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**FREEHAND DRAWING FOR STUDENTS
OF ARCHITECTURE – EDUCATIONAL ISSUES**

**NAUCZANIE RYSUNKU ODREČZNEGO
DLA ARCHITEKTÓW**

ANDRZEJ DOMARZEWSKI*

DRAWING AND PAINTING? DEFINITELY!
THE ROLE OF PAINTING AND DRAWING
WORKSHOPS AFTER THE FIRST YEAR OF STUDIES
AT THE FACULTY OF ARCHITECTURE

RYSOWAĆ, MALOWAĆ? – NA PEWNO TAK!
ROLA PRAKTYKI MALARSKO-RYSUNKOWEJ
PO PIERWSZYM ROKU STUDIÓW
NA WYDZIALE ARCHITEKTURY

Abstract

There is a long tradition of painting and drawing workshops offered after the first year of studies at the Faculty of Architecture of the Cracow University of Technology. In view of the limited number of teaching hours devoted to painting and drawing throughout the academic year, workshops constitute an indispensable element of artistic education and prove useful in the course of subsequent professional activities. Classes are held outdoors, in various spots all over Kraków, and last for five days. For the past several years, plein-air workshops have been organized in Chelmino for groups of ten. During the plein-air workshop, which is not comparable to class-room painting sessions, students work in constant close contact with architects and visual artists, whose professional tips and advice enable them to expand their experience in drawing and painting.

Keywords: architecture, practice, drawing, painting

Streszczenie

Praktyka malarsko-rysunkowa po pierwszym roku studiów na Wydziale Architektury Politechniki Krakowskiej ma wieloletnią tradycję. Ze względu na małą ilość godzin zajęć rysunku i malarstwa w czasie roku akademickiego jest niezbędnym elementem kształcenia plastycznego przydatnego w późniejszej profesjonalnej pracy zawodowej. Zajęcia odbywają się w plenerze w różnych miejscach Krakowa i trwają 5 dni. Od kilku lat dla grupy dziesięciu osób istnieje możliwość uczestniczenia w dziesięciodniowym plenerze w Chelminie. W trakcie pleneru niedającego się porównać z zajęciami na sali rysunkowej, pracując w ciągłym kontakcie z architektami, plastykami, dzięki profesjonalnym korektom i rozmowom studenci zyskują nowe doświadczenia w dziedzinie rysunku i malarstwa.

Słowa kluczowe: architektura, praktyka, rysunek, malarstwo

* Ph.D. Arch. Andrzej Domarzewski, Division of Freehand Drawing, Painting and Sculpture, Faculty of Architecture, Cracow University of Technology.

Drawing, graphic art and painting constitute indispensable elements in the process of the development of future architects in terms of their artistic awareness. The teaching programme has been developed over the years by generations of artists. The spectacular results of these teaching methods can be observed, for example, at periodic exhibitions organized at the university. Students' paintings, graphic designs and drawings are also exhibited on the walls of the Rector's office. They can also be found in the offices, halls and rooms of such institutions as the Institute of Paediatrics, children's homes, children's special care centers and schools. Good teaching results are not achieved exclusively through regular classes during the academic year; the limited number of drawing lessons makes it necessary to supplement them with summer training. During plein-air workshops, which are not comparable with classroom sessions, students are enabled to shape their artistic awareness and sensitivity.

Currently, training in painting and drawing is offered primarily in the form of a five-day plein-air workshop in Kraków. The city features numerous picturesque sites perfect for plein-air painting, including landscapes, urban greenery, parks, and bodies of water. Numerous historical neighbourhoods, buildings and beautiful architectural details add to the diversity and richness of plein-air options.

The optimal form of practical training is fieldwork outside the student's academic centre or hometown. This requirement has been addressed for the past several years by the Chełmno Town Hall, which organizes ten-day summer plein-air painting and drawing workshops called National Plein-Air Workshops for Architecture Students. The purpose of these annual workshops is to promote young talent as well as the beautifully situated town of Chełmno, whose numerous historical buildings constitute a valuable cultural heritage. This cultural space is especially attractive for the artistic activities of graphic designers, painters, sculptors, photographers and filmmakers. The programme offers the ten freshman students of the Faculty of Architecture selected for the workshops a unique opportunity to complete their training in painting and drawing in a form that, while slightly different, remains within the curricular framework. Workshop training has been designed so as to enable not only adherence to the curriculum and exercise topics but also a large degree of interpretational freedom in accord with the student's expectations, intuition, and interests. Therefore, it is necessary to adopt an individual approach to each student's work.

Landscapes with which we commune daily may come to be perceived as ordinary and fail to evoke impressions as intense as those created by fresh new scenery. In Kraków, students can work individually and independently, according to their needs and potentials. The opportunity to visit such an interesting place raises university training to an entirely new level. Additionally, better teaching results can be achieved there thanks to students' constant and direct contact with their teachers and supervisors. A ten-day plein-air workshop features all-day sessions which often last far into the night, as opposed to meetings several hours long such as those organized within the framework of classroom training in Kraków-based workshops. This creates perfect conditions for unhurried individual and collective corrections and summarizing of work done over a series of days. Then, participants can draw adequate conclusions and think about and discuss their individual work plans for the following day. Ten days of practical training and maximization of each work day permit the thorough consideration, observation and revision of issues that might be difficult to

address otherwise. Thanks to a relatively small group of well-integrated people, mutual communication is much easier, as is enhancing the students' consciousness and transmitting necessary knowledge. This kind of working atmosphere and common involvement has a huge impact on achieving a higher level of mutual understanding. It results in more mature work. What is more, integration of student groups from various architecture faculties from all over Poland and abroad is also possible, because the plein-air workshops are attended annually by students from the Faculty of Architecture of Lviv University. Contacts with other teachers expand the horizons of these young people and stimulate their imaginations.

Currently, plein-air workshops are offered based on 70 years of experience in teaching painting and drawing at the Faculty of Architecture. An architect's practical skills are developed through improvement of his spatial imagination, among other aspects. The quality of teaching depends on frequent professional correction from experienced teachers, usually artists active in various fields such as painting and drawing, graphic design, stained glass, and artistic photography. Direct contact with a teacher, his personality and experience may take the form and features of a live experience, enabling him to reach the minds of the young people. This is one of the factors that facilitate a transition to mature artistic and professional activity.

The ability to observe and enhance one's artistic sensitivity, richness of perception, and ways of incorporating colour into artistic work are the basic issues the students work on. The opportunity to make independent decisions is an important element of self-development which will have a positive effect on the work of a future designer, architect, or artist.

A way of seeing things is a deliberate act; therefore the ability to look and see comes down to the ability to make conscious choices. We see only what we look at; thus a painting is an image isolated from its original context. It must be processed and interpreted so as to eventually constitute a culmination and essence of many factors. It must be also noted that 'The way we perceive things depends on our knowledge...'¹. This knowledge does not appear out of nowhere. In this case, it results from experiments and experience in drawing and painting, among others, and is aided by the presence and expertise of a teacher and artist. Intensive training and frequent correction result in the transfer of emotions that emerge within the sphere of life experience into the structure of a painting. These emotions may consist of many elements, such as knowledge of the subject of interest, history, sociology, psychology, or, finally, the entire psychological makeup of the artist. Seeing, as understood and expected, does not come down to a mere mechanical reaction to stimuli. Reactions and recording reactions make up only a small part of the whole process of seeing.

In order to meet the requirements imposed upon architects and artists, students of architecture must become familiar with and acquire skills related to drawing and the use of colour. These skills directly influence the quality and character of an architectural design, along with its details and surroundings. One has to do many exercises to explore one's ability to communicate through colour, and to become familiar with the theoretical and practical aspects and niceties of a given problem in order to be able to propose a mature solution for a given location. The importance of colour in architectural design is as great as the design of the architectural form itself, because the mutual interaction

¹ J. Berger, *Sposoby widzenia (Ways of seeing)*, Poznań 1997, p. 8.

between form and colour influences the positive or negative perception of the project in question. The inadequate or irresponsible use of colour may have an adverse effect on the perception of the architecture.

In relation to the psychological effects of colours and shapes, Walter Gropius, one of the twentieth century's most outstanding architects, stated that 'Shapes may have a stimulating or calming effect, and the intended result is additionally enhanced through the selection of suitable colours, bright or subdued. Surface colour and texture are indeed independent entities which emit measurable physical energy. They may be perceived as warm or cold, increasing or decreasing distance, light or dark, tense or relaxed, and even attractive or repulsive'².

One cannot resist the impression that our surroundings are dominated by colour nowadays. Colour is a part of a rich range of creative tools, with the concept of communication between the creator and the surroundings playing one of the crucial roles. Used in medicine, it may even supplement psychiatric treatment and disease treatment, among others; therefore only responsible people fully aware of their skills should be allowed to have such a powerful influence on the end users. Architects who lack a thorough knowledge of colour and related experience are thus unable to exercise the considerable power of the artistic medium.

Gropius expands his vision of an architect's education into a proposal to train a student's emotional skills. He claims that he relies on '... reaching towards creative disciplines, such as music, poetry, or visual arts. This action is certainly more than just an addition to thinking – it is basic experience ... This is also the only teaching measure interrelated with our perception and inventive skills'³. This view seems to indicate a complete understanding of and appreciation for the importance of the artistic education of architecture students through drawing and painting exercises. The statement by such a renowned architect that 'drawing and painting is certainly a valuable means of self-expression, but paper, pencil, brush, and watercolour are useless when it comes to the development of spatial aptitude, which is indispensable for free expression' arouses a mixture of astonishment, regret and objection⁴. He emphasises making students familiar with materials, their structures and textures, rather than with these experiences. He claims that a student will begin to learn about colour through working with materials.

But learning at this stage and level comes down to knowing that some colours exist, often without realizing how important colours are and how rich a range of possibilities they offer. Using colour in architectural design requires knowledge whose basics can be acquired during architectural studies as well.

It seems that a basic exploration of the secrets of colours does not enable the conscious use of colour. Thus, one's education cannot be completed at the level of a layman's awareness of traffic lights. The ability to recognize red, yellow, and green does not result from education and so does not entitle one to practice serious artistic activity. Within this

² W. Gropius, *Pelnia architektury (Scope of total architecture)*, Kraków 2014, p. 51-52.

³ *Ibidem*, p. 77-78.

⁴ W. Gropius, *Pelnia architektury*, p. 79.

context, the notion that All my premises emphasize the importance of the creative factor⁵ arouses distrust.

From the perspective of time and experience, it is certain that not all of Gropius's premises were correct. The thesis formulated above diminishes the value of the whole theory. Lacking such an important link as a thorough knowledge of colour theory and the ability to put it into practice, the design capability of future architects is impaired. This may indicate the lack of a crucial professional skill enabling the design of high-quality architectural compositions.

Seeing is the process of looking at one's surroundings at a certain moment in time. The assessment and selection of elements takes place in our consciousness. A category of this consciousness depends on the intensity of artistic experiences gained throughout one's university programme. The image of reality as seen is not created in a single static glance, but through a mental process of looking at it at a certain point in time. This notion is elaborated on by Władysław Strzemiński, who writes that '... we never look at nature by means of a single static glance. Our eyes move from object to object. They stop at some, skip others, move in various directions; our seeing is not a motionless mathematic algorithm, but a mobile physiological activity'⁶.

Our level of knowledge about drawing and experience enables us to transmit selected important content. Transmission via drawing must be done in a professional way. It cannot be done through a naïve drawing revealing educational gaps or defects. Even if the architect chooses to draw in a naïve manner, as has become fashionable recently, of the entire range of their artistic abilities, such naivety might only be apparent. For a professional designer, the quality of such work is relatively easy to determine.

To summarize, it may certainly be stated that training in painting and drawing after the first year of the architecture programme is an enormously important and indispensable element of the education of future architects. Drawing and using colour, due to the role these skills play in an architect's work, cannot be left out of the curriculum. The limited number of teaching hours devoted to artistic education renders such an education incomplete. Summer training fills the gap, resulting in the formation of a different level of awareness, useful and necessary throughout the subsequent years of studies, and an invaluable aid in future professional activity.

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MAREK FIREK*

MEDIATION IN ARCHITECTURAL DRAWING AND ITS TEACHING

ZAPOŚREDNICZENIE W RYSUNKU ARCHITEKTONICZNYM I JEGO NAUCZANIU

Abstract

Mediation in architectural drawing and its teaching, and in general in art and didactics, is a phenomenon that occurs constantly but with different intensity and at different periods of time. Then, the meta- prefix appears and we obtain 'meta-art', 'meta-drawing', etc. The article covers this issue in relation to the ever wider use of computers in present times. Due to external determinants it is sometimes perceived as pejorative; however, it does not necessarily have to be true. In this work the author analyses the above-mentioned phenomena in reference to manifold criteria of defining and the description of architectural drawing, as well as on the basis of theories concerning designing. Simultaneously, an attempt is made to include these ponderings and conclusions in an outline of the theory of choice that the author is currently elaborating. The theory assumes the possibility of a positive assessment of mutually contradictory theories, which, paradoxically, might lead to interesting results in the sphere of didactics.

Keywords: architectural drawing, mediation, meta-art, theory of choice

Streszczenie

Zapośredniczenie w rysunku architektonicznym i jego nauczaniu, a ogólnie w sztuce i dydaktyce, jest zjawiskiem występującym stale, z różnym nasileniem w różnych okresach. Pojawia się wtedy przedrostek meta- i mamy metaszukę, metarysunek itd. W artykule zostało to omówione w związku z coraz szerszym obecnie zastosowaniem komputera. Uwarunkowania zewnętrzne sprawiają, że czasami jest to odbierane jako pejoratywne. Niekoniecznie tak musi być. Autor w pracy analizuje powyższe zjawiska w odniesieniu do różnorodnych kryteriów definiowania i opisu rysunku architektonicznego oraz na bazie teorii dotyczących projektowania. Jednocześnie zostaje podjęta próba wpisania tychże rozważań i ustaleń w opracowywany przez autora aktualnie zarys teorii wyboru. Teoria ta zakłada możliwość występowania pozytywnej oceny sprzecznych wzajemnie teorii, co paradoksalnie w sferze dydaktyki może prowadzić do ciekawych efektów.

Słowa kluczowe: rysunek architektoniczny, zapośredniczenie, metaszuka, teoria wyboru

* Ph.D. Arch. (Fine Arts) Marek Firek, Division of Freehand Drawing, Painting and Sculpture, Faculty of Architecture, Cracow University of Technology.

1. Introduction

Architectural drawing is mediated in its nature. When it comes to the term *mediated*, it would be the best to confine to a general statement that it occurs when we want to overtake or convey something via something else. It should be also added that it is the becoming of something between something and something else, without going into the possible philosophical interpretation of the term. The first definition seems to be simpler but it is tainted by the word *via*, which might require further defining but is not necessary for these ponderings.

The term of an architectural drawing, however, should be addressed. Is it enough to say that it is “an architect’s drawing as well as a drawing depicting architecture” [3]? It is, but only if we introduce certain limitations and extensions. It is obvious that a nude drawn by an architect is not an architectural drawing, but it becomes one when it constitutes a design sketch of a body- shaped building. Such a drawing has to possess features that can be described as preliminary for further designing based on it. A painting depicting, for instance, a lip- shaped sofa, which was created by Salvador Dali, is not a design drawing, even though an actual piece of furniture was manufactured based on it. A landscape, in turn, is not an architectural drawing, even if it is created by an architect who intends to design a building in this particular location. Thus, an architectural drawing is a drawing made by an architect in connection with his professional work as well as a drawing depicting architecture. A drawing connected with the didactics of the profession of an architect also belongs to the category of drawing connected with their professional work.

It needs to be noticed that there occur two categories of the title drawing. In reference to the already mentioned didactics, there arise situations that are not fully defined. What are sketches of figures drawn by architecture students as their assignment? Considering the fact that the purpose of the correction of students’ works during classes is, among others, to include the construction (“architecture”) of a human figure, their works partially fit these categories. Even though they are created by future architects.

Having made these attempts to define the term ,one can consider the development of teaching architectural drawing, including the changes taking place in the field of technology (computer drawing) along with introducing the assessment of these changes.

2. What kind of mediation?

Architectural drawing is mediated, as it has a utilitarian function [2]. It is a building, and not a sketch, that is a work of art created by an architect. Yet on another level of understanding, there is a mediation resulting from using a particular tool during the drawing process. Can nowadays the computer be such a tool? It must be said that at design offices the transition from developing a design manually with the rapidograph to doing it with the computer was practically smooth. Why, then, is introduction of these techniques to freehand drawing so controversial? When drawing on a piece of paper, we hold a pencil. Drawing on a tablet, we hold a stylus or we can just as well use our finger to draw a line or a nail if we want the line to be thin. Is it so hard to imagine students in a drawing room,

holding 70×50 cm tablets on their laps and drawing with styluses? It obviously concerns only one sort of drawing activity during the didactic process.

Providing such examples, one has to be careful not to make the mistake of futurologists who in 1985 drew their visions of “the city of the future in 30 years”, where cars were hovering in the air. “Rational” assumptions do not necessarily lead to rational effects. The production of butter in disposable plastic containers has not eliminated butter dishes from our lives [6].

In didactics the most important statement is that a proper reproduction of reality in a drawing on the basis of a model or outdoors, subsequently guarantees an appropriate reproduction of an idea that appears in a future architect’s mind on a sheet of paper (or a computer screen, from which it is then put down on paper anyway).

What, then, causes these mental reservations in the perception of architectural drawing? Is it only about the degree of mediation? Undoubtedly, an important aspect here is the transfer of evil from the field of morality to the field of technique [1]. Yet, as drawing experience shows, a certain easiness of lines does not necessarily go hand in hand with the profundity of art. This simple and commonly known observation explains a lot. It should also be remarked that when using the computer, one can generate images with programs (rendering) or make it with a stylus on the screen. The second way seems to be more “natural”.

We have an analogous situation in the drawing didactics, where the process of reaching a set aim is extremely significant. Easiness does not encourage reflection, and the resistance of the matter might be useful, as quantitative excess does not always develop into quality. Reflection is also fundamental in the didactic process when it comes to the correction of students’ works. However, also in this case one can come up with some positive examples of using the computer. Instead of laboriously drawing a certain theme, a student can bring numerous previously printed solutions to choose from. Then the correction would be about selection and rejection. One has to be cautious, however, so that the excess does not become an obstacle. It can be added as a digression that this method could be also applied to reaching the right form in the didactics of so called pure arts.

3. Meta-art, meta-drawing?

There are conceptions determining various kinds of architectural drawing, including those connecting it with technical drawing [10]. As it is essentially freehand drawing that is discussed herein, a following division has been adopted for the sake of this paper (although it has its limitations):

- visionary sketches concerning free conceptions, which do not necessarily have to be realized and, what is more, they can constitute nourishment for other architects (Jan Głuszak, Antonio Sant’Elia) [8, 11],
- conceptual sketches connected with reaching the form of a designed building gradually,
- visualisations of a design already carried out connected with perfecting the design,
- visualisations of designed architecture made for the purpose of presenting them to a potential client.

This division ensues naturally from the designing process and is connected with it. As you can see, there is always a specific function that a drawing is to serve. Simultaneously, it is also a need that has to be satiated. It relates to defining designing and teaching as designing the designing [6]. However, this is a rather totalitarian approach that was characteristic of the second part of the 20th century. Referring to the design conceptions, what we get here is the transformation of fiction arising in a creator's mind into fiction on paper (optionally, on a computer screen).

Reconstruction drawing which depicts architecture should be added to the above division. Then, however, we are talking about the transformation of reality into fiction. Whereas, designing and developing a building is transforming fiction formed in a designer's mind, and then on paper, into the reality of a finished building.

Teaching drawing is designing a designer. When we assume that education entails imposing certain opinions, the above wording should not be considered gross. Currently, the didactics of architectural drawing is based on the following, sometimes interweaving, motifs. There is drawing either reconstructing reality or transforming it. Finally, there is also creative drawing. Here, we can discern certain similarity to Hegel's dialectics and his theory of a thesis, anti-thesis and synthesis.

The meta- prefix, in turn, means "above", "beyond" or "about" something in a different context. Colloquially, meta-art is art about art, meta-science is science about science, meta-drawing is drawing about drawing, and meta-relation is a relation to a relation [5]. Metaphysics is knowledge above physics. When it comes to meta-science, in a broader sense it is science knowledge.

The reception of meta-art in contemporary art criticism is not always positive. It results from desperately clinging to terms that were applicable to the 20th century avant-garde, and not discerning the transformations in art in a general context. The valuation of architectural drawing has to be considered against this background. As you can see, it has a servicing character to a large extent. Thus, it can be objectively assessed, unlike non-applied art, which can be only assessed subjectively. Yet, this is not a clear-cut distinction; while design(applied) arts satisfy people's physical needs, pure arts, as they are sometimes called, also satiate some needs. These, however, are psychological needs. As it turns out, there is also some type of application in this case.

4. Conformity in architectural drawing and its teaching, and the theory of choice

The notion of conformity needs to be introduced in reference to the above considerations. Yet, our understanding of the notion is not tantamount to the one used in social psychology or sociology, where it sometimes has a slightly pejorative meaning. Just as in the case of meta-art, certain limitations have to be adopted. Therefore, let us agree that it is simply an attitude compliant with the prevailing views, norms and values.

Selling a design is a key issue for an architect. They do not have to be concerned about being accused of conformity in the presentation of their design, i.e. in an architectural drawing. Such a drawing is to be nice so that a client likes it. Similarly, in didactics it is wrong to apply the same measure as in the so called pure arts. An architectural drawing can be

impressive, or even “showy”. Obviously, it has to follow all the aesthetic rules characteristic of its epoch.

Despite appearances, an artist creating a painting is in a similar situation because they always want to sell it. If they create a war-related painting, then, no matter what their intentions were, they earn on other people’s suffering when they sell it.

A question that arises is whether an architect designing a building in the style of an epoch he lives in is a conformist. And is he a non-conformist when attempting to introduce a new style? Well, introducing a new style is a willingness to rise above others, and thus, a desire to be noticed. Then one can sell a project at a higher price. It seems to follow that a willingness to introduce a new architectural style (and it refers to pure arts as well) is pure conformism. But this is not the subject of this paper.

In non-applied arts (e.g. painting) the beginning of abstraction meant the end of objective assessment. Till then, everyone looking at a painting could assess themselves, without the help of critics, whether a horse was painted well or badly. It simply resembled a horse to a bigger or smaller degree. With the coming of the non-figurative art in the 20th century, critics felt they were the most important. As a result, opinions were passed that, for instance, a red spot painted on a white canvas in Krakow was worse than the same spot painted in Paris. Surprisingly, everyone believed critics. What is more, certain theories were formulated that assessment in art is only subjective. These theories still persist but is this the way it should be?

What does the above have in common with the theory of choice developed by the author hereof? According to the theory, we now have at our disposal a certain historical stock of ideas, art styles, philosophical conceptions, etc. And everyone can choose from them the one that most suits and serves them. It can be also a compilation of a few of them. The key statement for the theory is that each of these ideas, etc. is right and true. It means that if an *X* chose some theory and claims that it is true, they are right. Analogically, a *Y* who holds a contrary idea, is also right. It is like Schroedinger’s cat but for the assumption that it is unverifiable. One of its consequences is a different, multiple understanding of being, time, truth, etc. [4]. The latter can have a significant bearing on didactics of, say, architectural drawing.

The theory of choice [7] concerns various disciplines; does it, then, assume the possibility of choosing either freehand or computer drawing? It would be too simplified an understanding of the theory. It might be better to state that it is about choosing the most appropriate solution. In fact, one type of drawing should coexist along with another one. Moreover, as it was previously suggested, these types of drawing can (in terms of a definition) overlap and, therefore, it is inadvisable to present this issue too explicitly.

5. Conclusions

Undoubtedly, freehand drawing in the didactics of the architect’s profession will persist and develop. What can actually change is the way it is presented and made. However, the issue of using the computer should not be demonized. Drawings made by artists as preliminary sketches for programmers creating new computer games can serve as an example. It turns out

that in this bastion of what is “new” freehand drawing is crucial. Programmers can perhaps amplify artists’ sketches and are proud when new software can, for instance, strengthen light representation and distribution.

It is worthwhile to address the remarks on beauty made by Witelo, who lived and worked in the 13th century (according to researchers some of Leonardo da Vinci’s observations resemble them) [9]. In fact, they should constitute a model guideline for programmers dealing with programming or computer art. This observation correctly establishes the proportions when it comes to the use of new media in architectural drawing and its didactics.

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BEATA MAKOWSKA*

THE SIGNIFICANCE OF SKETCHES IN THE EDUCATION OF ARCHITECTS AND IN THE DEVELOPMENT OF THEIR PROFESSIONAL SKILLS

ZNACZENIE SZKICÓW W NAUCZANIU ARCHITEKTÓW I ROZWIJANIU ICH WARSZTATU

Abstract

Sketches are an irreplaceable method of recording thoughts and of correcting the design process. They are a means of discovering and examining reality which supports the development of imagination. Sketching is an essential element in the education of architects and in the double-loop learning process. Sketching opens two channels of communication: conversation and spatial-visual activity. Both traditional and new digital tools have important roles in the development of future architects. The primacy of computer design over freehand drawing in an architect's work can lead to the disappearance of a designer's individuality and creativity, limiting the role of his personality at the earliest stage of the design process.

Keywords: sketches, freehand drawing, architect's professional skills

Streszczenie

Szkice są niezastąpionym sposobem zapisu myśli, korygującym proces projektowania. Są drogą odkrywania i badania rzeczywistości, która sprzyja rozwojowi wyobraźni. Szkicowanie jest ważnym elementem w nauczaniu architektów, w istotnym dla ich rozwoju procesie uczenia dwupętlowego. Uruchamia ono dwa kanały komunikacji – konwersację i przestrzenno-wizualne działanie. Zarówno tradycyjne, jak i komputerowe narzędzia pełnią ważną rolę w rozwoju przyszłych architektów. Prymat projektowania komputerowego nad rysunkiem odręcznym może jednak doprowadzić do zaniku indywidualności projektanta i jego kreatywności, ograniczając rolę jego osobowości w początkowym etapie projektowania.

Słowa kluczowe: szkice, rysunek odręczny, warsztat architekta

* Ph.D. Arch. Beata Makowska, Division of Freehand Drawing, Painting and Sculpture, Faculty of Architecture, Cracow University of Technology.

1. Introduction

Sketches are an irreplaceable method of recording thoughts and of correcting the design process¹. They are a means of discovering and examining reality which supports the development of imagination. They help one to remember images seen previously and to process them creatively. Thanks to drawings, perception of the world is a direct experience, something very important in the contemporary world, which we frequently come to know through a computer or TV monitor. Direct recognition enables the viewer to see things which are special, striking and important to him.

Sketching is an essential element in the education of architects and a crucial ingredient of their professional skills. Drawings are a quick and effective means of communication, playing a very important role in a fruitful dialogue between students and teachers in the process of correction². Sketching is significant in the development of mental models shared between them and in the double-loop learning process³. According to Chris Argyris and Donald A. Schön's terminology 'double-loop learning' is a kind of learning in which discrepancies between an aim or plan of action and its results are corrected first through examination and alteration of determining variables and then by a change through action⁴. Sketching opens two channels of communication: conversation and spatial-visual activity. It enriches conversation and yields more precise answers; otherwise, forms may remain abstract and difficult to understand⁵.

Drawing performs an important role in the development of students' spatial imagination, which is indispensable in the creative process⁶, in which the computer is only a tool. Both traditional and new digital tools have important roles in the development of future architects. However, proliferating contemporary technologies pose new challenges in a designer's education. Recent surveys⁷ point out that the limitation of training in freehand drawing, especially sketching, has negatively affected the development of students' creativity⁸. A survey, directed by *Design Intelligence* and *Almanac of Architecture and Design*, was conducted a few years ago among 800 leading American architecture firms, which were asked to evaluate new employees, graduates

¹ J. Silveti, [in:] E. Robbins, *Why Architects Draw*, Mass. MIT Press, Cambridge 1994, p. 104.

² G. Goldschmidt, *The black-curtained studio: Eulogy to a dead pencil*, [in:] Proceedings of SCAD 2011 Symposium Spatial Cognition for Architectural Design, New York 2011, p. 9.

³ Ch. Argyris i D.A. Schön, *Organizational Learning: A Theory of Action Perspective*, MA, Addison-Wesley Publishing Company, 1978.

⁴ G. Goldschmidt, *The black-curtained studio...*, *op. cit.*, p. 16.

⁵ *Ibidem*, p. 8.

⁶ A. Białkiewicz, *O rysunku architektonicznym (On Architectural Drawing)*, Commission of Architecture, Urban Planning landscape Studies Polish Academy of Sciences, Lublin 2006, p. 59.

⁷ I. de Vere, G. Melles, A. Kapoor, *Developing a drawing culture: New directions in engineering education*, [in:] Proceedings of the 18th International Conference on Engineering Design, ICED August 15–18, 2011, Eds. S.J. Culley, B.J. Hicks, T.C. McAlloone, T.J. Howard, A. Dong, The Technical University of Denmark, Vol. 8, Copenhagen 2011, p. 151-160.

⁸ G. Goldschmidt, *op. cit.*, p. 1-21.

of architectural schools⁹. According to the results, 14% of young architects were unable to draw with sufficient skill and creativity.

According to Ian de Vere, efforts must be made to reduce designers' reliance on CAD, which imposes a structured methodology, stifling creativity and restricting exploration and abstract creation¹⁰. The computer is a tool which we use to create images, but ideas arise in an architect's mind¹¹. Similarly, use of the Internet often narrows the field of inspiration; it standardises motives and sometimes simplifies the process of thinking. The architect finds quick answers, which is not necessarily the same thing as an original search for new ideas. A human being is not always a catalyst for the integration of thoughts. A compilation of different motives available on the Internet has emerged through duplication, quotation, interpretation and *collage*¹².

2. Sketching as a way of thinking

Sketches are an important component and method of creative work – “drawing is not a transparent translation of thought into form, but rather a medium which influences thought just as thought influences drawing”¹³. They record a sequence of design moves-thoughts reflecting a continual dialectic between two ways of reasoning: ‘seeing how’ and ‘seeing that’¹⁴. They enable the rapid recording of images coming into existence in imagination, which is uniquely crucial to an architect's professional skills¹⁵.

Constant drawing deepens an architect's spatial awareness. It develops his creativity and sharpens his perception. It is a tool which expands the range of awareness. Creating images in the mind is a natural process, which is part of thinking¹⁶. When we draw, we

⁹ J. Al-Qawasmi, G.V. De Velasco, *Preface*, [in:] Changing trends in architectural design education. Proceedings of CSAAR, Rabat, Morocco 2006, November 14–16, Eds. J. Al-Qawasmi, G.V. De Velasco, 2006, p. vii-ix; G. Goldsmidt, *The black-curtained studio...*, *op. cit.*, p. 18.

¹⁰ I. de Vere, A. Kapoor, G. Melles, *Developing a drawing culture...*, *op. cit.*, p. 425.

¹¹ B. Makowska, *Szkice i ich rola w twórczym procesie zapisu przestrzeni architektonicznej (Sketches and their role in creative process of architectural space description)*, [in:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej (Defining of architectural space. Description of architectural space)*, Monograph No 441, Vol. 2, Ed. Cracow University of Technology, Krakow 2013, p. 308-312.

¹² *Vitamin D2. New Perspective in Drawing*, Phaidon, London 2013, p. 11-12.

¹³ I. Fraser and R. Henmi, *Envisioning Architecture: an analysis of drawing*, Van Nostrand Reinhold, New York 1994, p. viii.

¹⁴ G. Goldschmidt, *The dialectics of sketching*, *Creativity Research Journal*, Vol. 1/1991, p. 123-143; E. and M.D. Gross, *Drawing as a means to design reasoning*, 1996, <http://depts.washington.edu/dmachine>, p. 2.

¹⁵ A. Białkiewicz, *Rola rysunku w warsztacie architekta. Szkoła Krakowska w kontekście dokonań uczelni europejskich i polskich (The Role of Drawing in a Modern Architect's Workshop. Krakow School Against The Background of The Achievements of Selected European and Polish Universities)*, Monograph No 315, Ed. Krakow University of Technology, Krakow 2004, p. 156-157.

¹⁶ P. Zumthor, *Myślenie architekturą (Thinking Architecture)*, Karakter, Krakow 2010, p. 69.

interpret and evaluate the real world and give it our own meaning, since reality touches us directly. Unfortunately, photographs and computer renderings cannot express and grasp what affects us directly. Sketches are a memory device, a personal record of analysis, notes and references¹⁷. Through sketching, an architect becomes a conscious observer of reality, interpreting and analysing it in an individual fashion. He learns how to choose and juxtapose different elements-images within a spatial whole, which he will be able to process and use in the future. Perceived and drawn reality becomes a personal experience, processed by the sketcher's sensitivity. It becomes an authentic and original document, which extends to his own roots as well as the roots of things.

Drawing helps to achieve a deeper understanding of reality. The sketcher creates his own library of images and references to which he refers more or less consciously. We see everything in the context of gathered knowledge – “we can see when we are thinking and we think when we are seeing”¹⁸. Sketches are a kind of rumination on paper. They are necessary to understand the step-by-step process¹⁹; they are “blinks of the eye, snapshots of the creative process”²⁰. They express the interaction of our minds, eyes and hands²¹. It is no coincidence that ‘I see’ in English means not only ‘I can see’, but also ‘I understand’.

Drawing enables one to look inside oneself; traces of the sketcher's presence can be felt within it. An image must penetrate a human being's interior (eye, mind and hand); it can inspire only when it is thus processed and experienced. It is based on individual experience and observation of the world and on information and impressions gathered by the author. It is a unique, independent and integral record. A sketch enables us to preserve and feel its metaphysical, ambiguous nature, which every viewer interprets in an individual way. It enables us to express the complexity and ambiguity of things. Sketching is a catalyst for our mind and simultaneously a basis for a return to previous solutions²². It is a continuous process of comparing and making corrections²³. “Being abstract and incomplete, architectural sketches support the projection of thoughts and facilitate evaluation”²⁴.

3. Developing Imagination and Creativity by Sketching

When we are drawing a future architectural form in many perspectival presentations, we boost the designer's imagination, as well as the viewer's. The image comes into existence in the observer's mind²⁵. Representations of architectural space are an essential source for

¹⁷ K.S. Smith, *Architects' sketches: dialogue and design*, Elsevier/Architectural Press, Amsterdam 2008, p. 3.

¹⁸ G.J. Dürschke, *Analogowy i cyfrowy zapis przestrzeni architektonicznej (Analogue and Digital Description of architectural Space)*, [in:] *Defining of architectural space ...*, *op. cit.*, p. 61.

¹⁹ P. Laseau, *Graphic Thinking for Architects & Designers*, John Wiley & Sons, New York, 2001, p. 2.

²⁰ W. Meisenheimer, *The Functional and the Poetic Drawing*, “Daidalos”, No. 25, 1987, p. 37.

²¹ M. Grave, *Architecture and the Lost Art of Drawing*, “The New York Times”, 1.09.2012, p. 5.

²² W. Meisenheimer, *op. cit.*, p. 37.

²³ E. Gombrich, *Art and Illusion*, Princeton University Press, 1984.

²⁴ K.S. Smith, *Architects Sketches*, *op. cit.*, p. 133.

²⁵ P. Laseau, *Graphic Thinking for Architects & Designers*, John Wiley & Sons, New York, 2001, p. 5.

stimulating knowledge and imagination²⁶. They are stored in the memory and can serve as the ‘scenography’ for created forms. A collection of such pictures and drawings plays a culture-forming role and develops creativity. The frequent practice of drawing enables the development of spatial imagination, visual memory and attentive perception²⁷. Drawings made outdoors, especially, are a very good way to create long-lasting records in the sketcher’s memory (Ill. 1–4). They teach the ability to observe and understand a real space, not a virtual one. Living with a sketchbook enables us to capture thoughts, to compare them, to seek and choose the right ones. “Memory is a part of our conscious and subconscious mind; it is impossible to escape its presence and influence, thus, it has significant influence upon imagination and fantasy”²⁸. Imagination is the synthesis of perception and memory²⁹.

Drawings and conceptual sketches resemble trajectories which guide us in the appropriate direction of research. They enable free figuration and development of a concept. They are intermediaries between the imagination and realisation of ideas. Sketching exercises the eye, the hand and imagination. It teaches abstract and synthetic thinking and elicits the essence and the structure of forms. It activates deeper levels of perception, which go far beyond ordinary visual observations.

Drawing is a way to explore space. It is the centre of cognitive and creative processes. Its task is to record existing forms chosen from reality and to find non-existent forms hidden in the imagination. Sketching links two different worlds: the one in which we live physically and the space of our imaginations and our minds. Drawing is an exercise of ‘free’ imagination. “The two processes of combining and restructuring together constitute important elements of the creative process”³⁰. One process can easily be performed with mental imagery and need not be supported by sketching. The other is much more difficult; it should be supported and reinforced by sketching, but only experienced draftsmen can perform it fruitfully. New ideas are frequently a result of creating analogies, permutations or combinations of forms by sketching. Definite possibilities (data, concepts, principles, relevance to context, etc.) and heuristic methods (the ability to detect new insights and associate them, which is helpful in discovering new truths) are important in the ability to solve problems. Sketches are very important tools in this process³¹. Establishing a well-defined framework for a problem under study, thanks to sketching, can foster the creative design process³².

²⁶ L. Maluga, *Trzy wieże*, [in:] *Defining of architectural space ...*, *op. cit.*, p. 119.

²⁷ B. Makowska, *Sketches which Develop Creative Thinking Skills and Imagination*, [in:] *What Images Do – Symposium*, The Royal Danish Academy of Fine Arts, Copenhagen, March 19–21, 2014, Kopenhaga 2014, p. 29.

²⁸ E.S. Casey, *Imagining: A Phenomenological Study*, Indiana University Press, 1976; [in:] K.S. Smith, *Architects’ sketches...*, *op. cit.*, p. 43.

²⁹ K.S. Smith, *op. cit.*, p. 59.

³⁰ I M Verstijnen, J M Hennessey, C van Leeuwen, R Hamel, G Goldschmidt, *Sketching and creative discovery*, “Design Studies”, Vol. 19, No. 4, October 1998, p. 541-542.

³¹ G. Bianchi, D.C.C.K. Kowaltowski, V.T. de Paiva, *Methods which Stimulate Creativity and their Use in Building Design Education*, 13.11.2009, <http://www.dkowaltowski.net/955.pdf>.

³² E.M.L.S. Alencar, D.S. Fleith, *Inventory of educational practices that favor creativity in higher education level*, “Psicologia: Reflexão e Crítica, Porto Alegre, Vol. 17, No. 1, 2004.

4. „Open places”, sketches of understatements

It is important to leave so-called ‘open places’ in graphic presentation, in which everyone can add whatever they want, according to their own imaginations. Thanks to such understatements, interest in space and forms grows. Exaggerated realism and virtuosity focus attention on the image itself – the graphic presentation no longer contains any promises³³. Leaving vague and unclear places in sketches enables them to be filled with different meanings. “The things and works of art which can touch us are multilayered. They have a great, perhaps even infinite, number of semantic planes which overlap, intersect and change, as we change our angle of perception”³⁴. However, this requires extraordinary precision in building the image and drawing the lines. Every line should mean something – as in poetry, where every word must be carefully selected.

The imperfection of sketches creates a better, richer and more ambiguous graphic. Something that is understated in drawing has a spontaneous and open character; it lends itself more to interpretation and is less rigid³⁵. Sketches support “ambiguity, imprecision, and incremental formalization of ideas as well as rapid exploration of alternatives”³⁶. They should contain the dichotomy of slow (*festina lente*) and fast; they reveal an intelligence of quickness³⁷. „The significance and uniqueness of hand drawings lies not in clarity of their message but in their inherent imperfection. They communicate with no one but their creator”³⁸. Sketches reveal the truth about their creator.

5. Summary

The primacy of computer design over freehand drawing in an architect’s work can lead to standardisation of the visual medium. It can also contribute to the disappearance of a designer’s individuality and creativity, limiting the role of his personality at the earliest stage of the design process. ‘Hybrid drawings’ arising from the fusion of freehand drawings with computer design certainly play a greater role nowadays³⁹. However, they won’t replace the role sketches perform in the early stages of the design process. Paradoxically, the more the methods and tools of design improve, the more distant and elusive the goals become⁴⁰.

³³ P. Zumthor, *Myślenie architekturą (Thinking Architecture)*, Karakter, Krakow 2010, p. 13.

³⁴ P. Zumthor, *op. cit.*, p. 30.

³⁵ P. Gajewski, *Zapisy myśli o przestrzeni (Notation of Space Conceived)*, Ed. Cracow University of Technology, Krakow 2001, p. 125.

³⁶ E. and M.D. Gross, *Drawing as a means to design reasoning*, 1996, <http://depts.washington.edu/dmachine>, p. 1.

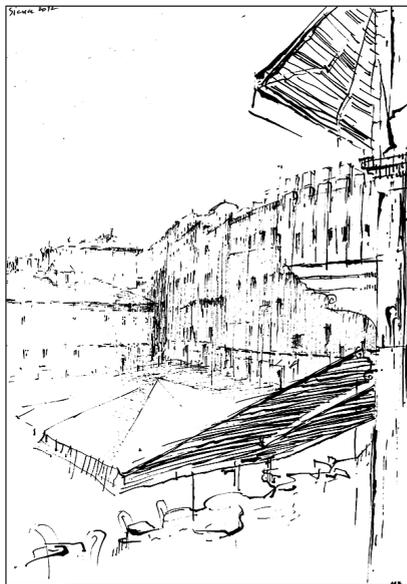
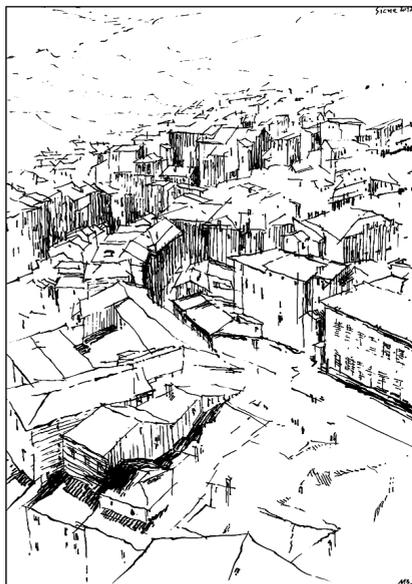
³⁷ K.S. Smith, *op. cit.*, p. 42.

³⁸ Z. Hecker, *The process of design – I draw because I have to think*, [in:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej*, red. M. Misiągiewicz, D. Kozłowski Monografia 441, Wyd. PK, Kraków 2013, p. 92.

³⁹ G. Gorski, *Hybrid Drawing Techniques. Design Process and Presentation*, Routledge Chapman & Hall, New York 2015.

⁴⁰ Z. Herbert, *Martwa natura z wędzidłem*, Zeszyty Literackie, Warszawa 2003, p. 136.

An architect's imagination has more free space when advanced technology is lacking. Independent from the computer and its hints, it has the opportunity to liberate itself from schemes and familiar methods.



III. 1–4. Sketches (drawings by author, 2013–2014)

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FARID NASSERY,* PAWEŁ SIKORSKI**

NEW POSSIBILITIES OF USING PROCESSING AND MODERN METHODS OF THE “GENERATIVE ART” GRAPHICS IN ARCHITECTURE

WYKORZYSTANIE PROCESSINGU I NOWOCZESNYCH METOD TWORZENIA GRAFIKI „GENERATIVE ART” DLA POTRZEB ARCHITEKTONICZNYCH

Abstract

This paper presents the process of creating graphics belonging to generative art and possibilities of its application in architectural works. Main focus is on different ways of creating pictures that fall under Generative Art movement, based on Processing programing. Differences and similarities between classical (analog) and digital creation are discussed, as well as successive phase of creating scripts and its application to architects' drawing technique. Processing allows to easily create almost infinite numbers of variants for once designed and programed graphic. Generative Art can be used in vivid and artistic arrangement of elevation.

Keywords: Generative Art., Processing

Streszczenie

Artykuł prezentuje proces tworzenia grafik zaliczanych do sztuki generatywnej oraz możliwości jej zastosowania w twórczości architektonicznej. Skupiono się na sposobach tworzenia rysunków z nurtu Generative Art opartych na uproszczonym języku programowaniu Processing. Pozwala w szybki sposób tworzyć wręcz nieskończoną ilość wariantów raz zaprojektowanej i zaprogramowanej grafiki. Omówiono w zarysie kolejne fazy tworzenia skryptów oraz możliwości ich wykorzystania w warsztacie rysunkowym architekta. Zaproponowano także zastosowanie Generative Art do plastycznej aranżacji elewacji.

Słowa kluczowe: Generative Art., Processing

* Ph.D. Arch. Farid Nassery, Division of Descriptive Geometry, Technical Drawing & Engineering Graphics, Faculty of Architecture, Cracow University of Technology.

