar features of a given region which the wine must represent.

[24] The history of the vineyard dates back to more than 120 years. In 1905, a little hunting palace was

Ill. 15. View of wine production – *Marof* and the small historical palace in Mačkovci near Murska Sobota – as of 2013 (photo by K. Zawada-Pęgiel)

wine production site located on the western slope of a hill. The complex was designed by Studio Kalamar and was built in 2009[25]. The building, designed in the spirit of neoregionalism, which alludes to the form, roof angles, and the materials that were used, is located in the direct vicinity of the historical palace and the farm buildings – in keeping with the directives of the restoration specialists (Ill. 15).

This two-storey building constitutes an arrangement of two, elongated, adjacent quadratic prisms. One of the quadratic prisms, two storeys high, is accessible from the ground level and contains an underground and overground level. It is crowned by a pitched roof whose gradient and colour scheme allude to typical farm buildings of the region. The entrance part extends west in order to emphasise the wine tasting area and to frame the view of the vineyard. This part of the building also features the entrance zone, the commercial zone, and the common rooms. On the other side of the entrance there is the wine reception zone, whereas the underground level houses the production zone, a laboratory, technical rooms, and a warehouse (Ill. 16).

The second, one-storey quadratic prism, hidden underground, comprises the rooms where the wine matures, is stored, and shipped. Owing to its underground location thermal conditions could be taken advantage of – a constant temperature of 14°C and other conditions which are appropriate for the wine to mature and mellow.

built with farm buildings as well as a wine cellar.

[25] The project was nominated for the 2010 award at the *World Architecture Festival (WAF)* – an annual festival with the ceremony of presenting awards in the field of architecture.

Ill. 16. The production zone of the manufacturing plant – *Marof* – as of 2013
(photo by K. Zawada-Pęgiel)

The external façade features a cover of vertical grey and brown panels which imitate the arrangement of grapevine support stakes. In keeping with the guidelines of the conservation team, the roof of the building was made of red ceramics. The interior, which contrasts with the external façade, features white lining panels. The technological zone features concrete. Considerable emphasis was put on the arrangement of the interior with the preparation of the individual pieces of furniture of light wood.

5. Conclusions

The architecture of industrial plants has many peculiar features which differentiate it from the architecture of other functions. Certainly, it must be perfectly functional because this conditions technological efficiency and economy of production. This type of architecture requires a considerable deal of flexibility because machinery undergoes frequent and rapid changes – technologies change rapidly, as entire production profiles sometimes do. The industry builds fast; it prefers to assemble rather than build, by taking advantage of modern materials. The first cast-iron constructions were applied in industry. It is also here that the first steel constructions were used, as well as steel in the façades of buildings. In spite of this, the architecture of the vast majority of production structures, with all its technical and material appropriateness, is made with little reference to high aesthetic quality.

However, the world is changing rapidly, and in the excess global market, where it is easy to produce and difficult to sell, more and more investors find out that good modern architecture, featured in the international professional press, and may be a profitable showcase for the company. We may speak about the development of thought which was initiated by the management of a lesser-known company with Canadian capital, which produces alcoholic beverages – Seagram. This company asked Ludwig Mies van der Rohe to design its office building in New York (as a matter of fact, the building was only partially occupied by the company), thus gaining world-wide prominence.

In her account of the changes in attitude towards industrial architecture in the modern age, Nina Juzwa (2010) presents her view of the changes in the attitude of investors in the following way:

"The increasing competitiveness of industrial companies and consortia, and the accompanying development and variety of new technologies make the architecture of the industrial structure play an increasingly greater role" [3, p. 104].

"And further on: The branches of the industry with great demands in the technical and technological field, located in the regions which put great demands upon the quality of the environment, brought about a situation in which the industrial structure becomes a marketing product with the product itself on an equal footing. New technologies are placed within structures of an architecture whose aims include the representation of the quality of the product which is made there. Thus the architecture of the modern industrial structure becomes a marketing showcase for the company, as well as a showcase for the civilisation and progress in the region" [3, p. 159].

In highly developed countries the task of designing more and more industrial structures is commissioned to distinguished architects and renowned companies, although these structures continue to constitute a minority in the huge volume of industrial realisations. Here the major role is played by the obvious will to achieve high aesthetic quality on account of advertising, prestige and the will to build the image of a brand. Such works, which are registered in world literature, include works by Lord Norman Foster: the Renault distribution centre in Swindon (1982) and the McLaren technological centre in Woking (2004), both located in southern England; the arrangement of the rooms in the "57 Metal" Renault factory by Claude Vasconi in Billancourt near Paris from 1984; the factory of the l'Oreal company near Paris by the Valode & Pistre team from 1992; and the assembly plant (frequently referred to as the *workshop*) of exclusive Volkswagen cars in Dresden, completed in late 2001 according to the design of the Gunter Henn office.

An interesting and peculiar example of the changes which pursue this direction is the French chemical enterprise which specialises in the production of industrial gases – Air Liquide S.A. The company, which has been operating since 1902, is currently the world leader in the field of technical and medical gases and in the provision of associated services. The basic products include: oxygen, nitrogen, argon, hydrogen and other noble gases acquired from the atmospheric air[26]. Until now, the arrangement and the aesthetic expression of the

[26] The Air Liquide concern operates in the majority of the developed countries, for the number of countries of operation exceeds 80. It employs more than 43 thousand employees, subject to the head office located in the centre of Paris. In Poland, the Air Liquide company initiated its operations in 1995. Today, it possesses three plants which produce oxygen, nitrogen, argon and krypton xenon. The first of these plants is the air separation installation in Dąbrowa Górnicza (the largest installation of this kind in Poland); the remaining two plants are located in Kraków and Puławy. Bottle refilling stations are located in Białystok, Dąbrowa Górnicza, Poznań and Pruszcz Gdański.

Air Liquide production sites had not been the object of architectural research work. This arrangement and expression was primarily a result of production premises and it resembles other chemical plants with elaborate installations such as distilleries and refineries. However, the management of the company reached the conclusion that the time had come to enhance the compositional values of their sites, mainly due to advertising reasons. The managers decided to tap the imagination and inventiveness of young people for innovative visions by organising an international (European) student contest for the design of the factory of the future. The intention of the managers of Air Liquide was to seek completely new engineering and architectural solutions. The group of young future architects was deemed as routine-free, regulation-free people, brimming with futuristic ideas, and the student designs of as those that constitute the final period of architectural freedom, the visionary approach to form, and the freedom of creation before their employment practice[27].

The analyses which were conducted by the Authors indicate that the industrial sites where a great emphasis is put upon high aesthetic qualities are quite frequently embraced by the viticultural structures whose production function is more frequently associated with the selling and advertising of products. In this line of business the pioneering achievement is considered to be the vineyard of Mominus in Yountville in California, USA, completed in the late 1980s according to a design by the Herzog & de Meuron team. The structure which on the one hand has a minimalistic expression, but on the other hand features organic aspects as well, was widely discussed and commented upon. It seems that now also the companies from Central Europe, which seek their place and strive for success in the market for their wines, embrace good modern "quality" architecture in the creation of their brand and advertising.

6. The basis of the work

The basis of the present work is the information and photographic data acquired during two research expeditions in 2013 – one was devoted to Hungarian organic architecture, and the second was part of recurrently organised cognitive expeditions conducted by the Cracow Division of the SARP under the general name: *Śladami współczesnej architektury* (*Following the paths of modern architecture*); the expedition took into account wine manufacturing sites in Austria, Hungary and Slovenia. The expeditions were realised as elements of the long-standing research theme elaborated upon in the Department of Industrial Architecture of the Institute of Architectural Design: *The current problems of the design of work place architecture*.

The Authors also used the information provided in the publication by Kinga Bauman: *Wine Culture Architecture. Smak Architektury*, published by the Foundation of Architects in Warsaw in 2010 [1] and the materials (photographs of buildings and publications which include texts written by supervisors and the catalogue of the structures that were

[27] The contest, which was announced by Air Liquide to unveil the factory of the future as well as the results of this contest, including the successes of the students of the Department of Architecture of the Cracow University of Technology, was presented in: K. Ludwin, A. Taczalska, A. Wiszowaty, K. Zawada-Pęgiel, M. Złowodzki, *Oxygen plant of the future architectural design competition – studencki, międzynarodowy konkurs na fabrykę przyszłości*. ARCH 3(23)/2014; p. 62-65.

presented) presented during the exhibition entitled *Architektura i wino w Europie Środkowej* (*Architecture and wine in Central Europe*[28]), held in the Museum of Architecture in Wrocław since 6 February until 30 March 2014.