** Student Paweł Sikorski, SKN IMAGO, Faculty of Architecture, Cracow University of Technology.

1. Introduction

In the first part of our review we shall present the process of creating graphics which fall within the new branch of artistic creation i.e. generative art. We shall also suggest some possibilities of its application in other artistic fields as well as economy. In this publication we shall acquaint the reader with the issues of generative systems and generative art both of which are widely discussed in the literature on the subject: Daniel Shiffman [16], Wiliam Mitchell [10], Yehuda Kalay and Wiliam Mitchell [7], Krystyna Januszkiewicz [6] dealing with the issue of generative systems; Hartmut Bohnacker, Benedikt Groß, Jula Laub and Claudius Lazzeroni [1] and Philip Galanter [3, 4] in which generative art is discussed – to name but a few.

In the second part of the paper we shall describe Processing, a programming language used in generative art. It is discussed in detail in the books of Matt Pearson [12], Casey Reas and Benjamin Fry [13], Daniel Shiffman [15] to mention a few.

In the next part we shall focus only on the graphic artwork itself and its visual features. Moreover, we shall give a few primary examples of approaches and methods used for graphics' generation. The question of relationship between generative art, design and architecture is widely debated in the books of Casey Reas and Chandler McWilliams [14], Lisa Iwamoto [5].

The last part of the review includes authors' own concepts of using generative art in the architect's drawing technique and its application in artistic arrangement of the elevation.

2. Generative Art

The definition of the term generative art is ambiguous. There are at least two reasons for that – firstly, it is a fairly innovative approach to art [4], secondly, it refers to a wide variety of artistic creations. Contemporary authors often use definitions adjusted to the features of their own artworks. These include pieces which fall within a diversity of various areas, such as electronic and algorithmic music composition, computer graphics and animation, spatial installation art, industrial design and architecture [3]. In the enquiry for the correct definition one should be looking for a criterion broad enough to include an artistic activity within all the mentioned fields and any new yet to be discovered. But since any act of art creating is also a process of art generation and not all art is generative art, the sought after definition should be restrictive enough to exclude art pieces created not by the means and methods of generative art. Thus we are looking for their specific feature constituting the distinction between generative art and other trends. Therefore generative process refers to a process generating a piece of art which is autonomous and independent of the will of the author who is only a designer of a certain system composed of the strict rules managing the generation. During the design, the artist decides on the complexity and order of its constituents, initial parameters and possible states of the system [6]. Note that in this language a system is at the same time a collection of possibilities representing an artwork as such and a complex set of rules managing their evolution. Usually a system operates to some extent randomly and thus a distinct and unique result is obtained each time the generating process is evaluated.

One can observe that the term generative describes primarily how piece of art is created. It is simultaneously characterised by the influence of the artist on the way the generative process is designed and by the generation itself which is independent of any influence. The whole process is finalised with the selection of the generated results, however it may be partially implemented already in the algorithm.

Generative Art is not only about artistic creation, its focus lies mainly on the abstract process itself and the corresponding system. Although the nature of the process favours the use of technological solutions employed in computerisation and informatics [3], nothing prevents us from applying elaborated solutions in traditional tasks [4, 6]. Therefore generative art is strongly connected with natural science (especially physics and biology) along with mathematics and cutting-edge technologies often serve as its subject. To elucidate our consideration one can adduce Roman Verostko's series of ink pen drawings entitled *Cyber Flowers* [18]. The artist modified a plotter and translated a digital code into a curvilinear motion of a drawing device obtaining pure, minimalistic pieces. The influence of other artists such as Piet Mondrian and Kazimierz Malewicz can easily be seen.

Although new systems and algorithms are in demand, essentially only the following are available: Voronoi diagrams, L-Systems, Cellular Automata, fractals, genetic algorithms [6].

3. Processing

A user friendly programming language Processing is a convenient tool for a generative art creation. It was developed in 2001 as a project of Benjamin Frey and Casey Reas – two graduate students at the MIT (Massachusetts Institute of Technology) Media Lab. The very inspiration and the key ideas of Processing can be traced back to earlier Visible Language Workshop released in 1973 and held by Muriel Cooper, a pioneering researcher, designer and digital media educator [19]. The avant-garde class broadened horizons of attending students. Employing a wide variety of experimental activities it linked cutting-edge technologies of that time, design trends along with art and related them to the meanings to human communication. In 1985 the research group was incorporated into MIT Media Lab which was established by that time [19]. However it was the innovative classes *Design by Numbers* by John Maeda which influenced Processing and gave to it its final shape [2]. His main ambition was to acquaint graphic designers and artists with the basics of programming language. For this aim the creators of Processing concentrated on simplicity and wide accessibility even for those without any technical background and moreover decided to make it open-source. Rapid and common uptake stimulated its further development and emerging of new versions. In order to secure high quality of the project, founding was essential and thus the Processing Foundation was established. Its board of directors consists of Ben Fry, Casey Reas and Daniel Shiffman¹ who significantly contributed to the development of Processing. He created the basics of the syntax of this language along with teaching materials [15, 16] with examples and exercises.

¹ Professor at the Interactive Telecommunications Program at NYU's Tish School of the Arts.

To clarify the notion – Processing is not only a programming language but also an integrated development environment (IDE) [15]. Its versatility and simplified syntax are the most specific features setting this language apart. From the deep technical viewpoint Processing is based on Java. To generate the application which displays graphical instructions of the code, three steps need to be carried out: firstly, one writes a script; secondly, the code is transformed into the Java syntax; thirdly, the compilation and displaying of the results take place [12].

The primary capability of Processing is to give a graphical interpretation to the digital code. This is the main advantage which makes it a highly useful and handy tool for data visualisation and broadly defined graphic design [13]. From another point of view, the flexibility and virtually infinite possibilities of script creation allow it to be thought of as the artistic output of audiovisual art and other various digital media activities [1]. It is compatible with the need to manipulate and work on sound, graphic, video, 3D models, other data and moreover communication technologies. The interaction between human and machine may occur by a numerous distinct ways such as cameras, tablets, microphones, joysticks and high-tech devices similar to Leap Motion (hand gestures reader) [9], Kinect (Xbox motion sensor 360) [8] and Oculus Rift (glasses for viewing virtual reality) [11].

4. The variety of the methods used in generative graphics

Roughly speaking, several major methods used to create generative graphics can be distinguished [3]. Probably the most intuitive and straightforward approach is by creation of intelligent and dynamic digital brushes. In the case of this tool the artist determines only the composition and arrangement of brush marks on virtual canvas while the final graphic result is solely generated. The displacement of the brush marks can be guided with the use of the mouse, tablet, gamepad etc...

The use of data visualisation gives rise to another method of graphics' creating. From the artistic point of view, the data is only a pretext and an inspiration which should not be presented as such but rather artistically processed as a material to create a graphic composition. The accent here lies on an aesthetic form which is to be obtained as a final result². Due to the ease with which computer fonts may be processed, many graphic compositions are often dealing with typography.

Another method is image analysis which, roughly speaking, involves the processing of any existing visual material. The key aspect here is that the processing regulated by the generative system of determining rules is fully specified by the content of the processed graphic.

Probably a creative activity which consists in processing of images influenced by visual simulation modelling illustrates the best what generative art is about. The result here is one of the least predictable and has the most experimental character.

² As an example of this approach may serve the installation "What does the river hear?" made by the students of Cracow University of Technology during the workshop „in[formational] infrastructures" under the tutorship of D.Eng. in Architecture Farid Nassery held by Prof. Gregory Spaw, Tennessee University in Knoxville [20].

Diversity of puzzles and patterns gives rise to another possibility. The graphic as a whole can be composed from the individually generated constituents. Compositions which make use of fractal algorithms and recursions have to be singled out here for their tremendous consistency and harmony of the self-similar forms.

Yet another result comes from the generating of geometric graphics with the use of three-dimensional shapes. Technically it is printing a two-dimensional surface submerged in the space of higher dimension although now it is possible to create any three-dimensional shape with the use of a 3D printer.

Finally, quite understandably, one can mix and combine all the mentioned methods which results in almost endless possibilities of new aesthetic values restricted only by the boundaries of our imagination [3].

5. The craft of generative art

One can easily see that technological progress and ubiquitous digitalisation enforce the enhancement of use of computers not only in the architect's craftsmanship but almost in virtually any professional activity. To comprehend how script is written enables bringing the principles of computers' operation closer to their users and reminds them that, leaving aside the interface, they are just calculating machines.

“The conceptual distinction between conventional form-making and form-finding underlies nowadays the division of design methodology. Generative systems and instruments caused architect's imagination and sensibility to be pushed into the domains of predictions of the results of a given processes”³.

The artist as such becomes rather a supervisor of the process [6]. A better understanding of the instruments used in our professions provides us with a rigorous and effective oversight over the act of creation and encourages to open up to new possibilities. Thus generative art makes the artistic results even more diversified [3]. The single artistic act in which creation takes place at the level of code scripting indicates the generation of the whole visual system consisting of a spectrum of possibilities enclosed in an innumerable series. Description given here refers at the same time to a conceptual creation and a virtual reality wherein they are executed. It is the author who decides which of the generated works shall be preserved, if he so wishes, with the use of paper and pigment.

Creating a code requires it to be expressed in an unambiguous, clear and precise way. To achieve such discipline one necessarily needs to plan and make a sketch of one's concepts on the paper before one can rephrase them in the code. This conceptual stage is essential as it serves as an opportunity to figure out and analyse the possible results. Therefore a decision if our concept is good enough to be carried out (i.e. written into the code) should and can be taken at this point.

Depending on the specific features of the concept, scripts require at least basic knowledge of mathematics and geometry. Program is composed of data subjected to operations which are executed in a given order and of additional instructions which could trigger and regulate

³ K. Januszkiewicz, *Systemy i narzędzia generatywne*, Archivolta, No. 4, 2012, pp. 45.

them. In Processing one has at one's disposal more or less one hundred thematically organised commands. By making use of them and those crafted by oneself, one can script a code evaluating one's graphical concept.

An example of the code which is continuously animating semi-translucent azure and light grey squares:

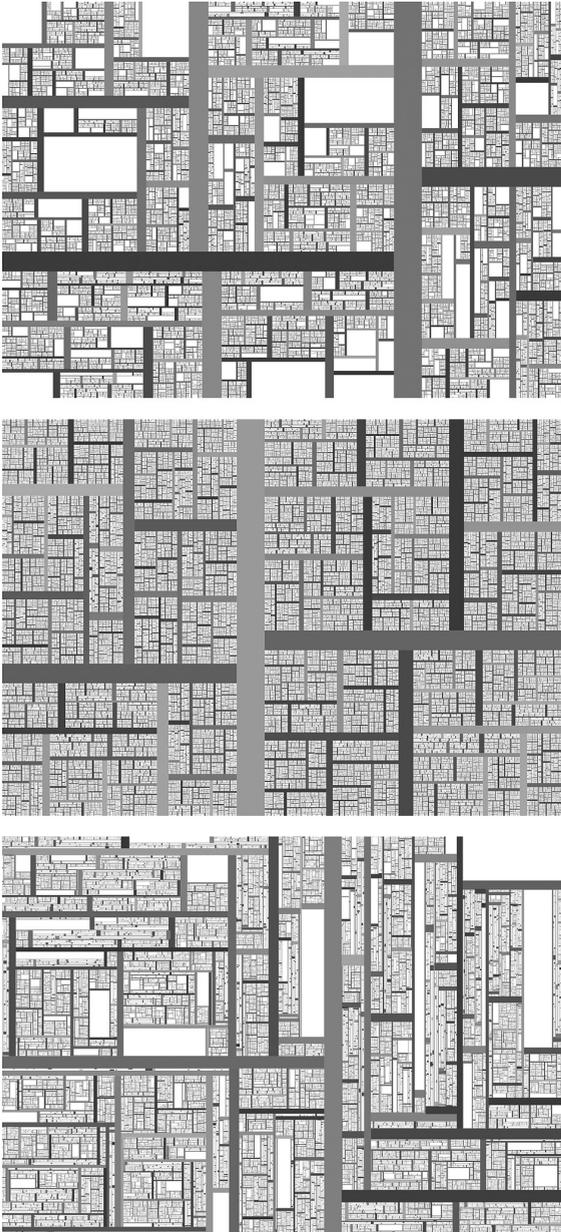
```
void setup() //initial instructions
{
  size(500, 500); //sets the magnitude of the window (in pixels)
}
void draw()//countinous drawing
{
  noStroke(); //turn off the contour
  fill(color(100, 0, random(100,255), 50)); //sets the filling
  rect(random(500-40), random(500-40), 40, 40); //draw a square
  fill(167,152,123,101);
  rect(random(500-40), random(500-40), 40, 40);
}
```

The features of the scripts described above make them the ideal solution for artistic arrangement of buildings' elevations. Nowadays new and inexpensive methods of individualised elements production are invented. This makes generative art practically applicable in design of diverse and simultaneously consistent elevation panels. A series of patterns generated in this manner is a cross-section of a certain visual system. Their features may become apparent only when observed from a specific distances and therefore would give a building an unignorable and identifiable appearance and would make it a dominant point in the surrounding area – if not due to its scenery at least due to its aesthetic values. We shall present an exemplary graphical project (Ill. 1) which could serve as a starting point for a creation of similar panels. Its final details would depend mostly on the used material and expected visual effect, for example: in the case of panels made of glass or metal sheet one could use printing, sandblasting and acid etching or laser cutting; for stone – claddings sandblasting or milling; printing or using unique moulds would be adequate for concrete. In the case of concrete or stone panels a designed graphic must be transformed into a relief if printing is not an option. A similar process must also occur in the case of pattern cutting or sandblasting.

6. Summary

The adaptation of Processing to graphics' creation was a milestone which reformed the very design process along with the role of the creator who became rather a supervisor of the processes generating the artwork on their own. The use of this technology gives rise to the creation of a great many versions of a given graphic but it is the author who singles out the final variant or chooses the entire collection. However, programming is still preceded by the conceptual stage carried out with conventional artistic techniques.

Changing the methodology may trigger new areas of graphics application (the example of individualised elevation panels was discussed above) due to rapid creation of consistent collection of distinct artworks. The use of cutting-edge devices such as CNC router or 3D printer reduces the production costs even for highly individualised elements.



```

void makeSRD(float X, float Y, int k, PGraphics gg) {
  if (k < 32 && X > 1*saveScale && Y > 1*saveScale) {
    k++;
    gg.pushMatrix();
    gg.translate(X, 0);
    gg.rotate(HALF_PI);
    float A = random(Y*startP, Y*endP);
    float W = divisionWidth*A;
    float halfW = W/2;
    gg.rect(A, X/2, W, X);
    makeSRD(A -halfW, X, k, gg);
    gg.translate(A +halfW, 0);
    makeSRD(Y-A -halfW, X, k, gg);
    gg.popMatrix();
  }
}

float saveScale = 10;
float startPosition = 0.25;
float endPosition = 0.75;
float divisionWidth = 0.05;
color colorFunction(
  (...)
  {
    if (isColored) {
      float a = random(80, 240);
      color c = random(156, 222);
      color(a, 80 + a/2, random(156, 222));
      return c;
    } else
      return color(55);
  }
}

```

III. 1. Works from series “Simple Rectangle Division” with programming code fragments (Processing generative graphics by Paweł Sikorski, 2014)

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JOANNA PĘTKOWSKA*

ROLE OF FREEHAND DRAWING IN AN ARCHITECTURAL AND URBAN DESIGN PROCESS ILLUSTRATED BY THE EXAMPLE OF *CHARRETTE* WORKSHOPS

ROLA RYSUNKU ODRĘCZNEGO W PROCESIE PROJEKTOWANIA NA PRZYKŁADZIE METODY WARSZTATÓW *CHARRETTE*

Abstract

Freehand drawing enables visualization of an idea in the form of a sketch. It is also a universal language designers use to communicate with other participants of a project. That is why freehand drawing ought to be an inherent element of a design process, especially in the first conceptual phase. In order to support this thesis I describe, using my work experience as a basis, the architectural and urban *charrette* workshop's method, which is a design process in a nutshell. Among others I try to answer the following questions: To what extent should computer programs be used in the first design phase of a project? Where are the boundaries between freehand and computer drawing? Research results can be considered as general guidelines for a freehand drawing curriculum.

Keywords: freehand drawing, design process, charrette method, design tools, architectural education

Streszczenie

Rysunek odręczny umożliwia projektantom przekształcenie myśli w formę, zapis idei w postaci szkicu. Jest również uniwersalnym językiem, jakim projektant komunikuje się z uczestnikami procesu projektowego, więc powinien stanowić nieodłączny element tego procesu, szczególnie jego I fazy – koncepcji. W celu poparcia tej tezy opisuję na podstawie moich doświadczeń metodę projektowania opartą na warsztatach *charrette*, stanowiących niejako proces projektowy „w pigułce”. Odpowiadam na pytania: czy i w jakim zakresie należy wykorzystywać komputer we wczesnej fazie projektu, oraz: gdzie znajduje się granica między rysunkiem odręcznym i komputerowym? Wnioski z badań stanowią również ogólne wytyczne do programu nauczania rysunku.

Słowa kluczowe: rysunek odręczny, proces projektowy, warsztaty charrette, narzędzia projektowe, nauczanie rysunku

* M.Sc. Arch. Joanna Pętkowska, Institute of Architectural Heritage and Art, Faculty of Architecture, Warsaw University of Technology.

1. Introduction

In times of constant change in the system of recording, processing and presenting data, it is a good idea to get back to the very thinking process as an essence of designing. It remains the same regardless of the technological progress. A product of the thinking process is a design concept, commonly known as ‘an idea’ which is determined only by the designer’s imagination. It should not be dependent on or tied up with attributes of a design tool one has chosen. Since the oldest times, freehand drawing has been the easiest and the most natural medium and has been a basic element of the architect’s workshop skills. Already Vitruvius wrote about its importance in the 1st century BC, emphasising the knowledge of drawing as one among a wide variety of disciplines in which an architect ought to be proficient¹.

Today, in comparison to ancient times, the presence of freehand drawing throughout the designing process is decreasing in favour of computer use indispensable within creating detailed project documentation. However, sketching remains the best option in the earliest, conceptual design phase. This is illustrated through an example of architectural and urban *charrette* workshops, in which sketches serve as means of the best communication between professionals and non-professional members of the design process.

2. Charrette workshops

Charrette workshops aim at an intensification of the conceptual phase and attempt to arrive at a satisfactory solution for all of the involved parties by facilitating a dialogue between them. It would not be possible without freehand sketches explaining the constantly evolving ideas. That is why *charrette* as a design process in a nutshell can provide an example illustrating the role of freehand drawing in the broad context of designing.

The *charrette* itself commences on or near the project site, but is preceded by *pre-charrette*, while project data, preliminary development programs and other regulations are collected and reviewed prior to the team’s arrival on site. Typically, designers gather in a single space to study and develop proposals for approximately three to ten days. The *charrette* brings together all interested parties: architects, planners, engineers, environmental consultants, CAD operators, the client, local public officials and community².

On the first day of the *charrette*, the design team visits the project site and gets to know the local and traditional architecture. Already on the same day, first ideas in a form of sketches are created (Ill. 1a i 1b). This could be spatial planning, greenery, transport or functional schemes as well as first visions of the future architecture and details (Ill. 1e). Through presentations, meetings and pin-up sessions, the *charrette* team is able to keep the client and other involved parties continually informed as the plan unfolds. The final project, so called ‘Master Plan’ (Ill. 1c), takes into account all the suggestions and conclusions

¹ Vitruvius, *O architekturze ksiąg dziesięć*, Warsaw 1955, p. 12.

² D. Phillips, *DPZ-Europe Architects and Town Planners Company Profile*, firm’s brochure, Berlin 2010, pp. 5-6.

gathered in the course of the workshop. During the final presentation on the last night of the *charrette* all of the work produced is introduced and explained. The project contains detailed plan, diagrams (public buildings and spaces, private lots, open space network, green areas, communication, etc.), a regulating plan with street sections, urban and architectural regulations, thoroughfare standards, draft prototypical building floor plans, bird's-eye view visualizations (Ill. 1f), perspectives from the human eye level (Ill. 1d) as well as phasing of the project's implementation.

What is new to the *charrette* process is the participation of the full community of the projects' constituents and creating a "win-win" solution. Formal and informal meetings are held with various approving agencies and interest groups. On a daily basis the design team's proposals and strategies are "reality tested", so it is impossible to take an unacceptable scheme too far. This process, which produces full documentation in a single week, has proven to be the most efficient and cost-effective means of arriving at consensus for a plan. The method corresponds with the common European idea of development of public participation, architectural education and a sense of sharing responsibility³.

It is worth adding here that the *charrette* method is closely related to the planning methodology that arose in the United States, called *New Urbanism*, that was created in response to urban sprawl. This urban design movement promotes context-appropriate architecture and planning. Urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice. Among other things, it is also related to historic preservation, safe streets and the revitalization of old urban areas. All of these principles lead to the enhancing of urban identity⁴.

3. The role of freehand drawing in the design process illustrated by *charrette* workshops

According to the idea of *New Urbanism* the first day of workshop is focused on exploring the local environment and the surroundings as well as becoming acquainted with the existing urban and architectural tradition. A number of photos are taken on the site to acquire information about the context of the project. However, these are much less valuable than sketches because drawing in contrast to photography is an active cognitive process helping to create a 'database' used afterwards during the designing process⁵. Prof. Konrad Kucza-Kuczyński writes about the awareness of places generated by the graphical record. He draws attention to the fact that the knowledge of space in the form of a sketch is a direct inspiration for the future architecture⁶. It directly influences the subsequent design and results in a better understanding of the context and conscious designing.

³ Duany Plater-Zyberk & Company. *Architecture and Town Planning*, firm's brochure, Miami 2013, pp. 16-17.

⁴ M. Mycielski, *Warsztat planistyczny charrette a Nowy Urbanizm*, *Urbanista*, 2005, No. 3, pp. 37-39.

⁵ M. Orzechowski, *Poszukiwanie architektury*, Warsaw 2010, pp. 6, 10.

⁶ K. Kucza-Kuczyński, *Architekt rysujący*, [in:] *Rysunek. Zmysł Architektury*, M. Orzechowski, Warsaw 2014, p. 70.

The first analysis precedes the shaping and crystallization of an idea. At this particular stage the drawing fulfils the most important role and becomes “a special moment when architecture and urbanism is being created”⁷. However, the design thoughts are created in an architect’s mind and are born before the first sketching. In contrast to Platonic ideas, they do not reflect the general and permanent truth. They refer to previously remembered and understood forms, to knowledge acquired subjectively, but at the same time through conscious observation⁸. Paolo Belardi notes the dual character of the first sketch and compares it to an acorn in which a whole oak tree is hidden. From the sketch – the best and clearest synthesis of the main idea – at the same time emerges the final project, with all its complexity⁹. The dualism of the conceptual project can also be understood as a quotation from many areas well known by the designer and at the same time as a moment of a very individual creation. Drawing, as a manual activity, has always characterized humanity. Up to now it has been one of the basic human interests, exceptionally emphasizing the individualism of an author¹⁰. It always has an authentic and original character¹¹.

Moreover, what is really important during the *charrette* is the simplicity of the message, because communication of all involved parties is the main aspect of the workshop. At the same time, sketches have also an unspecified and non-committal character encouraging the public to provide feedback. What is more, these quick drawings are not time-consuming, so the designer can easily modify them or even start over from the very beginning. This happens with no regret because one did not waste much time going into too much detail as often happens with drawings made on the computer. The strength of the digital techniques lies in their infinite precision, but it begins to be a weakness exactly at the first, conceptual phase of the project. At this phase, more important is the character of space than correctness and accuracy; “details are thrown off, because they could absorb attention as much as the most important element: general idea”¹². Variability and constant modifications of the project basically preclude the use of a computer in the first days of a *charrette*, because continuous implementation of changes in CAD programs requires a lot more time than making a quick sketch of a new project version. In addition, at the initial stage of the project, designers do not have specific data to create architectural or urban details. Yet, at the same time, there is a need to present a character and an atmosphere of the project. An ideal medium that does not require this type of information is freehand perspective. It provides a perfect and quickly made material for discussion with stakeholders. Currently available computer programs cannot manage to generate, for example, a quick street view without time-consuming modeling based on the set parameters. The imagination of the designer deriving from knowledge and emotions expressed in the form of an original sketch is an element irreplaceable by any digital program.

⁷ S. Gzell, *O Architektury. Szkice pisane i rysowane*, Warsaw 2014, p. 145.

⁸ G. Hasenhütl, *Zeichnerisches Wissen*, [in:] *Kulturtechnik Entwerfen. Praktiken, Konzepte und Medien in Architektur und Design Science*, D. Gethmann, S. Hauser, Bielefeld 2009, p. 341.

⁹ P. Belardi, *Why Architects Still Draw*, MIT Press 2014, translator’s note.

¹⁰ *Ibidem*, pp. 9-10.

¹¹ J. Grochulski, *Architektura potrzebuje rysunku*, [in:] M. Orzechowski, *op. cit.*, p. 36.

¹² *Ibidem*.

Furthermore, drawing is a means of communication in a dual sense. It helps the designer to conduct a dialogue with himself so that one can realize the emerging design solutions and articulate his or her thoughts graphically. It is also a universal language understood regardless of the cultural environment. What is more, freehand perspectives explain the project much more clearly than complicated plans with elevations and sections usually unintelligible for non-professionals.

The *charrette* ends with the public presentation of the final project when it is easy to notice one more advantage of freehand drawing. Not only the clarity and simplicity of the message but also the attractiveness of the colorful perspectives play an important role in the process of introducing the project's conception. Drawing has a remarkable force of impact, much stronger than words. It "reaches the heart and point"¹³. Moreover, it is an important marketing asset at the moment of 'selling' the project to the wider audience and convincing people of the beauty of the future realization.

At the final stage some plans are also presented digitally. What is worth adding is that it ought to take place at an appropriate time, after developing the idea with more precision, and not earlier than the time when there is a need to show the pure truth about the building or a plan.

4. A word on education

It is important to mention that the designer can visualize ideas emerging in his or her imagination in many different ways, freehand drawing being only one of the possible solutions to achieve that goal. Some prefer to assemble simple models or mock-ups. Others use digital techniques to create plans and sections, sometimes even without the three-dimensional presentation of an idea¹⁴. The choice of the approach depends on the designer's level of skills in using the particular tool and his or her personal preferences. However, it is often the case that designers of a highly developed hand drawing or computer skills put too much emphasis on the esthetics and the overall beauty of the outcome, potentially hampering the objective assessment of the design solution's quality.

Thus, in this context it is especially important to provide an adequate education for future architects that encompasses possibly the broadest spectrum of available design techniques. It is crucial not to forget that the presence of the freehand drawing techniques in the architectural curriculum is not aimed only to present a certain esthetics of graphical representation of a designer's idea. Freehand drawing trains the perception of space, facilitates its understanding, remembering and most of all develops spatial imagination. Therefore, freehand drawing should be a constant and mandatory element in an architectural and urban planning education.

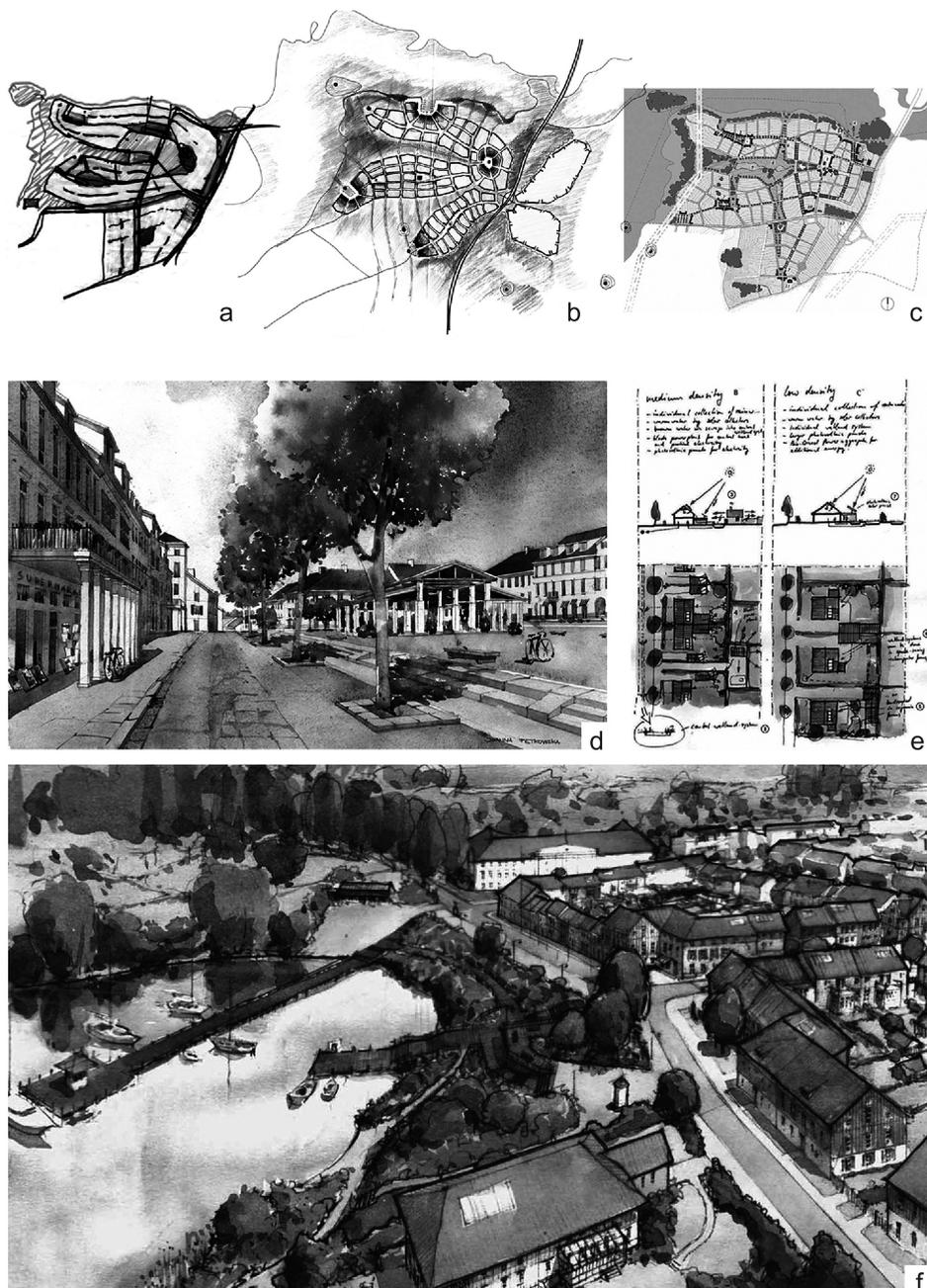
¹³ W. Karczmarzyk, esej o rysunku architektonicznym, [in:] M. Orzechowski, *op. cit.*, p. 58.

¹⁴ M. Orzechowski, *Poszukiwanie architektury*, *op. cit.*, p. 10.

5. Conclusions

Holding the most open and comprehensive view on the innovations that have happened in the area of digital techniques in recent years, we should keep in mind the advice given by Michelangelo to his assistant Antonio Mini. When Antonio asked how to become a great artist, the Master wrote the following sentence on the paper next to his drawing: “Disegna Antonio, disegna Antonio, disegna e non perder tempo” (“Draw Antonio, draw Antonio, draw and do not waste time”)¹⁵.

¹⁵ J.A. Symonds, *The Life of Michelangelo Buonarroti*, Philadelphia 2002, p. 375.



III. 1. Drawings from a workshop *charrette* in Siewierz, 2007: a, b – first sketches, c – final plan (Master Plan), d – perspective from a human's eye level, author: Joanna Pełkowska, e – plan and section of an urban detail, f – bird's-eye view perspective (author: Max von Trott zu Solz)

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KATARZYNA SŁUCHOCKA*

DRAWING – THE AUTOGRAPH OF SPATIAL SENSIVITY

RYSUNEK – AUTOGRAF WRAŻLIWOŚCI PRZESTRZENNEJ

Abstract

In the work of the architect, drawing representation is an essential means of communication as well as an important factor verifying the level of sophistication of the design process. It portrays the original vision aimed at viewers – an industry specialist, an investor and the creator themselves. It enables to confront the drawn idea with the design purpose. Idea – drawing ↔ mirror – execution. Rich in artistic values and technical content, it transfigures an individual view of the art of shaping space, demonstrating the multidimensional perception of architecture and the interdisciplinary character of the profession.

Keywords: idea, communication, confrontation, identity

Streszczenie

Zapis rysunkowy w twórczości architekta stanowi podstawowy środek komunikacji oraz istotny czynnik weryfikujący poziom zaawansowania procesu projektowego. Jest utożsamieniem autorskiej wizji adresowanej do odbiorcy zewnętrznego – branżysty, inwestora oraz samego twórcy. Daje możliwość konfrontacji zobrazowanej idei z celowością projektową. Wyobrażenie – rysunek ↔ lustro – realizacja. Bogaty w walory artystyczne i merytoryczną treść transponuje autonomiczne spojrzenie na sztukę kształtowania przestrzeni, dając dowód na wielopłaszczyznowość percepcji architektury oraz interdyscyplinarność specyfiki zawodowej.

Słowa kluczowe: idea, komunikacja, konfrontacja, tożsamość

* Ph.D. Arch. Katarzyna Słuchocka, Chair of Drawing, Painting, Sculpture and Visual Arts, Faculty of Architecture, Poznan University of Technology.

Each type of creative work in the field of graphic expression is a factor directly influencing the development of abstract thinking, unlocking the imagination and enhancing sensitivity. It is both an essential tool for architects and their trademark.

The pure form of dialogue between a gesture and mind is one of the fundamental elements of the creation process. It reflects the image of an inner world, enabling the sensual verification based on the examination of the representative vision of reality, consequently contributing to the progress of design work. Representing the parts of space with the use of drawing and graphic notation is a key factor in the cognitive process, and the development of the ability to use information contained in other, finished sketches and drawings, simplifies and speeds up the process of creating new forms. Noticing shortcomings has a direct impact on judgment and decision making, problem solving and, finally, on the success of one's actions. "The first sketches – representation of the architect's ideas, are (...) transformations of the final architectural form and the initial design of the creation to be executed later, as well as images that allow the viewer to better understand the thing"¹. The creator themselves is the viewer. The original output is multidisciplinary compared with short-term memory sensual information on a given idea². The set of previously adopted signals describing the phenomenon being developed is a kind of a buffer stock of sensual, pictorial information, including visual data from iconic memory, short-term memory images and many traces of the long-term memory visual code. Cognitive attention in combination with selective function are close-coupled with motivational tensity – in this case – related to the design task. The process takes place in the individualisation area which is responsible for past experiences and the ability to use the privileged signals that are relevant for the purposeful action which is planned or being implemented.

Graphical notations of a given topic – unique, original artistic compositions – are the source of processing ideas. Scanning, inversions and reintegration occurring during testing imaginary spaces result in the metamorphosis of the central figure of an idea. Multiple analyses and the synthesis of conclusions lead to the objective – an originally notated programme – at the same time having an impact on the compression of time. In this case, we can talk about ideational drawing. Its value consists in both technical aspects (passive representation of the observed world, without conscious interpretation) and substantive factors – the idea of the design, an imposed function and architectural guidelines. Content transformations of the images are accompanied by the awareness of the action taken and the design brief, and each intentional look of the designer captures defects. The extrapolated planes of imagination result in an intentional change of the form.

drawing ↔ mirror ↔ confrontation

A designer who is experienced and open to comments can take advantage of the opportunity when the effect of their work is confronted with the idea. A "controlled opportunity" contributes to the increase in the aesthetic value of the work and its higher

¹ Defining the Architectural Space, main theme no. 2 of the 13th WAPK International Scientific Conference of the Institute of Architectural Design.

² J. Młodkowski, *Aktywność wizualna człowieka*, Wydawnictwo Naukowe PWN, Warszawa–Łódź 1998, 246-250.

quality. “The handwritten note – quick sketch, initial sketch, autonomous drawing” – are terms that embrace the merit of the issue. Thoughts swirling while working on a given solid figure and space are the unrestrained energy of the combination of guidelines, restrictions and one’s own vision that are on a collision course with one another. The synergy originating from experience, time compression and the resulting rate of the reaction of ongoing processes are the mechanisms that cannot be handled by the computer. Pressing ENTER takes definitely more time than getting down on paper a note that pictures the output of thinking. A drawing or sketch is an immediate product of our thinking, its depicted follow-up, perfect in terms of the ideational accuracy. The specific kind of dialogue between the author and a viewer, where the author themselves is often the viewer, is a formal type of message. Its form depends on individual abilities. The pencil, the crayon and the pen are just working tools, actuators. First and foremost, one works using their brain and imagination, and humility towards individual creative action acts as a lever enabling to reach higher and higher levels. Lack of humility blocks the progress. Using the “mirror” skillfully is an art. The drawing-mirror determines the development of conscious perception. Being conscious and aware of the design purpose, together with the confrontation, increase the imagination which opens the doors to sophisticated abstract thinking. The “pencil or crayon” dilemma is definitely connected with modeling imagination, which results in liberating creative invention, and the development of spatial thinking, feeling and understanding the world around us.

Providing architecture faculty students with the opportunity of functioning in full-service drawing and painting studios translates into the quality and ease of moving between the planes of imaginary works depicting original visions. Perceiving the world through the prism of various experiences sharpens one’s sight and sensitises them. One can see more and, consequently, notice more. The constantly used imagination offers more and more opportunities. Balancing between the “worlds of future” being formed and the real, living tissue of the context, it teaches how to make analytical choices leading to the best solutions through the constant possibility to compare the representation with the abstraction. The functions of attention, that is its various types, are mutually related. Detecting discrepancies between the quality of the recording made and the vision – the domain of monitoring function – entails the increase in concentration. Selective actions translate into increased focus while working, expanding the set of potentially correct answers – solutions.

drawing-mirror ↔ confrontation ↔ detection of discrepancies

Detecting discrepancies is related to increasing the pace of work and, most of all, it accelerates achieving the desired effect. Detecting errors is half of the success. Repetitive acts of recording the phenomena that need to be corrected turn into para-behavioural activity saved in long-term memory as elements – keys for understanding and evaluation, resulting in progressive action.

Initially, the process of artistic education for future architects requires that they become acquainted with drawing and painting matters, as well as introduced to the issue with the help of academic exercises involving observation tasks – figures, still life. Then such a less experienced designer is ready to take a more sophisticated challenge of trying to engage in dialogue with specified tasks that aim at stimulating imagination to the largest extent possible. The ancillary role of drawing consisting of representing facts enables to

reach individual fascination with one's own visions and their spontaneous, autonomous representations, and to respond to them critically. Brushing up one's skills in various spheres of visual arts media produces a reaction – the author identifies themselves with the style of a drawing, painting or graphic representation. The time spent on projects linked with diverse, space-related drawing themes is helpful. The effect is an increased proficiency at holding content-based dialogue. The richness and ease of vision processing can be found in executed tasks, where every new problem that has been solved stimulates imagination.

drawing ↔ identification mark

Building a ladder of personal development aided by continually flourishing imagination affects the industry recognition of the creator. Specific features repeatedly found in drawing representations are attributed to the sets of works and these identify the originator. The dynamic development of abstract thinking and the continuously refined ability to represent the surroundings of sensual origin accompanied by periodic work cycles aim at a specific autonomy of the message. The vast majority of architects' original messages is connected with the process of creating specific objects or new spaces. Drawings, sketches, brush strokes and ink notes are created in processes of high emotional subjectivity to satisfy specific needs. The detection of values inherent in particular objects is such a need. Emotions that accompany decision taking eliminate redundant content to the benefit of the right one, which allows the creator to get closer to the objective, and stimulates activity and creative efficiency. Individual abilities to express the created architectural ideas, independent concepts, essential in order to conduct multi-threaded conceptual and design discussions, may be considered as the art of recording the 3D world in two dimensions. Edwin Lutyens – a British architect – accurately defines this kind of work as an “open letter”³. For, not so rarely, the original sketches of architectural visions are in fact read as independent visual art works that are full of expression and sensitivity. The sensational reception of the “side effects” of design processes complemented with technical content contributes to the positive feedback on the necessity of using drawing and drawing-related media in the context of the growing potential of electronic recording.

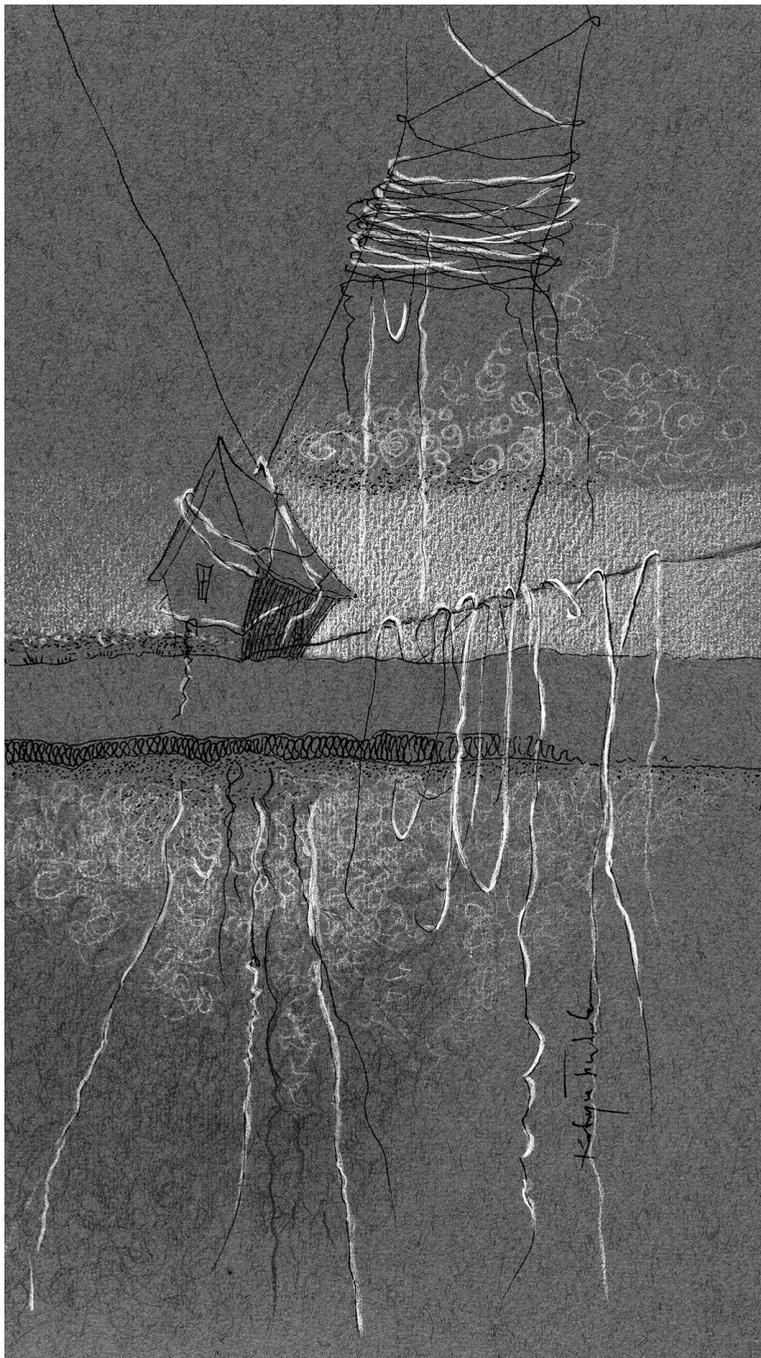
side effect ↔ independent artistic value

Its unique nature, and communicative and educational function contribute to the phenomenal character of architectural drawing representation⁴. It increases the awareness of both theoretical and practical professional issues, at the same time introducing some fresh element originating from individual traits of the creator wandering the planes that are relevant in search of the implementation solutions for their architectural visions. They also link, often independent, motivational areas and scientific fields, proving the interdisciplinarity of the architectural profession. They create a specific space like engineers, combined with the message complementing the city or urban texture, mindfully, with full responsibility

³ P. Wilson, *British Architectural Drawing. Contemporary British Architectural Drawing*, London–Berlin, 1993, 7.

⁴ L. Maluga, *Autonomiczne rysunki architektoniczne*, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006, 259-262.

for the decisions taken, taking advantage of all the qualities of the context, meaning to continue well the job of the former “constructors”. Architecture – part of human culture – requires a properly developed module of consciousness. Specific advertising material is the works created in the studios, hidden in drawers or briefcases with archive footage, complementing the design visions, penetrating the cul-de-sacs of imagination, depicting the codes of creative thinking, the ones uncompleted because of intersecting decision dilemmas and – the completed ones – ready to be hung on the walls of prestigious galleries. Perfection that is far from the illusory portrays of the reality, full of realistic creative visions, attributed to particular space components, based on disciplines related to the architect’s work, at the same time an inspiring example of popularisation of the art of architecture, aspiring to be an independent artistic accomplishment. With a specific line, gesture or tool, the architectural drawing is considered a mark of creative identity, an autograph “negligently” signed on some random piece of a medium, the autograph of spatial sensitivity. Autograph – a handwritten signature, a signature – a linguistic, graphic device whose form and style may indicate one’s character. Drawing – the autograph of spatial sensitivity – its form and style may indicate the level of aesthesia which plays a substantial role in the architectural profession.