However, the information about the changes and trends in industrial architecture is based upon the Authors' own material and the following work devoted to modern architecture and industrial urban planning – a work which is rarely mentioned in the Polish literature on the subject: *Architektura i urbanistyka współczesnego przemysłu* was written by Nina Juzwa et al.

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[3] Juzwa N. i inni, *Architektura i urbanistyka współczesnego przemysłu*, Wydział Architektury, Politechnika Śląska, Gliwice 2010.

[28] 38 contemporary vineyards, established in selected seven countries of Central Europe – Austria, Bohemia and Moravia, Germany, Slovakia, Slovenia, Italy and Hungary – were presented at the exhibition. The latter was organised by Jaroslav Fragner's Gallery in Prague; the exhibition was prepared by the Museum of Architecture in Wrocław with the collaboration of the *Design Factory* in Bratislava and the FUGA Centre of Architecture in Budapest.

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ANDRZEJ ZDZIARSKI*

OPTICAL TRANSFORMATION AND RECORDING OF ANAMORPHIC IMAGES

OPTYCZNE PRZEKSZTAŁCENIE I ZAPIS OBRAZÓW ANAMORFICZNYCH

A b s t r a c t

The work presented here is a continuation of the earlier discussion undertaken by the author on the definition of geometric transformation and principles of creation and graphical representation of anamorphic images [3]. A specific method based on optics has been used to explain the method of creating complex geometrical anamorphic images with the inclusion of those parts of images that usually cover difficult deformations. The ideal scheme for an optical device which can be used for generating transformations of real life images into anamorphic images for this type of reflective anamorphic transformations has been developed. The validity and correctness of the geometrical and optical analysis of this type of transformation have been demonstrated in practice. A prototype of an optical device has been developed and used for the realization of this type of transformation and called the "Anamorphot". The image created using the Anamorphot proves validity of the theory of creation of anamorphic images as presented in earlier publications.

Keywords: anamorphic images, anamorphic transformation, optic devices, ideal scheme

S t r e s z c z e n i e

Obrazami anamorficznymi są płaskie, geometrycznie zdeformowane kompozycje celowo wykonane na dostępnych płaszczyznach. W przekształceniach tych zakłada się, że oglądu restytuowanych obrazów anamorficznych dokonuje się w odbiciu w określonej powierzchni refleksyjnej. Opracowanie w oparciu o wnikliwe analizy przekształceń anamorficznych wskazuje innowacyjną możliwość przekształcania obrazów rzeczywistych w obrazy anamorficzne oraz ich zapis. Określono schemat ideowy takiego urządzenia optycznego, które realizuje przekształcenie oraz zapis obrazów anamorficznych. Przedstawiono i opisano jego prototyp, wykazując jego praktyczną skuteczność, poprzez restytucję przekształconego i zapisanego optycznie obrazu anamorficznego.

Słowa kluczowe: anamorfoza, przekształcenia anamorficzne, urządzenie optyczne, schemat ideowy

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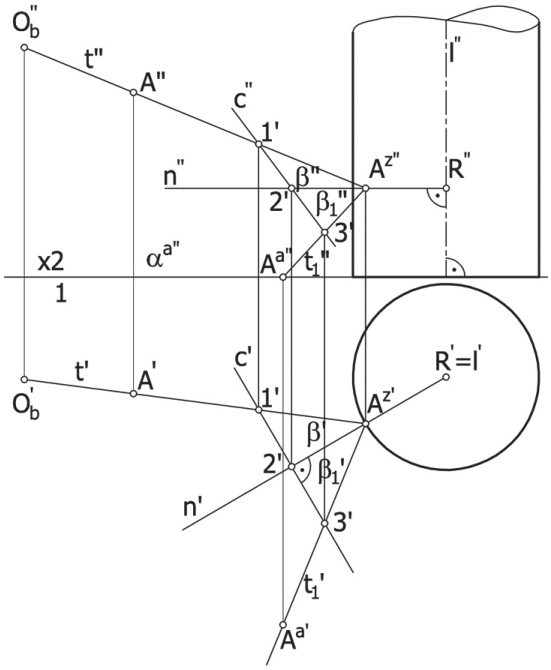
1. Geometrical principles of catoptric anamorphic transformation



Ill. 1. Graphical notation of the anamorphic transformation of any point

Ill.1 describes the basic geometrical relations that exist between the elements of a 3D space and their images when projected in the reflexive anamorphic transformation with the use of a cylindrical reflexive surface. The geometric apparatus of the transformation contains the following elements: an anamorphic picture plane which is the plane (α^a), a reflexive surface of a cylinder of revolution with the axis (l) perpendicular to the picture plane (α^a) and the centre of projection (O^b) that belongs neither to the anamorphic picture plane (α^a) nor to the surface of the cylinder. The ray (t) passing through any point (A) of a 3D space and drawn from the centre of projection (O^b), reflects at point (A^z) on the reflexive cylindrical surface. According to the basic law of reflection, the angle of incidence (φ) defined by the incident ray (t) and the normal (n) to the surface equals the angle of reflection (φ_1) defined by the reflected ray (t_1) and the same normal (n). It has been proved that the two angles (φ) and (φ_1) are coplanar and thus the image (A^a) of the point (A) has been uniquely determined in the anamorphic picture plane (α^a) [7]. Due to the fact that the axis of the reflexive cylindrical surface is perpendicular to the anamorphic picture plane (α^a), the normal line (n) has parallel position with reference to the plane ($n \parallel \alpha^a$). We can conclude that the image of the angle of incidence (β') and the image of the reflection angle (β_1') are of equal measure ($\beta' = \beta_1'$). This proves that the point (A^a) as point of intersection of the reflected ray (t_1) with the anamorphic picture plane (α^a) is the image of point (A) in the anamorphic transformation as described above.

2. Logic diagram of the optical device for catoptric anamorphic image creation

It is worth noticing that in contemporary arts and architecture anamorphic images are becoming increasingly popular and artists have started to create such images today. The key point in understanding perspective anamorphic images is to remember that there is a double content hidden behind anamorphic images. On the one hand, we perceive the anamorphic images from the aesthetical viewpoint as works of art which create beautiful geometrical forms. On the other hand, anamorphic images are artistic compositions which, having been perceived from a specific viewpoint and at a specific angle of observation, reveal the true shape of the object hidden behind geometric deformations. The main point of the discussion provided in this paper is to show how it is possible to simplify the construction of the anamorphic images, specifically those which are characterized by highly complicated geometrical deformations.

Analysis of the geometric basics [6] as well as the dimensional relationships existing between the particular elements that create the base of the anamorphic transformation [5] together with the analysis of the potential solutions used by the optical industry has brought about the idea of producing a prototype of an optical device which might be used to produce anamorphic images from the deformed nets of anamorphic images. The goal was to be able to store the anamorphic images for future use.

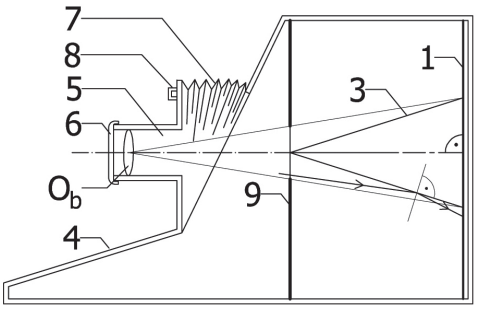
Ill. 2A and 2B present schematic diagrams of the designed optical device together with a description of its principal elements. In Ill. 2A we can see the principle of construction of the device developed to produce reflexive anamorphic images with the use of a conical reflexive surface while Ill. 2B shows the device for cylindrical reflexive (or catoptric) anamorphic images.

The device as a whole has been closed in a hermetic box (4) which protects the interior from light inference. The movable part of the device consists of the lens "Biometar" (5) with a focal length of 120 mm. This part creates the core of the optical device. The lens has been placed in a tube which has been fixed to the camera box. The plate has been fixed to the camera's box by a rotating joint at the bottom, and on the remaining part of the circumference by extensible bellows. The type of joints used to fix the lens inside the device enables freely adjustable tilt of its axis with reference to the both types of anamorphic picture planes (1 and 2). The incident rays are directed onto the reflexive surface, i.e. on the reflexive element (3). The correct tilt of the lens will be controlled by a special lamp which has been fixed between the plate of the box, the extensible bellows (7), and the box of a camera.

The movable elements of the camera also create: photographic plate holders for the horizontally or vertically positioned anamorphic picture planes (1, 2), reflexive elements (3), and masking frames (9). The photographic plate holder contains replaceable light-sensitive material (either light-sensitive paper or a plate) which will carry the stored anamorphic image.

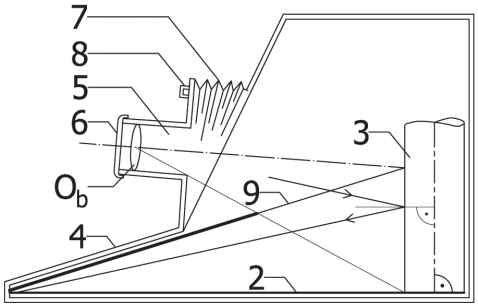
The type of anamorphic picture plane decides on the type of anamorphic image. Reflexive anamorphic images of conical and pyramidal shapes will be recorded on the vertical picture plane (1) while for the reflexive conical and prismatic shapes the horizontal picture plane (2) will be used. The shape of the reflexive element can be developed for a number of various shapes which will be formed by variations and combinations of the basic forms.

A)



Optical device for conical reflexive anamorphic images

B)

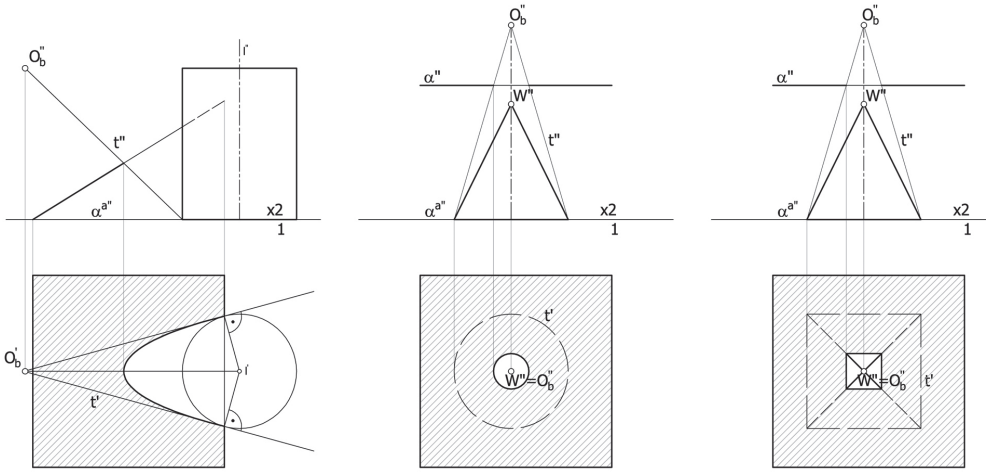


Optical device for cylindrical reflexive anamorphic images

Ill. 2. Ideal diagram of the optical device – cross-sections A) and B)

1. Vertically positioned photographic plate holder for the anamorphic picture plane;
2. Horizontally positioned photographic plate holder for the anamorphic picture plane;
3. Reflexive element (a cone or a cylinder dependent on the type of anamorphic image);
4. Hermetic box for the camera – blocking the light from interfering inside;
5. Lens of the optical device;
6. Cover of the lens;
7. Extensible bellows with lens that enables changing the inclination of the lens' axis;
8. A clamp that enables bellows' control;
9. Masking frame

a) b) c)



Ill. 3. Example shapes for the masking frames relative to various forms of reflexive elements: a) cylindrical, b) conical, c) pyramidal reflexive element

The masking frames (9) create the non-translucent partitions which block the access of the incident rays (t) to the anamorphic picture plane (1, 2) while simultaneously enabling access for the reflected rays. The shape of the masking frame will directly depend on the shape of the reflective element. Ill. 3 shows example shapes for the masking elements for the chosen reflexive anamorphic images: a) cylindrical, b) conical, c) pyramidal.

3. Prototype of the optical device "Anamorphot" used for anamorphic image creation

In the hermetic box a reflexive element in the shape of a cylinder of revolution has been fixed orthogonally to the light-sensitive anamorphic picture plane. The "Biometar" lens (5) has been positioned along the line of sight that passes through the centre (O_b). The line of sight is the direction of observation in this case. The photographic plate holder has been designed to be adjustable to the usage either of standardized photographic paper or an *X*-ray plate (18 × 24 cm). The device is presented in Ill. 4.

Ill. 4. A prototype of the optical device "Anamorphot" (project development: A. Zdziarski)

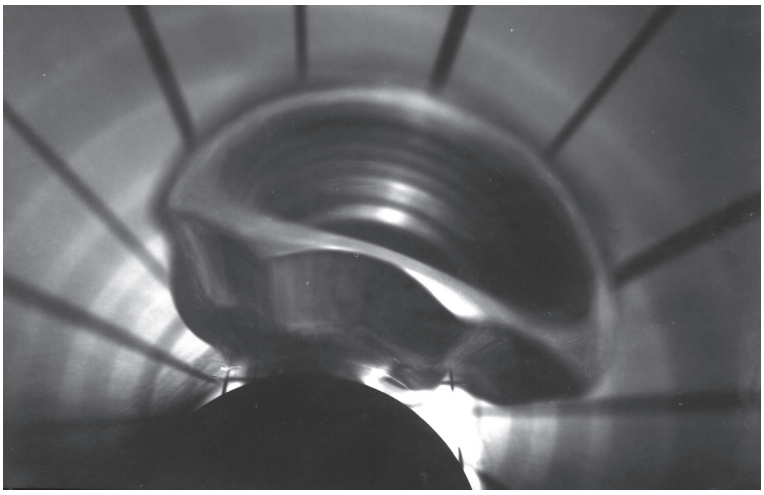
The experiment was conducted over some span of time. In the first stage of the experiment, a focusing screen has been used instead of a photographic plate. This enabled us to take a peep at the created image and evaluate its size and clarity. As the parameters of the anamorphic picture plane do not change (are constant) in the optic device and as the centre of observation (O_b) lies on the axis of the lenses, the range of the image to be transformed can be guided by choosing the relevant tilt of the lens axis. The maximum height of the anamorphic image which can be examined, is equal to the distance between the horizontal axis of the lens and the anamorphic picture plane [5].

Stiffening of the required position of the lenses axis will be carried out using a circular countering mechanism. In the prototype of the optical device no shutter was constructed due to technical conditions. Exposure to the light rays was realized by removing the lens cap, the exposure continued for a short time, then the cap was replaced.

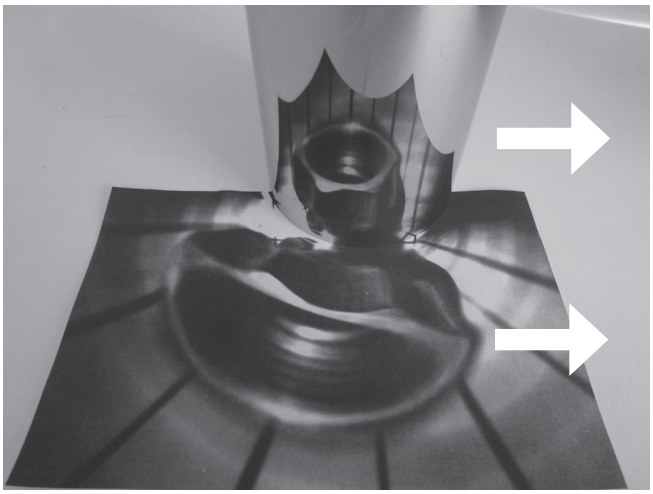
An experiment was conducted using the "Anamorphot" device to demonstrate the validity of its construction. One of the first successful experiments was conducted on the example of a nut. An anamorphic image of the nut was created using the "Anamorphot" and then reconstructed in a reflexive surface of a cylindrical mirror.