III. 1. Space number 1 – Autograph – a handwritten signature, Poznan (drawn by the author, 2010)

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SŁAWOMIR WOJTKIEWICZ*

GENERATIVE ART – O METODACH KREOWANIA PRZESTRZENI W SZTUCE I ARCHITEKTURZE

GENERATIVE ART – ABOUT METHODOLOGIES FOR CREATING A SPACE IN ART AND ARCHITECTURE

Abstract

This paper tries to identify the creative processes of Generative Art that brings to the construction of dynamic procedures of transformation, generative algorithms, by departing from interpretative logics. This structure becomes possible through a proactive approach to Geometry. In fact, overcoming the logic of the figures and related rules, this approach opens to the logic of the progressive processes and the dynamics of transformation inside the geometric space. This dynamic use of Geometry can be performed crossing the revolution operated by Brunelleschi, by Piero Della Francesca and Leonardo da Vinci again. This Renaissance revolution funds on the convergence of Art and Science and the discovery of the Perspective Logic.

Keywords: Design Systems, Performance-Based Design, Generative art

Streszczenie

Artykuł jest próbą zidentyfikowania procesów kreacji sztuki generatywnej, która oparta na tradycji euklidesowej geometrii wyznacza nowe możliwości interpretacji i kreacji obrazu w sztuce architekturze. Zjawisko Generative Art znajduje współcześnie spełnienie zarówno w sztukach wizualnych – malarstwie, rzeźbie, grafice, w rysunku architektonicznym, jak i w muzyce, tańcu, filmie, grach komputerowych. Generative Art, będąc połączeniem tradycyjnych zasad komponowania obrazu z technikami komputerowymi, wyznacza nieopisany wciąż rodzaj emocjonalnego odbioru i wartościowania sztuki. Opisanie pojęcia Generative Art na tle historycznych, ale jednocześnie naukowych podstaw rysunku klasycznego, daje nam możliwości twórczego wykorzystania całej palety dostępnych środków i narzędzi, których nadrzędnym celem zawsze jest wartościowanie i określenie pojęcia „dzieła”. Zakres doboru warsztatu jest w tym wypadku pochodną nauk matematycznych i aktem samego tworzenia bliskiego sztuce klasycznej.

Słowa kluczowe: zapis projektu, algorytm, geometria, sztuka generatywna

* Ph.D. Arch. Sławomir Wojtkiewicz, Department of Environmental Protection and Management, Faculty of Civil and Environmental Engineering, Białystok University of Technology.

Generative Art, art of transformation, variations, performed by the newest computer technology and mathematical theories is connected with the classical design rules approach and composition order. Since last twenty years, the notion of Generative Art became to be a solid part of science and art within developing of computer applications supporting design and art process. Classical geometry is her a base and its methodology is not more than a supporting process to rationalization design approach and creative decisions.

Geometry is one of the main fields in the construction of the generative algorithms for the architecture, design, and visual art, but also for music and poetry. Since Generative Art moves from static forms to progressive transformations, Generative Geometry should be considered as the primary tool for managing dynamic process processes of change. Generative Geometry moves from geometric figures to the representation of dynamic logic processes. Exemplifying, such potentialities could be represented by the passage from axonometric representations to perspective views, the only ones that logically represent the infinity. The construction of generative and geometric algorithms finds more explicitly on logical interpretations by fixing point of view. It is also a way to describe preferred results of the past: the work of chief masters of interpreting them as results of a progressive process of transformation able to perform the quality that we appreciated. The aim is to construct procedures able to bring our design process in reaching such qualities.

Not analyzing these conditions but identifying which quality we like to transfer to our artworks, which quality corresponds to our vision. This goal is performed by clearly identifying the point of view and the objective. Operationally we are not doing copies of forms that interests us for the construction of a code, of a rule that represents our hypothesis: “how” we can construct events with the character that we like. And we will try to use these rules for managing the progression from the existing activities to the possible ones; in other words for designing or making art. The logical-geometric interpretation of our imaginary of reference, of the works of our masters, of what fascinates us, is the core of the construction of a generative engine and creative tools.

As, in Nature, a sequence of very different olive trees are all recognizable as the olive tree. Variations are infinite because there is no limit to variations of individuals belonging to a species, of representations of the same objects belonging to the same logical interpretation but changing the point of view.

We could define the Generative Geometry as “part of the mathematics that studies the dynamics of the spatial transformations and the progression of its figurations”.

But Generative Geometry would be a sterile branch if there were not the perspective. It is not a case that the perspective, and its first logical form identified by Brunelleschi, has been a revolution in science. The identification of a logic perspective, or rather of a based logical structure of points of view and observed events, allowed a scientific approach based not only on deductive analysis but also to Logical Interpretations whose multiplicity is based on the points of view. The first and fundamental aspect of this “scientific innovation” has been to discover that these logical arguments can acquire the infinite and “to measure it” giving an essential impulse to the human knowledge.

The valid interpretations of spatial events could use different points of view and different perspective logics. These are not limited only to the perspective of Brunelleschi but they can also involve other perspective logics as the curved perspective, the anamorphic ones

and the inverse perspective of Florenskij, as well as the three-dimensional representations of events with more than three dimensions. We can start from simple examples. The choice of the point of view and the logical structure of the perspective, identifying a peculiar logical interpretation of the space, can define the character of the artwork and the vision of the artist. Two examples are very eloquent. The “Flagellation of Christ” by Piero Della Francesca and “the room” of Van Gogh. In both these artworks, the perspective image is paradoxical, particular and hardly verifiable in the reality. Also, if they both seems to be “normal” at the first sight. In the “Flagellation” the observer is very low, almost to the floor, and he looks toward the direction of the flagellated Christ. From that position he could not see in full the three figures, being these, of a fact, out of an acceptable optic cone; he would see only the low part of the dresses. Instead, forcing the geometric structure of the perspective the three figures are fully represented. The use of this point of view constructed an estranging image but geometrically “correct”. And in this it reflects and renders explicit the interpretative logic of Piero. In the room of Van Gogh the perspective seems, at first sight, a reasonable perspective of the room seen by a standing observer. But the vertical lines converge upward. Since the observer is standing, taller than the bed and of the chair, these lines should converge downward instead. This converging is estranging because, to find again this possibility in a correct perspective image, or however in a “photographic” view, we must imply that the observer is, as he appears, more high then the objects but, at the same time, he looks upward. The whole room, therefore, would be seen with the tail of the eye while the observer (Van Gogh) is looking at the ceiling (that is not represented in the artwork) and the whole image of the room would be, in a certain sense, out of a “normal” optic cone. This posture represents, through the perspective logic, the discomfort, the character and the vision of Van Gogh. In the use of an “impossible” perspective image we can find something in common between Piero Della Francesca and Van Gogh. Both have used the perspective geometry clearly to communicate a strong subjective vision of a “normal” spaces. And this has produced a spatial order strongly interpreted but, also if impossible, logically correct. It shows how the perspective science can communicate subjective visions.

The logic to represent the events identifying points of view and observed events has allowed to build different perspective logics. While the perspective of Brunelleschi and Piero della Francesca identifies an observer and an observed point, other perspectives as the cylindrical and spherical anamorphic perspective, identifies one point of observation and a linear (cylindrical) sequence or a surface (spherical) of observed points.

This is the first possibility to go over the Brunelleschi perspective going in an axiomatic visual direction, opening to not Euclidean geometries. But it’s possible to go ahead. The inverted perspective, identified by Florenskij in the Russian icons, inverts the direction of observer and observed point. Here, contrarily of the anamorphic perspectives, the points of view become manifold while the observed point returns to be unique. And this is indicative of the peculiar use of Russian icons: a multiplicity of people (points of view) looking at the same event, the face of the Saint. The Saint as we look from the inside of the head, or from the inside of a cube where the image is anamorphically projected. The Inverse perspective is focused by Florenskij saying that we only see the eternal surface of the objects. In this case the image is the same but the cube is inverted and we look to its external surface. This approach using different perspective logics and the related construction of generative

algorithms opened the possibility to “logically” interpret in different way the same event. The different points of view, all together, can refer to possible variations of the same logical interpretation, opening to the generation of endless possible results, endless individuals of the same species, recognizable through the same logical interpretation.

This is a way to collect our creative investigations, making them executable inside our generative software. It is possible to do that without creating a database but with generative algorithms. They, using as input different “points of view” can generate multiple variations. The interesting aspects of this type of the generative approach are two: each result is different, but each result is recognizable by the same logical interpretation, that is by the same “vision”. In this way, the “author” can be expressed, and the style too.

This “change of point of view” is generally used by artists, designers, and architects, and it is of great utility in the creative process.

Simone Martini, tempera on panel, 1328 looking at the different buildings it's possible to verify that each building seems to be represented with a different perspective view. This “interpreted” points of view create a 3D line from outdoor to inside the medieval city. We can interpret it as representation of the 4th dimension in the two-dimension image. In the right image two frames of the transforming sequence of the solids following the path of points of view.

Simone Martini used, for drawing his artwork, the Generative Geometry. And it's possible to find this type of approach in Giotto too, and in some medieval artists living before the systematization of the perspective tools made by Brunelleschi. If this process is used in the creation of the space, the form of every three-dimensional solid transforms itself in progress, assuming different results and performing events that have characters fitting the vision of the author. Spatial orders and characters that are logically reproducible through algorithms because the process is repeatable.

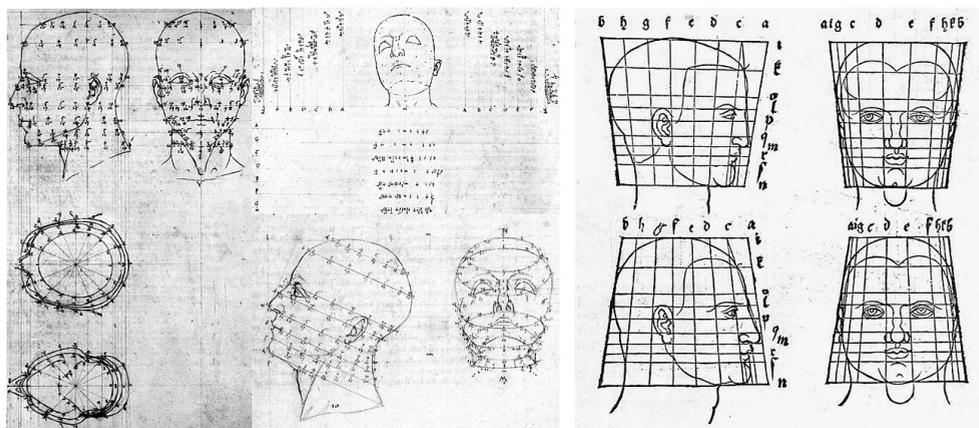
This generative process can produce complex solid events that reflect our spatial vision. In that case the results are rounded solids where the curved lines are strongly controlled by an intrinsic harmony, the same harmony of the previous squared solid but different fascinating. Logics are mathematically describable. Therefore the construction of these generative algorithms is easily prosecutable, together with the objectives and to the characters that they intend to pursue. Following the same approach, a reverse perspective of a cube, for example, can be read as canonical perspective assuming that it is a 5 sides prism. The increasing from 4 to 5 sides transform the solid in a generative way moving from a logical geometric interpretation to another one.

This is the Generative Art Geometry. The logical sliding constitutes the hard core among different representations, among different spatial dimensions. In fact, another possibility can be performed by sliding from a dimension to another. The base is moving from two dimensions to three reading a two-dimensional image as was three-dimensional and vice versa.

The creative world of Generative Geometry is extremely wide, and above all it can fit the own vision. It can logically reflect our uniqueness of creative people, it is the logical world where we can identify and develop our vision as our style.



III. 1. “Flagellation of Christ” by Piero Della Francesca and “The room” by Vincent Van Gogh



III. 2. Piero Della Francesca, visionary definitions of quality versus Durer Albrecht – analytic definition of quantity – for human head sample

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MASTERS, TEACHERS AND THEIR STUDENTS

MISTRZOWIE, NAUCZYCIELE I UCZNIOWIE

MARCIN BARAŃSKI*

SEEN FROM SIENA

WIDZIANE ZE SIENY

Abstract

The article discusses a series of paintings, on a vision of a modern city, inspired by the author's recent visit to Siena, Italy. It describes an importance of architectural visions and its complementary role in relation to an architectural practice. The article presents the author's experiences with the process of painting. It highlights the role of a quick sketch in the process of selecting and analysing a subject. Finally, it shows the unique importance of traditional painting techniques in a realization of the subject, impossible to be replaced by a digital visualization.

Keywords: painting, freehand drawing, architectural vision

Streszczenie

W artykule omówiono cykl prac malarskich poświęconych wizjom współczesnego miasta, inspirowanych wizytą w Sienie. Opisano znaczenie fantazji architektonicznych, ich roli uzupełniającej w stosunku do praktyki architektonicznej. Pokazano własne doświadczenia związane z procesem powstawania prac. Podkreślono rolę szybkiego szkicu odręcznego w procesie wyboru i analizy tematu, a także unikalne znaczenie tradycyjnych technik malarskich w realizacji tematu, niemożliwych do zastąpienia przez wizualizacje komputerowe.

Słowa kluczowe: malarstwo, rysunek odręczny, fantazja architektoniczna

* Ph.D. (Fine Arts) Arch. Marcin Barański, Division of Drawing, Painting and Sculpture, Faculty of Architecture, Cracow University of Technology.

The matte, black and white marble of the Sienese cathedral, the dirty reds of bricks of the surrounding palaces, the gold tympanum and city towers, the hypnotic flooring of Sienese *Campo* and the narrow gorges of streets aroused in my mind a dream of putting on paper my own city. On the way to searching for beauty, one must start from big shapes, from a certain hierarchy and scale. First there must be a beautiful city, then a palace in it, a room in the palace, and finally inside the room – a beautiful painting or a piece of furniture.

It need not be a logical and a rational city, meeting real needs of its inhabitants. I wanted to paint some postcards from the city, not necessarily connected together, they would not show the whole view but rather a suggestion of an urban space. I thought I would use medieval Sienese buildings, and then I would put them by myself in a modern space, maintaining the Italian, bricked and striped look.

I did not have an ambition to resolve any urban problems, I just wanted to use architecture as a motive. I thought it would be great after 20 years to go back for a while to the times of my youth and in the spirit of these carefree days (and not loaded with excess of knowledge, theories and biases), paint a city for myself – the city which I would like to live in or visit.

Architecture as an independent motive in paintings occurs in different epochs. For me the most beautiful was presented in three Renaissance paintings under the same title *Citta Ideale* painted by Fra Carnevale, Francesco di Giorgio Martini and Piero della Francesca. Particularly the painting by Fra Carnevale¹ fell deeply into my memory. I have an emotional approach towards it – to put it simply, I want to step into this painting and live in this wonderful *piazza*. Luminosity of this place, its proportions and mathematical symmetry arouses an extraordinary feeling of calmness.

In later epochs I would foremost distinguish Roman architectural visions of Giovanni Battista Piranesi and melancholic urban landscapes of Giorgio de Chirico. In the case of Piranesi, who was an artist and an architect, a ratio of architectural drawings (and visions) to realized buildings is: 2000 etchings to barely 2 realized buildings in Rome. Therefore, architectural practice and realized buildings alone are not necessary for a man to exert influence on a certain epoch. Piranesi drew everything that a good city should have – big perspective openings, wide squares and small alleys, dominants, urban details or an awesome accumulation of architectural plans. For me the most original thread in his art are ruins, weeds, sprawling out of small wooden houses just near monumental classic shapes – in brief, a true life of *metropolis*, where luxury is interwoven with misery. This is exactly how big cities are, and all urban fantasies that came later (especially those from the twentieth century, either done by architects or by set designers for science fiction movies), have the origin in these strong contrasts used so freely by Piranesi.

The use of architecture in de Chirico paintings is interesting. Architectural forms, sometimes without proportions, too long or too squat, are mostly used to introduce the viewer to a reflective mood. The viewer is, so to speak, emotionally manipulated by an architectural composition. None of the earlier discussed artists used it to such an extent. It is interesting

¹ http://commons.wikimedia.org/wiki/File:Fra_Carnevale_-_The_Ideal_City_-_Google_Art_Project.jpg (access 05.02.2015).

to note repeated perspective errors in de Chirico's paintings, e.g. four different horizons in one picture².

In all examples mentioned above, a complete impracticality of these visions of the cities is essential. They were painted for their own sake, as an intellectual and visual discourse about an urban scene. They are totally different from classic design drawings made for an actual realization of a building. These examples emphasize the significance of architectural visions as an important contribution to general progress and to the development of urban structures and buildings.

From this point it is just one step towards the significance of an architectural drawing as an art for art's sake, as the work of the same magnitude as a realized building, and the significance of an architectural painting (this is how I would name paintings with a strong architectural theme). This field, mostly entirely unpractical and made only on paper or on canvas, complements or sometimes replaces an architectural practice.

By painting my Siene project, I continued an old tradition of painting architectural visions, created for their own sake. Created not to achieve anything, but because architecture is another subject of a painting similar to a portrait or a still life³.

My paintings are a result of many factors, including impulses, and associations which I do not have a full control of – this is a mystery of the creative process, where each artwork is a surprise even for the author himself.

What worked, worked for me with black and white stripes, which is good, as each city should have its color character. An American architectural illustrator and teacher, Chris Choate gave the following advice for painting architecture: *Don't be subtle, say it*⁴, and I tried to listen to his advice.

In what follows next, I would like to focus on freehand drawings in the process of making the sketches for paintings and also on the advantages of the traditional technique of gouache and watercolor in which I painted the final pictures.

While I was imaging compositions for my paintings, I worked in two different ways. The first process and only occasionally used in my work – when a vision of a painting suddenly appears in my mind, I put it down on paper in the shape of a quick sketch. The second process and mostly used in my work – I create my compositions more laboriously, by gradually adding and removing something, thickening, checking directions, mixing different elements and so on.

A quick architectural sketch, sometimes looks awkward, but it must follow fast moving thoughts, and it has to be as concise as possible. I never judge the correctness of its perspective, its graphic quality, or in general how I feel about it. It is simply a spontaneous and the fastest record of my thoughts. The result could be naive, or even illegible for a casual viewer. When it is impossible to draw a detail, I simply write a brief description on the margins. This sketch is only for me and I am its only recipient.

² P. Baldacci, *De Chirico. The Metaphysical Period 1880-1919*, Boston–New York–Toronto–London 1997, p. 118.

³ Paintings can be seen at <http://www.marcinbaranski.com/seen-from-siena.html> (access 06.02.2015).

⁴ C. Choate, *Architectural Presentation in Opaque Watercolor. Theory and Technique*, New York 1961, p. 158.

A few words about my technique of sketches. I draw with a pencil on ordinary paper, I do not use a sketchbook, I prefer loose sheets of paper, I often change their order, and reshuffle them like a deck of cards. This spontaneous process leads to new connections and ideas. For example, sketches made months apart may find themselves side by side, creating an unexpected composition.

This is an advantage of a traditional freehand drawing over a digital visualization. Many artists these days only create drawings using a computer. Although their results are often excellent, they are unable to physically arrange, side by side, 100–200 sketches on a table and look at them as a whole, rearrange them to change their way of thinking and conceive a new idea. Old and rugged pencil drawing on a piece of paper, a lost sketch found in a studio among a pile of papers – this unexpected finding can lead to new ideas. A review of sketches by means of a computer is too organized and ordered.

A serendipity, a lack of logic, a surprise, a fresh look- all of these lead off the beaten track. Therefore, traditional techniques of sketching (in my case on loose sheets of paper – unchronological, and mixed and matched) have an advantage over digital techniques of sketching, which are more orderly and described. I look at digital sketches administratively, not creatively.

My final works of the Sienese cycle were made using watercolor and gouache paints. Watercolor and gouache (sometimes named as tempera) are techniques more suitable for presenting architectural visions than techniques such as oil or acrylics. A contemporary American architect and an architectural illustrator Richard C. Baehr named tempera as “the best medium for a literal, dramatic representation of architecture”⁵. With oil paintings it is also easy to obtain a smooth transition of colors, but water based techniques are quicker. Unlike waterproof acrylics, watercolors are great for washing out pigments with clear water and blotting them with the tissue which gives an effect of a soft light.

Watercolor and gouache techniques demand careful planning and patience, which does not work for everybody. A good watercolor is also very expensive and requires some years of practice. This is why it is not surprising that this technique has practically disappeared from a repertoire of architectural visualizations.

Digital paintings are enjoying an enormous success and indeed they are getting better and better. They are created very skillfully even by beginner students of architecture. I occasionally look at both student and professional digital renderings and recently I have observed an interesting progress in their presentation.

First of all they have a much better light now- usually morning or afternoon light which gives the best lighting for architecture. This type of light is selected by professional photographers. They typically start their work before sunrise, waiting for the first, warm rays of light to fall on the walls of a building, and they have only a few moments for shooting the best picture⁶. At midday they photograph interiors, and at night they photograph the silhouette of a building illuminated by its own light.

⁵ R.C. Baehr, *Architectural Rendering In Tempera*, New York 1995, p. 3.

⁶ A video about a professional architectural photographer Paweł Ulatowski can be seen at <http://pawelulatoski.pl/o-mnie> (access 5.02.2015).

Digital renderings use well this effect of morning and afternoon light. There is no more than just a plain blue sky with white clouds but there is a mood and emotions, coming from good lighting and this is what sells a project. Another thing that is more efficiently used is the effect of a blur or in focus and out of focus areas. In digital renderings from about ten years ago, we can see in the foreground a clichéd blonde with a puppy, and now we can see a blurred silhouette of a pedestrian or blurred lights of a passing car, only indicating a movement around a building or the scale of a human form. The entire attention is focused on the architecture or the design, which gives a welcoming effect between a sharp area of rendering (architecture) and partially blurred surroundings (people, cars, branch of tree at the foreground) – leading the viewer to the main subject. Here digital renderings have an advantage over traditional techniques. These effects of depth of field are technically very difficult to paint, especially when painting from imagination, rather than painting a specific project at a given location. Perhaps the use of an airbrush, or an experience of working with watercolor on wet paper (which gives soft edges) facilitates this process, but ultimately digital techniques work better here.

There are a few key-points which appeal better to human imagination when traditional painting techniques for architecture are used.

Firstly, there is a deeply rooted psychological effect in human nature of an admiration for handmade things. An enchantment with secrets of an artist's craft is deeply rooted in human psyche. I experience it myself when I look with interest at an original artwork that puzzles me technically. I do not have the same admiration in front of a digital work.

Secondly, traditional techniques have a character, they are not artificial (or "plastic-like") as numerous digital visualizations. They are like a letter handwritten with a fountain pen versus a page out of a printer.

Thirdly, an effect of a chance, an awkwardness, even a small perspective fault or a roughness of handmade work, gives a sense of communion with the artwork – here and now, one of its kind, impossible to repeat, and completely different from a digital reproduction.

Last but not least, traditional techniques have a visible and clear continuity of knowledge and human experience. When I paint with real paints, rather than with digital tools, I feel a part of the bigger whole, I feel a personal bond with old generations of artists.

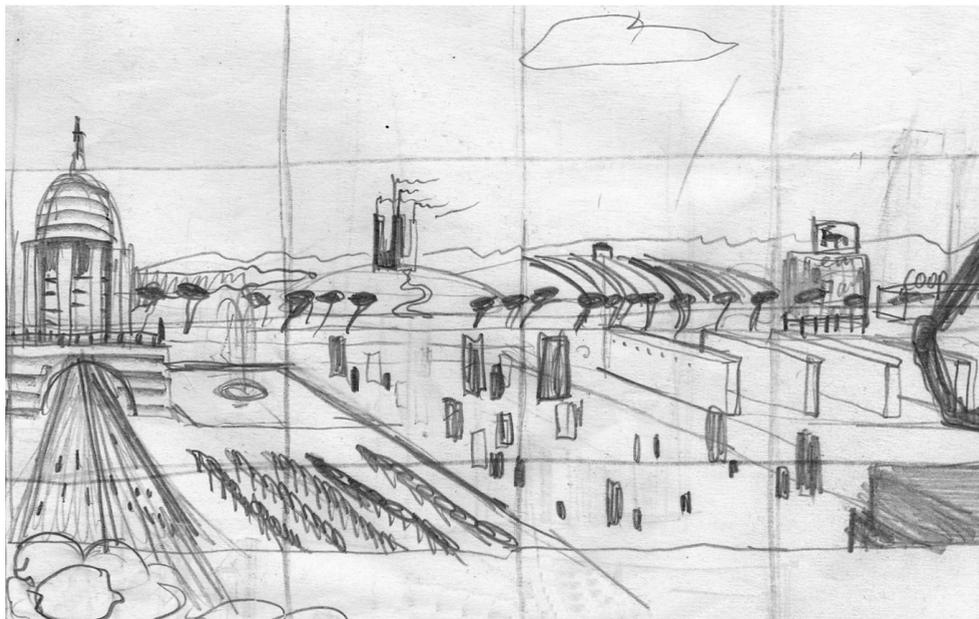
When presenting images of architecture, these four key-points give a definite advantage of traditional painting techniques over digital renderings. Of course, I have in mind, technical skills at least on an intermediate level.

In conclusion I would like to quote a legendary fashion illustrator Rene Gruau who said: "a poor photo is better than a poor drawing, but a good drawing will always win out against a good photo"⁷.

As the esthetic character of a digital rendering is similar to photography, simply replace the word "photography" for "digital rendering" and the sentence will read: "A poor digital rendering is better than a poor architectural drawing, but a good architectural drawing will always win out against a good digital rendering".

As for the question, "To draw, to paint or to use a computer" – my answer is "To paint!".

⁷ S. Nissen, V. Leret, *Rene Gruau's first century*, Paris 2009, p. 238.



III. 1. First sketch and final painting. This and other paintings from the Siene cycle can be seen in color at <http://www.marcinbaranski.com/seen-from-siena.html>

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MONIKA GAŁA-WALCZOWSKA*

DRAWING SERACH FOR ARCHITECTURAL SPACE. UNREALIZED HOUSES OF MIES VAN DER ROHE

RYSUNKOWE POSZUKIWANIA PRZESTRZENI ARCHITEKTONICZNEJ. NIEZREALIZOWANE DOMY MIESA VAN DER ROHE

Abstract

Design studies in the field of searching for modern architectural space of a single family house led by Mies van der Rohe in 1920s and 1930s, have survived as drawings – sketches, plans, perspectives and photographs of models. Projects of the Brick Country House (1923) and the Concrete Country House (1924), the urban Court-house and the House with tree courts (1934) and drawing studies of the Mountain House (1934), although they have never been realized, had a great impact on development of modern architecture. The drawings illustrating the architecture of the houses are a breakthrough in thinking about a creation of a place, about living space, about a relation between inside and outside. They permanently went down in history of architecture, still being an inspiration for new generations of contemporary architects.

Keywords: drawing, search for architectural space of a house

Streszczenie

Studia projektowe poświęcone poszukiwaniu nowoczesnej przestrzeni architektonicznej domu jednorodzinnego, prowadzone przez Mies van der Rohe w latach 20. i 30., przetrwały w postaci rysunków – szkiców, planów, perspektyw oraz zdjęć modeli. Projekty podmiejskich domów z cegły (1923) i betonu (1924), miejskich domów z dziedzińcami (1934) oraz rysunkowe studia domu w górach (1934), choć nigdy nie doczekały się realizacji, przyczyniły się do rozwoju architektury nowoczesnej. Rysunki obrazujące architekturę tych domów stanowią przełom w myśleniu o kreowaniu miejsca, przestrzeni mieszkalnej, powiązaniach wnętrza i zewnątrz. Trwale wpisały się one w historię architektury, wciąż inspirując nowe pokolenia współczesnych architektów.

Słowa kluczowe: rysunek, poszukiwania przestrzeni architektonicznej domu

* Ph.D. Arch. Monika Gała-Walczowska, Chair of Housing Architecture and Architectural Composition, Faculty of Architecture, Cracow University of Technology.

*Creativity of an architect is fulfilled in joining mental and drawing activity*¹.

Maria Misiągiewicz

Architecture and the profession of an architect are usually perceived as being strongly connected with drawing, as a central area of such an activity. Drawings of famous architects, among them drawings of unrealized houses of Mies van der Rohe created in the 1920s and 1930s have a special artistic, cognitive and didactic value. “A drawing presenting an architectural object enables an access to such a thing, Maria Misiągiewicz mentions, this very state is characterized by a specific kind of directness and immediateness as well as by being unarbitrary while the object is visually unrepresent”². Sketches, conceptual projects – projections, plans, views of elevations, perspective drawings let us follow the architect’s way of thinking.

Looking for the essence of contemporary architecture, Mies van der Rohe works according to the concept less is more, reflecting the character of his entire architectural activity. “In those words ‘the great internationalist’ expressed his faith in perfection of simple solids and ‘minimalistic’ architecture”³. His works are characterized by discipline and order, purity of construction and honesty in use of materials. “Formally ascetic architecture of Mies van der Rohe, being an effect of a process of reduction of unnecessary decorations and details”⁴, was, in his original assumption, supposed to reflect the spirit of the time. Mies, “rejecting any type of historicism or futurism, definitely chooses the way of realism”⁵. Analyzing space conditioning, treating a construction, materials and technology as a means, pursues a goal set by himself, which is an architectural form, understood as a representation of its own destiny. “For Mies a cognition of a function doesn’t mean an understanding what outer form it should be expressed by”, Antonio Monestiroli explains, “but an understanding, what is its general value. Learning about the function means defining the value, which should be expressed by concise form, showing the value in an evident way”⁶. Looking for the superior value in architecture, the architect focuses on the analysis of chosen types of buildings. Comparing architecture and nature, Mies says: “there are good roses, but not all plants can be roses; there are also good vegetables”⁷. A similar approach is characteristic of his search for an appropriate relation between architecture and a place. The attitude of the architect is reflected in his words: “every building has its position

¹ M. Misiągiewicz, *On Presentation of the Architectural Idea*, Cracow 1999, p. 15.

² *Ibidem*, p. 3.

³ M. Misiągiewicz, *Architectural Geometry*, Cracow 2005, p. 104.

⁴ M. J. Żychowska, *The New Description of Architecture*, [in:] *Technical Transactions*, issue 10-A/2004, *Defining of Architectural Space – Architecture as Art*, M. Misiągiewicz (ed.), Cracow 2004, p. 181.

⁵ A. Monestiroli, *The Metope and the Triglyph*, Cracow 2009, p. 42.

⁶ *Ibidem*, p. 43.

⁷ [after:] K. Frampton, *The Unknown Mies van der Rohe*, [in:] D. Spaeth, *Mies van der Rohe*, New York 1985, p. 7.

in a stratum – every building is not a cathedral”⁸. Drawing studies in architecture of a house are led in analogy to a landscape, to the nature perceived as both – an ideal and an inspiration. For Mies van der Rohe architecture of a house is a pretext for search for a relationship between a low building and its direct surrounding, where “constructing of a house equals constructing of a place”⁹. It is the search for a defined living space, understood as human’s place in space, concerning urban, suburban and open landscape.

In the 1920s Mies van der Rohe created the conceptual drawings of suburban villas, where he redefines the architectural space of a house. In the drawing studies of the “Brick Country House (1923), where the spatial expression owe to the Neoplastic architecture of the Dutch De Stijl movement”¹⁰, says Kenneth Frampton. The irregular scheme makes the architecture innovative, and the shape of the projection connotes Mondrian’s paintings as well as Frank Lloyd Wright houses wide projections. The composition of the *Brick Country House* was based on geometry of a right angle and on a combination of contrary directions – the vertical and the horizontal, accented by interpositions of walls. The segmentation of the projection is being continued in the third dimension of the drawn architecture, which is shown in the perspective drawing. Cuboidal, intermingling solids, which derived from the core of the building, established the sculpturally deconstructed architectural form. Rising up pyramidal solids with different areas and height, change gradually while distancing themselves from a compositional core and transform into walls, which are ejected far outside. In the drawings of the villa Mies defines a new concept of wall in architecture. A wall does not limit architectural space anymore. On the contrary, overrunning an outline of a solid, it becomes a constituent element of a connection between outside and inside, as if it was creating a spatial dialog with nature¹¹. It is visible in the perspective drawing that thanks to the juxtaposition of full-brick and glass parts of the walls make the interior of the house open into the landscape. The choice of the traditional material, which was juxtaposed with the avant-garde form also creates the uniqueness of the villa.

In the drawing studies of the Concrete Country House (1924) the innovative form was supported by a modern technology of reinforced concrete. The perspective drawing shows a horizontal, spatially expansive solid. The architectural form is characterized by recumbent cuboids, penetrating in the central part of the bulding. In this drawing architecture possibilities created by a monolithic construction were used and highlighted. “Boldly leaned out slab cantilevers, banded arrangement of windows and glass corners, writes János Bonta, show that Mies was also the incomparable master in creating reinforced concrete forms”¹². The irregular outline of the plan shows a dynamic relation between the architecture and the landscape. Each solid – a component part of the composition, corresponding with each usable zone of the villa, faces a different direction, as if Mies wanted to fully benefit from a value of the place. The irregular solid is complemented by surfaces of adjoining terraces, partly covered by cantilever roof. Big banded glass surfaces highlight the horizontal

⁸ *Ibidem*.

⁹ A. Monestiroli, *op. cit.*, p. 45.

¹⁰ K. Frampton, *op. cit.*, p. 8.

¹¹ P. Trzeciak, *The Adventures of Architecture in 20th Century*, Warsaw 1974, p. 121.

¹² J. Bonta, *Ludwig Mies van der Rohe*, Warsaw 1983, p. 13.

charakter of the solid, which guarantees the visual connection between the interior and the surrounding landscape.

Opposing spatial concept is characteristic of introvert urban houses, which were drawn in the early 1930s. “Think about a gesture of space closing, says Antonio Monestiroli, sanctified gesture, repeated in the history of a humankind every time, when it is necessary to distinguish inside and outside of limited space. Close to protect but also to identify, to make a place proper and recognizable”¹³. The architectural “closing gesture” lets Mies assign space, which belongs to a house, but also clarify a living area, distinct from urbanized and often chaotic city space. This assumption is present in Mies’s design studies led at Bauhaus in Dessau and next in Berlin, where he demonstrated his own personality of “a purist and perfectionist, obsessed with a passion of order, clarity and perfection”¹⁴.

The drawing showing the plan of the Court House (1934) lets us see the basic design concept. The house was placed in the middle of the space appointed by the outside wall. The compact solid of the building appoints the entrance yard and the bigger garden yard. The plan of the house was based on a rectangular outline whose regularity was interrupted by excision of a part of a corner. The interior of the house is defined by the free plan, where the living space is accented by free positioning of the partition. The glass wall visually connects one-space interior with the garden yard.

The architectural idea of the Three Courts House (1934) was recorded as conceptual drawings – a plan and a view of the building, read through the windowless wall surrounding the house. The house was designed on a lying T-shape projection. The solid was set up in a way, which lets it ring-fence three garden interiors: the entrance yard and two smaller, quiet yards. “Introducing this type of a building in an arrangement appointed by two parallel streets, Antonio Monestiroli explains, closed parts communicated with the street only through open gates in a fence were obtained. The achievement is similar to an ancient city, connotes its general concepts and confirms them in the present day”¹⁵. Because of the glass walls the interior of the house stays in visual connection with the yards, while the wall isolates it from the neighbouring development and the streets.

One of 37 archive sketches of the Mountain House (1934) shows the drawing record of theoretical studies of modern house architecture in the Alpine landscape of South Tyrol. “By the project we will discover some aspects of drawings as theoretical and operational designing tool”, used for defining of architectural space¹⁶. In the Mountain House sketches, the architect focuses on nature and relation between architecture and landscape. He establishes a condition for existence of a house, which is perceived as a place to

¹³ A. Monestiroli, *The Responding Form I Short Lecture on Architecture*, [in:] *Pretext Research Bulletin of the Chair of Housing Architecture*, D. Kozłowski (ed.), M. Charciarek, T. Kozłowski, Cracow 2003, p. 39.

¹⁴ G. Naylor, *Bauhaus*, Warsaw 1977, p. 138.

¹⁵ A. Monestiroli, *The Metope and the Triglyph*, Cracow 2009, p. 47.

¹⁶ C. Battaino, *Defining rather than depicting architectural space: Abstraction and variation in the Mies van der Rohe’s Mountain House*, [in:] *Defining of Architectural Space – Description of Architectural Space*, M. Misiągiewicz, D. Kozłowski (ed.), Monograph, No 441, vol. 1, Series Architecture Cracow University of Technology, Cracow 2013, p. 17.

contemplate nature¹⁷. The horizontal, one-storey solid was composed on an L-shape plan. The solid of the house includes the surface of the observation deck, which opens into the mountain pass. The Mountain House is an observatory house, Claudia Battaino writes, “panoramic viewpoint”, “architecture seeks to catch an abstract order of landscape”¹⁸. Spatial, compositional, and scenic connections between architecture and nature determines the innovative character of the concept of the Mountain House. The horizontal solid seems to melt in the immensity of the alpine landscape.

The drawings of the unrealized houses of Mies van der Rohe went down in history of architecture. In the drawing studies one can find typical features of Mies’s creative work: opening of the building to the nature and continuation of the classical architectural order. The diverse character of landscape inspired Mies to open to eternal, opposed concepts of architectural space: centrifugal concept of a country house in spatial and visual connection with a landscape as well as an introvert urban house.

Drawing visions of unrealized houses of Mies were a point of reference for architects of the time and have been an inspiration for next generations of architects, especially for representatives of minimalism in architecture. Among inheritors and continuators of Mies’s search and, in the same time, authors of single-family houses one can find: Alberto Campo Baeza, Peter Zumthor, John Pawson, David Chipperfield and Japanese architects Tadao Ando and Shigeru Ban. The relevance of Mies ideas is confirmed by European realisations, honored by the award of his name.

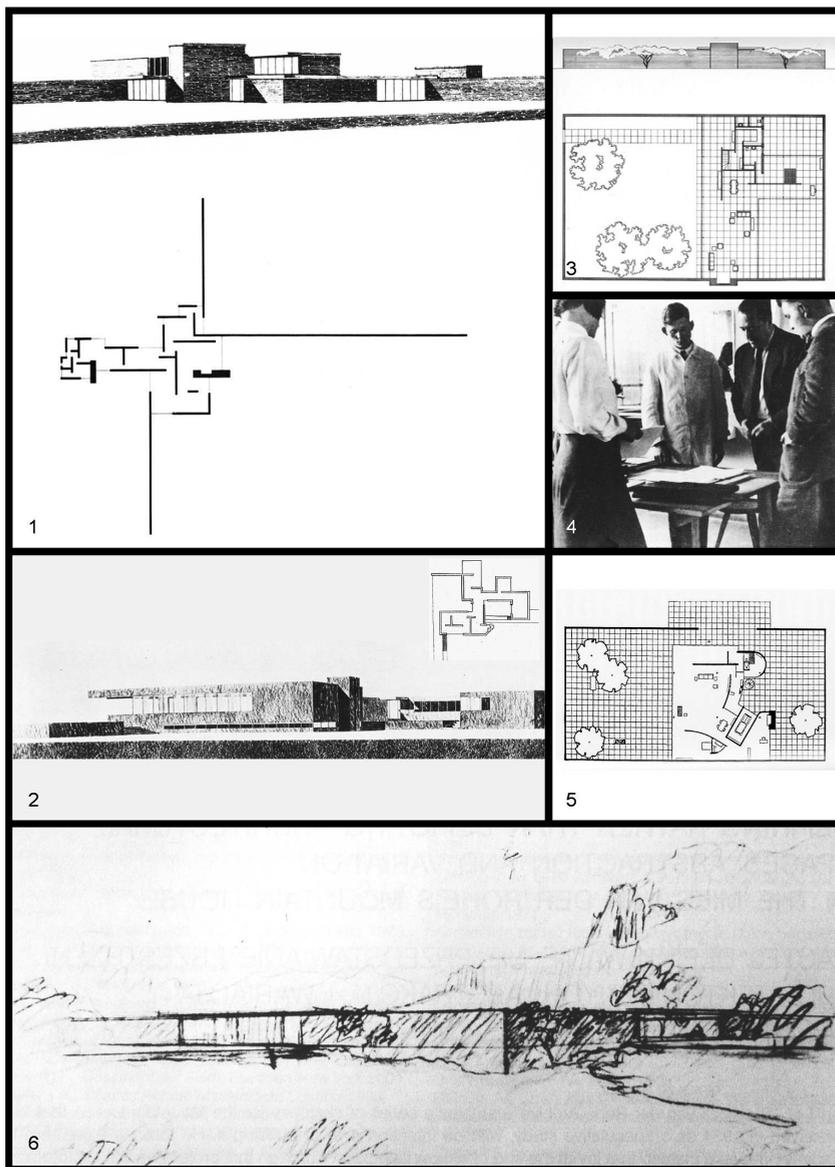
Studies of drawings of unrealized houses of Mies van der Rohe might have an educational value and let student of architecture discover next steps in search for modern space of a house and right relation between architecture and a place.

To sum up the reflection on the drawing studies of Mies van der Rohe, it is important to underline perennial role of a drawing as creative tool of an architect. An architectural drawing, similar as in the past, is still a “method of searching for the perfect esthetic effect”¹⁹.

¹⁷ A. Monestiroli, *The Responding Form 1 Short Lecture on Architecture*, [in:] *Pretext Research Bulletin of the Chair of Housing Architecture*, D. Kozłowski (ed.), M. Charciarek, T. Kozłowski, Cracow 2003, p. 41.

¹⁸ C. Battaino, *op. cit.*, p. 17-22.

¹⁹ A. Białkiewicz, *The role of Drawing in a Modern Architect’s Workshop. Krakow School against the Background of the Achievements of selected European and Polish Universities*, Cracow 2004, p. 43.



- III. 1. The perspective and the projection of the *Brick Country House*
- III. 2. The perspective and the projection of the *Concrete Country House*
- III. 3. The view and the projection of the *Tree Courts House* (Spaeth D., *Mies van der Rohe*, New York 1985)
- III. 4. Mies van der Rohe with Bauhaus students (<http://theredlist.com/> [data dostępu: 19.02.2015])
- III. 5. The projection of the *Court House* (Spaeth D., *Mies van der Rohe*, New York 1985)
- III. 6. The skatch of the *Mountain House* (<http://www.ncmodernist.org/> [data dostępu: 19.02.2015])

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JOANNA GIL-MASTALERCZYK*

THE SIGNIFICANCE OF DRAWING AND PAINTING IN ARCHITECTURAL DESIGN (AS EXEMPLIFIED BY LE CORBUSIER'S SACRED ARCHITECTURE)

ZNACZENIE RYSUNKU I MALARSTWA W PROCESIE PROJEKTOWANIA ARCHITEKTONICZNEGO (NA PRZYKŁADZIE ARCHITEKTURY SAKRALNEJ LE CORBUSIERA)

Abstract

Looking at Le Corbusier's works one cannot fail to notice how his drawings and paintings transformed into architectural projects to become the foundations for new objects, including the sculpted forms of sanctuaries which have a permanent place in the tradition of sacred architecture. He centered his original ideas on visions of his works which he put down on paper in an unconstrained manner as sketches and drawings. Le Corbusier proved that drawing and painting can be used as support for and in collaboration with the architectural design process in pursuit of an architecture that would satisfy the user's need for aesthetic value and appeal to their senses. He introduced the two into the design process leaving behind abundant documentation.

Keywords: drawing, painting, sacral architecture, Le Corbusier

Streszczenie

Przyglądając się twórczości Le Corbusiera, można dostrzec, jak powstające rysunki i obrazy przeistaczały się w projekty architektoniczne, stawały się podwalinami dla nowych obiektów, w tym rzeźbiarsko formowanych świątyń wpisanych na trwałe w tradycję budowli sakralnych. Oryginalne pomysły koncentrowały wokół wizji własnego dzieła i bez ograniczeń, przy pomocy szkicu, rysunku, przelewał na papier. Le Corbusier udowodnił, że współdziałanie i wykorzystanie powiązań rysunku i malarstwa w procesie projektowania architektonicznego jako wsparcia w celu osiągnięcia lepszych efektów w dążeniu do architektury spełniającej oczekiwania wrażeńiowo-estetyczne jej użytkownika jest ogromnie ważne. Temat ten podjął i wprowadził do procesu projektowego, pozostawiając bogaty materiał dokumentujący.

Słowa kluczowe: rysunek, malarstwo, architektura sakralna, Le Corbusier

* Ph.D. Arch. Joanna Gil-Mastalerczyk, Department of Architecture and Town Planning, Faculty of Civil Engineering and Architecture, Kielce University of Technology.

Proficiency at drawing and using it as a medium of communication plays a particularly important role in the architect's work. "Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion" [1].

Le Corbusier proved that the architect's knowledge combines many branches of science and numerous abilities and according to Vitruvius¹: "for it is by his judgement that all work done by the other arts is put to test. This knowledge is the child of practice and theory (...). Therefore an architect – must have a knowledge of drawing so that he can readily make sketches to show the appearance of the work which he proposes" [1].

Vitruvius' treatise still continues to impact architecture. In his descriptions, he drew particular attention to the importance of drawing in the architect's work. He discussed all drawing techniques from the general composition of the artwork through particular geometric constructions. He made an attempt to define the methods enabling an architect to draw a project with the sense of its form structure. He believed that drawing should be a faithful representation of reality and provide exact information about the designed object [2].