The image taken on the horizontal photographic plate (2) has been chemically developed after taking a shot. Ill. 5 presents the distorted image of the nut. In the central part of the image we can see a distorted anamorphic picture of the nut on the background of the radial

grid of lines. In the top central part of the picture (Ill. 5) we can see a circular dark spot that determines the original position of a reflexive cylinder.



Ill. 5. Anamorphic transformation and photographic record of the nut obtained using the "Anamorphot" (photo by A. Zdziarski)



Restored anamorphic picture of a nut on a reflective cylindrical surface

Anamorphic image

Ill. 6. Restoration of an anamorphic image of a nut (by A. Zdziarski)

The anamorphic image obtained by using the "Anamorphot" has been reconstructed and the result can be seen in Ill. 6. In the anamorphic picture plane a right circular cylinder has been positioned in such a way that its axis is perpendicular to the picture plane and the

cylinder's base was fixed within the dark circular trace at the top part of the image (aligned with the dark-shaded trace of the cylinder base). The image reflected in the cylindrical surface creates the shape of the nut as it is read from an appropriate direction. In the central part of the mirrored image we can see the non-deformed picture of the nut. The grid of radial lines turns out to be a background or a wallpaper for the picture.

In order to construct a conical anamorphic image of a nut we need to use a vertically positioned photographic plate holder and exchange the reflexive element for a conical one. Then we need to fix the conical reflexive element in a horizontal position so that the axis of the cone is perpendicular to the anamorphic picture plane and is co-axial with the lens' axis (Ill. 2A).

The transformation and recording of the anamorphic reflective images that were realized using the "Anamorphot" prototype demonstrate the validity of the device's construction. Specifically, the ability to obtain a correctly restored image of a nut by reflecting it in a cylindrical surface shows that the reasoning based on the basic law of reflection and based on the geometric principle of creation of anamorphic images is correct.

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ANDRZEJ ZDZIARSKI, MARCIN JONAK*

CYLINDRICAL ANAMORPHIC IMAGES –A DIGITAL METHOD OF GENERATION

CYFROWA METODA GENEROWANIA ANAMORFICZNYCH OBRAZÓW WALCOWYCH

A b s t r a c t

The aim of this paper is to present a practical construction for some cylindrical anamorphic images. The method is based on the analytic properties of reflective anamorphic image construction – topics which have been discussed in previous papers. This time, the authors deal with the analytical analysis of a transformation that is applied in order to obtain an anamorphic image, and provide an innovative digital notation of the reflective transformation discussed. The analytical model described here allows us to generate a cylindrical anamorphic image of any object that is represented in the form of a set of parametric equations. Some example anamorphic images together with their counter-images reflected in the surface of a cylindrical mirror will be presented here. The method of construction described enables the development of any design project of an anamorphic image in the urban planning environment and within the interiors of public spaces.

Keywords: transformation, anamorphic image, visualization of an anamorphic image, reflective cylinder

S t r e s z c z e n i e

Niniejszy artykuł przedstawia praktyczną metodę konstruowania obrazów anamorficznych w oparciu o własności analityczne dla anamorf refleksyjnych. Praca jest kontynuacją zagadnień związanych z określeniem geometrycznych zasad powstawania obrazów anamorficznych na bazie obrazu rzeczywistego, natomiast prezentuje ona analityczne przekształcenie oraz innowacyjny cyfrowy zapis takich obrazów. Tak więc opracowany model analityczny pozwala generować obrazy anamorficzne dowolnych projektowanych obiektów zapisanych w formie równań parametrycznych. Przykładowe anamorfy zaprezentowano wraz z ich obrazami restytuowanymi za pomocą prototypowego zwierciadła walcowego. Powyższe rozwiązania dają możliwość precyzyjnego projektowania obrazów anamorficznych w zurbanizowanej przestrzeni miejskiej oraz architektonicznych wnętrzach przestrzeni publicznej.

Słowa kluczowe: przekształcenie, restytucja, anamorfa, walec refleksyjny

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Symbols

A_p	–	designed point;
A_{anm}	–	anamorphic image of a designed point;
x_{anm}	–	abscissa of an anamorphic image;
y_{anm}	–	ordinate of an anamorphic image;
R	–	radius of the reflective cylinder;
x_p	–	abscissa of a designed point;
y_p	–	ordinate of a designed point;
ζ	–	reflection angle.

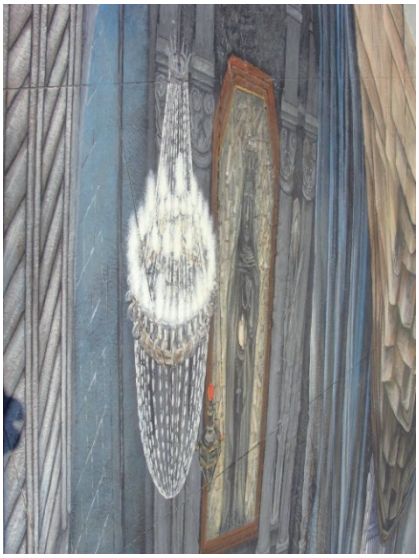
1. Introduction

Anamorphic, perspective images can be described as those with the possibility of being perceived through a double vision process: 1) through direct vision on a scene or a picture and 2) when the drawings produce a certain illusion when they are reflected in the surface of a mirror. This specific illusion is usually hidden behind the dual meaning of an image. At a very first glance at an anamorphic image we can usually see a geometric drawing which makes a good aesthetic impression due to its geometrical composition that is ruled by the principles of reflective transformation. However, there is another layer hidden inside the image that has the beauty of a planar geometry and a sense hidden behind the complicated shapes that we can see directly in the picture. This secondary level of the anamorphic image becomes readable when they are observed from a specifically taken stationary point or viewpoint, or when the picture is reflected in a specifically adopted mirroring surface.

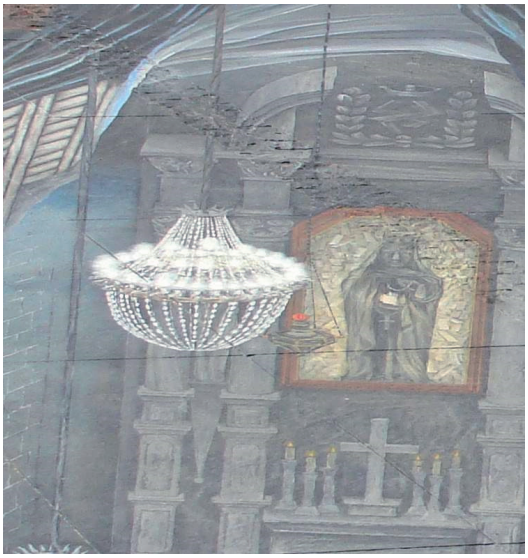
The art of creating anamorphic images survives and today returns. They appear in public areas either as the planar, colourful and surprising compositions or as being brought to a 3-D space with the aid of special mirrors helping to see them in three dimensions (Ill. 1, Ill. 2 and Ill. 3). In a series of publications on anamorphic image creation ([6–8]), Zdziarski provides a geometrical analysis of particular types of anamorphic transformations together with their classification and possible methods of visualization. The previous papers describe the highly complicated principles for creating an anamorphic image so that a view of a real life object is obtained when reflected in a mirror or when observed from a specific viewpoint. The metric parameters of the reflective cylindrical anamorphic images have also been analysed. A special taxonometry has been introduced in order to classify all possible of various types of axonometric images and to arrange them into specific sub-groups. This classification and special nomenclature has been provided in previous publications. In consequence, it has become possible to create much more advanced anamorphic images and to introduce simplified methods for creation and “reading” the images in a 3-D space. It is also possible to create “deformation nets” which help in drawing the anamorphic images and understanding the ways they should be constructed.

Additionally, some analysis has been done in order to describe the planar constructions of anamorphic images, the constructions aided with a device called a “pantograph”. An optical principle has been applied in order to execute this type of transformation.