Many outstanding scientists, artists and philosophers from antiquity to contemporary times share Vitruvius' views on the role of drawing in architectural design².

The architect Jorge Silvetti³ considers freehand drawing as a tool for correcting the whole design process and, in his opinion, it plays a fundamental role in architecture since it is the first expression of an architect's vision [3]. Daniel Libeskind wrote "that drawing is not an ordinary invention. The effect of drawing does not derive from its own unlimited sources of freedom. It is a state of experience whereby 'the other' is shown through the mechanisms producing and supporting objective achievements" [4].

¹ Marcus Vitruvius Pollio, in his treatise *De architectura libri decem*, written between 27 and 23 BC, when a precise method of projecting a solid in perspective did not exist and neither did Pompeian painting styles, repeatedly emphasised the need for an architect to be sensitive to proportions, composition and harmony of particular elements with regard to architectural details, the whole object and urban programs. He thought that apart from projections and elevations, an architect should draw a project in perspective [2].

² Villard de Honnecourt, the author of a 13th-century manuscript which served future architects as a basis for perfecting the craft of drawing; he thought that "it was a duty of a multi-talented architect to design various works of art and to provide other artists with their sketches (...). Apart from precise drawings he left behind some advice on the art of drawing ... the principal features (les traits), as the discipline of geometry ... requires and teaches them" [15].

Leonardo da Vinci devoted particular attention to perspective drawing. He made a distinction between linear perspective and natural perspective. He complemented Alberti's system –he examined wide-angle view and described arial perspective [2].

Albrecht Dürer, a painter and author of a treatise on drawing based on mathematical and geometric rules. He stressed the need for building a theoretical background for new technical skills of artists: "supporting practical craft with theoretical knowledge is an indispensable condition for an artist to free himself of the limitations of the medieval system. (...) it guarantees high dignity of art and raises the artist to a high level in social hierarchy" [14].

³ J. Silvetti, professor of architecture at the Harvard University Graduate School of Design, partner at Machado Silvetti & Associates, Boston.

Maria Misiągiewicz claims that nowadays “There is a trend to consider drawings primarily as conveying ideas (...) An architect’s drawing mediates between an idea – representation and reality, along the way: idea-drawing-realization. 2. The drawn project is a primary form of perceptive substantiation. 3. The record of the project should justify the decision about its realization. 4. The project is to be a model for the object being erected 5. Architectural drawing records and preserves the form of the structure at all moments when the architect cannot attain the goal he has been striving for, when the object which is a reflection of the architect’s idea has not materialized in a real landscape 6. The term ‘work of architecture’ should be ascribed not only to built objects but also to those that exist in the form of drawings” [5].

The evolution of views expressed by architects and architectural theorists on the need for drawing as a tool in the architect’s work enabling him to present the designed objects in a graphic form invariably confirms the opinion that a designer should be proficient at drawing. A sketch and a drawing are indispensable means of communication between designers and contractors as well as a form of presenting the object to the client. They are also basic records of the creative idea and have a significant influence on the aesthetic value of the designed objects.

Drawings by many remarkable modern architects, such as Le Corbusier – a versatile architect, painter and sculptor⁴, clearly document the prominence of drawing and painting in the process of architectural design. He believed the architect to be “a man who combines the attitude of an artist with the utility of an engineer. It is a man who ought to constantly look for the finest aesthetic effects in inseparable connection with the most careful consideration of the ever changing needs (...) And what is more? I love colour and composition that takes into consideration the values of terrain sculpture” [6].

Le Corbusier was an ingenious creator of form who was active in many areas⁵. His original ideas, centered on visions of his own works, were put down on paper as drawings. Sketches and drawings ensured him full freedom and were expressions of an emerging concept and examples and forms of an ideal image. “Once he started a sketch, he could elaborate on it for decades thanks to the instinct of a genius artist” [11].

Collections of the architect’s sketches and paintings are important documents showing the significance of drawing in designing.

⁴ Le Corbusier’s legacy consists of 50 books, 57 built structures and 70 sketchbooks [18].

⁵ Aleksandra Prokopska made an analysis of Le Corbusier’s design process from the point of view of the latest developments in the field :architectural design elements methodology and system theory. She examined opinions and descriptions of the actual design methods. She concluded that Le Corbusier’s know-how originates from design practice and includes many intuitive methods which are efficient in designing; she formulated the hypothesis: “the forms of the architectural works being designed result from, among other things, methodical actions taken in the process of designing” [16].

According to Jencks, Le Corbusier’s work is characterized by creative changeability. He had the ability to synthesize and reconcile formal and conceptual opposites, to create similarities between contradictory and diverse forms and concepts. He believed that an architect’s task was to create a new language of architecture [18].

Let us examine the phenomenon using as an example religious architecture which has always played a particularly prominent role in the work of architects. “Sacrum (...) fascinates more than pure beauty and at the same time it is more distant, more transcendent, more sublime than any aesthetic sublimity (...)” [7].

Ewa Węclawowicz-Gyrkovich thinks that sacred architecture of today “should also be a carrier of values other than just the ones contained in the Vitruvian triad. Apart from responding to the problems of contemporary man, it ought to evoke emotions and sensations. (...) Every architect who designs a place of worship tries to contain in its architecture the immeasurable values, perceived in the sphere of feelings, emotions and impressions” [8].

In the age of computers and modern transformations of architecture, the forms of Le Corbusier’s sacred objects which originated from freehand sketches still make an unforgettable impression on the viewers. Their shapes and plasticity of architecture stimulate emotions and enhance a feeling of astonishment. The mystical darkness and sculptural form of the interiors build an atmosphere and are deeply moving.

The chapel Notre Dame du Haut in Ronchamp (1955) is one of the best known projects by the artist. “It begins (...) a sequence of artworks where an increased role of irrational artistic motifs separates the artworks from the previous artistic and ideological traditions. What links the works of sacred brutalism with the avantgarde modernism movement is the tendency to experiment, hardly restrained by the need to submit to the requirements of the specific function” [9].

The first sketches and notes about Ronchamp are dated June 1950. “July 1950, on a hill. I have been trying for three hours to comprehend the terrain and horizons. I have gradually absorbed them. (...) Ronchamp? Contact with the site, the location of the site, the language of the terrain, words addressed to the terrain. In all the main directions” [10]. On the high hill near Ronchamp where the pilgrimage chapel was designed there were ruins of a bombed church. The sketches from that time show the surrounding landscape and an attempt to translate it into the outlines of a chapel. The drawing of the forms used in the elevations and the horizontal projection of the structure are a result of a dialogue with the surroundings “which contributed to connecting an architectural form with natural conditions” [9].

The architecture of the objects, or rather its first contours, is completely subordinated to the lines of the landscape. While sketching freely and combining specific shapes, the designer learned and discovered the relations with the profile of the natural landscape. Consequently, with the help of drawing – combining the concepts of shapes with specific function of the object – he created a structure opening out to the external landscape. The structure was based on nature and its architecture became a “movement immersed in shapes and persuading one to follow the artistic form, to take a walk forced by natural curiosity” [9].

The nature of the work on the project showed freehand drawing to liberate ideas in search for the forms that had not existed – it was thinking about shaping space, starting from a line on paper and ending with construction. Numerous sketches, notes, studies illustrate the accepted program – a plastically shaped sculpture with rounded elements and no straight lines. The richness of the volume composition – exposed cylindrical tower, long wall with many irregular openings punched in it, sculptural roof protruding upwards – all of them testify to a significant influence of the architect’s artistic means. Likewise, the structure of the

interior modelled by the play of natural light draws attention because of the aesthetic values and artistic invention. It is worth noting that Le Corbusier, owing to his interest in painting⁶, created his own language of architectural forms in Ronchamp. He expressed it in drawings featuring religious architecture and art.

Like in Ronchamp, influence of painting can be seen in the architecture of the convent of Sainte-Marie de La Tourette (1959), where it is reflected in the deliberate use of texture and colour. The interior of the monastery is filled with light which creates the mood. Le Corbusier gives the light an important role to play by using hues and transitions of varying degree of intensity. The relationships of structural elements and plastic elements with the splendid play of light and shadow reveal a richness of the architecture and demonstrate how several kinds of art such as painting, architecture and sculpture can be combined and made to collaborate.

In the pilgrimage chapel Notre Dame du Haut in Ronchamp this is proved by the paintings on glass and the colourful composition of the metal cover of the front door.

Architecture and painting featured strongly in Jeanneret's design since his youth. He used his interest in painting while making a great number of sketches. The content of his works – visions of drawings, paintings, often turned into real architectural objects. This was confirmed by E. Nagy who said that "(...) plastic arts, and painting in particular, were at constant war with architecture. (...) in paintings there slowly ripened architectural forms. (...) he always returned to two-dimensional compositions either in the form of perspective paintings or designs of carpets" [11]. Forms from paintings find their representations in fragments of many objects including sacred art. Many sketches have the composition and rhythm typical of the purist image [11].

The coordination of painting and drawing was very important at every stage of design. Compositions sketched on paper or canvas – drawings or fragments of paintings – clearly determined the development of future architectural forms. In the process of designing a solid, apart from a rigorous cycle of drawing and designing, the artist discovered specialist techniques of study and synthesis which he supplemented with traditional drawing techniques [16], (Ill. 1).

Linear drawings made in a precise manner as if with the use of a template illustrate the concept of the last and unfinished sacred object by Le Corbusier, the church Saint-Pierre Firminy, France. A perspective drawing of 1963, showing strong, vertical, conical geometry of the church is still admired for its uncompromising shape and conciseness of the symbolism of form. The sketch is an ingenious and succinct representation of the idea of the future church and an excellent graphic and artistic document of the concept put down on paper. Using linear drawing, the architect presented an extravagant yet functional form which shows that

⁶ He was particularly interested on the paintings of Cezanne and Matisse. He studied German industrial design and worked for Petera Behrens; he visited Heinrich Tessenow and became aware of social significance of architecture. In 1917, he moved to Paris and became involved in art. He started painting and won some recognition. With Amedee Ozenfant, he edited the magazine *L'Esprit Nouveau* and initiated a new movement in modern french painting called purism which allowed him to create his own language of architectural form. In his works, purism was the architecture of image and image became a project [11].

“the power of the idea itself – whether it is expressed in words or as an architectural drawing – is undeniable” [12].

Owing to the commitment of Fondation Le Corbusier and people in charge of the artist’s legacy, the object was built in 2006⁷. It remains one of the few examples of architectural objects realized after the author’s death.

In conclusion, Le Corbusier’s objects of religious architecture such as the chapel in Ronchamp, La Tourette [10], and the church in Firminy, referred to as the most important structures of the 20th century, introduced a new artistic value into the architect’s work and modern religious architecture. All of them are distinguished by the monolith of the sculptural shape of the solid which is an image of plastic integrity of the form, function and content. The forms of the churches together with their applications evoke purist movement in painting, a period of fascination with elementary geometric figures shaping not only painting compositions but also architectural forms. The structure of the interiors supported by the play of natural light and darkness is a result of the author’s original interpretation and a reflection of the achievements in the art of painting which stormed into modern architecture through his projects. All of the discussed religious objects are distinguished by their plasticity and amazing creativity which “gives works of architecture the power of testimony” [11].

Nowadays, when thinking about architecture has been dominated by computer software and the architect’s hand no longer interferes at the design stage between a vision and created reality, a look at the drawings by Le Corbusier and other outstanding architects provides aesthetic satisfaction and an opportunity to reflect on the role of drawing in the process of architectural design.

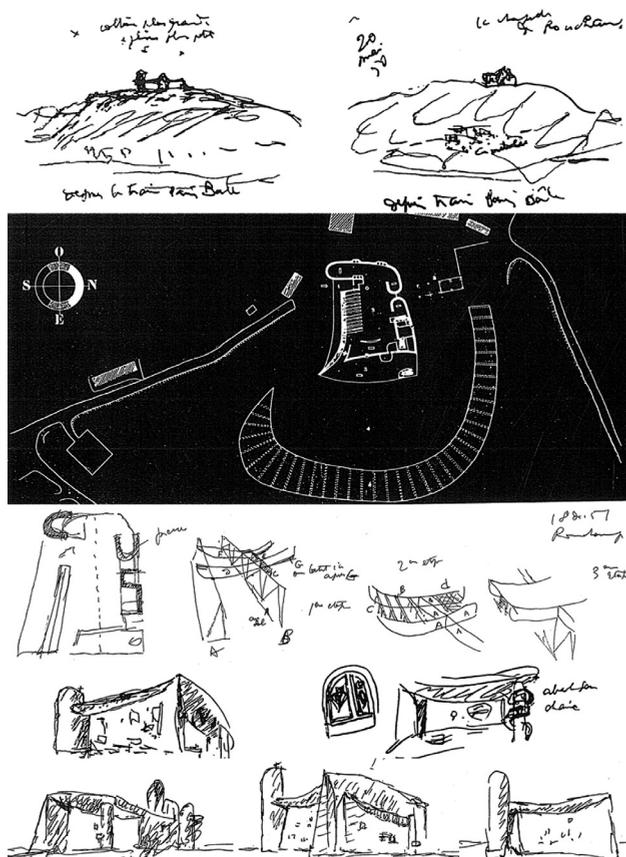
Le Corbusier is undoubtedly one of the most original characters in modern architecture. He proved that drawing helps to make a fast synthetic record of space. It clearly documents the architect’s work demonstrating the assumed programs and definitions. It creates new ideas – regardless of what already exists.

The designer uses drawing to transfer his ideas onto paper which, over time, becomes a precious document. It takes on artistic value and is recognized for its graphic qualities. The ideas presented in the form of drawings or paintings often become foundations for new strategies and original approaches. Above all, painting develops imagination and a way of thinking in artistic terms which is useful in the process of architectural design. It stimulates creativity and sensitivity to form, space, light and colour. It makes possible expression of a personal attitude to the world around us.

⁷ In 1954 r, city authorities of Firminy commissioned Le Corbusier to design a new urban space of the city with new functions for four basic social activities including worship. Le Corbusier in collaboration with André Wogenscky designed Firminy Vert – „Green Firminy”, in line with his idea of urbanism, the city comprised monuments, housing towers surrounded with vast green areas and ensuring proper coexistence of the community with nature and urban structures. The church was completed by the architect José Oubrierie – Le Corbusier’s partner, from 1957 until the architect’s death. He also made final decisions about the shape of the church and the way it was built [12].

To conclude, in the age of ubiquitous computerization, when the way of thinking about space continues to change together with methods of design and construction of buildings- a hand-drawn sketch or sumptuous study still constitute important elements of the architect's skills. They become indispensable as a basic means of communication and information transfer. They develop precise spatial imagination which plays an important role in creation of architecture. Drawing is also a unique medium to express the author's personal interpretations and even the most bizarre visions.

It is also worth noting that projects of modern architects have to a great extent been marked by the desire for originality. "For ages, architects with original ideas have focused on the vision of their own creation. Sometimes they set new trends, devise new strategies of action or only claim to do so. More often than not, these are presented in the form of drawing, particularly at the initial stage. Thus, apart from material, built architecture there is non-built architecture and architecture which might never be built but which exists in the form of drawing" [13].



III. 1. The chapel Notre Dame, Ronchamp, France, perspective sketches of the form, Le Corbusier, (source: [19])

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ANNA KULIG*

HISTORICAL OBJECTS IN ARCHITECTURAL SKETCHES. WILL THEY REMAN A THEME IN ARTWORK?

ZABYTKI W SZKICACH ARCHITEKTONICZNYCH. BYŁY, SĄ, A CZY BĘDĄ MOTYWEM TWÓRCZOŚCI?

Abstract

Sketch is understood as a spontaneous, quick and synthetic drawing. Architectural sketches have a long history as well as numerous circumstances and reasons behind their creation. They were created as records of the reality – to emphasize key elements, as travelling notes, and also as preparation or study drawings before a finalization of a design or a painting. Typically they remained in private collections of their authors and were published only rarely. Nowadays such sketches and drawings provide a valuable insight into the methodology of work of well-known artists and constitute a source of knowledge of history and of the previous form of the objects they are depicting. The draftsmen can be divided into faithful and precise documentalists and artists expressing their personal, free vision and effects of their imagination.

Keywords: architectural sketches, historical drawings

Streszczenie

Szkic rozumiany jest jako spontaniczny, szybki, syntetyczny rysunek. Szkice architektoniczne mają długą tradycję i różnorodne okoliczności i cele powstania – tworzono je jako zapisy rzeczywistości – akcentujące najważniejsze elementy jako notatniki z podróży, rysunki przygotowawcze, studialne przed ostateczną wersją projektu czy obrazu. Zazwyczaj pozostawały w prywatnych zbiorach autorów, rzadko były publikowane. Obecnie szkice i rysunki robocze są środkiem poznania metod pracy znanych twórców, a także źródłem wiedzy o historii i dawnej postaci ilustrowanych w nich obiektów. Postawy rysowników można podzielić na wiernych i ścisłych obserwatorów i dokumentalistów oraz artystów wyrażających osobistą, swobodną wizję i grę wyobraźni.

Słowa kluczowe: szkice architektury, historyczne rysunki

* Ph.D. Arch. Anna Kulig, Division of Descriptive Geometry, Technical Drawing & Engineering Graphics, Faculty of Architecture, Cracow University of Technology.

1. Introduction

How can one quickly prepare a sketch of a historical object? Using several commands in a few minutes one can transform a digital photography into a linear sketch-like drawing. Naturally it is a kind of a graphical play, a trick, but the risk of false interpretation and application is nevertheless present. A draftsman spending numerous hours on a location to sketch from nature apparently loses to the “drawing machine”. One starts to doubt as to the sense of author’s own representations and the sense of drawing practice since an apparently similar effect can be easily and readily obtained using a computer. Let us go back to the times when views were drawn directly and when there were no tools to facilitate the work of an artist.

2. Review

We shall examine sketches of historical objects left by previous generations of painters and architects who were active either for study or work reasons in Krakow. Why shall we consider Krakow, its historical objects and their sketches? The grounds are abundant. The architecture of Krakow, rich in style and form, has been fascinating artists for a long time. The high saturation of the city’s tissue with historical artwork was providing both inspiration and numerous possibilities of expression through architecture. Architectural sketches were created by Jerzy Głogowski, Józef Brodowski, Jan Niepomucen Głowacki, Aleksander Gryglewski, Franciszek Turek, Władysław Łuszczkiewicz, Franciszek Mączyński and many others¹. The historical architectural patterns of Krakow painted and drawn by them, still exist, and can be recognized on sketches from before 200 years. Concentration of the artists’ community in Krakow was related to the presence of the first academies of arts, associations and painting traditions (the oldest guilds). From here there originate the first collections and exhibitions and museums in the 19th century, as well as the interest in historical objects and their maintenance and preservation. The development of writing influenced the area of artwork through numerous orders for figures, i.e. drawings, pictures transferred next into engravings. In museums and archives of Krakow original drawings and their reproductions have been preserved. This enables comparisons between the original and a copy, the draftsman’s style and the workshop and precision of a copyist (e.g. of Władysław Łuszczkiewicz – the analysis of which indicates that reproductions didn’t fully replicate the precision and vividness of the original works retained in a sketchbook of 1869–1871 and depicting sculptures, domes, lanterns and other architectural details)².

For weekly published magazines there drew such artists of Krakow as Aleksander Gierymski and Maksymilian Gierymski, Józef Pankiewicz, Waclaw Podkowiński, Stanisław Witkiewicz. Well-known woodcutter Władysław Klein reproduced paintings of Józef Brandt, Józef Chełmoński, and pastels of Teodor Axentowicz. Figures and texts in the 19th century magazines were of equivalent weight. In the second half of the 19th century reproductions of photographs were also made.

¹ J. Banach, *Kraków malowniczy*, Kraków 1980.

² M. Rzepińska, *Władysław Łuszczkiewicz – malarz i pedagog*, Kraków 1983.

Another repertory of interest from the comparison standpoint comprises collections of oil paintings and sketches made during their realization. E.g. of Gryglewski who realized a large number of paintings representing church interiors of Krakow as well as left drawings which have identical content, composition and size as the paintings.

Browsing through rich collections we are considering which of the values of the old drawings representing old objects are timeless and universal. Historical, source and cognitive values are definitive and iconography still remains a subject of studies and serves a purpose in cognition of history and in preservation and reconstruction activities. However, do the aesthetic and artistic values speak to the recipients nowadays? Can a draftsman today be inspired by this legacy, can they learn from it, enjoy it and use it as a model or maybe even continue it?

And how do these old drawings compare to the modern ones? Do they appear archaic? Let us consider for instance sketches of the tenement houses of the Kanonicza Street, Wawel Royal Castle and the Main Square with St. Mary's Church – which appear throughout the works of F. Mączyński and H. Walter – these can be considered modern works, yet they were created one hundred years ago. The architecture of Krakow remains in the same form, one easily recognizes streets, corners, facades and cresting. Clearly visible is the similarity to the model, clear composition, flawless perspective, vivid line and aesthetic finishing – all requirements of the architectural sketch recommended by modern teachers are complied with to the full extent.

Is thus the language of the drawing so constant, or the teaching methods have remained similar...? Referring to the comments of professor Bruzda on sketch drawing: "The process in perspective sketch drawing proceeds from general observations to detail. This rule is realized in stages. Each of the stages is characterized by its main task, and all of them, to a varying extent, contain also problems from other stages. As a consequence each stage serves also as a correction of the results of the previous ones. The first stage can be considered almost completely point based, with only vague linear silhouette obtained through joining of the characteristic fragments. The purpose is to mark the key dimensions and the localizations of the most important elements. The next stage involves gradual particularization of the elements following an order of decreasing importance. This stage is executed through a division of the entirety into its building blocks. The order of work in this stage follows the sheer hierarchy of the building elements. First, a division into the most principal elements is made and next one moves towards the details. The gradual departure from the overall shape of the object towards a form more precisely expressing all of its features is accompanied by the introduction of construction elements represented by symmetry, rhythms, proportions, angles and perspective elements"³. The 19th century teaching methods through a study of sketch are still considered in the curricula and textbooks of academies of arts in Krakow. The methods for the development of drawing skills, developed by old masters, are documents in memoirs of students, who later became artists and teachers⁴.

The teaching of drawing in the 19th century was divided into several stages and categories. Hand, measurement, geometrical and technical drawing, professional and compositional and

³ J. Bruzda, *Szkice perspektywiczne*, Kraków 1993.

⁴ J. Fałat, *Pamiętniki*, Katowice 1987.

modeling exercises were distinguished. The teaching would begin with drawing of outlines of simple shaped objects, then would focus on copying of plaster torsos and in the end it involved drawing of a human silhouette and a landscape. The practical exercises were extended with theory and history of architecture, i.e. teaching of the order by Vignola and of the perspective, plans and facades according to Andrea Pozzo. The aim of these classes was to train the eye and to develop the taste. In Krakow drawing was taught by known painters – J. Brodowski, J. N. Głowacki and M. Stachowicz. In the second half of the 19th century such painters as M. Cercha, S. Świerzyński, W. Łuszczkiewicz worked as teachers of drawing. They emphasized the educational and developmental importance of drawing exercises and were of the opinion that the purpose of the teaching is “to provide the rules of drawing based on reasoning and training the eye in picture observations”. They would not consider, however, the teaching of drawing artistry.

Draftsman and architecture painter J. Brodowski, lecturer at the Academy of Arts, underscored the importance of drawing, considering it a “soul of painting, engraving etc.”. In his opinion each future painter, engraver and sculptor had to gain knowledge on the “rules of drawing”. The drawing was supposed to be understood a basis of artist’s work and all artists were supposed to spend large amounts of time on exercises needed to “perfect the talent and the taste”⁵.

The teaching of architects is described in the memoirs of professor Władysław Ekielski: „In the second half of the 19th century, having higher aspirations in architecture, almost all of us studied abroad. Colleagues from Krakow studied in Berlin: S. Odrzywolski and K. Zaremba, from Lwow: Hochberger, Gorgolewski and Stryjeński in Zurich and partially in Paris; Zawiejski, Pokutyński, I and J. Kremer in Wien, and then in Lwow, J. Zubrzycki in Lwow. F. Księżarski in Metz, M. Moraczewski in Berlin. Not having a trustworthy school in the country we have dispersed over Europe and in line with the environment in which we were gathering our knowledge, we were penetrated by the school, teachers’ rules and even the culture of the various European societies we lived in. For that reason, one familiar with the architecture of modern European cities will find related objects in our cities.

Students in Paris were taught to prepare ground plans – for more important buildings always with the use of an axial plan in the background, with consideration of practically all details, which were pursued to the full extent of their practical implications. Hence the background of the composition in the works of Stryjeński, and later in the works of Gravier, i.e. plans of Stryjeński are almost always perfect”⁶.

Let us return to sketches, their creators, subject area and purpose. Sketches made by 17th and 18th century painters were typically preparatory works, notices for the actual paintings. Artists like Rembrandt, Guardi mastered the art of drawing with a pen, and the skill of pen and wash – all these were however only exercises before an oil painting. Sketches of historical objects in the 19th century served numerous purposes: they praised, documented and recorded objects endangered with destruction, they popularized. We shall refer now to several leading draftsmen and their works:

⁵ M. Opalińska, *Józef Brodowski, malarz i rysownik starego Krakowa*, Kraków 2005.

⁶ K. Estreicher, *Dwa wspomnienia*, *Rocznik Krakowski*, 46, 1975.

J. Głogowski, 1777–1838, was the author of drawings depicting the fortified walls of Krakow which were demolished in the first half of the 19th century, he created numerous drawings and watercolor paintings of gates, archways, flanking towers and ramparts.

J. Brodowski, 1780–1853, draftsman and painter, is known as a documentalist of objects endangered with destruction. He would complement his detailed drawings with remarks and large representations of important details.

J. N. Głowacki, 1802–1847, prepared drawings of historical architectural objects which were published in a lithography album of 24 views of Krakow and its vicinity.

A. Gryglewski, 1833–1879, author of cityscapes, became well known for his very precise, documentary in nature, views of historical objects, which testify to his excellent knowledge of the perspective. An example of a drawing and an oil painting of Kanonicza street by that author can be used to understand the painter's workshop and the role of the drawing in painting (Ill. 1, 2).

F. Mączyński, architect, 1874–1947, designer of numerous building in Krakow, was also a keen draftsman of streets, allays and details of Krakow. The drawing of Kanonicza street was made in 1905 (Ill. 3, 4).

Collections of drawings made by these authors represent sketches from nature, handmade with pencil or pen. They were intended mainly to be reproduced as figures. The drawing constituted the pattern that was cut in stone or wood. Objects were presented using a realistic convention.

The realistic convention meant high degree of similarity and precision of the reproduction. The artist took the position of a faithful and precise spectator. They were working under the concept of iconographic documentary. The realistic nature of the drawing was in certain cases very strict and advanced, without any kind of staffage, with no life, persons, vehicles, vegetation or landscape.

A separate convention constituted the impression, the vision. A drawing is in such case a note of impression and describes the important, general features of the object. An autonomous artist would create a vision of a landscape or of objects as a unification of impressions and feelings from the play with their imagination. The artist would focus only on a fragment of the reality, on interesting details and general impression. One could notice a free and vivid sketch as well as lack of precision in the work of the hand and the eye. Works of S. Noakowski are an excellent example, and are compared to poems on architecture. His sketches are full of freedom, purposeful discretions, free associations and transformations and are a negation of the portraying of architecture.

A timeless value in drawings being visions or faithful views is the preservation of the general architectural heritage, praise of an architectural shape or revelation of a hidden, forgotten beauty. A draftsman would often become a vigilant guardian of the immunity of a historical object, would influence preservation attitudes and raise awareness that a historical object is a document only when it remains in its original, intact state. Old drawings prove that architecture was treated with respect and in a „con amore” manner. The artistic values of old drawings and paintings are not in balance with the iconographic and cognitive values. Representation with high aesthetic values but without a similarity to the actually existing objects represents smaller value in comparison to drawing which may be poor in the artistic aspects but faithfully represent the documented objects.

Nowadays the convention of realistic drawing of nature is considered almost an anachronism. It plays its important role in the artistic education, as a preparatory stage, but as artistic expressions it is encountered only rarely – very few artists draw portraits of architecture.

Starting with the second half of the 19th century photography replaced the effort of the draftsmen and gradually eliminated handmade sketches and studies. Nowadays it dominates the imagining of old and modern architecture. Computer- made visions of architecture being under development resemble photographs so closely that the spectator is unable to distinguish virtual elements from the real ones.

Computer made images are perfect from the technical standpoint, yet dehumanized and cold, stripped of the charm, atmosphere and sensuousness of handmade drawings.

Manual preparation of sketches or painting of architecture on location is a rarity today. The tradition disappears or is even skewed. A peculiar reversal of the teaching sense of sketching is taking place when students pretend sketching by replicating contours of a photograph without undertaking the work on location and with pencil notes. Yet the sketch was and shall remain an assistance facilitating understanding through observation. The method of drawing shall be to the maximum extent consistent with the process of thinking and shall express the results of observation and reasoning. The task of a draftsman is to accurately generalize plans, to emphasize the importance of the central theme, to eliminate unnecessary details. It is recommended to avoid in the perspective sketch a pre-assumed convention which could limit the freedom of creation. “The process of cognition, i.e. of gaining knowledge on a form, is undoubtedly an individual experience, which has undisputed influence on the diversity of creation”⁷.

3. Summary

In the future, sketches shall come back into favor and start to fulfill purposes of forming the imagination and taste, aid with popularization, speak to the recipient, sensitize to beauty and convince that drawing can serve the old architecture and at the same time act through its appeal. The idea of illustrating small guides with handmade sketches and drawn impressions, rather than nowadays common photographs, can be continued. On location exercises in historical surroundings can stimulate the interest in history and sensitize to the cultural heritage and the attitude of respecting it. Sketches have a chance to influence activities that ensure existence of historical objects and their remittance to the next generations in their complete form, i.e. with retained shape, composition and spatial-functional arrangement.

⁷ A. Białkiewicz, *Rola rysunku w warsztacie architekta*, Kraków 2004.



- III. 1. Aleksander Gryglewski, *Ulica Kanonicza*, akwarela i ołówek, 1869, Muzeum Historyczne Miasta Krakowa, nr inw. 529/III
- III. 2. Aleksander Gryglewski, *Ulica Kanonicza*, ołówek na kalce, zapewne 1869, Muzeum Narodowe w Warszawie, Rys. Pol., nr inw. 7668/29
- III. 3. Franciszek Mączyński, *Ulica Kanonicza*, 1905, rysunek ołówkiem, Muzeum Historyczne Miasta Krakowa, nr inw. 1430/VIII
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ANNA LEWICKA*

ARCHITECTURAL WORK OUTPUT – SPACE PRESENTATION FORMS

MATERIALNY WARSZTAT ARCHITEKTA – FORMY ZAPISU PRZESTRZENI

Abstract

Great masters expressed their architectural thoughts through lines drawn by hand on sheets of tracing paper. Will the new technology in the form of parametric design tools, computer models, 3D pens and spatial printing become a distinctive feature of our times? A concept presented in the form of an architectural design becomes most valuable when it is put down on paper through soul and hand, like a violinist transferring a melody to the strings with a sensitivity of an author. In spite of the development of computer technology, at the stage of impressive concept designing there is an even greater need for the return to hand-drawn designs. In view of electronic media, it shows a high quality of the architect's technique, original and individual approach and specific value of handmade creation.

Keywords: architect, workshop, line, electronic, drawing

Streszczenie

Wielcy mistrzowie wyrażali swoje zamysły architektoniczne poprzez kreskę zapisywaną ręcznie na arkuszach kalki. Czy nowe technologie w postaci narzędzi do projektowania parametrycznego, modeli komputerowych, piór 3D oraz wydruków przestrzennych staną się cechą rozpoznawczą naszych czasów? Zapis koncepcji w formie projektu architektonicznego staje się najcenniejszy, kiedy dociera na arkusz poprzez połączenie duszy i dłoni, jak skrzypek przekazujący melodię z autorską wrażliwością na struny. Pomimo kształcenia technik komputerowych, na etapie koncepcji wrażliwych istnieje co raz większa potrzeba powrotu do projektów rysowanych ręcznie. Na tle elektronicznego zapisu świadczy to o wysokim poziomie warsztatu architekta, o jego jednostkowym i indywidualnym podejściu do zadania oraz o szczególnej wartości odręcznego wykonania.

Słowa kluczowe: architekt, warsztat, kreska, elektroniczny rysunek

* M.Sc. Arch. (Fine Arts) Anna Lewicka, Department of Civil Engineering and Architecture, Faculty of Civil Engineering, Opole University of Technology.

Drawing is the basis of art and constitutes elementary means of understanding and expression. The beginnings of life with self-awareness and reflection gave rise to linear thinking. Fingerprints, the DNA code – are unique and one-of-a-kind characteristics of each one of us. The same applies to timbre and projection technique – lines in writing or drawing. A fascinating and creative process begins when the first line is put down on paper. There is a relation between imagination and pragmatism¹. Only the few have the ability to record the most important features of an object using just several lines (Ill. 1, Ill. 2).

Through an analysis of the didactic process in the field of drawing, starting from the 17th Century, we can observe that drawing was particularly significant. Hand drawing was the most important form of education both in Academies of Fine Arts and Universities of Technology. The contemporary architects also emphasize the important role of hand drawing as a fundamental record of creative thought. Architectural drawing constitutes an architect's drawing as well as a drawing depicting architecture so it is defined on the basis of the content and the identity of its author². Marcus Vitruvius Pollio was the first theorist who wrote about the importance of drawing for an architect's work output³. He expressed the view that an architect should present the building design in the form of plans, elevations and perspective called a scenography⁴. Before the end of the 10th Century few architectural drawings were created. Villard de Honnecourt's manuscript which dates back to the first half of the 13th Century was the first handbook for architects, that contained a collection of drawings with comments⁵. The invention of geometric perspective by Filippo Brunelleschi and Leon Battista Alberti was the next step; design drawings were precisely prepared thanks to this principle. The architectural form was shown in scale and in perspective. Drawing became a major and analytical stage in the designing process as well as the value of art⁶. Federico Zuccari presented interesting views on drawing in relation to an architect's work output⁷. He introduced the conceptual frameworks of: internal drawing which he called – a concept, and an external drawing which was a graphical representation of this concept.

In the past, technical designs were drawn by hand using tools such as: a T-square, ruling pen, circle templates, French curves or a pantograph. In the case of a mistake the whole draft drawing had to be prepared from the scratch. The computer-aided design system (CAD) has changed this. Modern architect's tools transformed the form of communication of a concept put down on paper into the form having a third dimension. Some architects think that creating computer visualizations in the early stages of a design is a degradation

¹ http://www.nospr.org.pl/media/uploads/gdy_na_papierze_pojawia_si%C4%99_pierwsza_kreska_tekst_ewy_niewiadomskiej.pdf (access: 28.02.2015).

² A. Białkiewicz, *O rysunku architektonicznym*, Teka Kom. Arch. Urb. Stud. Krajobr. – OL PAN, Cracow 2006, pp. 53-60.

³ H. Rottinger, *Die Holzschnitte zur Architektur und zum Vitruvius Teutsch des Walter Rivius*, Studien zur deutschen Kunstgeschichte, Strasburg 1914.

⁴ Witruwiusz, *O architekturze. Ksiąg dziesięć*, tłum. K. Kumaniecki, Warsaw 1956, p. 11, 12.

⁵ H. Hahnloser, *Villard de Honnecourt. Kritische Gesamtausgabe des Bauhüttenbuches. ms. Fr. 190093 der Pariser Nationalbibliothek*, Vienna 1935.

⁶ M. Misiągiewicz, *O prezentacji idei architektonicznej*, Cracow 1999, pp. 44, 45.

⁷ F. Zuccari, *L'Idée de 'pittori, scultori et architetti del cavalier*, Torino 1607.

of the artistic nature of the designer's work, on the other hand, the demands of the modern world do not allow to miss the opportunities offered by the virtual environment. The introduction of IT tools in this area of an architect's work is the most controversial and creates numerous conflicts. Metaphorically, a conceptual drawing is a bridge linking a customer's and an architect's minds. Mutual understanding of form and function of the designed object is one of the basic conditions for the satisfaction of both parties. Because of that the dialogue between a designer and a customer requires using means of communication that minimize the risk of misunderstanding.

Thanks to drawing studies an architect becomes a creator who knows cultural heritage and the heritage of civilization, is involved in the current architecture and art. Drawing as a tool becomes a part of the creation process, the art in itself, an integral part of the work and a separate work⁸. A line is an introduction to abstract thinking, constitutes a characteristic feature connecting all types of drawings. In this sense, a drawing is a record of movement and is a form of a person's signature. It constitutes an identification, exposes and informs about individual characteristics, the ability to see, perceive, and especially to experience. Lines of a drawing can be compared to a seismograph or an electrocardiogram. A drawing is a psychogram of a creator, as it is the most personal expression, which similarly to diaries of a writer, requires sincerity and at the same time confidence limits⁹.

Notwithstanding the development of computer-aided techniques, handmade designs become more and more relevant at the stage of conceptual frameworks. When it comes to the work output, N. Foster puts major emphasis on a relevant drawing at every stage of the designing process¹⁰. The tentative design calls for a substantial number of sketches – concepts that are to serve the basis for conceptual frameworks. Handmade drawings are also used for the purpose of negotiations with customers. Technical drawings are created as late as at the final stage of the designing process. According to Gustaw Peichl¹¹, sketching is a form of reasoning put down on paper. A sketch is the language of architecture. Nowadays architects cannot be opponents of fast computer-aided techniques, however application of advanced techniques must be well considered from the point of view, where and how to make use of them. Jorge Silvetti comes forward with another argument in favour of the essence of drawing. He argues that handmade drawing in a form of a sketch is the source of concepts and a tool for adjusting the designing process as a whole¹², it is of fundamental

⁸ M. Orzechowski, *Rysunek-zmysł architektury*, Wydawnictwo Blue Bird Jan Pirogowicz, Karolina Wojciechowska Sp.k., Warsaw 2014.

⁹ <http://www.konrad.jarodzki.com/teksty.php> (access: 18.02.2015).

¹⁰ E. Robbins, *Why Architects Draw*, Massachusetts 1994, p. 82.

¹¹ Gustaw Peichl, born in 1828 in Vienna. In the period from 1973 until 1996 he was the Principal of the Institute for Art and Architecture at the Academy of Fine Arts Vienna. He was an author of many architectural works, among others in Bonn, Frankfurt and in Vienna. He was awarded many honours and decorations in the field of architecture, he was a honorary member of the Association of German Architects, the Royal Institute of British Architects, the Academy of Fine Arts in Berlin and the American Institute of Architects. G. Peichl, *Back to the pen – back to the pencil*, Salzburg 2003, p. 86.

¹² Jorge Silvetti, a profesor of architecture in Harward School of Design, a pratner of a group of architects in Boston Machado & Silvetti Associates.

significance for architecture since it is the primary expression of an architect's vision¹³. Still another remarkable architect, Renzo Piano, argues that handmade drawing is the major part of the theoretical process of creating architecture¹⁴. Piano states that drawing is an instrument of the circulation process between a concept and an actual design, whereas a model is just a physical conversion of drawing into a three-dimensional form. According to Christoph Gantenbein, computer-aided fabrication and parametric design methods provide for abundant opportunities but they do not constitute a good and interesting pathway. It allows to create incredible objects but designing and creating good space, that can be useful for uninterrupted designing process, takes one's skills and experience¹⁵. In spite of extensive knowledge that architects may acquire nowadays, this is an investor who chooses a concept. According to the architect, Antoni Domicz, a customer often requires servitude from a designer to the extent of designing buildings in correspondence with a customer's fancy and a developer's interests. Under harsh market conditions, an architect is a disabled partner whose performance is limited to submission of "papers" for execution purposes. Homogeneity, consistency, pragmatism and art of reduction – this is how an architect defines the philosophy of designing¹⁶.

Technical drawings constitute graphic form presenting construction design or operations manual of various objects in a conventional way. Whereas artistic drawing is assumed to be expressive and to provide for diverse interpretation¹⁷. 3D CAD systems enable to compile all drawings as one functional integrity. Thanks to them, calculations may be verified in terms of accuracy and a design may be proven to have been successfully completed. When a concept derives from a form dependent on software and its capacity, an architect may often fail to be creative. Instead of implementing one's concept based on extensive knowledge in numerous disciplines such as ergonomics, fundamentals of development and sociology, an architect is implementing an investor's idea that becomes an economic product – far from immaculate ideal. Analysis of didactic programmes of architecture advanced education schools, one may argue that schools, that used to downsize and downgrade handmade drawing skills dozens of years ago, are now inclined to develop and extend that discipline. The work output of remarkable creators of contemporary architecture and their drawings contribute to the development of the documentary proof for significance of handmade drawing for designing purposes to a great extent. No software may substitute for a designer's intuition and knowledge as it cannot check whether a structure has been designed in a correct and accurate way in technical, humanist, social, and ergonomic terms. From the point of view of a designer's own conceptual framework, notwithstanding computer-aided techniques, handmade drawing for designing purposes is more and more

¹³ E. Robbins, *op. cit.*, p. 104.

¹⁴ Renzo Piano, the Head of The Building Workshop Office.

¹⁵ Source: a fragment of an interview conducted by S. Penn with C. Gantenbein, "Architektura i Edukacja", Aefoundation.co.uk, January 2012, Translated by: M. Załuska.

¹⁶ Recording of a discussion of P. Chimeczak and Antoni Domicz, source: <http://blokblog.pl/post/109823349199/ciagle-stawiamy-te-same-pudla> (access: 09.02.2015).

¹⁷ D.L. Goetsch, W.S. Chalk, J.A. Nelson, *Technical Drawing*, Fourth Delmar Learning, Albany 2000, p. 3.

needed and required at the stage of impressive concept designing. In view of electronic media, it proves high quality of an architect's work output, and an architect's original and individual approach as well as specific value of handmade deliverable.



- III. 1. The drawing presented a visionary form of architecture which was not known before and became a stage in design ending with the construction of the object – tower. A drawing of *the Einstein Tower* made by Erich Mendelsohn (<http://documenta-akermariano.blogspot.com/2011/11/erich-mendelsohn.html>, 02.03.2015)
- III. 2. *The Einstein Tower* in Potsdam – an astronomical observatory, E. Mendelsohn (<http://cudaaarchitektury.pl/wp-content/uploads/2014/12/Wie%C5%BCa-Einsteina-2.png>, 18.02.2105)

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ANNA MIELNIK*

BETWEEN IMAGINATION AND REALITY

MIĘDZY WYOBRAŹNIĄ A RZECZYWISTOŚCIĄ

Abstract

The starting point for the discussion concerning the role of drawing and painting in architectural presentation are the works of the Albanian creator Edi Hila, exhibited during the 14th International Architecture Biennale in Venice in 2014. In a series of paintings called *Penthouse*, the artist, using extremely poetic narratives, examines the specific archaeological research on Albanian modernism. Contemporary Albanian cities are full of uncompleted, abandoned buildings. In his paintings, the author transformed such architectural ruins into imaginary monuments. The poetic nature of the images and themes brought up – as a search for identity and cultural heritage - are reminiscent of drawing and painting ideas from the past of the great artist Aldo Rossi.

Keywords: Edi Hilla, Aldo Rossi

Streszczenie

Punktem wyjścia do rozważań na temat roli rysunku i malarstwa w przedstawieniu architektury są prace albańskiego twórcy Ediego Hili, będące częścią wystawy prezentowanej w czasie 14. Międzynarodowego Biennale Architektury w Wenecji. W serii obrazów *Penthouse* artysta, poprzez niezwykle poetycką narrację, prowadzi swoiste badanie archeologiczne modernizmu albańskiego. Współczesne miasta Albanii są pełne nieskończonych, porzuconych budynków. Autor na swoich obrazach takie architektoniczne ruiny przekształca w wymaginowane monumenty. Poetycki charakter obrazów oraz tematy poprzez nie poruszane, jak poszukiwanie tożsamości i dziedzictwa kulturowego współczesnego miasta, przywodzą na myśl rysunkowe i malarskie wyobrażenia wielkiego artysty Aldo Rossiego.

Słowa kluczowe: Edi Hilla, Aldo Rossi

* Ph.D. Arch. Anna Mielnik, Department of Housing and Architectural Composition, Faculty of Architecture, Cracow University of Technology.

1. Potential Monuments of Edi Hila

The starting point for the discussion concerning the role of drawing and painting in architectural presentation are the works of Albanian creator Edi Hila – *Potential Monuments of Unrealised Futures*¹ exhibited during the 14th International Architecture Biennale in Venice in 2014.

Edi Hila is an artist whose scope of interests include the urban environment and particularly, its architecture². He uses these subjects as a medium for expressing the heritage and the complex identity of his homeland. Hila especially points out the relation between architecture and social, political and demographic conditions.

In a series of seven paintings entitled *Penthouse*, the artist, through extremely poetic narratives examines specific archaeological research of Albanian modernism. Contemporary Albanian cities, full of unfinished and abandoned buildings, are cities in the state of entropy³. Here, the inspiration for the artist became a semi-structured, unfinished, one-family house. By focusing on one type of building, Hila tried to recognize and reveal the hidden or lost traces of modernism. Giving up the role of an honest documentarist, he rather tried to register anecdotal, unconventional and fictional elements that traversed reality⁴.

Using ruins of houses marked by traces of modernism, the author transformed them into imaginary monuments. Seven buildings are pictured separately in front view or three-quarter view. Two thirds of the bottom parts of the building are left as simple, smooth, blank walls. The last floor concentrates on all ornamental elements⁵. Elevated to the absurd, exaggerated “plinths” of buildings became imagined structures loaded with monumental elements like arches, pediments and pilasters⁶. The use of central perspective gave objects gravity and dignity, clearly indicating a great degree of the author’s admiration for the portrayed subject. The image composition is very narrowed; the buildings fill the greater part of the painting surface. Houses are located in the void, and are “cut off” from the environment. It emphasizes their importance and makes the images less real. Houses have been transformed into weird and absurd objects. Space and time seem to be stilled.

¹ Curators of Albanian exposition is *Beyond Entropy* (the group formed by Jonida Turrani and Stefano Rabolli Pansera from the Balkans). They invited two well-known Albanian artist Edi Hila and Adrian Paci to present their works that were supposed to constitute an answer to biennale’s subject matter: *Fundamentals – Absorbing Modernity: 1914–2014*.

² *Portraits of Houses* is another series of his paintings.

³ Albania, which is in a transition period following the collapse of the totalitarian regime, has faced a phase of tumultuous urbanization. The country stands between a developing, temporary and static world. The traditional architecture, adopted in order to define the national identity, the imposition of Soviet urban plans and finally, the wave of contemporary architectural trends, have produced a chaotic ensemble mostly within the city itself, [in:] http://www.domusweb.it/en/news/2014/06/21/potential_monuments.html (access: 30.01.2015).

⁴ <http://www.artmargins.com/index.php/archive/390-edi-hila-qpaysages-transitionnelsq-galerie-jgm-paris-january-15-2009-february-15-2009> (access: 18.01.2015).

⁵ <http://galeriemitterrand.com/cspdocs/exhibition/files/CP%20Edi%20Hila%20ENG.pdf> (access: 01.09.2015).

⁶ http://www.domusweb.it/en/news/2014/06/21/potential_monuments.html (access: 30.01.2015).

Over-exaggerated pedestals indicate the endless process of building, the space for future architectural elements. Hila – clearly leaving space for what could be found, rather than just focusing on what there is – avoids the traditional architectural viewpoint. In the fragmented and uncompleted, he stresses the potentiality considered as a value to be preserved⁷. “Unrealized Futures” are for him the partially realized, suspended, yet not completed promises of modernity.

Hila wishes also to focus the viewer’s attention on ostentation, which is used by houses owners to reveal their social status and distinct individuality. The artist ironically takes a look at aspects that form the quest for identity, resulting from a strong need for identification⁸.

The curators of the pavilion did not want it to be a merely didactic exhibition presenting an encyclopedic catalogue of Albanian architecture. The aim was to show how modernist architecture in Albania is transferred, rejected, modified and absorbed. In search of traces of modernist architecture, the artist “interwove real and constructed reference, past and present, fictional stories and reading of such buildings beyond the traditional lexicon of architectural representation”⁹. Hila emphasizes the role of architecture as a medium of identity, and the fact that its material shape is always determined by a particular ideology of a historical moment.

“Architectures” designed by Edi Hila are commentaries, not representations; not a slavish portrayal of reality. The author’s own explicit references to the vernacular and modernist architecture, “instilled” with something mysterious and supernatural. Phantasmagorical facades encourage us to wonder how much of what we observe is real, where fiction begins and why the creator gave his work such intriguing and ambiguous character. Analyzing his paintings, we realize how much room there is for interpretation.

2. Urban artefacts of Aldo Rossi

The poetic nature of Edi Hila’s paintings and brought up themes – as the search for identity and cultural heritage of the modern city – are reminiscent of the great painting ideas of Aldo Rossi. The Italian architect was, and still is a creator admired both for his artistic ability, architectural design skill, as well as for his theoretical texts. His quick sketches, drawings and elaborate paintings became independent, separate works of art and still arouse great interest, as parts of museum collections and retrospective exhibitions.

Aldo Rossi’s drawings that accompany the architect’s design process illustrated and explained his way of thinking and his strategies of action. Often however, they took him far from the practical effort of executing architectural projects. Both his architecture and the convention of its drawn presentation have never adhered to the principle of obviousness. Rossi’s drawn architecture was a consequence of his wide interests, particularly concerning the relationship of typology and morphology of the city. He tried to express the shape of the modern city, its architecture and society. Observation, memory and repetition were the three important aspects of his work, constantly depicted in his drawings.

⁷ <http://www.beyondentropy.com> (access: 10.02.2015).

⁸ <http://galeriemitterrand.com/cspdocs/exhibition/files/CP%20Edi%20Hila%20ENG.pdf> (access: 01.09.2015).

⁹ <http://www.beyondentropy.com> (access: 10.02.2015).

Rossi was a “diligent” observer. His unusual curiosity yielded numerous sketches filling countless notebooks, scraps of paper and newspapers, commenting and processing the surrounding reality. Rossi seems to have been obsessed with the observations of the relationships between objects, “small” and “great” architecture. His sketches seem to be an attempt to order, control, filter the world around him. In his drawings, he wanted to show the “strict world with only a few objects, the world of intelligible facts”¹⁰.

The forms and shapes of Aldo Rossi’s images are immediately recognizable, legible, evoking well-known associations and references to the past, but at the same time they are puzzling. He made a remarkable fusion of something rediscovered with never-before-seen, of the known with the unknown. He wrote: “I am referring rather to familiar objects, whose form and position are already fixed, but whose meanings may be changed. Barns, stables, sheds, workshops, etc. Archetypal objects whose common emotional appeal reveals timeless concerns. Such objects are situated between inventory and memory”¹¹. Rossi shows us the architecture immersed in Melancholic Space¹², but yet an extremely rational kind, made up of clean lines and simple, timeless elementary shapes. A world composed of memories of architecture and archetypal forms. Rossi understood the concepts of space and time as both specific and universal, connecting them to the principle of analogy: “The time of analogy measures both the history and memory, similarly the place of analogy refers to a historic place and memory associated with it”. Rossi wanted to find the identity of the architecture in the past, in memory¹³.

Rossi was concerned with creating an atmosphere of familiar and recognizable forms infused with unreal qualities. He did it by a number of repetitions, changes of context, scale manipulation and “dramatic” light. He established a vocabulary of forms and ideas which he manipulated and mixed together in endless variations. Motifs such as pyramidal roofs, arched roofs, triangular roofs, the striped cabins, coffee pots, bottles, rows of square windows, columns, lighthouses systematically appeared in his work. Rossi moved objects from one context to another, flexibly changing their scale. He used everyday objects as “miniature architectures”. Flexibility of scale allowed him to conceive of coffee makers, Coca-Cola cans, and blue packs of Gauloises as an inhabited architecture¹⁴. Relativity, the ambiguity of scale often assumed the presence of quite monumental form.

Human figures have been banished from Rossi’s images. In these uninhabited scenes, architectural forms look inward, being as if in meditation. Objects are immersed

¹⁰ P. Porthogesi, *After Modern Architecture*, New York 1982, s. 97 [in:] E. Węclawowicz-Gyurkovich, *Niezapomniany bunt postmodernistyczny w przedstawieniu architektury*, [in:] *Definiowanie Przestrzeni Architektonicznej – Zapis przestrzeni architektonicznej*, Kraków 2013, p. 196.

¹¹ Rossi, A., *An Analogical Architecture*, [in:] *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965–1995*, red. K. Nesbitt, Princeton 1996, p. 349.

¹² M. Misiągiewicz, *O prezentacji idei architektonicznej*, Kraków 2003, p. 130.

¹³ J. Wojtas-Swoszowska, *Aldo Rossi – architekt i teoretyk. Dylematy architektury po modernizmie*, *Kwartalnik Architektury i Urbanistyki PAN*, 2/2012, p. 49.

¹⁴ G. Braghieri, *Tower, Coca-Cola and Gauloises. The relationship between Art and Architecture in Aldo Rossi*, [w:] *Architecture & Arts 1900/2004: A Century of Creative Projects in Building, Design, Cinema, Painting, Photography, and Sculpture*, ed. G. Celant, Milan 2004, p. 452.

in architectural landscapes out of time. Silence of elementary forms is sensed. This is reminiscent of the mood established by his Italian predecessors. Rossi made a belated contribution to metaphysical painting – *pittura metafisica* – an artistic movement that emerged on the eve of the First World War. The mood especially brings to mind the paintings of Giorgio de Chirico, where Italian squares emanated extraordinary metaphysical essence. Carlo Carrà, another painter who turned to metaphysical painting, wrote that true art is an attempt to “extract from ordinary objects the metaphysical reality that makes things eternal”¹⁵. Just as the works of *pittura metafisica*, Rossi’s paintings are filled with obsessive, melancholy longing for the absolute.

Rossi showed the city as a product of its densely woven interconnections. He had a great feel for urban chaos, but “in his drawings he expressed the search for a ‘leitmotif’, that would be able to make order in the architectural composition and to suggest the continuation of the architectural story”¹⁶. Although Rossi seemed to understand modernity as a void, an immense absence of tradition’s understanding, he did not claim that it had swallowed everything valuable¹⁷. However, he willingly introduced historical and vernacular forms and values to the current world of architecture, and also used modernist and universal references.

Aldo Rossi was the artist, whose drawings and paintings combined his influential buildings and theoretical texts. His architectural projects could be seen, even as a ramifications of the conjectures that flow through his art. “By drawing, Rossi presents at an intimate scale qualities that might elude us when we are faced by grandeur of his buildings or and the elegance of his theories”¹⁸.

3. Conclusions

Gianni Braghieri¹⁹ highlights, with regret, that the drawings and paintings of Aldo Rossi no longer belong to our culture. It seems, however, that continuous interest evoked by his drawn architecture proves its permanent value and the longing of a part of creators and audiences for this specific kind of thinking about architecture embodied in his images. Agreeing with Maria Misiągiewicz, Aldo Rossi could be classified in the extraordinary “group of architects, for whom drawing is not only illustrating, presenting or showing, but becomes the retention and the manifestation of ideas, allowing them to see the intended shape”²⁰.

The work of Edi Hila, a non-architect interested in the subject of urban planning and architecture in the difficult transition of his homeland, may remind us of Rossi’s ‘drawing

¹⁵ C. Ratcliff, *Introduction*, [in:] *Aldo Rossi. Drawings and Paintings*, ed. M. Adjmi, G. Bertolotto, New York 1993, p. 11.

¹⁶ M. Misiągiewicz, *op. cit.*, p. 130.

¹⁷ C. Ratcliff, *op. cit.*, p. 16.

¹⁸ *Ibidem*, p. 18.

¹⁹ Patrz.: G. Braghieri, *op. cit.*, p. 451.

²⁰ M. Misiągiewicz, *op. cit.*, p. 53.

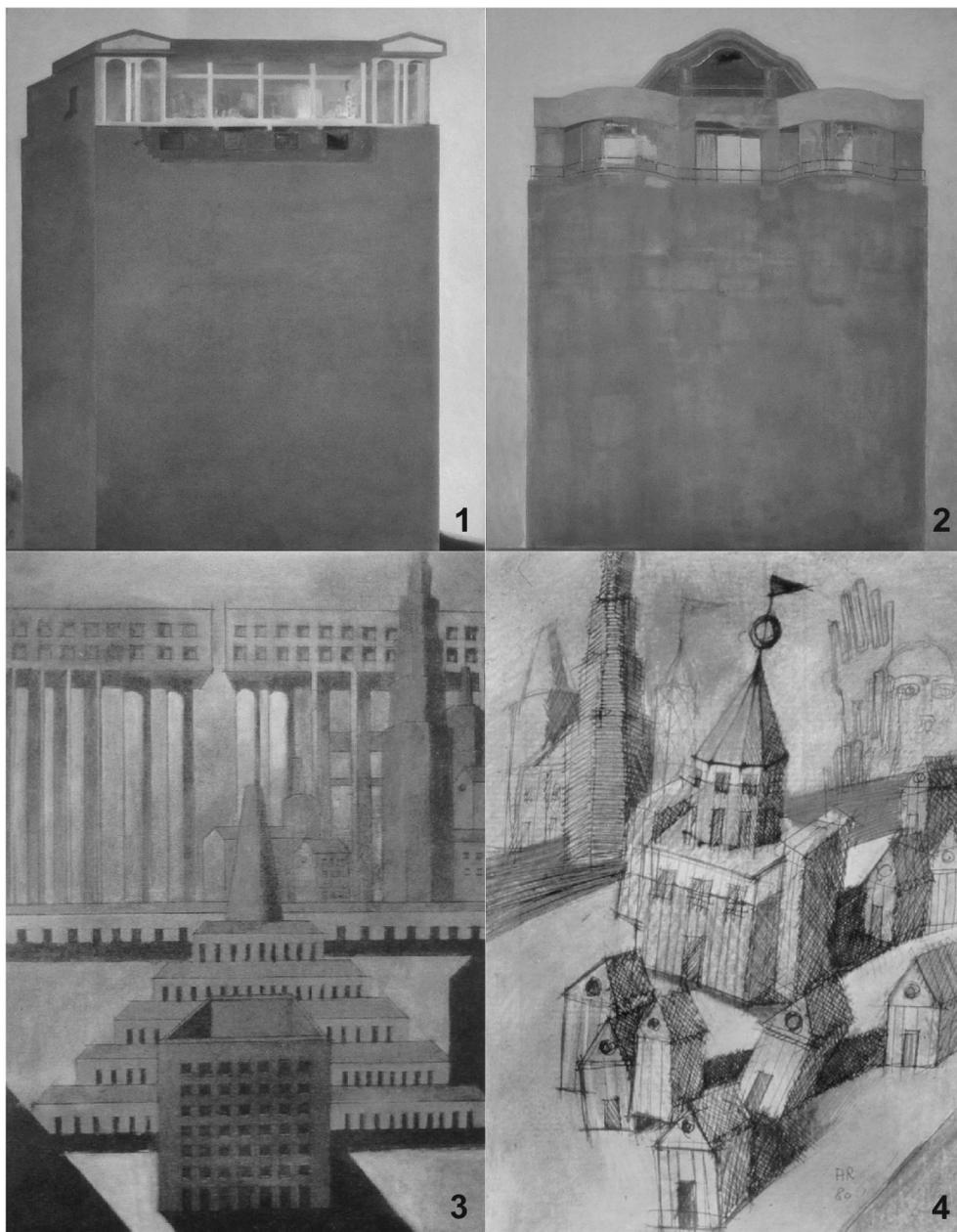
imagery' which analyzed his contemporary world of uncompromising modernism during the post-war years. The world and its problems have not changed so much, and the search for identity will always be up to date, because it gives us a sense of belonging, the awareness of who we are and what our place is in the world.

Both artists can be categorized as seeking unfamiliar ways to render familiar objects. Images evoke feelings of anxiety, which in turn stimulate us into reflection. Maybe as Rossi's "analogous city" was not a real, true city, but analogous to the real one²¹, so too should architectural images, like the authors' cited in the text, be similar to real ones, since art should reveal inside realities and eternal truths²².

The images described above provide individually and personally arranged collections of thoughts, feelings, sensations, and memories of architecture. Although the authors' profession, time and place of their origin is different, they seem to prove that drawing and painting are still an important medium of communication.

²¹ Wojtas-Swoszowska, J, *op. cit.*, p. 49.

²² C. Ratcliff, *op. cit.*, p. 12.



III. 1, 2. Edi Hila, *Penthouse* (photo by author, 2014)

III. 3. Aldo Rossi, *Cimitero di San Cataldo a Modena*, 1971–1978 (source [3])

III. 4. Aldo Rossi, *Il teatro del Mondo a Venezia*, 1979 (source [3])

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PATRYCJA OCHMAN*

DECONSTRUCTION AS A METHOD OF SHAPING SPACE. DRAWING – THE ARCHITECT’S MEDIUM

DEKONSTRUKCJA JAKO METODA KSZTAŁTOWANIA PRZESTRZENI. RYSUNEK – MEDIUM ARCHITEKTA

Abstract

The author discusses the process of deconstruction in architecture and the accompanying drawing process, interpreted as an architect’s medium rather than merely a tool for signification, a method of communication between an artist/architect and the world. The architect’s mind finds delight in space, a fleeting thought, idea, concept, a non-verbal shape of future material substance. Drawing, while being an immanent part of the work, is the work in itself, the language that allows for space to be described in its own categories. Drawing as a method of experiencing space reveals the mechanisms through which architecture is shaped.

Keywords: deconstruction, drawing, space

Streszczenie

W artykule omówiono proces dekonstrukcji w architekturze i towarzyszący mu proces rysowania – rozumiany jako medium architekta, a nie jedynie narzędzie sygnifikacji, metoda komunikowania się artysty/architekta ze światem. Umysł architekta – zachwyt nad przestrzenią, przelotna myśl, idea, koncept, niezwerbalizowany kształt przyszłej materialnej substancji. Rysunek, będąc immanentną częścią dzieła, jest dziełem samym w sobie, językiem pozwalającym opowiadać o przestrzeni w jej kategoriach. Rysowanie jako metoda doświadczania przestrzeni ujawnia mechanizmy kształtowania architektury.

Słowa kluczowe: dekonstrukcja, rysunek, przestrzeń

* MA Patrycja Ochman, Faculty of Interior Design, Jan Matejko Academy of Fine Arts in Krakow.

At the beginning there is a thought. It appears out of nowhere and spreads around itself the thicket of other thoughts; it grows simultaneously with them, building the tissue of space in the designer's mind. The reality which is being designed has a long way to go, from its author's imagination, through a sheet of paper to the actual world, and in the process it undergoes a number of trials, tribulations, doubts and errors. It often returns from a stage of preliminary models to the flat surface again to find better coordinates for itself. The process it undergoes is a key to shaping space without charging it with the schemes of ready-made template solutions; in fact the right door will open through the search, tracking the inner tensions concealed in the space, the cracks that delaminate it, the invisible network of correlations and cleavages between the nodes that define its structure. Deconstruction, interpreted as a process of this kind, implies a particular type of play, based on continuous analysis, a tracking of what is taking place, of what provokes action – at the same time calling for an image of the forever-unfinished building of the Tower of Babel. Deconstruction is therefore about experiencing the designed space without imposing meanings and interpretations, while remaining convinced that unequivocal and schematic perception immobilizes and restricts any insightful thinking. Deconstruction as a method of shaping space freely, searches for new boundaries in well-known, familiar matter, but it does not define them for good, which allows it to stay away from the old habits and relationships between concepts that comprise a system of thought. An analysis of architectural space does not therefore close a design path but leaves it in a dynamic form, ready for new transformations, suggesting a dialogue within the shapes and surfaces that build it; as if a button has been designed that sets off the machinery of architecture in motion, because it has been stuck motionless for a moment, as if paused. This is what Frank Gehry's spaces are like. There is no strict division into roles, into an interior and exterior, which present ready-made content on the stage of life; instead they brush against each other, permeate each other, enter into interaction. They are open to 'otherness', are tolerant and unique. Whether it is the Guggenheim Museum in Bilbao or the design of the Louis Vuitton Foundation Museum in Paris, these – just like many other buildings which had originated in the architect's mind before they found their place in the real space – underwent a lot of drawing and modelling trials before making it into reality. A giant made of steel, titanium, stone and glass gives an impression of being moulded by a light gust of wind; while the sparkly surfaces of its shape bend to allow light to sculpt permanence into flux, so typical of Gehry's buildings. Although the project itself was aided by the use of the Catia software, the architect himself emphasizes the indispensable role of sketches and modelling, which are like "drawing in space". A flat visualization on the computer screen is incapable of reflecting the fullness of reality or of the shape of the air filling an empty space. Gehry's uniqueness stems from the fact that by moving in space he considers *difference* – which according to Derrida's is something shapeless that does not exist, the *difference* which is not a specific state or form; it cannot be known through senses but it is still right at the centre of things. Owing to this centre, this difference, this emptiness, it is possible to obtain a coherent image and therefore space, which by comprising a precise mechanism gives an impression of the ambivalent positioning of its components, immobilized in space, as if it encouraged free interpretation and further intellectual deconstruction. The Louis Vuitton Museum situated in the Bois de Boulogne is only/as much as another step/stage/of deconstruction, previously acted out in drawings and models. When realized in the 1:1 scale it sows the seed of further,

individual, uncountable thought deconstructions. Just like a cloud, swirling through the air, which will change shape in a moment; like glass sails, filling with wind to raise the building above the earth.

The French philosopher Jack Derrida does not discuss reality as such but the ways of its perception, which -according to him – can be revealed through literature and, which can also perhaps be extended to such media as drawing. “Deconstructionism comes down to the process of applying a specific linguistic and artistic model to the reality – it is in no way gaining knowledge, reading or contemplation” but rather “deconstruction of the opposites: the objective world and its human (true or false) interpretation” which leads to “thinking in the space of irresolvables”¹. Could it be then that drawing space is not about creating new models or alternative versions, not in order to gain the ultimate knowledge of it but to experience it continually, getting to know it as if incessantly. Taking on the semantic play of Derrida’s texts and thinking about literature, which on the destructionist view is a practice of reading and writing, we could perhaps think about drawing by practicing both the writing/designing of space and the reading/interpreting of it. Following this trail, deconstruction is about an exhaustive drawing analysis of architectural space, in order to disclose the places that destroy its superficial cohesion, to reveal the in-built, insoluble dissonances which are particularly privileged in the process of deconstruction. Why? Because they create the area in which new solutions can be discovered. To an architect, drawing is a medium that serves the purpose of discovery. In the drawing matter, unlimited by an impossibility of actualisation, Zaha Hadid shortens or extends distances between designed objects, stretching them, showing their movement, as if trying to work out their form by sculpting it from different viewpoints. One could, after Rem Koolhaas, who called Hadid “a planet moving round its own orbit”², describe every architect in this way who closely listens to the inner voice that moves her hand while drawing. What Hadid brings to life are creations that stand out with their controversial form, worked out through endless drawings and spatial reliefs, defining dynamics of lines, edges of space, emotions relating to the fluidity of form. The design process is based on her virtuoso skill in bringing out synesthetic sensations, coded inside the machinarium that pulsates with its own life, which – just like the Museum of Modern Art in Cincinnati -swiftly changes and crops its inner space with unexpected shots combining various floorings. Zaha excludes computers from the first phase of designing, using only sketches and conceptual drawings, which will lead you from one shot to another to the final effect, not unlike a storyboard. The Vitra Fire Station in Weil am Rhein is defined by, rather than occupies, a place in space, by a linear and layered gradation of walls which suggests a frozen movement, implying the tension of the expectation of a sudden, violent change of dynamics in the structure. The Abu Dhabi Performing Arts Center rises up like a natural form and, as if it were a developing organism made out of pedestrian paths crossing the new cultural district; it spreads out, creating a structure that locates its layers along the axes marked out on the drawing.

¹ *Powszechna encyklopedia filozofii*, red. Andrzej Maryniarczyk, t. II, Polskie Towarzystwo Tomasza z Akwinu, Lublin, 2001, s. 494.

² <http://www.magazyntrendy.pl/Trendynew/podglad.php?id=234> (access: 02.04.2015).

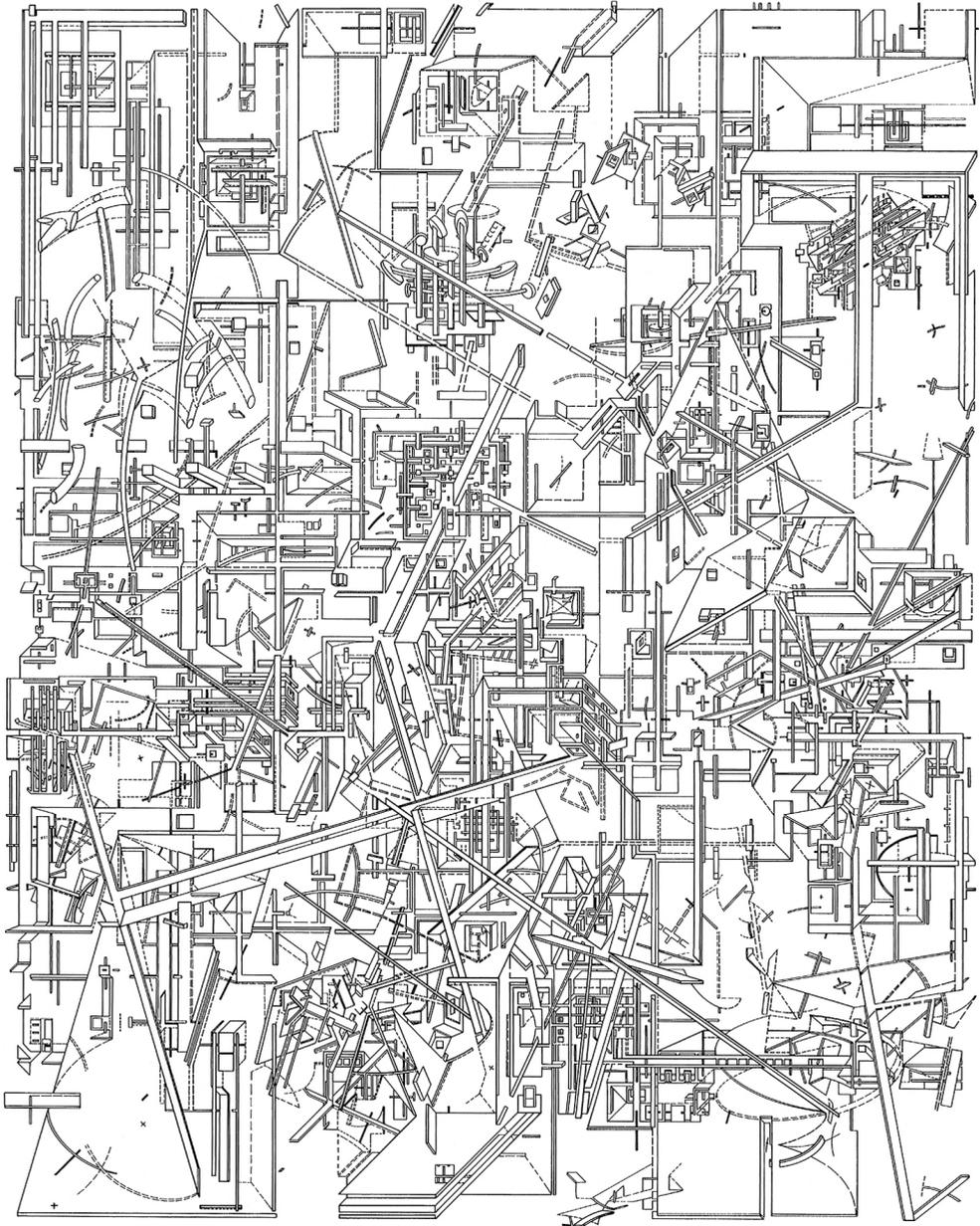
Drawing, in the spirit of deconstruction, is a record of an exceptional dialogue with space, which is also an object of its analysis/processing/investigation. An author of a drawing (text) is not the only source of its meaning; deconstruction undermines the traditional interpretation of the subject to the effect that language can express ideas without changing them. An architect's drawing is like a philosopher's text – hardly a static structure but more of a building under reconstruction, continually changing internal relations between the constituent opposites of emptiness and fullness, interior and exterior, totality and fragment, content and form. Architecture, in all reality, just as in design drawings, is entangled in a net of correlates which means that its self-deconstructing goes beyond the designer's intention. With the use of the medium of drawing, an architect carries out a deconstructing “disassembly” of space, yielding to doubt the elements that combine it together, such as unity, harmony and balance and, in this way, presents multiple points of view, a distribution of forces working from the inside. Drawing to an architect is a search for new perspectives, horizons that have not been conquered before. Drawing enables the giving of shape to the non-verbalized matter, which provides a stimulating impulse of unpredictability, so needed in deconstruction. It smashes, reverses the way in which reality is seen, manipulating it in the same way a designer manipulates surface and shape; by changing directions and building contrasts, it leads into an area of thinking which is free of rationality.

Daniel Libeskind's design space is the space “on its way”; yet it does not happen with the aid of words, so it is hard to describe it with words; neither does it make use of routine, computer solutions. Libeskind, who is often defined as an architect of sounds, relates building space to the process of composing music; in both cases the situation takes place concurrently on paper and in the author's mind. An architect touches on the form and shapes in the imaginary design space; a musician hears a melody in the musical design space which is then recorded on paper. It is impossible to replace such a mechanism of the inner projection of the senses with computer software, which is merely a tool for systematizing the visualization of the project. Libeskind draws arrangements of geometric forms on manuscript paper, while listening to the music of their spatial relations. The first works that made him famous were not any specific architectural designs but cycles of drawings, such as “Micromegas: the Architecture of Space End” (1979, ill. 1) and “Chamber works: Architectural Meditations on Themes from Heraclitus” (1983). The drawings improvise space based on intuition, blind chance and gestures, with the help of multidirectional, crossed lines, curves, circles that create an impression the penetrating, searching, tracking or marking of traces which bring to mind deconstructionist analysis. Sometimes his labyrinths suggest spaces that cannot exist in reality, as if the architect was on the trail of new dimensions, new realities, which opens broader perspectives in design thinking, undermining all tried and tested architectural theories and practice. Libeskind's drawings are reminiscent of Escher's works, in which architecture evades reality, in this way brining drawing up to the rank of architecture. In any case, this is what Libeskind wanted – his drawings are ways of experiencing “otherness” and depicting the mechanism of drawing and perception of a drawing. They go beyond directing a being towards what precedes being – otherness, questionability, a chasm, but at the same time they show drawing/a drawing as a medium and not only a tool for documenting, describing facts, the process in which a person at the user-end is passive. The innovative

character of the Micromegas series initiated a new way of perceiving space; it became a portent of the broken line of the Jüdisches Museum in Berlin and foundation of the famous theoretical project the “City Edge” (1987). The competition-winning vision of building in the area near the Berlin Wall did not go along with the general trend of masking the fissures, the tearing of the city tissue, but went for a deconstructive reversal of the situation, searching for a solution within the structure which was already in place, ripping and splitting it from the inside and at the same time binding the fate of the new object with the fate of both East and West Berlin. Architecture as the record of the memory of a place is clear in the design model, in which elements of the old buildings were covered with the paper photos and texts, and so above the preserved structures an object rises on the set of three intersecting lines at an acute angle. The space, visualized with the use of a model, makes us aware that the scars of the past are impossible to erase but the reorganization of this space is only possible thanks to a deconstructionist analysis which imposes a prevailing significance on the new building, almost suspended against gravity. Libeskind based the design of the Jewish Museum also on the sounds of Schoenberg’s unfinished opera; looking for a deconstructionist opposition to the historic building of the Kollegienhaus, he created a raw metallic shape with sharp cuts, suggesting suffering. The shape of the building, searches for its own path in the space to be able to express with itself more than a mere presence. Drawing has allowed for the extraction of additional layers of space; as Libeskind says, drawing is not only an invention that leads to a clear record or creation, but it comprises an explanation and interpretation of text – a reality existing independently of an architect³.

Designing and creating in the spirit of deconstruction is not a method which should be used according to pre-specified rules; it is more of a willingness to take on a new interpretation, depending on a design situation that is already in place. The architect’s mind should be entirely free of rigid frameworks that restrain the design reality and the prejudice rooted in it in the shape of established definitions, concepts or meanings. From the very first line, an architect tells a story about space and the laws it is ruled by, about the contrasts defining its character, about chiaroscuro searching for its altering mood, about the emptiness and silence which balance the density of architecture against a white sheet of paper, about the people that will reside in the space. A drawing is a language which lets express space in its own categories, it comprises a medium for deconstructing architectural reality, an architect’s method of communication with the world, not only a tool for signification. Together with modelling, it is an additional sense for an architect, which enables the experiencing of space, experimenting with the possibilities it offers, and marking out new coordinates for architecture, which is a value in itself. A drawing illustrates the structure of thought and inventions before they are verbalized, ascribed to specific concepts, charged with meanings. A drawing can be read as a whole, without visually linking the connected points, like letters. If an architect loses his voice, he can still talk: using points in place of words, lines instead of sentences, fragments of pure white on a piece of paper instead of punctuation.

³ Ch. Jencks, K. Kropf, *Teorie i manifesty architektury współczesnej*, Grupa Sztuka Architektury, Warszawa 2013, s. 311.



III. 1. Daniel Liebeskind, *Micromegas* (caption: *The Burrows Laws*), 1978–1979 (source: <http://mediacentre.kallaway.co.uk/architectural-association-school-picture-library5.asp>)

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MARTA PIECZARA*

DRAWING AS A LESSON FROM THE BUILT HERITAGE

RYSUNEK JAKO LEKCJA Z DZIEDZICTWA

Abstract

The notion of drawing skills that an architect shall be equipped with has several aspects. First of all, drawing can be used as an instrument for learning the principles of defining space, its scale, composition and architectural detail. Sketches and studies of existing buildings help an architect understand the way they were assembled. These drawings represent, therefore, a compulsory phase in building up one's skills as an architect. Such is the goal of the outdoor drawing, considered as an important teaching method since the 17th century, when the French king Louis XIV founded the Prix de Rome. This drawing scholarship has endured till the 20th century and is still being imitated in other lands, giving students a possibility to gain knowledge directly from the greatest works of architecture.

Keywords: freehand drawing, a study, drawing scholarship, education of an architect

Streszczenie

Na warsztat rysunkowy architekta składa się kilka jego rodzajów. Przede wszystkim jest to rysunek służący uczeniu się prawideł kształtowania przestrzeni, jej skali, zasad kompozycji oraz tworzenia detalu. Szkice odręczne oraz studia istniejących budowli służą architektowi jako środek pozyskania wiedzy o tym, jak zostały one zbudowane. Rysunki te stanowią wobec tego niezbędny element w budowaniu warsztatu pracy projektanta. Taki jest cel rysowania w terenie, uznany za ważną metodę nauczania dla architektów już w XVII-tym wieku, kiedy król francuski Ludwik XIV ufundował nagrodę Prix de Rome. To stypendium rysunkowe przetrwało do XX wieku i jest nadal naśladowane w innych krajach, dając studentom możliwość zdobywania wiedzy bezpośrednio od największych dzieł architektury.

Słowa kluczowe: rysunek odręczny, studium, stypendium rysunkowe, proces kształcenia architekta

* Ph.D. Arch. Marta Pieczara, Institute of Architecture and Planning, Faculty of Architecture, Poznan University of Technology.

The drawing skills of an architect, being his basic tools of work and communication, reflect not only his innate talent, but also the knowledge he has gained. In its widest sense, this notion covers the whole range of kinds of drawing and related tools. As first comes to mind the freehand drawing, which is often made as a pencil or a pen sketch, but also allows the author to reach for various painting techniques. Secondly, we ought to mention the scale drawing which permits to combine techniques typical of freehand drawing with the use of drafting tools. A particular place in the architect's workshop is obviously attributed to the project, which is a complete vision of a designed building. Essentially, a project consists of a two-dimensional representation of the space imagined. Once drafted with ink on tracing-paper, it is nowadays being widely replaced by the computer. The Computer Aided Design is now involved in every stage of design. We willingly reach out for it more and more often because of its convenience and great representation possibilities. The increasing use of computers by architects is not anymore limited to drafting, but it stretches out to become a tool of defining a three-dimensional concept as well as its aesthetic expression. Despite all its advantages, computer drawing cannot replace one of the most elementary aspects of the architect's training which is the drawing intended as a didactic tool.

When it comes to its place in the architect's formation, drawing helps to learn the principles of defining space and its scale, as well as the rules of architectural composition and detail. Freehand sketches and scaled studies of existing buildings, also those made with the use of drafting tools, serve an architect as means to gain knowledge about how they were assembled. These drawings are, therefore, a compulsory stage in developing an architect's professional skills, allowing him to seize the order and the elements of architectural form's construction. Yet, this knowledge is essential in the design practice and it might even serve as foundations for one's approach to work. This was the case of Louis I. Kahn, who based his individual definition of the ornament, far from its usual purpose as added adornment, on his observations of the buildings he drew. For Kahn, the ornament comes from "the glory of the joint"¹ and so it plays an important role in communication with the user, by demonstrating the building's order of construction. Even though Louis I. Kahn does not state it, his reflections on this subject seem to have their source in his sketches of the classical edifices, whose elements of décor, like metope or triglyph, resulted directly from the order of construction.

Sketching existing architecture is, at the same time, a method of analysing its spatial context, consciously or subconsciously giving an insight into such notions as proportion, rhythm or harmony. The Vitruvian traits of architecture can therefore be experienced by means of drawing, which allows an architect to absorb them better than from reading. Such is the goal of outdoor drawing, which has been considered an important teaching method for architects since the 17th century, when the French king Louis XIV founded the Prix de Rome. Awarded to the most talented architects and artists, this scholarship allowed them to spend a few years in Rome, where they contributed to an extensive project led by the prestigious Académie française de Rome (est. 1666). Its aim was to document and to create reconstructions of ancient Roman edifices. The target of these studies was limited neither

¹ L.I. Kahn, *Talk at the Conclusion of the Otterloo Congress*, 1959, [In:] L. Kahn, *Essential texts*, red. R. Twombly, New York–London 2003, p. 60.

to improving skills of the *envoyés* as individuals nor to gathering information about the monuments of ancient Rome. More importantly, they aimed at identifying and describing the composition principles of the Roman architecture and at transferring them afterwards to the French ground. Considered perfect since the Renaissance, the ancient edifices were precisely analysed with a particular regard to their proportions, elements and rules of their composition and architectural detail. The works of the *pensionnaires* of Académie française de Rome formed, in a way, a sourcebook of inspirations for the French architects of baroque palaces built at that time in Île-de-France region. Among other realisations of the epoch, the famous extension of Versailles was ordered by the French king Louis XIV, founder of discussed scholarship.

The interest in subsequent studies brought from Rome was not lesser during the following centuries. The French neoclassicism continued to derive from antiquity. Besides the most obvious facts, like the one that the Architectural Orders were still compulsorily used in formal architecture of institutions, it ought to be mentioned that some of the most famous edifices of the epoch had their initial concept based on the ancient Roman monuments. A perfect example is the church of St. Geneviève in Paris, inspired by the Pantheon in Rome and known nowadays also as Panthéon. It was designed by Jacques-Germain Soufflot, who was never awarded the Prix de Rome but went there for a journey in 1750 accompanying the marquis de Marigny [4]. Moreover, the propagation of illustrations representing renowned masterpieces of classical architecture fed the imagination of the greatest visionary architects of that time, like Claude-Nicolas Ledoux or Étienne-Louis Boullée. The famous perspective vision of the Royal Library (Ill. 2), presented by the latter in 1785, was admittedly modeled on the Pantheon in Rome (Ill. 1). This project, which transformed Pantheon's centrally opened dome into a vault with a full-length axial slit, was a challenge that the epoch's technical possibilities could not meet. Besides the evident reference to the widely renowned ancient masterpieces, the visionary propositions of Ledoux and Boullée showed an influence of Giovanni Battista Piranesi's individual drawing manner. Passionate about Rome, Piranesi's etchings were back then a great inspiration for the artists, and for the *pensionnaires* of Académie française de Rome in particular. For many designers of the epoch, the ancient monuments drawn during a sojourn in Rome served often as a literal model rather than only an inspiration. The Arc de Triomphe in Paris, for example, built in the years 1806–1836 as a memorial of Napoleon's victory at Austerlitz and modeled on triumphal arches erected by victorious Caesars of Rome, was designed by Jean-François-Thérèse Chalgrin, a scholar of Académie française de Rome in the years 1759–1763. The Vendôme Column in Paris, ordered for the same occasion by Napoleon and erected in 1810, is actually a copy of the Trajan's Column, which was minutely depicted in 1788 by Charles Percier, also a beneficiary of the Prix de Rome.

Popular at the time and consistent with the idea of cosmopolitanism, shifting of architectural models from one place to another was not limited to the Roman heritage, though. In the second half of the 18th century a French architect Julien-David Le Roy devoted to the ruins of the ancient Greece the illustrated publication entitled „Les ruines des plus beaux monuments de la Grèce”, in which he precisely represented the features and the elements of the Architectural Orders. Commenced at the same time, the realisation of the Madeleine Church in Paris initially referred to the Soufflot's design of the church

of St. Geneviève in Paris, both by its concept and a corinthian portico. Abandoned at the time of French Revolution, the construction restarted under Napoleon. Redesigned by an architect Pierre-Alexandre Vignon, La Madeleine was erected in the form of peripteral temple in the Corinthian order, making a sharp reference to the Temple of Olympian Zeus in Athens.

In parallel, the imagination of neoclassical designers was equally influenced by the archeological works led at Pompeii and Herculaneum. Systematically produced documentation, accompanied by the attempts to retrace architectural landscape of these cities, inspired not only architects, historians and artists, but it also particularly nourished the useful objects' design as well as the work of decorators. The discovery of well preserved multicoloured mosaics and frescos delivered a bunch of new motifs which delighted European customers. Apart from inspiring colours, like the renowned Pompeian red, they were especially enchanted by geometrical patterns, garlands, motifs of cherub and satyr, as well as life scenes and animal representations modeled on Pompeian frescos. All these motifs were frequently used for printing wallpapers, very popular at that time and supplied by several producers, for example by the French manufacturer Réveillon.

During the following centuries, the drawings of architectural masterpieces made directly at the place did not cease to influence the designers. They formed, at the same time, a foundation of the sourcebooks containing images of renowned buildings and the architectural details that adorned them. Assembled in such a way, this ample collection of architectural models was a reference from which to derive diverse elements and traits. This source was extensively used by the eclecticism, freely reaching out for motifs typical of different architectural styles, as well as by various revival tendencies. Although the Romantic era, upcoming after the Enlightenment, directed attention of the 19th century society to the medieval architecture, and to the Gothic style in particular, the process of popularising its characteristic features and details itself did not change a lot. As previously for the classical architecture, this process was still based on observation and outdoor drawings of historical monuments. An outstanding development of the Gothic revival in the British Isles was nourished by hundreds of illustrations representing Gothic architecture and its characteristic details. Among their authors it is worth to mention a prominent draftsman Augustus Charles Pugin, whose son, an architect Augustus W.N. Pugin collaborated with Charles Barry on the design of the Palace of Westminster, which contains the two houses of Parliament of the United Kingdom. The Gothic revival became a tradition of the Pugins family, followed by the brother and both sons of Augustus W.N. Pugin. Another distinguished draughtsman and art critic of the Victorian era, John Ruskin, was equally devoted to the Gothic architecture. One of his major publications, entitled "The Stones of Venice" and released in England in the mid 19th century, contained numerous etchings and sketches representing Venetian monuments. This three-volume opus did not limit itself to depict those buildings, but it convinced that their Gothic detailing gave the artists more freedom of creation. According to Ruskin, the Gothic's naturalism, not subjected to the mathematical descriptions, resulted from the artists' intention to represent the inspirations derived from the surrounding world in the most sincere way². At the same time, Ruskin resisted to the fixed separation between the

² J. Ruskin, *The Stones of Venice*, ed. J.G. Links, New York 1960, p. 169.

designer and the executive of an ornament, thereby forming a moral foundation for the Arts and Crafts movement.

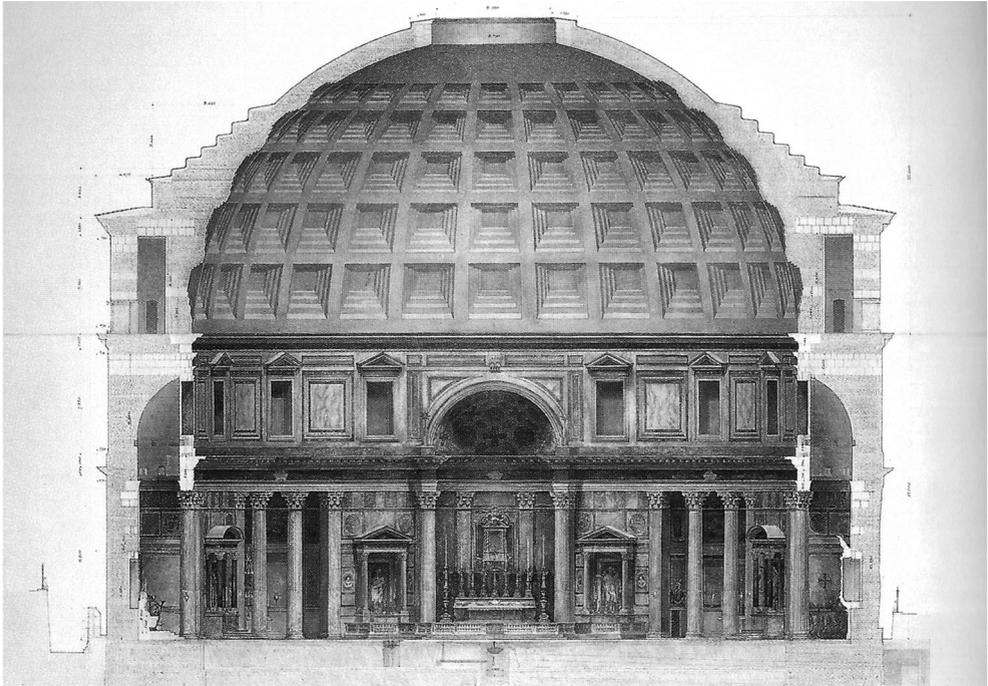
Thanks to the publications that revealed what benefits an architect can draw from a direct contact with the masterpieces of architecture, the outdoor drawing became a tradition and was made an integral part of the formation for architects. It was since then compulsory not only for those students who were granted a scholarship in order to produce illustrated documentation of historical buildings, but for any ambitious architect. Conscious of a financial barrier preventing students from organising study trips on their own, wealthy philanthropists and institutions granted drawing scholarships to the students selected in a competition. One of the awarded architects in such a competition was Charles Rennie Mackintosh, who left for Italy in 1890 [10]. He started his journey in Naples and, after visiting Sicily and Pompeii, he set off to the north stopping in every place famous for architecture. Unlike the precise documentation produced by the *pensionnaires* of Académie française de Rome, the journey of Mackintosh had for its goal mainly sketches and watercolour paintings which gave the author the possibility to cognize and consolidate a wide number of works of art and architecture. In the margins of his drawings of façades Mackintosh often placed schematic sections of cornices and frames, as well as the fragments of ornamentation, paintings and mosaics. Comparing the works brought by Mackintosh from his journey to Italy with those previously made by the scholars of the Prix de Rome, one can observe certain process leading to faster and, at the same time, more superficial comprehension of a greater number of architectural styles and their traits. The outdoor drawing became thus a lesson of history of architecture, supposed to give the basic knowledge on this subject and, at the same time, assist an architect's imagination.