Ill. 1. Planar anamorphic image in the closed municipal area of the Main Square in Wieliczka, PL-Ryszard Paprocki (photo by M. Jonak)



Ill. 2. Detail of an anamorphic image as observed from a randomly chosen view-point (photo by M. Jonak)



Ill. 3. Detail restitution seen from specified view point (photo by M. Jonak)

An innovative idea of how architects and designers can introduce anamorphic images into their design projects in urban planning and/or within the interiors of the public spaces has been brought about by A. Zdziarski ([6–8]). A wide range of the papers written by A. Zdziarski may well serve the architects and the artists who want to use the guidelines presented in his work today.

2. Description of a projection method used to create anamorphic images

2.1. Projection variables (Figure 1)

The elements of projection system create:

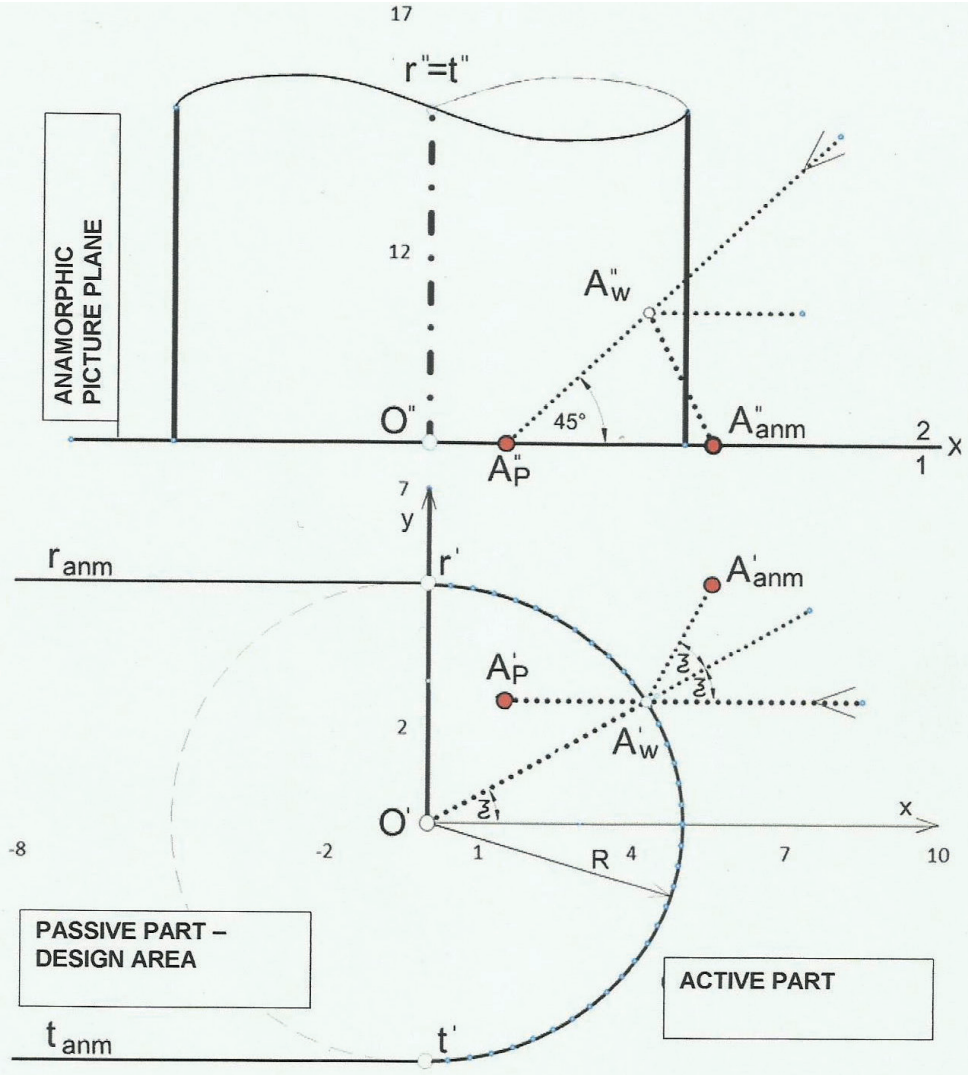
- an anamorphic picture plane which is a horizontal plane of the cylinder's base,
- a reflective cylinder of revolution with a set-up diameter and vertical axis,
- direction of a projection (LOS) which has a slope of 45° in reference to the horizontal picture plane.

2.2. Description of a projection method

As has been typically described in many of the available textbooks [6–8], the described type of projection is realized practically based on the principles of a central projection (theory of seeing vs. perspective projection). In the case described here, the authors have adopted the position of an observer at infinity and thus they assumed that a parallel projection will represent the projection method. The parallel bunch of lines of sight (LOS) that are inclined at 45° in reference to the anamorphic picture plane represent the direction of projection. This assumption means the digital notation of all equations be simplified and we can easily design numerous anamorphic images.

The adopted direction of projection (LOS) determines two of its parts on the cylinder's surface: a) an **active part** in terms of optical conditions (this is the part facing the observer); the active part of a cone will be limited with two generators r and t; and b) a **passive part** (the remaining part of the cylinder). The semi-lines r_{anm} and t_{anm} are the images from two generators r and t. These two lines also divide the anamorphic picture plane into two areas: a) a **passive part** – the part where we can place a design pattern; and b) an **active part** where an anamorphic image of a designed object will be projected. The bordering polyline between the two parts of the anamorphic picture plane will be made of two semi-lines r_{anm} and t_{anm} and a semicircle of the cylinder's base (in ill. 4 the line shown with a thick continuous line represents the bordering line). Thus, in the anamorphic picture plane we can distinguish two areas with differing terminations: a design area where we can place the transformed image, and an area where the anamorphic image will be active. The design area is necessary to realize the digital input of the transformation.

Illustration 4 shows the principle of construction of the anamorphic image A'_{anm} of the designed point A_p that belongs to the passive part of the design area. The image A'_{anm} lies in the active part of the anamorphic picture plane.



Ill. 4. Two-view orthographic projection of principles of anamorphic transformation

The base for creation of any anamorphic image is the well-known optical law of two angles equality: the angle of incidence equals the angle of reflection in geometric optics (in ill.4: angle ζ). Point A_p has been randomly specified in the anamorphic picture plane. From point A_p a projector parallel to the direction of the LOS has been drawn. The point of intersection A_w is the point of incidence of the LOS passing through A_p and lies on the active part of a cylinder. Next, a surface normal to the cylinder at point A_w has been drawn. According to the geometric optic we can determine the angle ζ between the incident ray and a normal n and construct the reflected ray making the same angle with n. A_{anm} will be an anamorphic image of point A_p.

2.3. Analytic approach and problem solution

The digital method for solving the problem is based on determining the relations existing between the designed geometry and the anamorphic geometry, i.e. between two images: one belonging to the passive part and the other belonging to the active part of the anamorphic picture plane. The problem has been solved with the use of theorems well known from trigonometry[1]. The analysis of the geometrical transformation presented in ill. 4 allows us to determine the corresponding relation existing between the coordinates of the designed point $A'_P(x_p, y_p)$ and the coordinates of its anamorphic image $A'_{\text{anm}}(x_{\text{anm}}, y_{\text{anm}})$. The equations can be formulated as follows:

$$x_{\text{anm}} = \mathrm{R} * \cos(\zeta) + [\mathrm{R} * \cos(\zeta) - x_p] * \cos(2 * \zeta) \tag{1}$$

$$y_{\text{anm}} = y_p + [\mathrm{R} * \cos(\zeta) - x_p] * \sin(2 * \zeta) \tag{2}$$

where:

x_{anm} – abscissa of the anamorphic image of the designed point;
y_{anm} – ordinate of the anamorphic image of the designed point;
R – radius of the cylinder of revolution;
x_p – abscissa of the designed point;
y_p – ordinate of the designed point;
$\zeta = \arcsin(y_p/\mathrm{R})$.

The goal of this paper is to present the application elaborated in MSExcel[2] by M. Jonak. This individual application helps to creating an anamorphic image of a designed object using a default function in MS Excel – the function which is called a "dotted diagram with smoothing option". It is possible to precisely define the contours of a diagram while the line weights and colours required may be used for visualization.