At the threshold of the 20th century travelling with a sketchbook around Europe and further became common. These journeys were usually interrupted by a few months of internship, taken generally during winter in an atelier of an already recognised architect. According to this trend, in 1907 Charles-Edouard Jeanneret began a four-year-long period of travelling around Europe. Like Mackintosh and many other architects before, he started his journey in Italy, where he was most concentrated on the Gothic monuments of Florence, Siena, Lucca, Ravenna and Venice. On his sketches Jeanneret also used to write down short notes that would help him afterwards recall the observations he made regarding buildings' proportions or detailing [2].

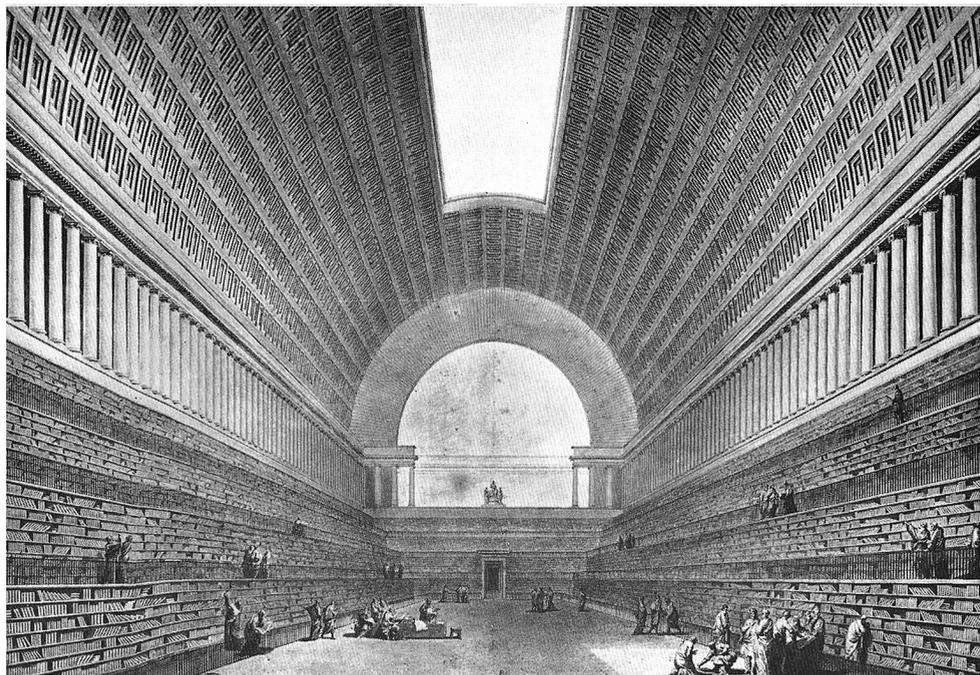
As far as the European students were concerned, a journey to the "sources" of architecture was achievable even without obtaining funds. However, for those who lived overseas such an excursion was often done once in a lifetime. In order to provide the most talented with a chance to gain the knowledge of defining space directly from the greatest masterpieces of architecture and, at the same time, to support the education of native architects, this field of study was covered by the American scholarship programme known as the Rome Prize. Selected in a competition, the laureates were delegated to the American Academy in Rome (est. 1894) where they participated in drawing classes as well as in various excursions led by experts in architecture and history of ancient Rome. The sojourn in Rome gave them also an opportunity to visit Greece and Egypt. Among the architects who were awarded the Rome Prize one finds, for example, George Howe (1947), Louis I. Kahn (1951) and Robert Venturi (1956). Their sojourn in Rome was without a doubt significant for the

development of postwar American architecture, and for the postmodernism in particular. For Louis I. Kahn his direct contact with the classical architecture was a source of reflections on the primordial purpose of architecture, that is to provide a given activity of human with an appropriate space. The Roman architecture also gave him the idea of interdependence of structure and light, which later became one of Kahn's essential principles of defining space. For Robert Venturi, whereas, the stay in Rome was an occasion to identify those elements among the observed details and traits of classical architecture which would later become a part of his postmodern language.

The significance of a drawing scholarship or a sketching tour is therefore not limited to improving one's skills, but it nourishes the development of architectural tendencies. Drawing the existing masterpieces helps to understand and to find the answers to the questions that concern the society of the time. These questions were varied in the history: how to give expression of an institution, how to define monumentality or how to express the author's personality. Nowadays, one of the most actual themes of research is the scale of the urban space, yet drawing the existing places can help comprehend the principles of their definition.



Ill. 1. Georges Chedanne, *The Pantheon*, 1891, in: R. Cassanelli, M. David, E. de Albeniis, A. Jacques, *Ruins of Ancient Rome. The drawings of French architects who won the Prix de Rome 1786–1924*, red. M. David, tl. Th. M. Hartmann, The J. Paul Getty Museum, Los Angeles 2002, p. 156



III. 2. Étienne-Louis Boullée, *Proposed new hall for expansion of the National Library*, ca. 1780, in: *Visionary Architects. Boullée, Ledoux, Lequeu*, University of St. Thomas, Houston 1968, p. 62

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ANTONINA ŻABA*

THE MYTH ABOUT CONNOISEURSHIP IN RELATION TO PERSPECTIVE, IN OTHER WORDS, ILLUSIONISTIC-ARCHITECTURAL PAINTING IN POLAND

MIT O ZNAWSTWIE PERSPEKTYWY, CZYLI O MALARSTWIE ILUZJONISTYCZNO- -ARCHITEKTONICZNYM W POLSCE

Abstract

It is commonly considered, that baroque painting depicting architectural elements on face partitions of building in illusionistic way needed the painter to have deep knowledge of constructing perspective charts. Research conducted in Poland (in its current borders), according to the author, do not confirm this thesis. They show that our artists, most commonly used ready-made patterns from perspective tractates and pattern books, but most of all from tractate by unquestionable master of this kind of painting, the Italian Andre Pozzo (1642–1709). The article it also presents the connection with selected paintings in Poland With baroque tractates and pattern books. Furthermore, comments on perspective rules education of baroque craftsmen and artists were included.

Keywords: P. Decker, A. Pozzo, J.J. Schübler, perspective, geometry, illusionistic architectural painting, quadrature, baroque, illusion

Streszczenie

Powszechnie uważa się, że barokowe malarstwo przedstawiające w sposób iluzjonistyczny elementy architektoniczne na licach przegród budowlanych wymagało od malarza głębokiej znajomości zasad konstruowania wykresów perspektywicznych. Przeprowadzone na terenie Polski (w jej obecnym kształcie) badania, zdaniem autorki, nie potwierdzają tej tezy. Wskazują one, że nasi artyści najczęściej wykorzystywali jedynie gotowe wzorce z traktatów perspektywicznych i wzorników, przede wszystkim z traktatu niekwestionowanego mistrza tego rodzaju malarstwa, Włocha Andrea Pozzo (1642–1709). Wskazano na związek wybranych malowideł w Polsce z barokowymi traktatami i wzornikami oraz scharakteryzowano cechy głównych ośrodków działalności artystycznej. Przedstawiono uwagi na temat kształcenia zasad perspektywy wśród barokowych rzemieślników.

Słowa kluczowe: P. Decker, Andrea Pozzo, J.J. Schübler, perspektywa, geometria, malarstwo iluzjonistyczno-architektoniczne, kwadratura, barok, iluzja

* Ph.D. Eng. Antonina Żaba, Department in Chair of Building Engineering and Building Physics, Faculty of Civil Engineering, Silesian University of Technology.

Architecture as „painters’ muse”¹ in a particular way inspired the creators of illusionistic architectural paintings in the Baroque, when painting „became architecture” in the perception process of architectural works enriched with paintings which in illusionistic way depicted architecture – from construction elements to little details. These paintings were investigated and described by representatives of many fields and scientific disciplines. Some of them are representatives of sciences such as: humanities (art historians), art (conservators, painters) but also technical – architects, geometricians² and surveyors. In literature by art historians [4, 6, 8, 9, 17–19] these kinds of paintings were presented synthetically. The literature discusses the most important paintings in our country, their creators, schools, style features and the influence of foreign patterns and artists on paintings in Poland. This group of researchers also presents opinions on geometrical features of Baroque paintings which are the topic of our discussion and which are referred to as “paintings” in further parts of this article. The most advanced research on geometrical issues has been presented in the publications of D. Folga-Januszezwska [4 i 5]. In her articles, the author describes basic geometrical assumptions which accompany the process of preparing perspective sketches for paintings. The schemes of floor plans and sections included in these publications [4] demonstrate these assumptions³. According to them, the creator of the idea of fusion between a structural object (truly existing) and an object depicted in painting (illusionistic object) started his work with planning characteristic of an architect, not a painter. The creator of this idea decided, if the structural space limited with architectural partitions after introducing the painting should:

- have the same space, i.e. illusionistic details should only fulfill or enrich this space, as it happens when we introduce moldings, pictures, balustrades or columns;
- have a bigger space, be higher by one or more tiers or longer by another room.

The described paintings of partitions of architectural objects have enriched architecture for many centuries. But only in Baroque⁴ were there bold solutions in use, in which:

- behind structural altars there extended deep, illusionistic choirs or byways;
- churches’ naves, which looked like multitier yards of monumental buildings, were seen as non-blinded, opened to heaven, flooded with Italian light⁵ (Ill. 1).

¹ The term is quotation of the title of I. Zuziak’s publication [20].

² In this article, people teaching geometry in architectural and civil engineering departments of technical universities and painting and its conservation of artistic universities. Also, people conducting research on paintings which use geometrical methods.

³ Also discussed in *Quadratura* by I. Sjöström [14].

⁴ In Italy, test solutions were often introduced in the Renaissance, but the period of the highest development of the tendency to use illusionistic architectural painting in architecture is the Baroque.

⁵ According to I. Sjöström [14], this solution was called quadratura. This opinion is not shared by many researchers connecting the term quadratura with every illusionistic picture of architecture. The author shares the view of I Sjostorm. She thinks however, that the most important thing when including a painting in the quadratura category is the presence in ceiling paintings of a deformation of high, traditionally vertical architectural elements commonly known as “collapse of illusionistic architecture” [6] or its “swinging” (see ill. 1).

The creator also had to decide how to connect the elements of construction of the structural part of the object with the illusionistic elements. Like in traditional architectural structures, the most important was the direct “setting” of the high vertical construction elements, such as pillars and columns of the top floors, on the vertical elements of the bottom structural floors. He also had to decide which parts of structural horizontal partitions (ceilings and vaults) would be “removed” from the object, to obtain the effect of a higher interior, opened to the ever sunny heaven. After constructing the floor plan and section i.e. registering the object’s structure, the creator started the construction of the perspective view of the designed object. As when considering outside views of architectural objects, the point of the observer had to be defined, the location of his/her eye and viewport, onto which the perspective view of the object was projected. Then this view had to be constructed, and only then could it be transferred to the partition⁶. The presented process is the maximum process. The creator of such a program had to know the complete design apparatus of an architect. He had to think like an architect. He had to have the architect’s wisdom and skills. In the case of preparation of a painted project for an object, which had already been built before, he had to think of its “rebuilding”, most commonly, of its “extension” or “superstructure”. Basing on graphical notation of the extension or superstructure design he constructed a perspective view of the object, with pre-fixed location of the observer’s stance and eye and the projection plane⁷.

Education of future painting creators was provided in masters’ workshops of this kind of painting, but also in schools of fine arts. An example of such a school can be Academy of St. Lucas in Rome, founded in 1577. Part of education in this school were lessons of geometry and perspective⁸. These classes were so popular among artisans, who were not students of the Academy, that its Senate had to pass a special resolution forbidding artisans from taking part in lectures⁹.

Another way of education was individual study of tractates and skilled masters’ works. During their journeys around Europe artisans mostly studied the works which adorned churches. Individual study of perspective tractates was harder because they were difficult to obtain. These tractates were also usually written in the languages foreign to our artists¹⁰ and it was not easy to study instructions written in the hermetic language of geometry.

⁶ Often the decision to transfer to partition was preceded by making of a modello, an easel painting or water-color of the painting to be shown to the investor for approval, which was small in comparison to the wall painting.

⁷ In some Baroque churches before construction of monumental main altars their illusionistic representations were painted. They were based on perspective views of the altars constructed basing on their floor plan and views (depicted in rectangular project). The reason to do so was lack of funds for “real altar”, lack of time or necessity to check the design in 1:1 scale. Such process was conducted in the university church in Wrocław.

⁸ M. Karpowicz [7] writes about the preserved geometric instruments, and the classroom is described by W. K. Stattler [16].

⁹ See M. Karpowicz [7].

¹⁰ J.I. Kraszewski [10] writes that the author of “the first perspective painting in Polish language” was S. Grzepski (1524–1570). This information is, however, not confirmed by any other sources or preserved publications by Grzepski.

An attempt to use the instructions on making perspective charts required skills of creation and reading of floor plans and sections, which could be too difficult for many painters. That situation made them use ready-made patterns and copy the paintings they had an opportunity to see¹¹.

However, the person who did not have any of these skills or did not use them could draw a ready-made view of the perspective designed by someone else from tractates for architects, builders and painters or copy specific pages from the tractates. It was possible to enlarge them to required dimensions and sketch them on the walls¹².

In the work of E. Rastawiecki *Dictionary of Polish painters...*, where statutes of painters' guilds of Poland are often quoted, we cannot find any information on the education of painters in the field of perspective or learn if it was necessary to master perspective to pass the master-exam in a painters' guild. It was, however, demanded from master candidates in builders' guilds¹³. Guild organizations required building masters to pass the guild statutory exam in professional skills. In Museum of Cracow there survived examples of the exams, called master exams. The most interesting master exams were written between XVII and XVIII century. Six of these Works presented in the article by Z. Rewski [13], present perspectives of cross vaults. The obligation to make them is included in the 3rd paragraph of Cracow's masons' guild statute. The statute was written in 1618. Interestingly, the guild prepared the text of the statute and Cracow's city council presented it to Sigismund III (1566–1632) for approval. He extended the proposed version with the above mentioned 3rd paragraph. In it we can read that a candidate for a master must "...in the presence of the elders draw a cross vault...". The preserved drawings of vaults show that some perspective was connected with same graphical pattern. Z. Rewski describes Cracow's master exams as drawings of "*partly wrong perspective*" or showing "*weak mastery of perspective rules*"¹⁴. A characteristic feature of Cracow's master exams is the fact that their authors did not use basic elements of the so called geometric apparatus. They did not record the object's construction in the form of floor plan or section, did not define point and location of the observer's eye or the location of viewpoint (background).

¹¹ An example of such imitations is the vault painting in the Franciscans' church in Wieluń, which, according to the author, makes reference to the vault painting by Johann Michael Rottmayr (1656–1730) in the university church in Wrocław.

¹² Real difficulties started when the painting was to be painted on the vault. In that case the creator had to modify the pattern, presenting the object in collinear perspective on a flat surface to non-collinear picture (on vault's surface). Making such a modification was necessary also when the creator designed collinear perspective by himself.

¹³ J.J. Schüler writes about the problems adepts of building arts had with the guild requirement of constructing the perspective chart of cross vault in the XVIIIth century [15].

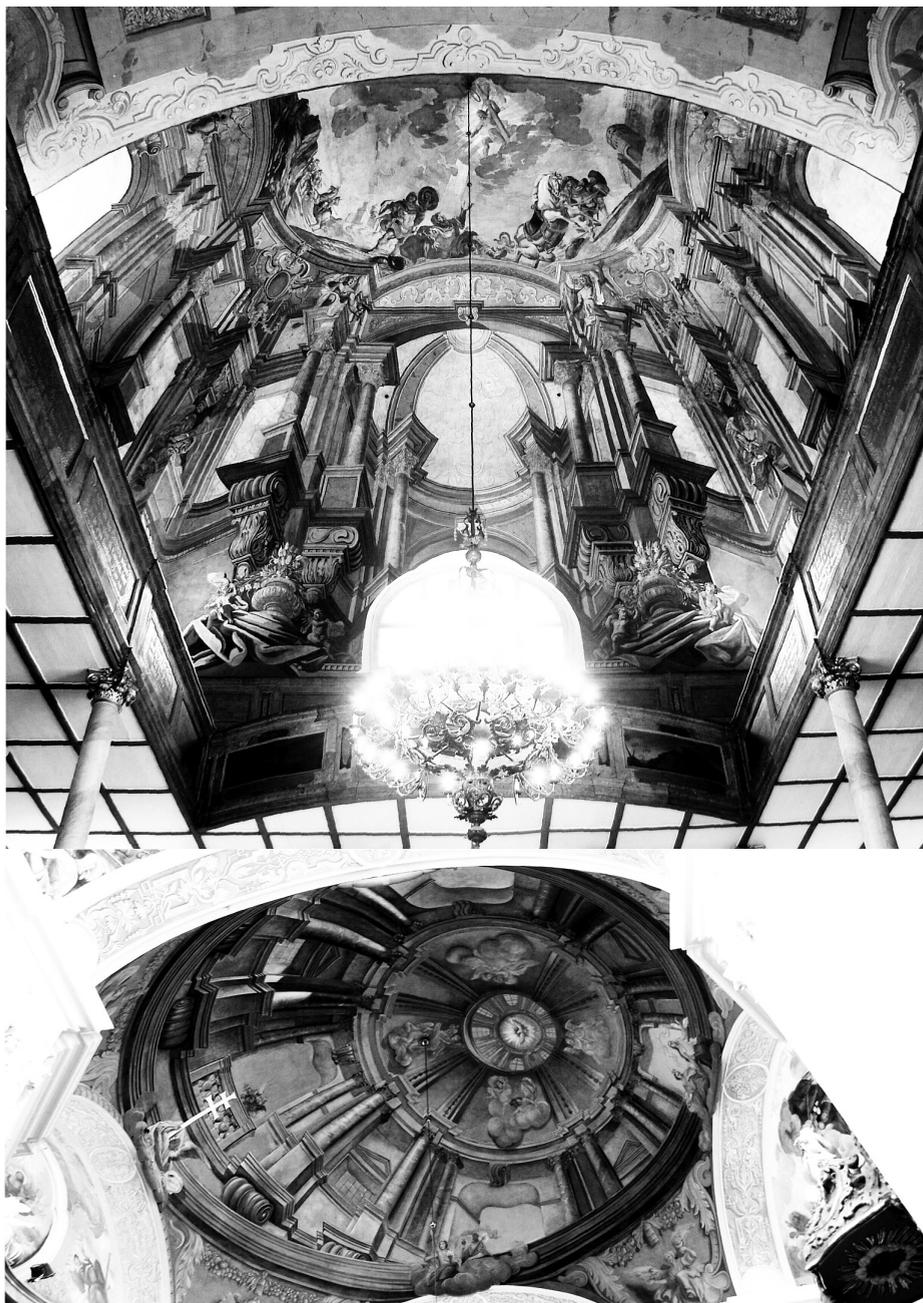
¹⁴ Preserved vault drawings show, that part of perspective referred to common graphical pattern. According to the author, base for part of Cracow's master exams could be graphic works included in D. Brabaro [1].

Among paintings in Poland we can find examples of copies of concepts from perspective tractates, mostly from the tractate by A. Pozzo¹⁵ with mistakes that were made by the publishers copying the originals. Good examples are paintings depicting illusionistic vault: M. J. Meyer (?–1737) in the Jesuit church in Święta Lipka and A. Swach (1668–1742) in the Franciscans' church in Poznań. In the latter, the incompetence of the artist is really easy to see. He failed to properly connect illusionistic architecture with the vault's surface. An example of an artist using tectonic solutions is W. Żebrowski (?–1765) “cutting” a big hole in the vault and drawing in it the pattern from Pozzo's tractate in the church of Immaculate Conception of the Blessed Virgin Mary in Łęczycza. Surprising effects of using a Pozzo's pattern in an object where the vault's proportions were different from those proposed in the tractate were achieved by an unknown artist¹⁶ in Łosiów. A solution that is interesting because of its originality is the painting in Kobyłka, where the artist G. Łodziński painted a “quadratura”, as if he had never had contact with any pattern or painting of this kind. We also have examples of creative perspective developments of Pozzo's patterns based on the knowledge of perspective, e.g. in baroque churches in Brzeg, Cracow, where patterns were adjusted to the different proportions of vaults.

Perspective as an example of a central sketch has always been a field of architects' interest. It is a method described in a number of manuals for them, but today most of all in standard drawing. It seems, that “architectural” research based on the knowledge of perspective possessed by architects and geometers can effectively supplement works of art historians.

¹⁵ In Silesia Works of P. Decker (1677–1706) [3] were also used, e.g. F. Hoffmann (1699 or 1701–1766) in a church in Oleśnica (painting does not exist anymore) or J.W. Neunhertz (1689–1749) in Krzeszów (illusionistic vault, connected in literature with A. Pozzo's pattern).

¹⁶ T. Chrzanowski [2] says it is a painting by J. Kuben (1697–1770 or 1771).



III. 1. Illusionistic architectural paintings in churches: garrison church of Exaltation of the Holy Cross, Jelenia Gora (picture at the top) and the monastery church of Mother of God, Lubiń (picture below) (photo by author, 2013)

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PAWEŁ ŻUK*

RENZO PIANO MUSEUMS. SKETCH AS SYNTHESIS OF THOUGHT

MUZEA RENZO PIANO. SZKIC JAKO SYNTEZA MYŚLI

Abstract

Renzo Piano believes that freehand drawing gives freedom, it is instinctive, and its imperfection provokes change and continuous improvement. The briefness of the sketch forces us into a synthetic way of thinking and to capture only the essence of things. Based on examples of Renzo Piano's works from different periods, we can observe the evolution of his very personal vision of the museum, his thinking about form, the relationship with the environment, with the audience and finally his approach to issues of natural lighting in an exhibition space.

Keywords: sketch, museum, Renzo Piano

Streszczenie

Renzo Piano uważa, że odręczny rysunek daje wolność, jest instynktowny, a jego niedoskonałość prowokuje do wprowadzania zmian i ciągłego ulepszania. Lakoniczność szkicu zmusza do syntetycznego myślenia i uchwycenia istoty rzeczy. Na przykładach autorskich rysunków z różnych okresów twórczości można zaobserwować, jak rozwija się jego bardzo osobista wizja muzeum, myślenie o formie, relacji z otoczeniem, z widzem czy w końcu podejście do kwestii oświetlenia naturalnego przestrzeni ekspozycyjnej.

Słowa kluczowe: szkic, muzeum, Renzo Piano

* Ph.D. Arch. Paweł Żuk, Institute of Architectural Design, Faculty of Architecture, Cracow University of Technology.

Renzo Piano, a Pritzker Prize winner in 1998, designed 25 museums until the year 2014. He is a master in this field. Basing on the examples of Renzo Piano's works from different periods we can observe an evolution of his very personal vision of the museum, thinking about the form, the relationship with the environment, with the audience and finally his approach to issues of natural lighting in an exhibition space. Each time, the sketch was the method of developing the project. Piano believes that freehand drawing gives freedom, it is instinctive, and its imperfection provokes change and continuous improvement¹. The briefness of the sketch forces us to think in terms of a synthesis and to capture the essence of things. We can also reverse this situation. The sketch is the perfect tool for illustrating the main guidelines of a project in a brief and clear manner. "Renzo Piano argues that freehand drawing is a basic part of the theoretical process of creating architecture. This process begins with the sketches, the next step is a more detailed drawing and the final phase is the model. At times, it happens that the architect goes back to the drawing, starting the process of circulation"².

Centre Georges Pompidou, Paris, France, 1971–1977

In 1971, Renzo Piano and Richard Rogers – young, little-known architects – won a competition for the design of a cultural center in the Beaubourg district of Paris, which, after the death of Georges Pompidou in 1974, was named after him. In an era of social revolution, the project was a kind of revolution in the world of architecture. The Centre Pompidou completely changed the relationship between the museum and the audience. It became a meeting place, a melting pot, a container, a machine open to people interested in culture and art. It is also considered the first example of high-tech architecture, which Piano himself denies: "In reality it is quite an ironic building. It is not a real spaceship – it is a Jules Verne spaceship. It's really more a parody of technology than technology. It was just a direct and quite innocent way to express the difference between the intimidating cultural institutions like they normally were in the 60s and 70s – especially in this city [Paris, where his studio is based] – and the modern building, very open and a curious relationship with people. The idea was that it doesn't intimidate. We were young bad boys and we liked that.

But the Beaubourg is not really the triumph of technology. It's more about the joy of life. It's a rebellion"³.

In an interview in 1977 Piano notes that the idea was born in the mind, not on paper. "We said to ourselves: 'Let's try and think about this competition. If we get a good idea for it, we'll do it'. And within the first 10 days, we had quite an interesting idea: that of counterproposing, in a slightly controversial vein, the concept of a big contraption, or machine, to that of the large cultural centre – an idea we both had simultaneously. This idea, although it hadn't

¹ P. Clemence, *Q & A: Renzo Piano*, <http://www.metropolismag.com/Point-of-View/July-2014/QA-Architect-Renzo-Piano/>, New York 2014.

² A. Biańkiewicz, *O rysunku architektonicznym*, TEKA Komisji Architektury, Urbanistyki i Studiów Krajobrazowych, Lublin 2006, 53-60.

³ M. Fairs, *Interview: Renzo Piano on The Shard*, <http://www.dezeen.com/2012/05/18/interview-renzo-piano-on-the-shard/>, London 2012.

been drawn yet, seemed interesting enough to warrant our participation”⁴. Surprisingly, freehand drawings became very important in the construction phase of the project. In an interview Piano complained that the sketches were taken from them in order to construct the building on their basis. “France was terrible. It was a bizarre school [of thought] where being the architect was just a sketch-making job”, he says. “They said, ‘Merci beaucoup, monsieur, now we’ll do it’ and we said, ‘No you won’t. We’ll do it’”⁵.

One of the Pompidou Center sketches published on the Renzo Piano Building Workshop website is an example of a drawing illustrating the concept after the project had been finished. In the competition entry design, the building was supposed to have 10 levels, 3 underground and 7 levels above ground; in the competition entry design it wasn’t a peculiar glass tube with escalators. However, this sketch perfectly demonstrates the most characteristic elements of the front facade: a modular structure with the cross braces, the escalator tube or the piazza recessed in the ground in front of the building.

The Menil Collection, Houston, United States, 1982–1986

The Menil Collection houses a private 20th century art collection of Dominique and John de Menil. This is the second Renzo Piano museum (after the Centre Pompidou), his debut as an independent author. It is the first example of Piano’s characteristic approach to the use of daylight in an exhibition space. While at the Centre Pompidou the exhibition spaces are almost completely without daylight access, in the Menil Collection design a glass roof was designed, fitted with huge blinds. A conceptual sketch of the building perfectly illustrates Renzo Piano’s thoughts on this topic. The painted white blinds are shaped so as to prevent the direct penetration of the sunlight into the interior and give a large amount of diffused light from upwards. The Sketch shows in a synthetic way another important feature of the design – a strict modularity, based on the spacing of the blinds the architect designed for the roof drainage system and the artificial lighting of the interior. In the sketch, we can see a raised floor covering all the installations and also figures of visitors and sculptures, which allows us to evaluate the height of the interior.

Cy Twombly Pavilion, Houston, United States, 1992–1995

This monographic museum dedicated to the works of the abstract expressionist Cy Twombly (whose real name is Edwin Parker) was also funded by the Menil family and it is located in the vicinity of the Menil Collection. The design is a further development of the idea of the glass roof, with a slightly different approach to the issue of excessive light exposure. Among the numerous sketches, there is one very simple drawing that focuses on issues of natural light. This fragmentary section highlights a large space between the glass roof and the ceiling made of a translucent fabric that diffuses natural light and reduces its intensity by about 300 lux. The drawing is rather simple, but it contains many descriptions and gives the impression of a quick draft sketch performed in order to solve a specific problem.

⁴ C. Casati, *The Parisian Hyde Park Corner*, Domus 01/1977, Milano 1977.

⁵ V. Pitt, *Interview: Renzo Piano*, <http://www.building.co.uk/interview-renzo-piano/5044399.article>, London 2012.

Beyeler Foundation Museum, Riehen, Switzerland, 1992–1997

Beyeler Foundation Museum is located in Riehen near Basel. The museum's founder – Ernst Beyeler – insisted that his collection of contemporary art should be viewed in natural light. The glass roof is a little different here than in the previous Renzo Piano projects – it is more modern, with an additional level of saw-tooth-shaped layer made of tempered glass with UV filters, as well as the ability to adjust, to some extent, natural illumination. There are many sketches describing the issues involved in the design of this building. However, one drawing which shows the relationship between the building and the environment caught my attention. The museum is located on the longitudinal plot among many century-old trees in close proximity to the eighteenth-century villa Berower housing museum offices and a restaurant. It is quite a large building, with a length of 127 meters, yet it does not dominate over the area and discreetly blends with a gentle hillside. The museum is not high, the horizontal proportions are achieved due to the fact that part of the exhibition space is located below the ground level. Large areas of glazing in the external walls integrate the interior with the surrounding greenery. One of Piano's sketches shows the context of the museum's park, and also in a very brief way explains the form of the building, its proportions, its glass saw-tooth-shaped roof and its shape based on the direction of the sun.

Jean-Marie Tjibaou Cultural Centre, Noumea, New Caledonia, 1991–1998

The Jean-Marie Tjibaou Cultural Centre was erected as a tribute to Jean-Marie Tjibaou, a New Caledonian leader murdered in 1989. The Center presents an exhibition of the Kanak civilization. On the island of New Caledonia, located on the Pacific Ocean, which had been under the rule of France for many years, nearly 40 percent of the population have European roots. The French government promotes the European lifestyle, threatening the Kanak culture. The Centre is a bridge between modern civilization of the Western world, and the local traditions. Built using the latest technology, the building has a structure which is inspired by local architecture. The form of the building fits perfectly into the landscape of New Caledonia. One of Renzo Piano's sketches of it shows a cross-section of one of the pavilions in the shape of Kanak huts. The drawing describes the air circulation in the interior. The shape of the high wall of the pavilion can be viewed as a shape similar to a sail. It was formed to increase convection and provide efficient interior cooling. Additionally, through the closing or opening of the different holes, the air flow can be controlled with an optimal effect during different wind conditions. This wall has to resist the force of hurricanes which frequently occur on the Pacific Ocean. The presented drawing is probably an early concept sketch because the wall was built in a slightly different shape, in the form of a double facade.

Paul Klee Center, Bern, Switzerland, 1999–2005

This museum, located on the eastern outskirts of Bern, contains more than 4,000 works of Paul Klee, with the ability to exhibit 200 of them to the public. In a very modest sketch, we can read the most important inspiration for its design, whose undulating form of the "three hills" refers directly to the landscape surrounding the museum – hills in the foothill region of the Alps, and symbolically shows the artistic personality of Paul Klee, himself being torn between the world of painting and music, an innovative approach to the concepts

of tension and dynamics in art, fascination with the intuitive art of children, or graphic forms of the Arabic alphabet. The attention is drawn to the huge spiral that highlights the entrance area which appears sometimes in Renzo Piano's drawings. The drawing enchants with its simplicity and accuracy in showing the architecture of the museum. It seems that the undulating form of the building is ideal for searching for the ideal curvatures using freehand drawings.

Chicago Art Institute – the new wing, Chicago, United States, 1999–2009

The new wing of the Art Institute of Chicago houses collections of modern European art. It is located in Grant Park – a large green area on the Lake Michigan shore. The old part of the Institute was founded in 1893. The addition was built on the east side as a light and transparent new wing which is to emphasize the elegance of the limestone-clad old building. Renzo Piano comes back to the idea of the glass roof – again in a slightly different way. The roof of the new section of the Chicago Art Institute, called the “flying carpet”, seems to float above the main body of the building. Beneath it there is a large space for ventilation. This is shown on an original Renzo Piano sketch, on which he also analyzes the influence of different sunlight angles on the building oriented on a north-south axis. As in the case of the Paul Klee Centre, the huge spiral highlights the new entrance on the side of Monroe Street. The drawing also shows the details of the design, such as vertical blinds to protect the facade, the context of the park and of the lowering of the terrain, in which the railway tracks are located.

Kimbell Art Museum – extension, Fort Worth, United States, 2007–2013

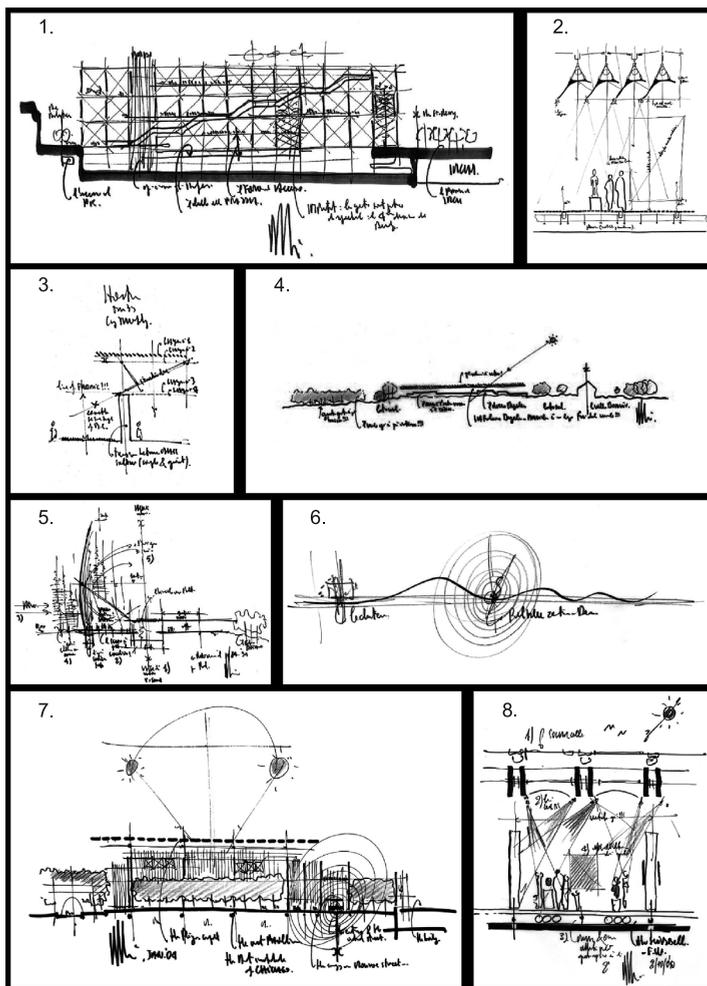
The design and construction of the Kimbell Art Museum extension is a kind of multi-dimensional conversation between Renzo Piano and Louis Kahn – the author of the older part of the Kimbell museum, which was completed in 1972. At that time (during the years 1965–1970), which was at the beginning of his career, an unknown Piano worked with Kahn. We can notice some similarities between both sections of the buildings in their scale, their height, proportions or the rhythm of their form. Kahn and Piano share a similar approach to the use of indirect natural light and the way of reaching a proper solution through numerous sketches. The part designed by Piano is “lighter” and more transparent. One of Renzo Piano's sketches shows the main foci of the concept, developing the concept of the glass roof. In this design, as in The Menil Collection, some of the technical infrastructure serving the exhibition is hidden under the raised floor. The sketch heavily accents double beams made of laminated wood – the main element of the roof structure. This drawing also shows details such as the inner membrane diffusing the natural light, artificial lighting systems and elements of the roof drainage. The Kimbell Art Museum project is a kind of bracket joining the beginnings of Renzo Piano's career with the present and it contains a wealth of his thought on the nature of the museum.

Agata Bonenberg, who worked with Renzo Piano for over a year, reports that according to him, “the advantage of the freehand sketching method is the ability to quickly take note of the creative thought and its importance”⁶. This proves Renzo Piano's appreciation

⁶ A. Bonenberg, *Techniki reprezentacji architektonicznej a jakość przestrzeni współczesnego miasta*, Czasopismo Techniczne, 6-A/2008, 256-261.

and use of sketches in the early stage of a design. However, Agata Bonenberg adds, that “the master freehand sketches contain the essence of the design concept. Looking at them, we understand the meaning of the project faster than analyzing the CAAD drawings”⁷. This statement suggests that the sketches are created as a part of a concept’s explanation, made in a later phase of design or even after it has been finished. Often it is the case that the sketch becomes an independent piece of art. In times of computer-aided design and 3D modelling, the sketch remains the best way to record an architect’s thoughts.

⁷ *Ibidem.*



- III. 1. Centre Georges Pompidou, Paris, France, 1971–1977 (copyright Renzo Piano Sketches)
- III. 2. The Menil Collection, Houston, United States, 1982–1986 (copyright Renzo Piano Sketches)
- III. 3. Cy Twombly Pavilion, Houston, United States, 1992–1995 (copyright Renzo Piano Sketches)
- III. 4. Beyeler Foundation Museum, Riehen, Switzerland, 1992–1997 (copyright Renzo Piano Sketches)
- III. 5. Jean-Marie Tjibaou Cultural Centre, Noumea, New Caledonia, 1991–1998 (copyright Renzo Piano Sketches)
- III. 6. Paul Klee Center, Bern, Switzerland, 1999–2005 (copyright Renzo Piano Sketches)
- III. 7. Chicago Art Institute – a new wing, Chicago, United States, 1999–2009 (copyright Renzo Piano Sketches)
- III. 8. Kimbell Art Museum – extension, Fort Worth, United States, 2007–2013, Source: www.rpbw.com, www.fondazione-renzopiano.org (copyright Renzo Piano Sketches)

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**DIVISIONS OF VISUAL ARTS WITHIN
FACULTIES OF ARCHITECTURE. PAST, PRESENT
AND FUTURE OF ART EDUCATION**

**KATEDRY RYSUNKU, MALARSTWA, RZEŹBY
NA WYDZIAŁACH ARCHITEKTURY.
HISTORIA, TERAŹNIEJSZOŚĆ, PRZYSZŁOŚĆ**

BEATA KOMAR, BEATA KUCHARCZYK-BRUS*

THE REDUCTION OF EDUCATIONAL HOURS
OF THE FINE ARTS AT THE FACULTY OF ARCHITECTURE
OF THE SILESIAN UNIVERSITY OF TECHNOLOGY
AS A RESULT OF CHANGES IN REGULATIONS
ON HIGHER EDUCATION

REDUKCJA LICZBY GODZIN NAUCZANIA
SZTUK PIĘKNYCH NA WYDZIALE ARCHITEKTURY
POLITECHNIKI ŚLĄSKIEJ JAKO EFEKT ZMIAN
W PRZEPISACH O SZKOLNICTWIE WYŻSZYM

Abstract

The article presents the changes that have taken place in the educational program in the field of fine arts at the Silesian University of Technology Faculty of Architecture since the 90s of the twentieth century to the present. They were caused by the new laws and rules relating to higher education, adapting it to the requirements of the European Union. There was a reduction of some courses of art and number of teaching hours while increasing the size of student groups. Observation of change leads to the impoverishment for aesthetic sensitivity and artistic skills of students, which is essential in communicating your design ideas. The results of analyzes were obtained on the basis of participant observation of teachers lecturing on the above mentioned subject.

Keywords: teaching progra, fine arts

Streszczenie

Artykuł prezentuje zmiany, jakie zaszły w programie nauczania przedmiotów z zakresu sztuk pięknych na Wydziale Architektury Politechniki Śląskiej od lat 90. XX wieku do teraz. Spowodowane były nowymi ustawami i zasadami dotyczącymi szkolnictwa wyższego, dostosowującymi je do wymogów Unii Europejskiej. Wystąpiła redukcja niektórych przedmiotów plastycznych i liczby godzin dydaktycznych przy równoczesnym zwiększeniu liczebności grup studenckich. Obserwacja zachodzących zmian prowadzi do sformułowania wniosków o zubożeniu wrażliwości estetycznej i umiejętności plastycznych studentów, co jest niezbędne w przekazywaniu własnych idei projektowych. Wyniki analiz uzyskano na podstawie obserwacji uczestniczącej pracowników dydaktycznych prowadzących zajęcia z wyżej wymienionego przedmiotu.

Słowa kluczowe: program nauczania, sztuki plastyczne

* Ph.D. D.Sc. Arch. Beata Komar, Ph.D. Arch. Beata Kucharczyk-Brus, Faculty of Architecture, Silesian University of Technology.

1. Introduction

June 19, 1999, Poland, along with other countries signed the Bologna Declaration, starting The Bologna Process, whose task was to create a European Higher Education Area [1].

The aim of the process was, inter alia, the conversion of one-stage study MSc course into two-stage studies and the introduction of a European Credit Transfer System for students (ECTS). This has led to major changes in the curricula of almost all universities in Poland. These guidelines also contributed significantly to the development of the curricula of fine art courses at the Faculty of Architecture, Silesian University of Technology, majoring in Architecture and Urban Planning. The paper attempts to show the evolution starting from the 90s of the twentieth century to the present.

2. Methodology

Participant observation of both authors. Analysis of selected regulations of the Minister of Science and Higher Education and the curricula at the Faculty of Architecture of the Silesian University of Technology.

3. The fine arts subjects teaching in the 90s of the twentieth century

After the political transformation, in practice for most of the first decade, the curriculum in the field of fine arts at the Faculty of Architecture, Technical University of Silesia remained unchanged touching a wide range of issues related to the aesthetic sensitivity education of future architects and developing their artistic skills. Students' contact with diversified fields of art remained virtually maintained throughout the whole course of five year long lasting study:

- **Semester 1 and 2 – drawing** – the curriculum began with drawing fundamental, geometrical structures, through analysis of basic spatial forms (simple furniture, dishes, appliances) consisting of rectangular elements, round and cylindrical forms, then architectural details (head, column, stairs), to complex still life systems, figures, architectural interiors, greenery and nature sketches, own, abstract drawing compositions, drawn in various techniques, with a full analysis of lighting (ill. 1); laboratory providing 4 hours teaching per week, conducted in groups of approx. 10 persons,
- **Drawing and painting plein-air** – after the first year of study the plein-air course was organized – exit or (later) outdoor stationary – obligatory for all first-year students, including three, then two weeks at the beginning of the holiday; the programme was set individually, depending on the location, and usually included studies of architecture and architectural details, also studies of greenery, of the nature,
- **Semester 3 and 4 – painting** – curriculum began with color exercises aimed at understanding the colour range (gamut of warm and cold tints, abstract compositions with simple colour systems), through collages of colour patches the to the full colour painting study of still life and other forms; during the course students have the opportunity to

get acquainted with various techniques and tools for painting (tempera, watercolor, oil, brush, spatula, etc.); laboratory classes, 4 hours a week, conducted in groups of approx. 10 persons,

- **Semester 5 and 6 – drawing, painting and graphics** – during the courses drawing, painting and designing exercises were carried out, closely linked to the architecture, using a variety of techniques from many fields of fine arts: typography – lettering and design of the sign, graphics issues (monotype), designing mosaics, sgraffito, wall painting, stained glass and artistic blacksmith; laboratory classes, 3 hours teaching per week, organized in groups *ibid.*,
- **Semester 7 or 8 – sculpture** – a two-hour laboratory classes in one semester, performing two themes: a study of the nature – the human head, the project of architectural abstract composition,
- **Semester 8 and 9 – elective courses** – optional subjects in the practical use of visual arts in architectural design – a two-hour lectures; 60 hours of teaching in total.

Ratio of the number of classes transferred to effective teaching hours were as follows:

- hand drawing (drawing, painting) at the 1st, 2nd, 3rd and 4th semester of one-stage MSc study – 240 hours in total,
- a three-week, plein-air of drawing and painting – approx. 90 hours in total,
- fine arts in architecture at the 5th and 6th semester – 90 hours in total,
- sculpture at 8 or 9 semester of one-stage MSc study – 30 hours in total,
- elective courses – 60 hours in total.