Illustration 5 presents a screenshot taken from MSExcel in which a set of parametric equations has been formulated to calculate the coordinates of points on a semi-circle with radius r_1. An anamorphic image of the circle has been calculated according to the equations (1). In ill. 1 we can see a pair of corresponding points A_p and A_{anm} that have been highlighted red: one point belongs to a semi-circle in the design part of the plane and the other represents its anamorphic image and belongs to the active part of the plane.

Now, if we take a look at the reflective surface of a cylinder in such a way that the LOS makes an angle of 45° with the anamorphic picture plane, we will see the image of an ellipse with two axes [r1 i r1/√2] – its axis parallel to the x axis will become foreshortened with the parameter √2 (√2 is the diagonal length in a square with side length 1). The foreshortening factor results from the fact that the Line of Sight (LOS) makes 45° with the anamorphic picture plane.

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[1] I.N. Bronsztejn, K.A. Siemiendiajew, *MATEMATYKA Poradnik encyklopedyczny*, Wydawnictwo Naukowe PWN, Warszawa 2000 (Część druga – III. *Geometria i IV. Trygonometria*).

[2] MS Excel, 2008.

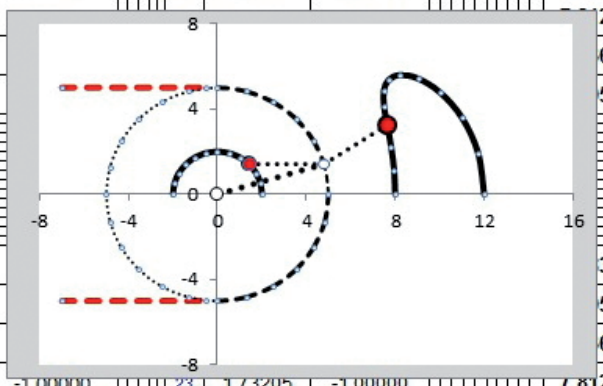
DESCRIPTION

BASE of REFLECTIVE CYLINDER: CIRCLE, RADIUS R, CENTER (0,0)

ANAMORPHIC IMAGE A(xanm,yanm) of A POINT A(xp,yp)

ζ PARAMETER

	R=	5,00						
	r1=	2,00	RADIUS OF THE TRANSFORMED CIRCLE				[1]	[2]
	xo=r1*cos(ζ)	yo=r1*sin(ζ)			x(p)=	y(p)	Xanm=	Yanm=
1	2,00000	0,00000		1	2,00000	0,00000	8,00000	0,00000
2	1,93185	0,51764		2	1,93185	0,51764	7,94922	1,14397
3	1,73205						255	2,24118
4	1,41421						639	3,24903
5	1,00000						513	4,13054
20	0,51764						345	-4,84984
21	1,00000						513	-4,13054
22	1,41421						639	-3,24903
23	1,73205	-1,00000		23	1,73205	-1,00000	7,81255	-2,24118
24	1,93185	-0,51764		24	1,93185	-0,51764	7,94922	-1,14397
25	2,00000	0,00000		25	2,00000	0,00000	8,00000	0,00000



Ill. 5. Exemplary screenshot captured from MSExcel: calculating the case of a circle (= designed geometry) and its transformation into an anamorphic image

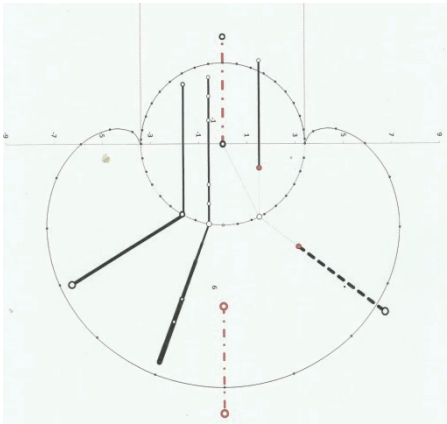
3. Example solutions

The images designed consist only of some parts of the curves (or straight lines) recorded by parametric equations. To the group of cases described here belong those which represent some special positions of geometric entities like the following in a reflected picture: vertical lines, intersecting lines, circles, ellipses etc. ...

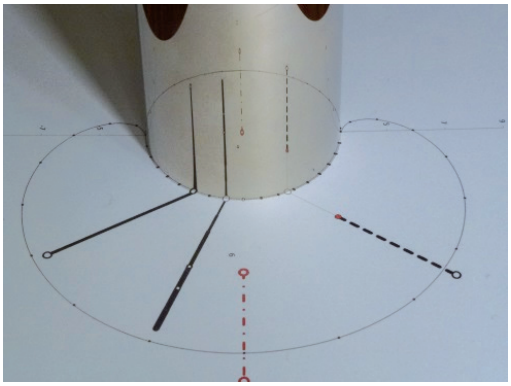
- Ill. 6 Vertical lines, i.e. the lines perpendicular to the anamorphic picture plane, as are the generators of the reflective cylinder's surface. Additionally, a vertical line parallel to the cylinder axis as positioned in the interior of the cylinder;
- Ill. 3 displays the image of the lines positioned in the design part of the cylinder together with their view contained in the active part of the anamorphic plane;
- Ill. 6 displays the view obtained after reflection in a cylindrical surface. It should be noted that anamorphic images of two lines are straight lines when they coincide with the surface generators. The other line – represented with a dashed line – will be reflected as a vertical

line that belongs to the interior of the cylinder. In addition, the line represented with a dash-dot reflects in the cylinder surface as its axis. Let us also notice that the width of the line belonging to the anamorphic picture plane changes along its length which results from the perspective image perception. This change in width will be required if we want to get a uniform linear image in the reflection;

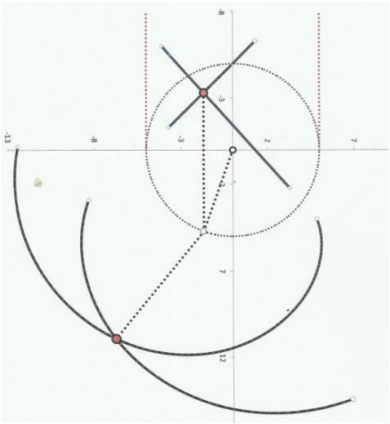
- Ill. 8 – the image of two intersecting lines;
- Ill. 10 – the image of two parallel lines;



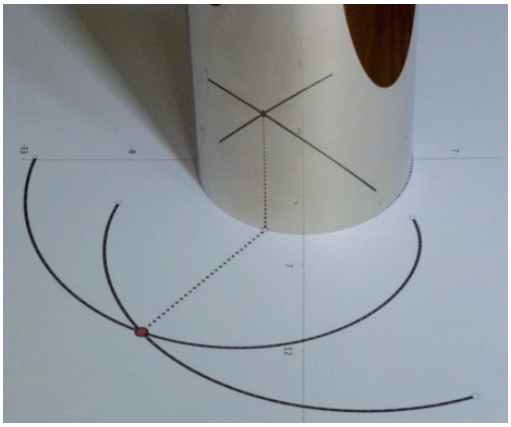
Ill. 6. Vertical lines – a design project in the passive part and the anamorphic image in the active part of the picture plane



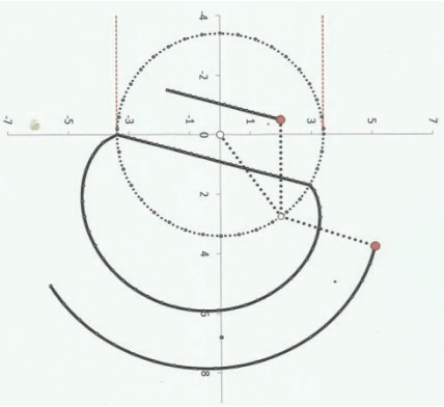
Ill. 7. Anamorphic image of vertical lines as reflected in the cylinder's surface



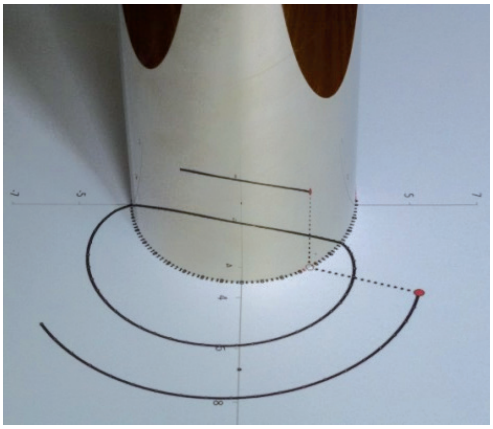
Ill. 8. Two intersecting segments – the design project in the passive part and the anamorphic image in the active part of the picture plane