The total number of teaching hours performed for the fine art courses was about 510 hours (including 12% of the hours of elective – 60 h). The total number of teaching hours in curriculum realized over the entire five-year course of study was then around 4000 hours, so **the percentage ratio of hours of teaching fine arts in relation to all teaching hours was 12.5%**.

4. Step „transitional” – 2001–2011

During ten years period changes and amendments in the curriculum of Architecture and Urban Planning study are still undergoing, also referring to the courses of fine arts. There comes gradual reduction of the number of teaching hours allocated to them and the total reduction of some of them:

- reducing the number of teaching hours for the initial semesters: first from 4 to 3, then into 2 per semester 4th, and subsequently – the total elimination of classes in semester 4th,
- abolition of the plein-air drawing (2008 year),
- elimination of the fine art courses at the third year of study,
- gradual elimination of sculpture course – along with expiration of cohorts continuing education at the one-stage, five-year MSc study system.

Moreover – which is extremely significant in the educational process – they gradually increased the number of students in groups: from 10 to 15 or even slightly more people per one person who conducts the classes.

The last cohort continuing their studies at one-stage system started in the academic year 2006/2007. In their curriculum the following courses of fine arts were written, including in total 210 hours of teaching carried out during the study:

- hand drawing (drawing, painting) on the 1st, 2nd, 3rd and 4th semester of MSc study – 3 hours of laboratory per week (conducted in groups of approx. 15 persons),
- sculpture at the 9th semester of MSc study – 2 hours of laboratory per week (conducted in groups of approx. 15 persons).

Under the Act of 27 July 2005 [2] and, published two years later, the Regulation of the Minister of Science and Higher Education [3] they introduced a study stage division – engineering study BSc, at the Silesian University of Technology Faculty of Architecture including eight semesters, and three-semester master’s degree MSc. Introduction of a new, two-stage education system entailed further reforms in the curriculum, now based on a set of the defined by the University learning outcomes that are consistent with the National Qualifications Framework for Higher Education, and based on the teaching methods leading to achieve these outcomes, together with the ECTS points’ values assigned to the various modules of the process. When estimating the number of ECTS credits for each module (course), they adopted – in accordance with the University President regulation – that one ECTS corresponds to the time effects of education, which requires the student to obtain an average of 30 hours including lectures organized according to the study plan (contact hours) and individual work specified by education programme. Saved in the curriculum number of ECTS credits (240 credits for the Bachelor’s degree and 90 credits for the Master’s degree), converted to hours of classes, distorts somewhat the picture of effective number of hours provided for each subject.

The first academic year in which they implemented engineering, Bachelor’s studies was the year 2007/2008. The curriculum included the courses called Art Techniques (drawing and painting) on the 1st, 2nd and 3rd semester – 3 hours of laboratory per week (conducted in groups of 12–15 students), which yielded a total number of 135 hours of teaching hours in the field of fine arts.

In the academic year 2009/2010 they introduced the full-time MSc education at the Silesian University of Technology Faculty of Architecture with the programme which included classes on the subject of Fine Arts in Architecture (design of stained glass, sgraffito, mosaics, etc.) – 2 hours laboratory per week at the 2nd semester, which increased the summary number of fine arts teaching hours for the BSc and MSc to 165.

In 2011, the rules on the standards of education for faculty of “Architecture” became clarified. They clearly defined the qualifications of the Bachelor’s degree graduate, which “should have knowledge of: the history and theory of architecture and urban planning, **fine arts**, building and construction technology, construction, building physics and architectural and urban design (...) have the skills (...) **to create projects that meet the aesthetic requirements**, functional and technical”. Under the Ordinance [4] fine arts and their technology workshop were qualified to the second group of educational content (directional), but they were not specified a minimum of ECTS credits for the individual courses (components of content), only the total number of credits for the whole group (68 pts. ECTS). Teaching contents and learning outcomes were also clarified which, for the courses of the fine arts teaching should include:

- content of education: the development of spatial, artistic, and compositional sensitivity – studies of drawing, painting and sculpture from nature and imagination; art techniques workshop; modeling,
- learning outcomes: skills and competences – the use of artistic workshop, addressing issues of art, the use of techniques workshop.

For the Master's degree graduate the educational content and learning outcomes in the field of fine arts and techniques workshop were not identified.

5. The current curriculum (since the academic year 2013–2014)

As the effect of the implemented by the law recommendations another amendments to the BSc and MSc study curriculum were provided and since the 2013/2014 academic year, the programme of teaching fine arts issues at the Faculty of Architecture of the Silesian University of Technology, at the first and second stage of the study of Architecture and Urban Planning includes the following items:

- **Fine Arts Techniques** (drawing, painting and small spatial forms) at 1st, 2nd and 3rd semester – 3 hours of classes per week (ongoing in groups of 30–32 students), that are assigned sequentially: 2, 2, and 3 ECTS credits; due to time constraints classes with drawing and painting in relation to the former scheme is geared more to stimulate the imagination of students, hence their subjects from nature are intertwined with drawings of the imagination;
- **Visual Techniques** at 4th semester – 2 hours of project classes per week (conducted in groups of 12–15 students), which is assigned with 2 ECTS credits; activities carried out in the framework of two topics: detail in the architecture, architectural structure analysis: for each topic analysis of the composition and colours are carried out and developed with the system of board design, typography, illustration, photo, etc.;
- **Fine Arts in Architecture** (2 ECTS) – the elective course occurring at the second stage of studies was transformed into a lecture – 1 hour lecture on the 2nd semester; due to the fact that the subject is “the elective mandatory” and all the students participate in it, course credit achievement is based on the posters prepared by groups of students of 5-persons; poster themes in 2013/2014 concerned ideological concept of visual information in the building of the Faculty of Architecture, Silesian University of Technology.

The total number of teaching hours performed for subjects in the field of fine arts summarized for the BSc and MSc studies is now 180 hours (including 15 hours of elective courses, ie. 8%). The total number of teaching hours performed together throughout the whole two-stage course of study is now 3600 hours, so **the percentage ratio of hours of fine arts teaching in relation to all teaching hours is now 5%** (Ill. 2).

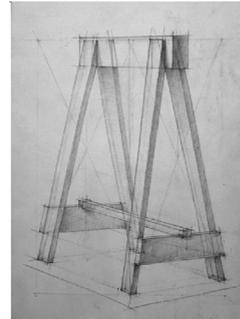
6. Conclusions

In the 90s of the twentieth and early twenty-first century truly deep and accurate study of fine arts courses was clearly reflected in the high level of student works on architectural objects at the design courses.

Currently, as a result of the changes described in the paper, the evident decline in artistic skills of students, their aesthetic sensitivity, color-matching skills to the proposed design solutions, skills of quick, sketchy presentation of their design ideas is observed.

The authors, as the persons carrying out fine art classes, have the impression that the new curricula reducing the time of fine art teaching contribute to the loss of good practices, lack of time for the development of art techniques workshop, and thus diminish spatial imagination of future architects, of which the quality of the aesthetics and usability of our cities and urban space will depend on.

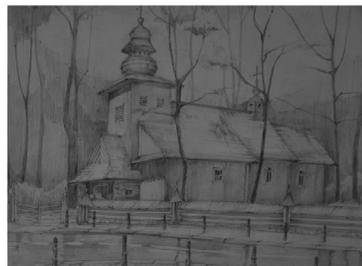
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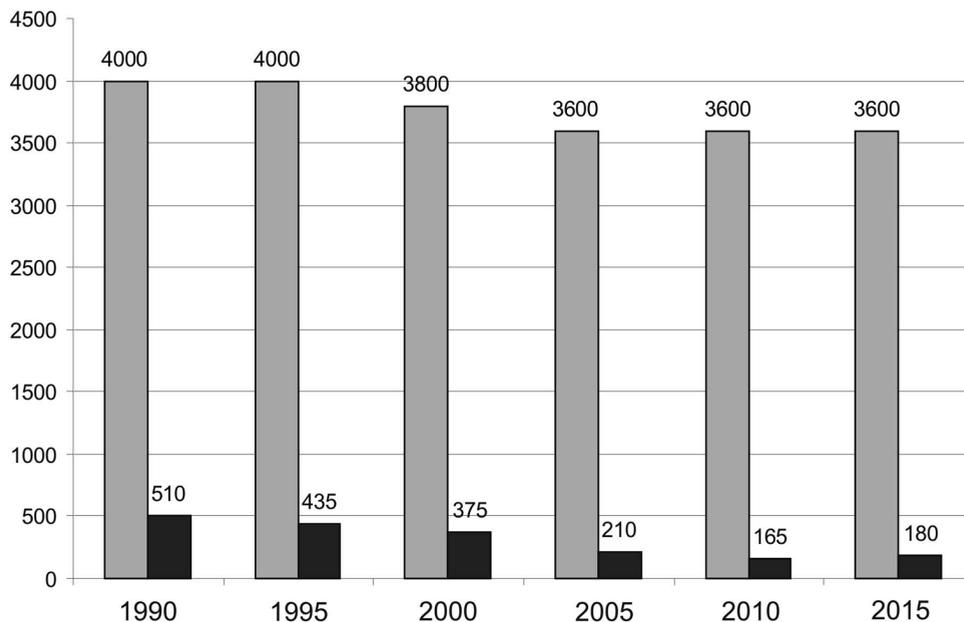
B



C



III. 1. Teaching process on hand drawing: A– geometrical structures, B – still lifes, characters, C – architecture



III. 2. The changes of total number of teaching hours and numbers of teaching hours on Fine Arts courses in 1990–2015

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PIOTR ŁODZIŃSKI*

ART COURSES AT THE FACULTY OF ARCHITECTURE AT BIAŁYSTOK UNIVERSITY OF TECHNOLOGY

PRZEDMIOTY PLASTYCZNE NA WYDZIALE ARCHITEKTURY POLITECHNIKI BIAŁOSTOCKIEJ

Abstract

This paper presents the Chair of Fine Arts at the Faculty of Architecture at Białystok University of Technology. The article describes how this unit was established and presents some reflections on the teaching of arts courses, which, in the author's opinion, help students to find their own technique of freehand drawing needed to record their creative thinking at all stages of architectural design.

Keywords: rysunek odręczny, szkic, rysunek architekta

Streszczenie

Artykuł prezentuje Katedrę Sztuki na Wydziale Architektury Politechniki Białostockiej. Opisano historię powstania katedry oraz refleksje dotyczące nauczania przedmiotów plastycznych, które w przekonaniu autora pomagają studentom w poszukiwaniu ich własnego warsztatu odręcznego rysunku, potrzebnego przy zapisie myślenia twórczego na wszystkich etapach projektowania architektonicznego.

Słowa kluczowe: freehand drawing, sketch, architect's drawing

* Ph.D. Ach. Piotr Łodziński, Faculty of Architecture, Białystok University of Technology.

The Institute of Architecture was founded at Białystok University of Technology in 1975. At that time, there was an obvious shortage of architectural designers on the territory of northeastern Poland, in the former provinces of Białystok, Suwałki and Łomża. Following the example of other schools of this type, the curriculum of the future architect included also courses providing instruction in the area of fine arts. Drawing in the tradition of architectural education put emphasis, among other things, on the artistic dimension of such education. Arts courses were taught not only by architects but also artists (painters, graphic artists, sculptors and interior designers). The authorities of Białystok University of Technology initiated cooperation with the Fine Arts Academy in Warsaw. They employed professors: B. Chmielewski, M. Gutt, B. Urbanowicz, Z. Ichnatowicz, T. Zieliński. Apart from the units dealing with architectural design, the Chair of Drawing and Interior Architecture was formed, which provided courses in drawing, painting, interior design, descriptive geometry, art techniques and sculpture. In 1981, the Institute was transformed into the Faculty of Architecture and the Chair of Drawing and Interior Architecture became the Chair of Drawing, Painting, Sculpture and Interior Architecture. At the same time, supervision over the chair was entrusted to Janusz Debis, a painter, (now a professor at Białystok University of Technology). Around 1988, young artists representing different areas of arts were employed. Most of them came from the region of Białystok, where they followed their creative pursuits contributing to the cultural offer of the region. They also presented their works at different exhibitions in Poland and abroad [1]. A characteristic feature of Białystok faculty of that time was a broad and comprehensive education in the history of art combined with freehand drawing and broadly understood fine arts: freehand drawing, descriptive geometry, painting, sculpture, modeling, typography, graphic design.

In 1998, another field of study was opened at the Faculty of Architecture at Białystok University of Technology – Interior Architecture. As the staff of the Chair developed their scientific and teaching competencies, it was possible to open a third field of study – Graphics, which happened in 2007. The unit changed its name to the Chair of Arts and its new head became Professor Andrzej Dworakowski [2]. Starting from the mid 1990s, the specific character of Białystok faculty gradually disappeared as the new standards were introduced and the teaching of fine arts to future architects was successively limited. After several reductions, the number of classes of this type decreased to about 30% of the initial status. The majority of architecture teachers claim that any tools other than the computer are absolutely useless. They question even the necessity of holding an examination in drawing as a criterion of admission. On the other hand, they are unhappy with the students' lack of drawing skills, which are needed for thought recording and communication typical in the architect's profession.

Presentation in the form of an image is a basic method of communication between the architectural designer and contractors. As there is a need to communicate with all the participants of the design and construction process, the drawings at the stage of presenting the final visual form of the design should be as realistic as possible. According to Andrzej Jeziorkowski "ambiguous understanding of a technical drawing disqualifies it as a source of information" [3]. 20 years ago, architects bent over drawing boards and with the same tools that had been used for hundreds of years made freehand perspective drawings to present their architectural designs. Some of them, had mastered to perfection the presentation of

design in perspective. These are mostly perspective views showing a three-dimensional illusion on a piece of paper that are supposed to charm the investor.

There are numerous examples from the past which prove that many famous architects were excellent sketchers. The extraordinary perspective drawings showing monumental buildings of Rome made by an 18th century Italian architect and sketcher – Giovanni Battista Piranesi [4] are fascinating and inspiring even today. In Poland, we have the example of a well-known professor of architecture – Wiktor Zin, whose professional life focused to a great extent on drawing and painting [5].

The author believes that the methods of presenting architectural forms and the drawing technique of Bauhaus masters have been influencing the architectural drawing until today [6]. Niel Bingham observed that “architecture became very high tech whereas the drawing technique remained typical for the post-modernist way of presentation – they still used drawing, watercolours or photo collage” [7].

At present, computer-aided design is dominant. Designs are made using a keyboard and a mouse. Time-consuming freehand perspective drawings have been replaced with photo-realistic renderings and, more and more often, video films. Computer-generated space allows for presenting the designed object from different sides, its quick modification, matching different textures and easy image composition, which may be done thanks to the automatic perspective and intelligent masking. There are also special effects which allow for imitating freehand drawings, paintings or graphics. It takes just a few mouse clicks to get chosen artistic effects. One does not have to spend a lot of time learning how to use this software as it gets more and more user-friendly. Huge bases of ready-made models makes modeling faster, saving the time spent on building a virtual space. It facilitates greatly the work on the presentation of a design concept. The most technologically advanced system is a virtual, three-dimensional CAVE (Cave Automatic Virtual Environment) [8]. However, as a result of using computer tools to prepare drawings the final effect is anonymous and does not go outside the framework the software allows for. We will not recognize the author by the method of rendering. Recording one’s design concept in the form of a freehand drawing is more personal than anything else. Perspectives drawn by hand are like the author’s personal signature. When we compare the drawings made by the same artist, we find in them important features of his/her personal style. We can tell the author by his/her way of drawing.

Despite the widespread use of computers by architects, the objective of freehand drawing classes is to develop spatial imagination and teach future architects how to record their own design ideas in the form of a drawing which will be clear and readable to the addressee. During the designing process, the idea is usually first born in the architect’s head, in his/her imagination. Architects’ sketches are usually made spontaneously, fast and with the first tool they can get hold of – a pencil, a fineliner or a fountain pen – depending on the personal preferences of the artist. Most often, such sketches are monochromatic rather than colorful. The goal is to write down, remember, record, specify the thought so that it does not disappear. At this stage, the skill of quick, professional, brave use of the freehand drawing and the knowledge of perspective principles are irreplaceable and extremely useful. This way of acting is still the fastest method of recording and verifying one’s ideas. What is more, an additional advantage is the fact that drawing as such does not require any special funds. Paper is available to everybody and so is a pencil or a crayon. These are often quick, brief

sketches made in notepads or even on pieces of paper or napkins. Great examples of such working freehand drawings made by world renown contemporary architectural designers in an attempt to grasp the idea and solve design problems can be found in the album: "The hand of the Architect" [9].

Any skill, including the skill of using drawing techniques, requires practice and experience built systematically over time through regular drawing practice with an increasing level of difficulty. If there is a long break in drawing, the sketcher cannot keep their hand in it and they gradually lose the acquired skills. At present, the students of architecture and urban development at Białystok University of Technology take compulsory art courses in the first, second and third semester. They draw from nature sets of objects of diverse material, texture and size, they make interior drawings and plein air sketches of architecture. In the fourth and fifth semester, these are elective courses, during which they study perspective drawing related to designing. It must be stated that these courses contribute greatly to students' development and improve their skills of using colour, light and plane. The focus is placed on showing a spatial illusion in perspective drawing. The aim is to develop individual artistic talents and make students more courageous in their drawing endeavors. However, these are only initial skills, which cannot be compared to the artistic education of a student 30 years ago. Today, the computer is clearly a preferred tool. But does the wide range of possibilities offered by the computer have to result in a gradual disappearance of the architect's technique? Students must be taught how to use computer graphics software, but is it enough to develop the future architect's talents and skills which, after all, are not given a priori to all?

What results from the author's teaching experience gained during classes and consultations for semester and diploma projects is that students with better freehand drawing skills obtain much more interesting formal effects in their own designs and their presentation than those using only computer techniques. Hence, we must draw, paint and use the computer at the same time. The architect's profession is a multidisciplinary one. Therefore, there is no reason why in the area of education we should opt for a tool monoculture resulting from the fascination with new technologies at the expense of artistic sensitivity, creativity and individualism.



III. 1. Drawing from the author's sketchbook. Sketch of the quay port in Rovinj, Croatia, Freehand (Drawing: Piotr Łodziński, 2013)

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MIROSLAW ORZECHOWSKI*

ONE HUNDRED YEARS OF TEACHING ARTISTIC
DISCIPLINES AT THE FACULTY OF ARCHITECTURE
AT THE WARSAW UNIVERSITY OF TECHNOLOGY –
THE WARSAW SCHOOL OF ARCHITECTURAL DRAWING

STO LAT NAUCZANIA DYSZYPLIN ARTYSTYCZNYCH
NA WYDZIALE ARCHITEKTURY POLITECHNIKI
WARSZAWSKIEJ – WARSZAWSKA SZKOŁA
RYSUNKU ARCHITEKTONICZNEGO

Abstract

This year we celebrate the 100th anniversary of the Faculty of Architecture at the Warsaw University of Technology. We would like to have a look at the term of the Warsaw School of Architectural Drawing that has been known for many years. It is present in the environment of the Warsaw architects and the graduate architects from the Warsaw university, however, does anyone use that term outside this group of people? Is the uniqueness experienced by us during plain air sessions, drawing exhibitions and celebrations at the Faculty of Architecture of the Warsaw University of Technology a fact or only our wish? How the Workshop of Drawing, Painting and Sculpture at WAPW was created and developed? These and other questions, after a hundred years of existence of the Faculty of Architecture at the Warsaw University of Technology need an attempt at answering.

Keywords: architecture, drawing, painting, sculpture, school

Streszczenie

W tym roku obchodzimy 100-lecie Wydziału Architektury Politechniki Warszawskiej. Pragniemy zmierzyć się z funkcjonującym od szeregu lat pojęciem Warszawskiej Szkoły Rysunku Architektonicznego. Funkcjonuje ono w środowisku warszawskich architektów i architektów, absolwentów warszawskiej uczelni, ale czy ktoś nim się posługuje poza tym gronem? Czy wyjątkowość, którą z pewnością przeżywamy podczas plenerów, wystaw rysunkowych i uroczystości na Wydziale Architektury Politechniki Warszawskiej jest faktem czy tylko naszym życzeniem? Jak powstała i rozwijała się Pracownia Rysunku, Malarstwa i Rzeźby na WAPW? Te i inne pytania po stu latach istnienia Wydziału Architektury na Politechnice Warszawskiej wymagają podjęcia próby odpowiedzi.

Słowa kluczowe: architektura, rysunek, malarstwo, rzeźba, szkoła

* Ph.D. Arch. Mirosław Orzechowski, Institute of Architectural Heritage and Art, Faculty of Architecture, Warsaw University of Technology.

1. The Genesis of the School

This year we celebrate the 100th anniversary of the Faculty of Architecture of the Warsaw University of Technology (WA PW). We would like to have a look at the term of the Warsaw School of Architectural Drawing used in the environment of Warsaw architects for many years now. Is the uniqueness experienced surely by us during plain air sessions, drawing exhibitions and celebrations at the Faculty of Architecture of the Warsaw University of Technology a fact or just our wish? In what way the Workshop of Drawing, Painting and Sculpture at WAPW was created and developed? These and other questions, after the one hundred years of existence of the Faculty of Architecture of the Warsaw University of Technology need an attempt at answering. They need answers that require discussion and over which we should stop for a moment.

In 1914 the painter Zygmunt Kamiński presented at the exhibition of the “Young Art” association in the rooms of “Zachęta” a cycle of drawing and aquarelle studies from Rome, Venice and Kazimierz. He earned interest of the environment of Warsaw architects. In autumn 1914, at the initiative of the university students of architecture who were not able to return to their universities due to the outbreak of World War, architecture course at the academic level were created. Teaching of drawing at those courses was entrusted to Zygmunt Kamiński in recognition of his artistic achievements. In the same year, the Society of Higher Scientific Courses and Association of Technicians (Towarzystwo Wyższych Kursów Naukowych i Stowarzyszenia Techników) appointed committees whose aim was to create Polish higher schools in Warsaw: the University of Technology and the University.

In 1915 Zygmunt Kamiński received, with the mediation of Rudolf Świerczyński, an order to develop a curriculum for teaching drawing at the planned Faculty of Architecture. Following consultations with Rudolf Świerczyński and Tadeusz Tołwiński, the program presented by Zygmunt Kamiński to the committee of the Circle of Architects, was approved. In the autumn it was introduced to instruction at the Faculty of Architecture and its author started to run drawing classes at the newly created university.

2. Warsaw School Of Architectural Drawing – Creative Personalities

In the middle of the 50's of the XX century, at the Combined Faculty of Drawing, Painting and Sculpture (Katedra Zespołowa Rysunku, Malarstwa i Rzeźby) under the direction of prof. Zygmunt Kamiński, lectures on descriptive geometry and perspective were conducted by the Assistant Professor Zbigniew Chwalibóg, Ph.D., classes in perspective drawing were conducted by the Assistant Professor Eugeniusz Szparkowski, M.Sc. Also at that time the Faculty, apart from the professors named above, included assistant academic workers, senior assistants: Edmund John, Henryk Dąbrowski, Jan Szymański, Karol Żarski, Barbara Rzepkówna and assistant deputies: Andrzej Kaliszewski, Tadeusz Linkowski and the faculty lab assistant Z. Baniecka.

This period of the School's history brought fundamental changes in the program and led to the appearance, in the consciousness of the environment architects, of the style identity of a drawing created at the Warsaw Faculty, the term of the Warsaw School of Drawing

was created. From the beginning of the Faculty's existence numerous students, who later became assistants and lecturers, went through. A specific relay of generations has been one of the basic features of the school in which teacher finds the most talented students who substitute him after some time and become teachers themselves. At this point we should name Jan Zachwatowicz, the assistant in the years 1925–1931, Stefan Sienicki (at the Faculty from 1930 till the war years), architects: Kazimierz Marczewski, Leon Marek Suzin, Jan Knothe, Marian Walentynowicz, the illustrator of „Przygody Koziołka Matołka” (*The Adventures of Koziołek Matołek*) by Kornel Makuszyński, the artist-graphic designer Edmund John, and also the architects already mentioned above: Eugeniusz Szparkowski and Zbigniew Chwalibóg; and finally, another generation of architects – the above mentioned students: Henryk Dąbrowski, Andrzej Kaliszewski, Barbara Rzepka Orzeszek, Ludomir Słupczański, Jan Szymański, Karol Źarski. From the beginning of the School's existence one more characteristic feature of that School appeared. The learning instructions were developed uninterruptedly, built on consecutive creative individualities, masters and students of the School. So, the term of the school should be basically associated with concrete persons who have formed it independently from the structural changes of the school or forms of employment of the WA PW academic teachers.

3. Strengthening Of The Term Of The Warsaw School In The WAPW Environment – The Features Of The Drawing Created In The School

In 1974 Henryk Dąbrowski, Ph.D. became the manager of the Department of Drawing, Painting and Sculpture. The new manager immediately started to develop the School's structures. The teaching was strengthened – the team of teachers conducting classes in perspective was joined by the architect Adam Sufliński. In 1974 Henryk Dąbrowski, Ph.D. led to engagement of a sculptor Bronisław Kubica and a young painter Franciszek Maśluszczak and architect Andrzej Nodzykowski, and simultaneously introduced separate classes in sculpture and painting. During that time the Department staff included: Jan Szymański, Ludomir Słupczański, Andrzej Pańkowski, Adam Sufliński, Andrzej Nodzykowski, Janusz Towpik, Franciszek Maśluszczak, Bronisław Kubica.

The end of 70's and the 80's is the period of strengthening of the School with a stable composition of the team. Students' drawing excursions which were organized from the time of establishment of the Faculty of Architecture, in the beginning of the 70's gained the status of obligatory student plain air sessions after the first year of studies. For over twenty years drawing and painting plain air sessions were organized in Białystok, Supraśl, Tykocin, Białowieża, Toruń and Lublin as the obligatory element of the learning process included in the curriculum, and associated with the development of the ability to understand the real space and the complex context of architecture. Also at that time, as a result of activation of the student's environment, various initiatives appeared, among others a group of students was formed who established the scientific circle. A lot of independent plain air trips, beside the obligatory ones, were organized. Students traveled to Tykocin, Malbork and to the Mazury, to Napiwodzko-Ramucka Forests. Although the obligatory plain air sessions were stopped, a spontaneous students' plain air movement continued. The tradition of plain

air sessions was born in 1915, in the first days of existence of the Faculty of Architecture of the Warsaw University of Technology and has continued in that form till the present time. We owe it particularly to the activity and devotion to organization of plain air trips to many places in Poland and Europe by our colleague, the architect Ryszard Rogala.

In 1990, after the amendment of the law on higher schools due to the possibility to preserve independence by the School, the Department of Drawing, Painting and Sculpture was renamed to the Workshop of Drawing, Painting and Sculpture, an independent teaching and research unit. At that time the Workshop, apart from prof. Dąbrowski, included: Ludomir Słupczyński, Andrzej Pańkowski, Włodzimierz Karczmazyk, Adam Sufliński, Ryszard Rogala, Władysław Fuchs, Mirosław Orzechowski, Franciszek Maśluszczak and Bronisław Kubica. In 1992 based on his creative achievements, prof. Dąbrowski was granted the full professor title. In 1994 a team of the Workshop architects under the direction of prof. Dąbrowski started studies collecting the teaching and research accomplishments of the Warsaw School of Drawing.

From the mid 90's structural and curriculum changes of the School have continued reaching so far that as a result of a drastic limitation of the number of classes the School starts to look for new forms of teaching preserving, however, the best work methods and topics.

In 2000 prof. Dąbrowski retired. However, he continued to conduct seminars for senior students. Architect Adam Sufliński, a student of Karol Żarski and a long term associate of prof. Dąbrowski, became the manager. The workshop at that time was composed of: Adam Sufliński, Henryk Dąbrowski, Ludomir Słupczyński, Andrzej Pańkowski i Włodzimierz Karczmazyk oraz Ryszard Rogala, Mirosław Orzechowski, Michał Suffczyński, Franciszek Maśluszczak and Bronisław Kubica.

Transformation of the organizational structure of the Faculty of Architecture was not without effect on the place of the faculty in the hierarchy of teaching units. In the beginning of the 2000's the Workshop of Drawing, Painting and Sculpture was merged with the Institute of Modern Architecture (Zakład Architektury Współczesnej) forming the Department of Architecture and Modern Art (Zakład Architektury i Sztuki Współczesnej) under the direction of Professor architect Lech Kłosiewicz.

More changes in 2006 have led to the establishment of an Independent Workshop of Drawing, Painting and Sculpture (Samodzielna Pracownia Rysunku, Malarstwa i Rzeźby). After the sculptor, professor Bronisław Kubica and the painter Franciszek Maśluszczak retired, the sculptor Marcin Nowicki and graphic designer, painter Radosław Jan Balcerzak and architect Joanna Pełkowska were transferred to the teaching team of the Workshop.

In 2013, as a result of another organizational reform, a new unit was established, the Department of Architectural Heritage and Art (Zakład Dziedzictwa Architektonicznego i Sztuki) with an autonomous Workshop of Drawing, Painting and Sculpture, whose manager, following the retirement of arch. Adam Sufliński in 2014, became architect Mirosław Orzechowski, Ph.D. The inevitable process of total organizational improvement of the school and implementation of digital techniques of record, made it necessary to modify the teaching program of artistic disciplines first of all towards finding a man as the subject of architecture.

The teaching team of the Workshop, due to the multithreading of the goals of teaching and the teaching needs at present is composed of persons employed by the Faculty full-time

and on the basis of freelance assignments. The team includes: the team manager Mirosław Orzechowski, Ph.D. in Architecture, Michał Suffczyński, Ph.D. in Architecture, Joanna Pętkowska, M.Sc. in Architecture, Ryszard Rogala, M.Sc. in Architecture, the sculptor Marcin Nowicki, the graphic designer, painter Radosław Jan Balcerzak, and also retired prof. arch. Lech Kłosiewicz, Włodzimierz Karczmarczyk, M.Sc. in Architecture, and Adam Suffliński, M.Sc. in Architecture.

The School preserved its classical method of drawing formed in the 60's of the previous century consisting of building of the drawing structure showing all edges, both the visible and invisible ones, and the lines, axial, cross-sectional, etc., emphasizing the space of the drawing through graphic contrasts and line saturation.

4. Reflections On The School Character

The continuous changes which have been characteristic for the last twenty years, have led to the appearance of doubts relating the validity of teaching drawing. More and more frequently we encounter lack of understanding for the essence of drawing in the profession of an architect. Strangely enough such doubts are mentioned by some of our colleagues architects. Such opinions are surely formed under the ongoing expansion of new media and the new formula of entrance examinations to our Faculty of Architecture. Availability of the tool which is the computer, easy operation, no necessity to make effort and the effect of aesthetic printout attract and create a magic attitude towards that tool. Whereas, the formula of the entrance examination which requires only a drawing based on imagination following reading of a specific text shapes the market of schools preparing the candidates for studies. Young people are taught on the basis of copying the instructions and re-drawing of photographs. In this way they only learn some graphic tricks allowing to obtain effective works without understanding the essence of the drawing which should be a record of creative thought. As a result, in majority of cases we enroll persons who are skilled at using the computer and an aesthetic prosthesis of manual drawing. Taking into account the scarce number of hours devoted to teaching drawing we face a dilemma whether we should put forward academic requirements or just work with the most talented persons and in this way shut out 99% of students, try to teach from the foundations or maybe just try to root out bad habits originating from the time of preparation for studies? The answer is not obvious. Our present programs and activities most probably need to be reconstructed thoroughly and adapted to the requirements of the modern times.

Our school has a grand future and through its representatives and a small group of talented students fights for the survival. The active operation of the students' research circle, development of the art of plain air aquarelle, the efforts associated with the modification of the teaching program form the present character of the School. Preserving professionalism of architectural drawing, treated as the language expressing the idea of the project comprehensible both in the environment and outside it is one of the basic tasks faced by the School representatives. It is an obligation to defend painting and sculpture classes, giving an opportunity to the future architects to meet other disciples of visual arts and to have an insight into other ways of creative vision and thinking; the aim of it is to care for

the preservation of the minimum level of culture of our students. The School at present faces these, and many other tasks. We can say that we undergo a specific period of *storm and stress*, we consider this time to be a non-dangerous and transitory administrative changes and civilization generation changes which are a real challenge. Exchange of opinions, views and methods can be an enlivening stimulus for the School's operation. Sometimes putting forward difficult questions and making attempts at answering them can be very helpful in finding proper formulas of activity, both within the school and on the level of inter-university, plain air contacts in Poland and all over the world. The question relating the existence of the School is justified. The answer can be provided only from the outside. Therefore, the question should be made on the occasion of a meeting of various Schools.

5. Conclusions

Zygmunt Kamiński was 26 years old when he organized teaching of drawing for architects and he cooperated with his peers, his students on the program and formula of classes. It is the key for the reconstruction of the proper formula of teaching the discipline of drawing for architects. This, maybe, concerns not only our School but also many other teaching units in this part of Europe. We should hope that similarly like in the case of making a project in a difficult location due to particularly difficult conditions of the modern times it will be possible to build a new good and durable *architecture* of the Warsaw School of Architectural Drawing.

NATALIA PRZESMYCKA*

TEACHING OF FREEHAND DRAWING IN THE CONTEXT OF CULTURAL DIFFERENCES

NAUCZANIE RYSUNKU ODRĘCZNEGO W KONTEKŚCIE RÓŻNIC KULTUROWYCH

Abstract

Architectural drawing is a kind of practical tool for recording thoughts and working through design problems, a method of presenting our vision or explanation of things which are impossible to describe with words. The paper summarizes the problems concerning teaching freehand drawing to foreign students. Teaching drawing involves not only sharing information and understanding the process of recording ideas but aesthetic sensibility as well. Students from countries with different cultural backgrounds are demanding pupils. The article is an attempt to answer the question how the cultural background influences the students of architecture in their use of freehand drawing as a tool.

Keywords: architectural freehand drawing, Erasmus Program, foreign students

Streszczenie

Rysunek architektoniczny to jedna z metod zapisu myśli, szkic idei, metoda przekazania swojej wizji odbiorcy lub objaśnienia tego, czego nie da się opisać słowami. W artykule przedstawiona została problematyka związana z nauczaniem rysunku odręcznego studentów zagranicznych. Nauczanie rysunku odręcznego wiąże się z przekazywaniem informacji i rozumieniem zapisu idei, ale również z wrażliwością estetyczną. Studenci z krajów o odmiennych wzorcach kulturowych są wymagającymi uczniami. Artykuł jest próbą odpowiedzi na pytanie, jak uwarunkowania kulturowe wpływają na studentów architektury w zakresie posługiwania się narzędziem, jakim jest rysunek odręczny.

Słowa kluczowe: architektoniczny rysunek odręczny, Erasmus, studenci zagraniczni

* Ph.D. Arch. Natalia Przesmycka, Department of Architecture and Urban Planning, Civil Engineering and Architecture Faculty, Lublin University of Technology.

1. Introduction

Due to growing popularity of international student exchange programmes, teaching architectural drawing becomes a new challenge for those who teach this subject as a part of architecture courses. Foreign students who stay in Poland under scholarship programmes, including the Erasmus programme which is the most popular of them all, willingly include freehand drawing in their curricula. The number of students participating in the Erasmus programme keeps growing. Students from Turkey and Spain constitute two biggest foreign groups arriving at Polish universities¹. Different levels of the foreign students' skills and short periods of their studies in Poland lead to differences in the ways in which freehand drawing is taught to them and to their Polish classmates. Worth considering are the cultural determinants that influence the ways in which objects are perceived and represented, as well as traditions of teaching architectural drawing in the students' countries of origin. The following paper is based on the experience gathered in the period between 2009 and 2015, while teaching Erasmus students of the Architecture and Urban Planning course at the Lublin University of Technology.

2. Drawing as an architect's tool in the twenty-first century

Teaching architectural drawing is an essential part of education in the field of architecture. It is of immeasurable importance, not only in the design process but also in documenting the legacy of the past. Its value manifests itself especially in the works of European architects of the turn of the 20th century which was the period of development of national styles. Thorough graphical studies also led to a deeper understanding of the characteristics of materials and the craftsmanship involved in the construction process. After the First World War, architects started producing bolder drawings. In that period, the differentiation of styles of architectural drawing originating from different schools of architecture or typical of particular countries, became noticeable². Freehand drawing was the main tool for tracing designs until the 1980s. The wide use of computer graphics software made it possible to create shapes that, due to their complexity, had been virtually impossible to trace by hand.

In the early 21st century, all stages of education are undergoing constant modifications and reforms, and higher education becomes more and more accessible. The master-apprentice relationship, cultivated by architects for centuries, was the basis of artistic continuity [4]. It remains visible in the drawings of the architects trained in the 20th century and earlier. In the last several years, the philosophy of education at all stages has been changing: the relationship centred on the teacher has been evolving into a model of education focused on the student, who should be inspired and encouraged by the teacher to develop solutions independently [14, 18]. Given the very large numbers of students and relatively shorter time of studying particular issues, the master-apprentice relationship is slowly disappearing.

¹ In 2012, there were 2495 Spanish and 1965 Turkish students, [20].

² Expressionism and Academism in Germany, Abstract Expressionism and Constructivism in Russia.

Architectural drawing is also a form of answer to the questions “why?” and “how?” that architects ask themselves while looking at the reality around them. The similarity of the thought process and the psychic and emotional engagement while drawing from nature to the processes that take place while designing was noted by Eric Jenkins [8]. By sketching the things that we are seeing, while consciously analysing the changing perspective, we become involved with the building that we are observing. Architectural sketches from nature are not only transferences of the things that we see onto sheets of paper. They are also acts of involvement with observed objects. Hence drawings from nature made by architects are often supplemented with additional information in forms of schemes, projections, drawings of details and notes. It is not only about the view of the object but also the understanding of relations between shapes, bodies, functions and structures.

Before computer graphics became widespread, perspective drawings were produced mostly with the intention of establishing communication between the architect and the client, while working drawings were intended to be used at the construction site or to produce a detail of the building in the workshop. The basic feature of architectural drawing – the proper use of perspective, enabling the observer to understand the proportions of different parts of a building and the relations between them – still holds. Although it is the software that “controls” the right application of perspective at the stage of working on a project using computer, when it comes to tracing the initial concept sketch, presenting the idea to the client or solving a problem at the construction site, the ability to correctly draw what one wants to present remains a matter of essential skills of an architect. Teaching freehand drawing in the context of the development of communication skills is one of the goals of contemporary education in the field of architecture.

A survey conducted among the architects running the biggest architecture firms in the United Kingdom, regarding the use of freehand drawing as a tool in the design process, brought some very interesting conclusions. All surveyed architects admitted that linear freehand drawing is a vital element of a project idea at the initial stage of its development. Asked about their favourite tool for making the initial sketches, they pointed to the permanent techniques, like drawing with fountain pen or felt-tip pen of various sizes. According to Edward Cullinan, black ink is “difficult to erase and makes you think well”³. It is also an effective tool for working with the client, who can see the confidence of the architect’s thought and their lack of hesitation.

Teaching of drawing became the subject of numerous publications. Most of them are handbooks. There are also studies of works of individual architects or particularities of different “schools of drawing” which developed at different architecture faculties⁴.

³ The survey involved the biggest UK architectural practices, with 492 architects interviewed. [7].

⁴ [3]. The achievements of the drawing school at the Warsaw University of Technology were summarized in the book by M. Orzechowski [10] and the history of the drawing school at the Wrocław University of Technology was described in a monograph by R. Natusiewicz, [11].

3. Teaching drawing to foreign students

Studying abroad, even for one semester, is becoming more accessible and more popular. The practice of architecture evolves in a similar way. A research conducted in 2014 by the Architects' Council of Europe concluded that the profession of architect has a transnational character. 18 per cent of the interviewed architects had international experience in the course of their education or professional work, and 35 per cent admitted that they considered working abroad⁵. Other very interesting findings come from a survey regarding the additional training of architects. In Turkey such practices are virtually unknown, while Spanish architects spend an average of €300 on additional courses, dedicating around 50 hours a week to supplementary professional training⁶.

Teaching architectural drawing to foreign students is especially difficult due to big differences in initial skill levels. Training in the field of drawing has distinct forms in different countries of Europe but the differences reach deeper than the higher education programmes.

Freehand drawing classes for international students at the Lublin University of Technology were taught both in mixed groups (where foreigners joined Polish classmates) and in groups consisting solely of Erasmus students. The range of topics studied in the winter semester included: composition in drawing, still life studies (training in measuring proportions, observing the properties of a given material) and communicative aspects of an architectural drawing meant to present a certain issue (e.g. a design created by the student in another subject). In the summer semester, the scope of the classes was extended through the addition of drawing from nature (plein-air painting classes in the Old Town of Lublin and the Lublin Village Open Air Museum, drawing human figures). Students were encouraged to try various techniques, in order to develop a convenient individual method that would make drawing enjoyable and give the most satisfying effect.

Unlike in the case of their Polish classmates, the assessment of works by international students is rather a delicate matter: it is difficult to compare the works of people that never dealt with drawing tasks before with the output of relatively skilled drawers, that is, the students that had previous training in the field. The language barrier poses another problem, especially in the case of Turkish students, who often take part in the Erasmus Programme despite the lack of sufficient foreign language competence. Facing these issues, teaching of architectural drawing aims at acquainting the students with drawing as a tool for transmitting ideas, encouraging them to look for means of artistic expression on their own, and raising their self-confidence. The last part is especially important in the case of the students who have no previous experience in freehand drawing. **The recognition of that special kind of “pleasure” that comes from creating autonomous worlds or imaging reality on a piece of paper is just as important as the spectacular results achieved by “highly trained” students.**

⁵ The research involved 18,000 architects from 26 countries of the European Union. Poland was not included, [18].

⁶ Bulgarian architects dedicate the biggest amount of time to additional training (over 90 hours a week). Apart from Turkey, also French architects do not take supplementary training, [18].

There are interesting differences in the methods of drawing from imagination employed by students from Turkey and Spain, who constitute the majority of international students that enrol in this subject:

- Turkish students most often struggle to represent still lifes, capture the proportions of their elements and use the perspective correctly,
- Turkish students have a special liking for drawing human figures (although the results are not very good),
- drawings from imagination by Turkish students often feature symbolic elements that amplify the dramatic effect of the work. The favourite motifs are birds, trees and hands,
- Spanish students draw quite slowly, linearly and carefully, often preceding the drawing with several sketches,
- Turkish students do not make preliminary sketches on their own accord,
- drawings by Spanish students are very communicative,
- Spanish students have problems when it comes to applying the chiaroscuro technique,
- Spanish and Turkish students (most of the latter group having never participated in any painting classes) have totally different approaches to using colour: the Spaniards try to represent the real colours as realistically as possible, filling the empty spaces in their drawing slowly and carefully. The Turks, on the other hand, apply colours in a spontaneous manner, rarely mixing them. Interestingly, among the Turkish students there is a difference in the methods of work employed by girls and boys while creating colour paintings. The ladies try to paint gently, not to “spoil” the work by using pure colours, discovering the possibility of mixing them only after being instructed and encouraged. The male students frequently mix colours on the paper on which they are painting and finish their work ahead of time. Beginners have a common tendency to meticulously close the outlines of the drawn objects, use the rubber, striving to produce a “neat” drawing.

The author’s signature is what crowns a drawing. Turkish students very often include a huge, flamboyant signature in the composition of their works. Interestingly, it is done only by male students.

In order to understand the reasons of the aforementioned differences in drawing skills and ways of looking at reality, it is worthwhile to look at the context to education in the field of architecture in Turkey and in Spain.

4. Turkey – the context of the tradition of education in architecture

The 1997 reform of the education system extended the period of compulsory primary education from 5 to 8 years. One can say that the reform of the educational system, intended to bring Turkey into the 21st century, is still under way and affects all stages of education [14]. The tradition of architectural studies in Turkey dates as far back as the 19th century, with Istanbul being the first Turkish academic centre to launch courses in this field⁷. In 1847,

⁷ Before the Republic of Turkey was proclaimed, the future builders of state and royal buildings were trained in the *Hassa Mimarlar Ocagi*. This institution, established in the 16th century by an architect named Sinan, operated until 1881, when it was transformed into the *Ebniye’i Hassa Müdürlüğü*. After the westernisation of most institutions in the 17th century, a technical military school was established in 1734, under the name of *Askeri Humbarhane ve Handesane*.

the Royal School of Military Engineering was transformed into country's first construction engineering faculty [1]. Initially, the education was oriented towards engineering, including courses in general construction, as well as road and bridge construction. Later on, the Civil Service School of Engineering (*Hendese-i Mülkiye Mektebi*) was opened, offering a course in architecture among other fields of study. In 1883, the Fine Arts School (*Sanay-i Nefise Mektebi Alisi*) was established in Istanbul, with architecture courses that followed the Western model of education [13]. Architects Kemalettin Bey and Vedat Tek, who worked as teachers at both schools, were the founders of the style called the Turkish neoclassicism. Since the 1970s, the style has been referred to as the national movement. The Young Turkey period in arts and the national movement came to an end in the first decade of the existence of the republic. The early years of the Republic of Turkey brought enthrallment to the Western lifestyle spreading among ever wider circles. The past was often identified with backwardness.