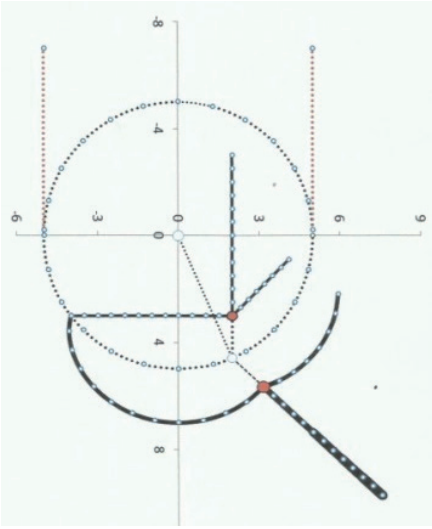
Ill. 9. Anamorphic image of two intersecting segments as reflected in the cylinder's surface



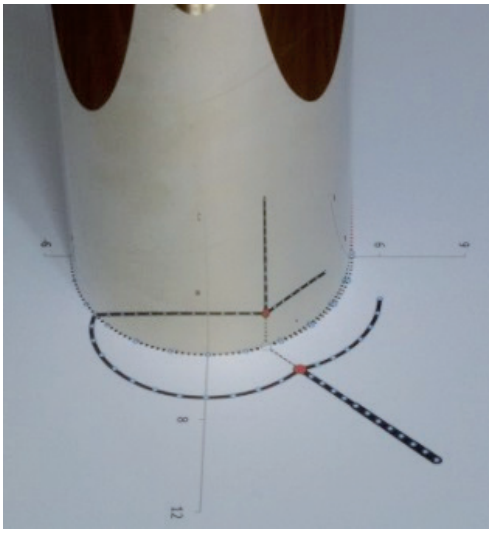
Ill. 10. Two parallel segments – a design project in the passive part and the anamorphic image in the active part of the picture plane



Ill. 11. Anamorphic image of two parallel segments as reflected in the cylinder's surface

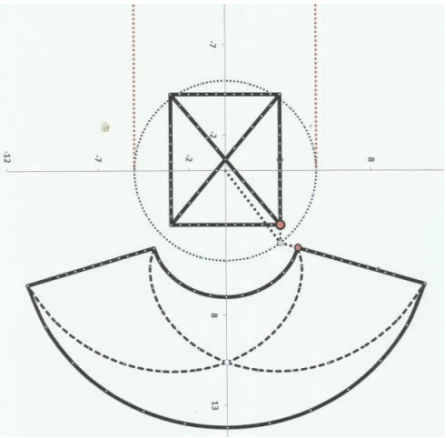


Ill. 12. Three mutually perpendicular segments – a design project in the passive part and the anamorphic image in the active part of the picture plane

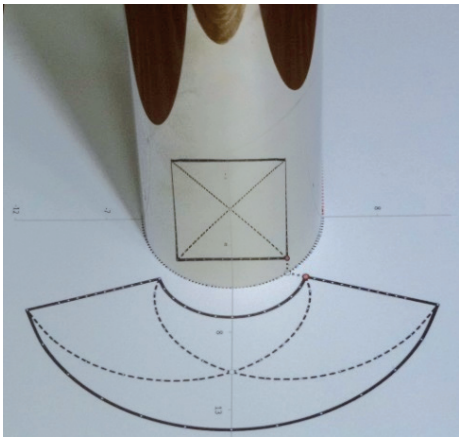


Ill. 13. Anamorphic image of three mutually perpendicular segments as reflected in the cylinder's surface

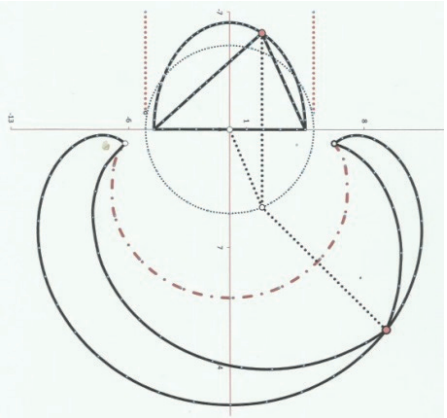
- Ill. 12 – two mutually perpendicular lines intersecting at a single point;
- Ill. 14, 16, 18 – the images of some basic geometric figures: a square, a rectangle, a circle, an ellipse;



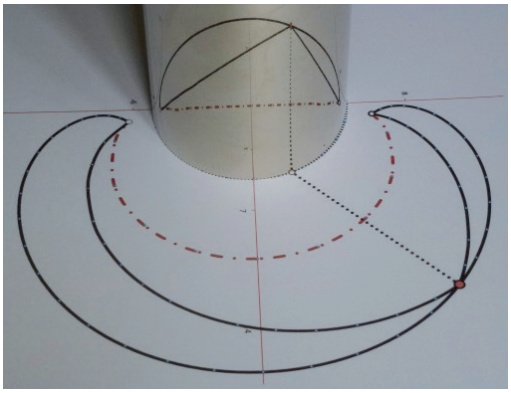
Ill. 14. A square perpendicular to the anamorphic picture plane – a design project in the passive part and the anamorphic image in the active part of the picture plane



Ill. 15. Anamorphic image of a square perpendicular to the anamorphic picture plane as reflected in the cylinder's surface

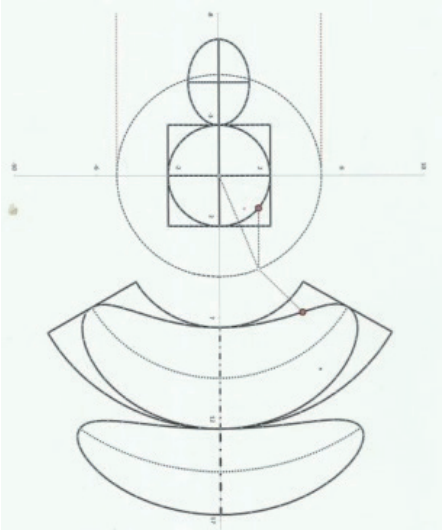


Ill. 16. Right angle inscribed into a semicircle – a design project in the passive part and the anamorphic image in the active part of the picture plane

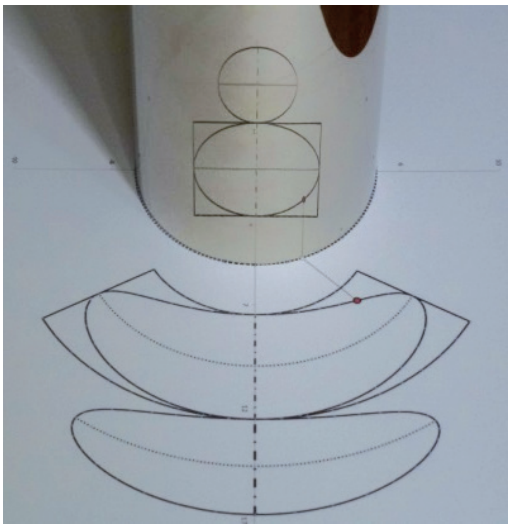


Ill. 17. Anamorphic image of a right angle inscribed into a semicircle as reflected in the cylinder's surface

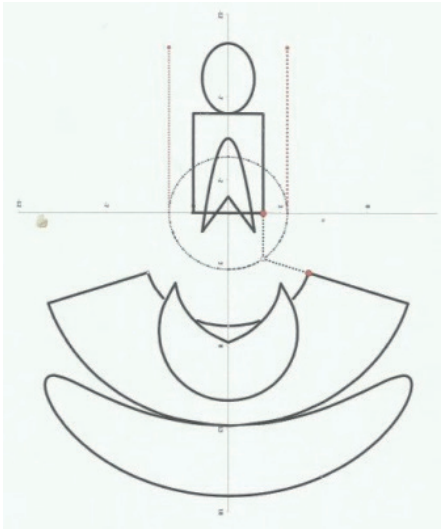
- Ill. 20, 22, 24, 26 – images of some spatial compositions which have been compiled from selected cases:
  - Ill. 20 – a composition of, a rectangle, a circle with a segment of a parabola cut out with a right notch;
  - Ill. 22 – anamorphic image of a right circular cylinder standing on the horizontal picture plane;



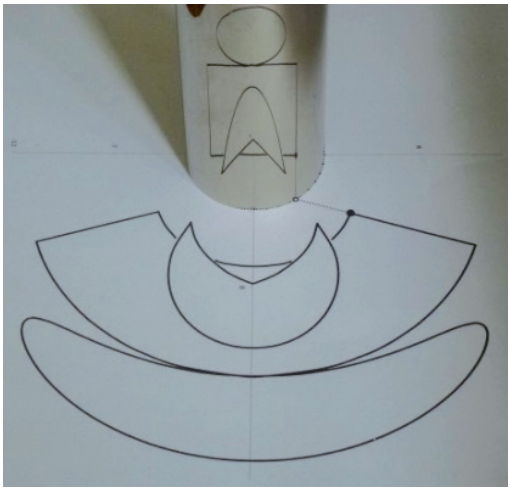
Ill. 18. A circle and an ellipse inscribed into a rectangle – a design project in the passive part and the anamorphic image in the active part of the picture plane



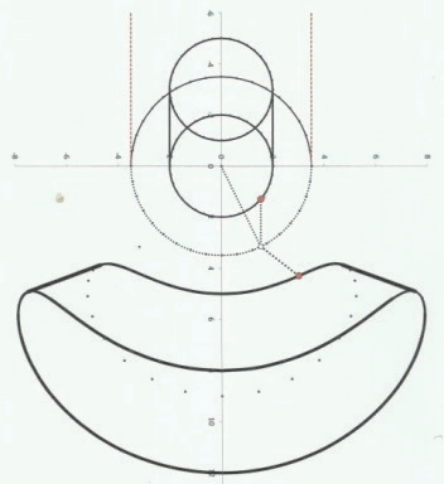
Ill. 19. Anamorphic image of a circle and an ellipse inscribed into a rectangle as reflected in the cylinder's surface



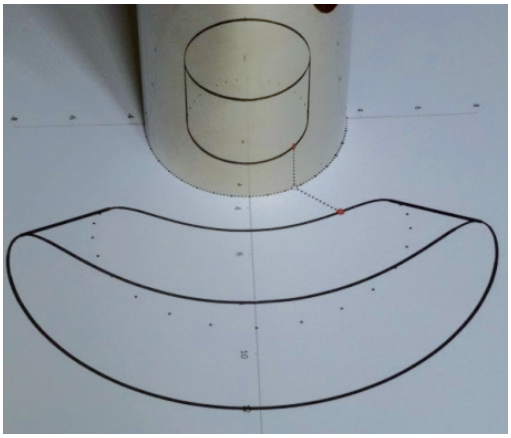
Ill. 20. Two-dimensional composition of planar figures – a design project in the passive part and the anamorphic image in the active part of the picture plane



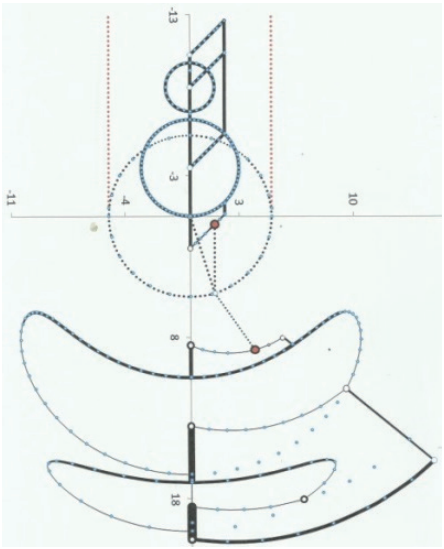
Ill. 21. Anamorphic image of a two-dimensional composition as reflected in the cylinder's surface



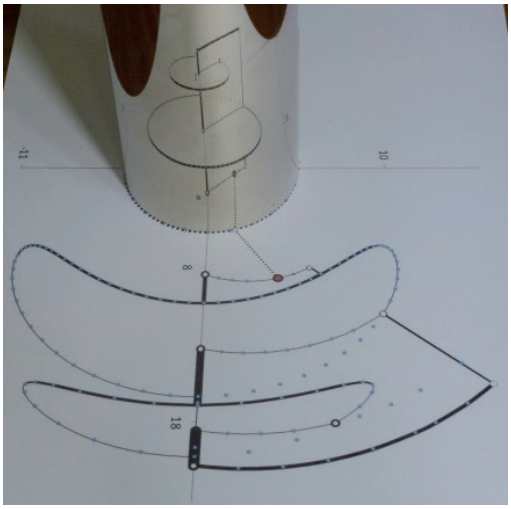
Ill. 22. Cylinder of revolution – a design project in the passive part and the anamorphic image in the active part of the picture plane



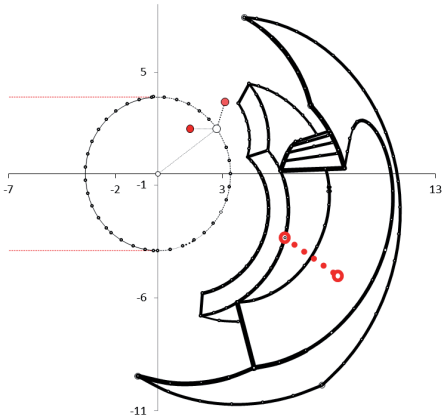
Ill. 23. Anamorphic image of a cylinder of revolution as reflected in the cylinder's surface



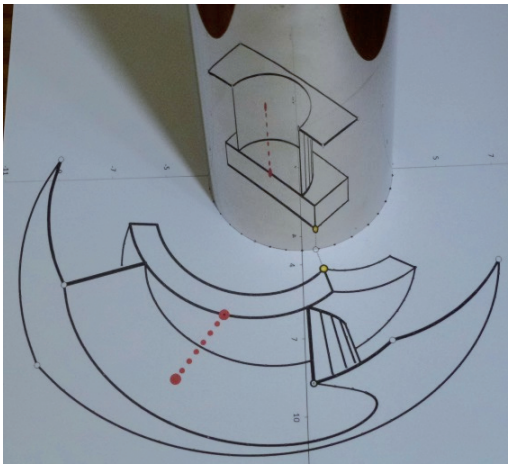
Ill. 24. Spatial object composition – a design project in the passive part and the anamorphic image in the active part of the picture plane



Ill. 25. Three-dimensional anamorphic composition as reflected in the cylinder's surface



Ill. 26. Spatial object – a design project in the passive part and the anamorphic image in the active part of the picture plane



Ill. 27. Three-dimensional anamorphic composition as reflected in the cylinder's surface

All photographs by Marcin Jonak, Andrzej Zdziarski

- Ill. 24 – a composition of two horizontal circles cut half-through with a vertical rectangle;
- Ill. 26 – reflection of the anamorphic image positioned in the active part of the anamorphic picture plane. As the design part of the anamorphic picture the plane has not been explicitly presented here; the result viewed in the reflective cylindrical surface is even more surprising.

The pictures described above have been created as compositions of primitive elements. All the pictures have their design image that have been fixed in the "passive part" and the anamorphic images have been placed in the active part of the anamorphic picture plane (Ill. 6, 8, 10, 12, 14, 16, 18, 20, 22, 24 and 26). The views reflected in the mirroring surface of the cylinder of revolution present spatial compositions as being observed from a specified view-point (Ill. 7, 9, 11, 13, 15, 17, 19, 21, 23, 25 and 27).

In practice, the images generated as described above, or rather the contours of the objects that are contained in the images, may play a special role in design. Further artistic elaboration of the images will usually undergo artistic finishing by means of adding textures, the colours and lineweights. One of the advantages of the method presented here is that the viewed anamorphic images have no deformations and give a good spatial impression when they are observed from a carefully specified viewing point. Besides this, the clarity of the image which can be seen in the reflection is high. Sometimes it happens that the observer will be surprised by the result obtained after seeing the reflected image.

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TREŚĆ