For almost 20 years the Turks were eager to invite European architects, who introduced the principles of modernism in the country. European ideas, especially those of the Bauhaus and CIAM, quickly reached Turkey. The first independent faculty of architecture was established in 1937, based on the German model of technical school (Bruno Taut was one of its professors)⁸. In 1944, it was renamed as the Istanbul Technical University, and has remained the largest school offering architecture courses.

1937 was also the year of the foundation of the Academy of Fine Arts. Ernst Egli, one of the Academy professors, is believed to have introduced a new approach to teaching history of architecture. He added elements of vernacular architecture, including that of the pre-Islamic period, to the course programme, emphasizing the importance of the cultural context and the local aspect of architecture. Nevertheless, in the 1930s, most Turkish architects created in the spirit of modernism, using reinforced concrete as the main material and remaining under the influence of the international style (e.g. the Ankara Exhibition Hall (Şevki Balmumcu, 1933), the Istanbul University Observatory (Arif Hikmet Holtay, 1934), the *Florya* Sea Pavilion (Seyfi Arkan, 1934), café on the Taksim Square and the *Yalova* Spa Hotel (Sedad H. Eldem, 1935-38). In 1940, there were 150 architects practising in Turkey [22]. Today, courses in architecture are offered by 22 Turkish universities [21].

Delayed industrial revolution and rapid population growth led to intense and chaotic urbanization. Contemporary Turkish architecture reflects the very powerful economic and social growth, as well as the increase in country's population and its cultural disintegration. Housing shortage and failure to take necessary economic and administrative precautions resulted in numerous houses and apartment buildings being erected lawlessly, without architectural design. Land speculation and lack of sufficient protection of valuable natural areas within cities are other problematic issues. As a result, most urban areas lack regional features that would attest to their local identity. They are full of buildings of low aesthetic and technical quality. Undiscerning subjection of the economy and urban aesthetics to the needs of the tourism industry is one of the effects of globalization [22]. The reasons of this situation may also be related to education in the field of architecture, which nowadays meets with criticism in the Muslim countries. Higher education programmes are not sufficiently

⁸ Other architects working there as teachers and creating their own designs, were Clemens Holzmeister, Ernst Egli, Martin Elsaesser, Paul Bonatz.

close to the social and cultural context, which leads to “mindless eclecticism”, often noticeable in the contemporary Muslim architecture [2]. Little by little, the Turkish academia is gaining conscience of the importance of recognizing one’s own cultural background and learning the history of the local architecture. The understanding of our own history, of traditional methods of building and developing architecture, boosts our self-confidence in expressing the cultural identity through architectural designs. It is particularly important for the developing countries in the times of globalization [12].

In this aspect, architectural drawing appears as one of the tools for studying other subjects, especially history of architecture. It should be mentioned that in the Ottoman world, unlike in the Western culture, history of architecture was not investigated until the 19th century. The *Usul-u Mimari-i Osoman-i*, (Written by Edhem Pasha, Montani Efendi and Boghos Efendi) a document published in 1837 for the Vienna World exposition, was the first Turkish attempt to summarize the legacy of the Ottoman architecture. Already at that time, it was noticed that copying Western styles can put an end to the uniqueness of the Ottoman architecture.

Most architectural courses at Turkish universities do not include freehand drawing classes. Teaching of freehand drawing is generally limited to geometrical and technical topics. Some universities introduce freehand drawing as one of the subjects in the second year of studies [23]. However, drawing skills are required already in introductory design classes taught from the first year. So how do the students deal with this situation? Conversations with the students show that their performance depends mostly on their talent, while the teachers complain that they do not know how to draw. At some universities, additional freehand drawing courses for architecture students have gained much popularity. They are considered extra-curricular activities and paid extra. Nonetheless, they are regarded rather as a hobby. Students admit that they often struggle to present their ideas and designs because, not knowing how to draw perspective, they do not have appropriate tools for doing this.

5. Spain – the context of tradition and culture

In Spain, education is compulsory for children between 6 and 16 years of age (primary school: between 6 and 12 years of age, secondary school: between 12 and 16 years of age). Tradition of higher education in Spain originated already in the times of the Muslim rule in the Iberian Peninsula. It is claimed that the first Spanish universities were the schools established by the royal court: the *Estudio General* in Palencia (1212) which was later transferred and transformed, giving origin to the University of Salamanca (1215). Others include Valladolid (1260), Alcala de Henares (1293) and Lleida (1293), [5]. Spain’s oldest school of architecture was opened in Madrid in 1752. It was later incorporated into the Technical University of Madrid.

Spanish universities rank among World’s best schools of architecture⁹. Last few years have seen growing attractiveness of course programmes and teaching methods, as well as

⁹ The Institute for Advanced Architecture of Catalonia, (IaaC) in Barcelona ranked 8th in the 2012 Graduate Architecture ranking, [21].

increasing competition between higher education institutions. In Spain great emphasis is put on the use of modern technologies in the process of education [9]. Interestingly, the modern methods of teaching, for example, history of architecture, include modelling of historic buildings, introduced in 2012. The role of drawing in teaching history of architecture is also appreciated [6, 15].

Today, people interested in studying architecture can choose between 31 universities [16]. Only some of the Spanish architecture schools offer freehand drawing classes. The subject is usually taught during 1 or 2 semesters, and the exercises mostly involve drawing still lifes (architectural details, plaster casts) in the first semester and urban plein-air classes in the second. Students mostly use felt-tip pens, the use of pencils is less frequent. The rules of perspective drawing are explained in the technical drawing classes, taught at most universities. Therefore students can enrol in an architecture course without any previous training in drawing. Freehand drawing is popular and liked in Spain. There are associations of drawers whose members pursue their interest during thematic and plein-air sessions¹⁰.

6. Conclusions

Teaching drawing is a constant process of learning. One of the reasons for that are the differences between the education systems in different countries. In the 21st century, freehand drawing is no longer a tool for presenting the final version of the design, and this is unlikely to change in the future. Drafting equipment has been replaced by the computer. Yet that does not mean that freehand drawing is no longer needed. Its role has simply changed. The important thing is the ability to sketch, to compose, to look for a form and, above all, to communicate. Students quickly notice that they need architectural drawing to present their ideas and communicate with other people. It is interesting that a survey among students of architecture showed that most of them consider painting classes less important than drawing classes. Students also point out that drawing stimulates the development of imagination, thus influencing the design process itself.

The Turkish students that choose to enrol in the freehand drawing classes at the Lublin University of Technology are not only those who took the architecture course. There are also spatial planning, urban planning and construction, and engineering students. It is clearly visible that they enjoy drawing, and many of them start their own sketchbooks. The criteria applied in the assessment of works by international exchange students should be different than in the case of their Polish classmates. It is important to remember that for many of them, it is the first contact with freehand drawing.

The answer to the question: “Why is it so difficult to teach architectural drawing to Turkish youth?” is very simple: this type of drawing was not present in their country’s culture, while in Europe it has been a part of culture since the Middle Ages, only evolving throughout the centuries.

Participant of the project: “Qualifications for the labour market – employer friendly university”, cofinanced by European Union from European Social Fund.

¹⁰ The Urban Sketchers collective is an example of such organization

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ANNA SZCZEGIELNIAK, PIOTR OBRACAJ*

FREEHAND DRAWING AS AN ARCHITECTURE “ESPERANTO” FOR STUDENTS OF ARCHITECTURE AND BUILDING ENGINEERING

RYSUNEK ODRĘCZNY JAKO ARCHITEKTONICZNE „ESPERANTO” STUDENTÓW ARCHITEKTURY I BUDOWNICTWA

Abstract

The paper describes the process and effects of two open-air drawing sessions organised by Department of Civil Engineering and Architecture, Faculty of Civil Engineering, Opole University of Technology. The open-air drawing sessions took place in 2013 in Opole and Gliwice, and in 2014 in Pavia. The aim of the sessions was to improve the ability of synthetical and analytical freehand drawing, a comprehensive communication tool, which also simplifies the work with computer. Furthermore, young architecture students had the possibility to broaden their knowledge about buildings and complexes in a wide range of revaluation and revitalization. Students and teachers from architecture and engineering studies from Poland, Italy, Denmark, Spain and Finland took part in those open-air drawing sessions. In this European Union project called “Let’s Exchange **HER**itage of our **CUL**ture – Drawing as a Communication Tool of Students of Architecture/Engineers from European Universities – **HERCULES**” freehand drawing was means of cognition and the main goal was to broaden the knowledge of cultural heritage.

Keywords: freehand drawing, drawing teaching

Streszczenie

Artykuł ujmuje przebieg i efekty dwóch plenerów rysunkowych zorganizowanych przez Katedrę Budownictwa i Architektury Wydziału Budownictwa Politechniki Opolskiej. W 2013 plener odbył się w Opolu i Gliwicach, w 2014 w Pawii. Celem było podniesienie umiejętności syntetycznego i analitycznego rysunku odręcznego, będącego wszechstronnym narzędziem komunikacji, ułatwiającym także pracę z komputerem. Ponadto młodzi adepci sztuki mieli możliwość poszerzenia swojej wiedzy na temat obiektów i zespołów historycznych w szeroko pojętym zakresie rewaloryzacji i rewitalizacji. W plenerach udział wzięli studenci i nauczyciele kierunków architektura i budownictwo z Polski, Włoch, Danii, Hiszpanii i Finlandii. W unijnym projekcie „Let’s Exchange **HER**itage of our **CUL**ture – Drawing as a Communication Tool of Students of Architecture/Engineers from European Universities – **HERCULES**” nośnikiem poznawczym był rysunek odręczny, natomiast wiodącym tematem poszerzenie wiedzy o dziedzictwie kulturowym.

Słowa kluczowe: rysunek odręczny, nauczanie rysunku

* M.Sc. Arch. Anna Szczegielniak, Ph.D. D.Sc. Arch. Assoc. Prof. Piotr Obracaj, Department of Civil Engineering and Architecture, Faculty of Civil Engineering, Opole University of Technology.

1. Intensive Programme – guidelines

Intensive Programme (IP) is a project financed by European Union within the framework of Lifelong Learning Programme/Erasmus Programme. It is a short cycle of didactic activities which last between 10 days and 6 weeks and gather students (between 10 and 60) and teachers of at least three different universities from three different European countries. The universities taking part in the IP have to be holders of the Erasmus card.

Intensive Programme entitled “Let’s Exchange **HER**itage of our **CUL**ture – Drawing as a Communication Tool of Students of Architecture/Engineers from **EU**ropean **U**niversities – **HERCULES**” was organized by Department of Civil Engineering and Architecture at the Faculty of Civil Engineering, Opole University of Technology. The two editions of IP were held in 2013 and 2014. The first one took place from 28th July until 10th August 2013 in Poland (Opole and Gliwice), the second edition took place from 13th July till 26th July 2014 in the Italian city of Pavia. Apart from Opole University of Technology which was a coordinator of the programme, the following universities took part in the IP: Silesian University of Technology (first edition only); Universidad Politécnic de Valencia and Universitat Jaume I from Spain; VIA University College from Denmark and Hämeen Ammattikorkeakoulu from Finland. 36 students and 12 teachers were involved in the first edition of the project and 30 students and 13 teachers in the second one. The teachers to students ratio was high, so frequent and individual contact with teachers was possible during the whole day drawing session, which is consistent with the “master-student” principle of teaching. Polish students represented the “classical” architectural studies, where the freehand drawing is one of the essential components of education.

Students of University in Pavia also graduate with the title “architect” but the program of studies does not include freehand drawing classes. The other universities taking part in the IP educate in the faculty “architect-engineer”. This is a combination of creativity and engineering which can be compared to the effects of education in Center of Engineers Education in Silesian University of Technology in Rybnik.

The organizers of the IP selected the task for students so that they could improve the skills they already had and gain some new knowledge. Therefore students of the Polish universities were creating perspective sketches of the buildings and their details, while engineering students were complementing them with proportion studies, construction drawings and material information mostly in orthogonal projections (Ill. 1).

The drawings and sketches made during each drawing session were used by the students to create a poster, which was supposed to give as complete as possible information about the drawing topic.

2. The organization and process of Intensive Programme HERCULES

During the Intensive Programme, students had a different drawing topic each day and series of lectures related to it. The drawing locations of the first edition of the IP were: city hall in Opole; The Opole Open-Air Museum of Rural Architecture (Ill. 2); the Młynówka river in Opole; Moszna Castle; Old Town in Nysa; urban areas in the center of Gliwice;

Nikiszowiec housing estate in Katowice; Old Town in Gliwice; Palace in Pławniowice and the Nowe Gliwice district. In the second edition the area of students' activity was limited to the Renaissance city of Pavia: Piazza della Vittoria; Romanesque church San Michele; monastery complex in Certosa di Pavia; cathedral (presumably designed by Leonardo da Vinci); the Ticino River and its surroundings; university complex and Castello Visconteo. Furthermore students were drawing the silhouette of the city visible from the other bank of the river and the new university complex.

The locations and buildings for drawing sessions were carefully chosen to give students a chance to get acquainted with the cultural heritage of the place and country where the IP was held and to enable students to draw buildings and complexes of buildings in different scale, different contexts and built in different periods. The drawing locations from IP HERCULES can be divided into several topic groups: historical sacred buildings (e.g. San Michele church; cathedral in Pavia; Certosa di Pavia), historical city buildings (e.g. city hall in Opole; Old Town in Nysa; Old Town in Gliwice; Nikiszowice housing estate; Piazza della Vittoria in Pavia; Castello Visconteo in Pavia), contemporary buildings (e.g. Nowe Gliwice district; new university in Pavia), buildings located in rural area (e.g. The Opole Open-Air Museum of Rural Architecture; Moszna Castle; Palace in Pławniowice), complexes of buildings – urban topics (e.g. Gliwice – urban areas in the center; complex of buildings by the Młynówka river in Opole – river as a part of the cityscape; silhouette of the city Pavia visible from the other bank of the river Ticino (Ill.3); the Ticino river and its surroundings). It is worth mentioning that the IP in Pavia was opened with a practical lecture about applied perspective, so the students of engineering could start the classes with this knowledge.

Each day of IP HERCULES was started with a short lecture about the drawing location for that day. During this approximately half an hour lecture students had the opportunity to get to know the history of the place or object they were drawing. Students were divided into workshop groups of six. In each group there was one student from each university taking part in the programme. Each university taking part in the Intensive Programme has a slightly different profile and education system, therefore in each group there were students with different drawing skills and techniques. This way of composing the workshop groups allowed students to work together, look for their strengths and use them in creating the collective poster, learn from each other, exchange experiences and communicate through drawings. Students would spend the whole day collecting the information, sketching and drawing. Afterwards they had time for group work during which they were choosing the drawings for the poster. Every evening the best poster was chosen, and their authors were awarded with a special diploma. At the end of each day a “National Day” was organized during which students and teachers from each country were presenting their culture, customs and traditions.

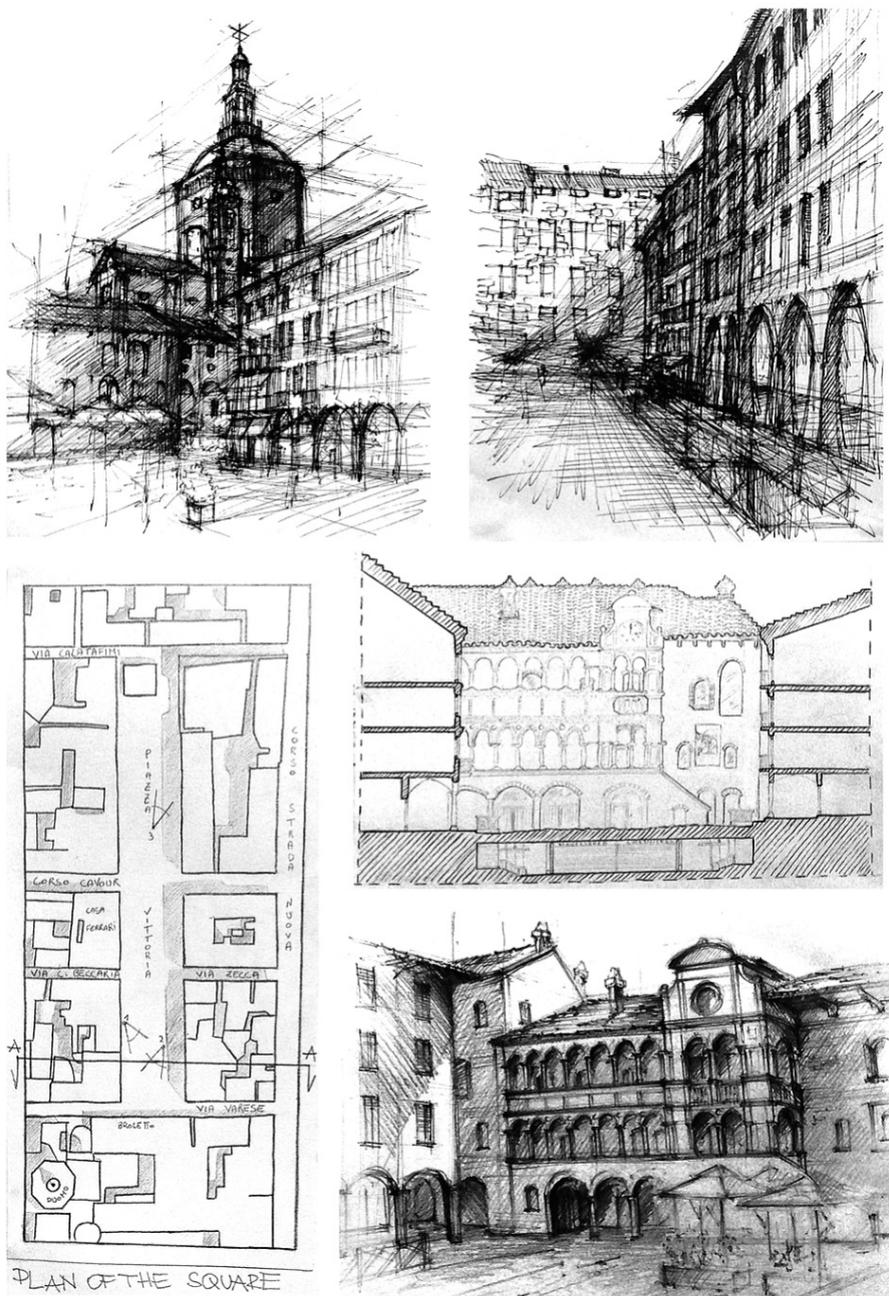
Apart from the everyday drawing sessions the Intensive Programme was complemented with sightseeing tours. During the IP in Poland students spent a weekend in Cracow and had the opportunity to visit Old Town and Rynek Underground permanent exhibition while the programme in Pavia included a one day excursion to Milan.

3. Didactic process

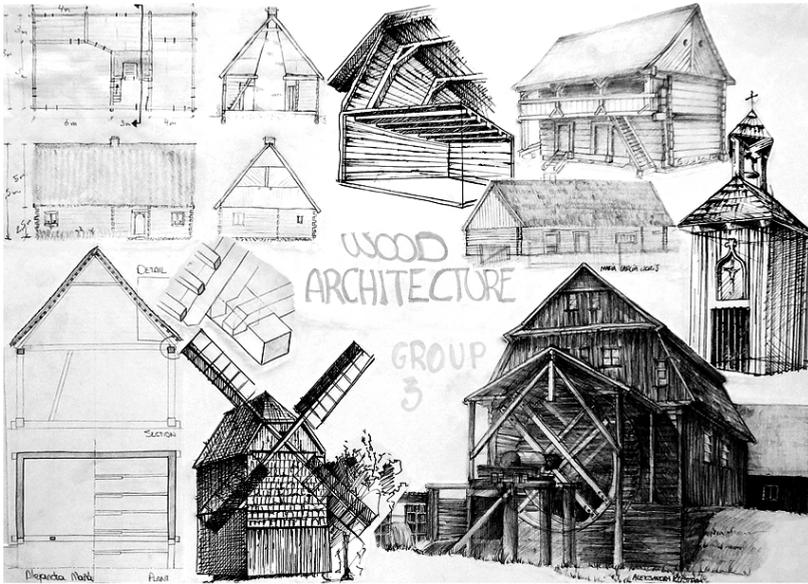
The basic didactic technique applied during the IP was the “master-student” approach. Relatively high number of teachers (teachers to students ratio was 1:3) enabled individual work with each student and frequent comments and consultations during the whole drawing session. Apart from the corrections of students’ works teachers had the opportunity to make their own drawings. Therefore students could also learn by observing their teachers during drawing and their final work. On the other hand, group workshops allowed to improve communication skills between students and enabled the mutual learning process. While composing the poster students were forced to choose only some of the drawings they made on a particular day, so they had to reason and explain their choice to the rest of the group. The everyday drawing contest for “Winner of the Day” (Ill. 4) and the end contest for “Superwinner” of the whole programme introduced the element of competition and raised the motivation to work. The best drawings from the IP were published in the calendars for 2014 and 2015 issued particularly for the programme. The drawing evaluation, discussion, choosing the best poster and explaining the choice by teachers allowed students to learn from their mistakes and improve their work every day. For the teachers from the involved universities it was an excellent opportunity to observe and compare the level of teaching and exchange the experiences about teaching drawing.

4. The effects of Intensive Programme HERCULES

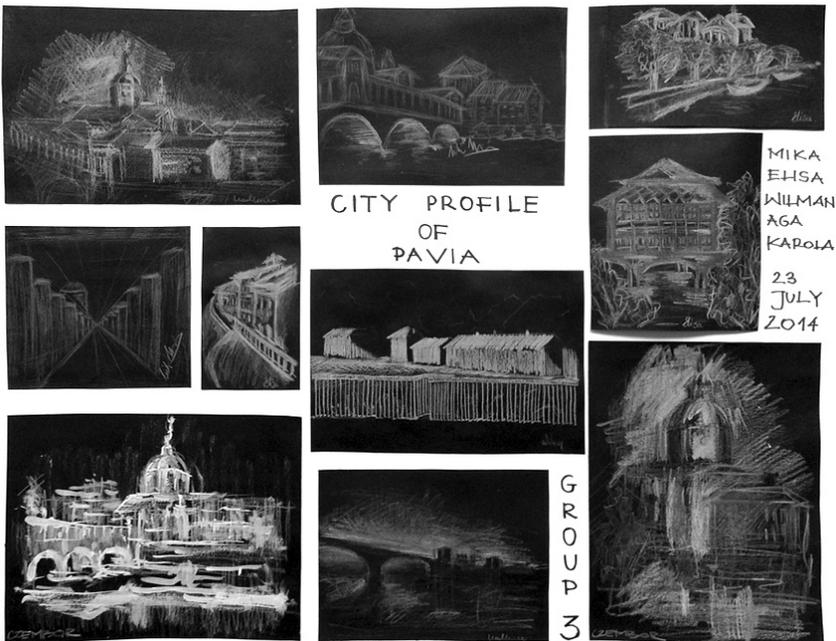
The two editions of the Intensive Programme HERCULES resulted in students’ works exhibitions: in 2013 at the Faculty of Architecture Silesian University of Technology and at the Faculty of Civil Engineering Opole University of Technology and in 2014 at the Faculty of Civil Engineering Opole University of Technology and teachers’ works exhibition in 2014 in Broletto Building on Piazza della Vittoria in Pavia and in Opole Philharmonic Hall. During both programmes, 60 posters of students’ works were created, from which best 10 were used for creating the calendars each year (Ill. 5). The calendars were sent to all the participants of the events and were used to promote the programme itself and its effect in Opole University of Technology and outside of it. The effect of the Intensive Programme is also a brochure with teaching drawing guidelines for students of architecture. It consists of the basic drawing exercises for students. The IP HERCULES allowed to improve the international cooperation between Opole University of Technology and other partner universities involved in the project. For students it was an attractive opportunity for a foreign trip, getting to know new country, students and teachers from different universities. It is resulting already in an increased number of foreign students coming to Opole University of Technology to study as an Erasmus student and Polish students going to partner universities. This is particularly important for the new major: Architecture and Urban Design created at Opole University of Technology in 2009.



III. 1. Set of drawings made during the IP HERCULES showing different approach for the same drawing topic (Piazza della Vittoria, Pavia) by students from different universities (photo by Mariusz Tenczyński, 2014)



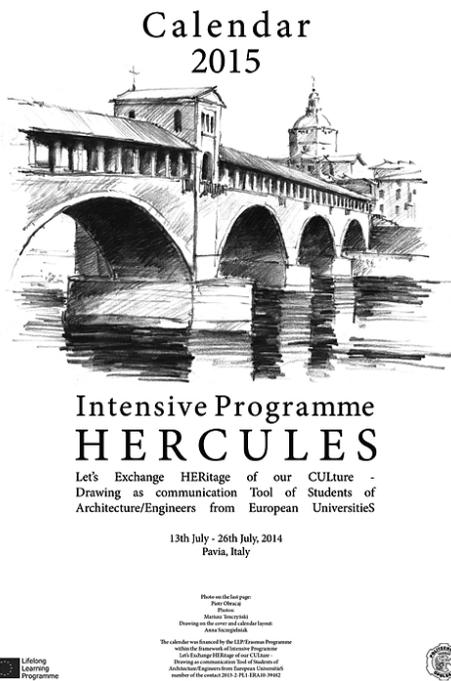
III. 2. Poster made during the first edition of IP in The Opole Open-Air Museum of Rural Architecture (photo by Robert Krac, 2013)



III. 3. Poster made during the second edition of the IP showing the silhouette of Pavia city seen from the other bank of the river (photo by Mariusz Tenczyński, 2014)



III. 4. Poster showing the old university in Pavia. Example of the work awarded with “Winner of the Day” title (photo by Mariusz Tenczyński, 2014)



III. 5. The title page of the calendar for 2015 (designed by Anna Szczegieliñiak, 2014)

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BARBARA ŚWIT-JANKOWSKA*

DRAWING AS AN ELEMENT OF ARCHITECTURAL EDUCATION OF THE YOUNGEST

RYSUNEK JAKO ELEMENT EDUKACJI ARCHITEKTONICZNEJ NAJMŁODSZYCH

Abstract

The architectural drawing is a permanent part of the architect's work – it is a bridge between vision and its realization. It cannot be clearly classified. It can be either a medium conveying information, as well as an end in itself and there are many opportunities to use its potential. This article attempts to answer the question of whether drawing can support architectural education of young children (3–6). This period is very important for the development of a human being. Skillfully stimulated curiosity of a child allows to expand the possibilities of perception, which may lead to increased sensitivity to the shape and quality of the space.

Keywords: architectural education of children, architectural drawing, perception

Streszczenie

Rysunek architektoniczny jest stałym elementem pracy architekta – pomostem między wizją a jej urzeczywistnieniem. Nie pozwala się jednoznacznie sklasyfikować. Może być zarówno medium przenoszącym informacje, jak i celem samym w sobie. Możliwości wykorzystania jego potencjału jest wiele. Niniejszy artykuł stanowi próbę odpowiedzi na pytanie, czy rysunek może wspierać edukację architektoniczną najmłodszych dzieci (3–6). Okres ten ma ogromne znaczenie dla ich rozwoju – umiejętnie pobudzana ciekawość dziecka pozwala na poszerzenie jego możliwości percepcyjnych, co może zaowocować zwiększoną wrażliwością na kształt oraz jakość przestrzeni.

Słowa kluczowe: edukacja architektoniczna najmłodszych, rysunek, percepcja

* Ph.D. Arch. Barbara Świt-Jankowska, Institute of Architecture, Urban Planning and Heritage Protection, Faculty of Architecture, Poznan University of Technology

*To draw is to possess – it is an act of cognizance...;
only dreams and death can compare with it.*

Amadeo Modigliani¹

Freehand drawing has for centuries been related with an architectural profession. Each phase of work with a project has got its own reflection in the form of subsequent mapping – from an abstract sketch expressing the idea of a design (conceptual phase), through drawings serving as a presentation for investors (designing phase), to the technical solutions that are the base of a construction project documentation (executive phase). Despite the unquestionable utilitarian role of the drawing in architectural design, it is hard not to agree with the statement that its influence goes far beyond the frames of simple utility. In many cases it becomes a lot more than only the representation of a shape of a future building. Architectural drawings, even the ones without any reference in a realized physical object, are an important nexus of the cultural transmission – they bring an emotional load, often alone representing the world of architectural ideas [5]. The purposeful deformation in Le Corbusier's drawings or a simplification of a form of a record used by Mies van der Rohe stood in opposition to the XVIIIth and XIXth centuries' poetic, nearly picturesque visions of Piranesi or Viollet-le-Duc. Thus being a reflection of creative approaches of the designers, their manifestos and simultaneously a confirmation of the validity of their theses.

It is crucial not to forget that a drawing is very often the only form of architect's hand-made creation – in other steps in the investment process he monitors realization of his work by others, most frequently using hand sketches.

Le Corbusier, despite his personal fascination with technology and photography, was an outstanding draftsman and he emphasized how utterly important in the process of exploration of architecture is its drawing – following (with a pencil) the characteristic lines forming an object allows to understand it deeply, to explore its hidden secret [4]. Following such a reasoning, handmade sketch, either being a stroke of genius or a process of development leading up to a right solution, becomes an aim in itself – an act of primordial creation.

A fascination connected with drawing as a creative act is visible from the very beginning of the history of art. The very first cave paintings in Altamira and Lascaux are an expression of belief in the causative power of drawing. Enchanting reality with a plastic projection of a vision or in the form of painting or a sculpture can be found in many societies and almost in every period. On a very primary level every child holding in a clumsy hand a pencil, charcoal or a sharpened stick, modifies the reality. In such a context it is plausible to consider whether an architectural drawing, which is a record of a certain idea of a space, can become an interesting tool in an architectural education of a young child.

From the psychological standpoint the period between three and six is extremely important in the process of formation of the subsequent psychophysical abilities of the child [7]. According to research, stimulation of the child's natural curiosity in the preschool period can significantly extend its innate possibilities – this applies to both musical abilities, physical and intellectual, as well as those connected with perception and creativity.

¹ Amedeo Clemente Modigliani (1884–1920) – Italian-Jewish painter, drawer and sculptor.

In this period, introducing workshops that help the children to improve spatial receptivity of the surrounding environment can bring a measurable effect in the future.

Drawing as a natural form of creative activity of children of such an age seems to be an ideal medium of communication between a teacher and a pupil. However, the early creativity of children is not in line with a realistic view of the surroundings and is not in accordance with graphical spatial projections [1]. Although the initial incomplete motor control gives place to a strictness and precision and a level of interest and insight in children are much higher than in an average adult, children's drawings lack characteristics and thus are commonly treaded as "imperfect". However, a closer analysis of preschool children's drawings enables opposite conclusions to be drawn– the youngsters, with the use of the most basic forms, render paramount traits of the structure of a particular object. Seeing more, they draw less – touching the very essence of things. They consciously refrain from adding details, even though they certainly note them and are able to render them. Moreover, in many cases, they are able to discover a pictorial equivalent (i.e. a circle that replaces, although not ideally, a rounded head, or a green referring only to an impression given by trees in general), by which the most important characteristics of the model can be depicted with the use of simplified tools.

Architectural drawing in many aspects can become an interesting medium supporting architectural education of the youngest. The simplification of form, focus on the main idea, an attempt to indicate the general rules governing a particular spatial structure – these are the traits which seem to relate it to an early creativity of children. On the other hand – the level of abstraction engaged both by architects and by children can be an obstacle to mutual understanding.

During a series of workshops conducted by students of the Faculty of Architecture of Poznan University of Technology, in one of the Poznan kindergartens, the above issues presented themselves with a full gamut of complexity. For the students of the last year of Master level studies finding a proper way to transfer their knowledge to the youngsters turned out to be an extremely complicated problem. A preliminary analysis, including issues related to developmental psychology, methods used in preschool education and architectural education, made it possible to formulate a program for the workshops in which architectural drawing played a crucial role. During the realization of those workshops it turned out that some of the tasks caused an unexpected difficulty – those were the one resulting from the lack of common ground of drawing.

In the opinion of students, materials that were the basis for those tasks were simplified to a satisfactory level, from children's point of view – the trouble was in misinterpretation. What is interesting, it was enough to change the way of leading to see that the vast majority overcame the barrier and converted the way of thinking about the depicted space (plans, sections). It can be stated that thanks to the architectural drawings and their adequate interpretation, a specific path was opened in their minds that allowed them to solve initially insolvable tasks, which turned out to be utterly trivial. In the research, which included subsequent observation of children's behavior during regular educational activities held in compliance with the core curriculum, it was stated that a part of the group could use the experience gained during the workshops and , while making various artistic works, used more or less consciously a newly learned manner of experiencing the space.

During another workshop the changed arrangement of actions was executed – here, a drawing was supposed to be the final result of the workshop, not the beginning of it. A group of children (whose age was similar to the previous group – from four to five) was asked to analyze the spatial structure of a small object – a wooden granary made in a traditional carpentry technology without the aid of nails. The work was done in three phases – the first involved a careful observation of a detailed physical model of that object. During that phase, children were free to touch, manipulate and view the model, they could look into the inside of it and they were precisely informed of its purpose and the method of construction. During the second phase, kids were divided into smaller groups and faced with the task to restore previously seen forms. Ready elements helped to construct an object much bigger, but lacking details – only the idea of the construction remained; such a construction for which no additional element was needed. With only the slightest help of the tutors, consequent groups laboriously achieved their objectives. The last phase was dedicated to drawing – kids were supposed to record on paper the information obtained earlier; they drew the form and the characteristic construction of the building as they memorized it. That phase was associated with the transition from the real, touchable and possible to personally experienced shape of the object to an abstract form. The order of actions was in accordance with the procedure described above, the concept of early works of children. Some of the participants coped with this task surprisingly well. In their drawings it was possible to distinguish the principal elements and, additionally, the abstract but correct idea of the object. Similarly as in the previous case the research assumed a further observation of children's performance. In a longer time perspective, particular changes were noticed in children's approach to depicting objects' structure in drawings.

The above described educational situations assumed the use of an architectural drawing as a medium for transmitting abstract ultra-material values.

During the above workshops, children learned how to experience the space, while remaining in the world of perception and imaging adequate to their age. A joy from an act of creation was not disturbed but rather enriched with a new perspective. The relatively small group of tested children does not allow to draw extensive and general conclusions, but with a reasonable likelihood it can be stated that an architectural drawing can become an interesting medium augmenting architectural education of young children. Although at first glance it seems to be too "mature" and thus not suitable for kids (many adult investors admit that they cannot read properly the meaning in architectural drawings: plans, sections, elevations, but also perspectives), soon it turns out to positively influence and expand children's cognitive abilities.

Both sides of the workshop, a teacher (architect) as well as a pupil (preschooler) can learn from this meeting something new for themselves – a child who did not succeed with its previous drawing will simply take another blank paper and start again.

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III. 1. Documentation of the workshop in kindergarten No. 46 in Poznan, organized by the Faculty of Architecture, Poznan University of Technology (photo by author, 2013)

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JOANNA ZABAWA-KRZYPKOWSKA, KINGA PALUS*

OPEN-AIR DRAWING AND PAINTING WORKSHOPS
CARRIED OUT WITHIN THE SUBJECT OF FREEHAND
DRAWING AT THE FACULTY OF ARCHITECTURE AT
THE SILESIAN UNIVERSITY OF TECHNOLOGY

PLENERY RYSUNKOWO-MALARSKIE
PROWADZONE W RAMACH PRZEDMIOTU RYSUNEK
ODRĘCZNY NA WYDZIALE ARCHITEKTURY
POLITECHNIKI ŚLĄSKIEJ W GLIWICACH

Abstract

Over a decade of conducting the open-air drawing and painting workshops by the university staff from the Faculty of Architecture at the Silesian University of Technology repeatedly makes us aware that every day passing by the gothic churches, a city hall, medieval ramparts we get accustomed to them and do not always perceive their beauty, monumental character or historic details. Sometimes the beauty of the city is noticed by someone else – a tourist who admires the panorama visible from the distance or the towers of churches overlooking the city. Similarly the works of students performed over the years enable us to rediscover the unrepeatably charm of such places as Gliwice, Tarnowskie Góry, Chełmno or Zakopane. Those works catalogued in albums and presented at various exhibitions convince of peculiarity of the places presented using diverse artistic techniques and means.

Keywords: freehand drawing, open-air drawing-painting, perception and creation

Streszczenie

Kilkunastoletnie prowadzenie plenerów rysunkowo-malarskich przez kadrę naukowo-dydaktyczną Wydziału Architektury Politechniki Śląskiej niejednokrotnie uświadamia nam, że przechodząc na co dzień obok gotyckich kościołów, ratusza, mijając średniowieczne mury obronne, przyzwyczajeni do ich widoku, nie zawsze dostrzegamy ich piękno, monumentalny charakter czy zabytkowe detale. Czasem piękno miasta zauważa ktoś inny – turysta zachwycający się widoczną z oddali panoramą czy górującymi ponad miastem wieżami budynków sakralnych. Podobnie prace studentów wykonywane na przestrzeni lat pozwalają na nowo odkryć niepowtarzalny urok miejsc takich jak Gliwice, Zabrze, Tarnowskie Góry, Chełmno czy Zakopane. Prace te katalogowane w albumach, prezentowane na licznych wystawach, przekonują o niezwykłości miejsc przedstawionych przy pomocy użycia różnorodnych technik i środków artystycznych.

Słowa kluczowe: rysunek odręczny, plener rysunkowo-malarski, postrzeganie a kreacja

* Ph.D. Arch. Joanna Zabawa-Krzyrkowska, Ph.D. Arch. Kinga Palus, Department of Fine Arts and Design, Faculty of Architecture, Silesian University of Technology.

1. Topic of the classes: ‘Freehand drawing’ – description of the teaching process

Drawing plays a special part in the teaching process at the Faculty of Architecture. The drawing and painting classes constituted a complex open-air course carried out at the end of the 2nd semester. Those were open-air workshops conducted both on the spot and away organized home and abroad. Full-time students of the 1st year participated in the workshops. At the beginning these were the three-week open-air workshops organized in the cities with rich past, abounding in historical monuments, climatic backstreets, which were the source of inspiration for the artists, such as: Kraków, Wrocław, Bielsko-Biała, Cieszyn, Sandomierz. Since 1994 the open-air workshops have been organized in Silesia. The mentioned open-air workshops contributed to the popularization of the Silesian cities and the Silesian University of Technology.

The open-air workshops bore fruit in the form of albums: ‘Zabrze in drawings’, ‘Mysłowice in drawings’, ‘Katowice in drawings’, ‘Courthouses of the Gliwice region’, ‘Churches of the Gliwice diocese in drawings’, ‘Zakopane in drawings’, ‘Chełmno in drawings’. Within the Gliwice open-air workshop the drawing documentation presenting the Silesian University of Technology was created in the form of a portfolio entitled ‘The University of Technology in drawings’.

Within the consecutive years the students immortalized the architectural monuments of Gliwice, Zabrze, Myslowice, Katowice, Rybnik, Tarnowskie Góry, Pławniowice. The following open-air workshops were devoted to the buildings of the Silesian University of Technology, the Auto-Robot Zone and also to the sacred and postindustrial architecture. Exhibitions were the culmination of the creative work, during which the students presented their works. It constituted an element of the confrontation method (comparisons, ability to refute charges) in the field of creative activity of novice artists against the authors of works originated in their own university or the other national or foreign institutions. The ability to present a drawing or a painting work and to display it during a student exhibition enriches the whole teaching cycle. Possibility of presenting the student creative work in public is an excellent school of independence for students.

1.1. Organization of training

The open-air workshops were conducted in 15-person groups and supervised by the teaching staff from the Faculty of Architecture of the Silesian University of Technology. Each time an open air workshop would begin with a short discussion on the topic of a work of art. The pass mark given at the end of the training course was based on the review of a portfolio with a set of the outdoor works of art made in the format of 100 × 70 cm and the sketches, which preceded the works, and which were made in formats A4 or A3.

2. The aim of the classes

The aim of the training was to develop artistic skills and the perception of relationships among the spatial elements.

The aim of training was to:

- consider the mutual relation between the perception and creation of composition skills;
- trigger creativity, train spatial imagination, artistic sensitivity and the sense of: proportion in composing the drawing plane in accordance with the principles of perspective, chiaroscuro, texture and colour, spatial context;
- develop the skills of creative thinking through drawing, become sensitive to the value and colour as elements which shape and enrich the spatial architectural form;
- shape personality of a future architect through the possibility of free, creative and original expression;
- make a series of works of art concerning the study of form and spatial arrangements from life in a certain cultural environment and improvement of the student's artistic technique;
- acquaint students with shaping the relationship between the architecture and nature in the scale of a building and the urban space;
- learn the methods of work from the stage of the analysis of the context and define the idea of the rough drawing through making the work of art up to the stage of presenting it on an exhibition.

The scope of a student's work embraced the topics which took into account the diversity of the scale, forms and materials creating specific spatial arrangements (architectural details and forms, urban interiors, elements of plants, a study of trees and landscape, etc.) starting with uncomplicated solutions and gradually passing on to the more complex ones.

3. Selected examples of the open-air drawing and painting workshops conducted within the framework of students' training

3.1. Chełmno

The city of Chełmno has been the source of artistic inspiration since the dawn of time. The First All-Poland Open-Air Workshops for the Students of Architecture were initiated in July 2004 under the auspices of the authorities of Chełmno; the Department of Education, Culture and Promotion of the City of Chełmno. It was intended as the invitation for young artists to 'creatively explore the Polish Carcassonne' with a sketchpad [1].

The crowning achievement of the open-air workshops was an exhibition of the most interesting drawings and paintings. Until now Chełmno has hosted the training for the students from the Cracow, Radom and Lwów Universities of Technology, Academy of Fine Arts in Warsaw, School of Economics in Bydgoszcz and the West Pomeranian University of Technology in Szczecin. In 2014 the Open-air Workshops were already organized for the tenth time. On behalf of the Faculty of Architecture in the Silesian University of Technology the academic tutelage was provided by Jacek Żurkowski, PhD, DSc, Arts, Beata Kucharczyk-Brus, PhD, DSc, Arch., Associate Professor in the Silesian University of Technology, and Kinga Palus, PhD, Arch.

3.2. Zakopane

Students of the 1st Year of the Faculty of Architecture at the Silesian University of Technology underwent a drawing training in Zakopane within the period of 1.07–14.07.2003. It was the first open-air workshop which took place in Zakopane thanks to the help of the painter Jacek Żurkowski, Ph.D. and the support of the Tatra Museum named after Dr Tytus Chalubiński in Zakopane. Wonderful mutual atmosphere during the first and the following open-air workshops, which were carried on until 2009, resulted in a high level of drawings contained on pages of the published albums embracing the catalogued works of students, and entitled: ‘Zakopane in drawings. Works of the students of the Faculty of Architecture at the Silesian University of Technology’, supervised by Kinga Palus, PhD, Arch., next ‘Impressions from Zakopane 2005’ supervised by Beata Komar PhD, Arch. and Kinga Palus, PhD, Arch. and ‘Open-air-Zakopane 2008’ supervised by Kinga Palus, PhD, Arch.

Each of the visited, drawn or painted places had its own unique charm reflected in the urban arrangement, architecture of buildings or in a detail. In this abundance of stimuli, everyone could find what was interesting in his individual, artistic quest, taking suitable composition, perspective and chiaroscuro into account. Diversity of sensations and the way of experiencing them, many times made students realize how differently they perceive surroundings. Not everyone possessed synthetic look thanks to which the idea for a painting originated in the admiration. The works that were created were inspired by a detail such as an architectural element or an elusive situation. A lot of participants treated those outdoor workshops as a possibility to search for originality through the willingness to work out their own individual style on the basis of established principles. It should be emphasized that many a time the works were distinguished by high technical and artistic level based on the insight of observation and finding the aim of the drawing.

3.3. Zabrze

The first after the open-air workshop catalogue which was created, was the publication entitled ‘Zabrze in drawings’. The initiator of the album release was the then Director of the Group of the Plastic Arts Prof Stanisław Słodowy. ‘Zabrze in drawings’, edited by: Stanisław Słodowy, Wojciech Słodowy, Adam Styrylski, Joanna Zabawa-Krzypkowska), Zabrze 1996.

That album was the result of a 14-day open-air workshop in Zabrze. The city proved to be an interesting cognitive and drawing area for young graphic artists. They were drawing the residential architecture from the turn of the centuries and the interwar period, sacred architecture and also the 19th century industrial architecture. In the past Zabrze was a cluster of villages. In the middle of the 19th century the country landscape changed into the industrial one. Mines, ironworks and factories of various branches of industry were built, such as: brickyards, glass-works, steelworks, a rolling mill, a coking plant and factories of the food industry, like a grain mill or a brewery. Simultaneously with the construction of the industrial plants the settlements of the working class houses were built, which later became the monuments of architecture often under the protection of the conservation officer.

3.4. Postindustrial Zabrze

The postindustrial plants of the city of Zabrze were the subject of the drawing training which took place in July 2004. Joanna Zabawa-Krzyzkowska PhD, Arch., Beata Komar PhD, Arch. and Grażyna Lasek PhD, Arch. took factual tutelage of the students. The purpose of work was to immortalize objects which were slowly falling to oblivion, becoming the history and deteriorating in full view of the city dwellers. The students were drawing pit-shafts, steam engines, production halls, pitheads, etc. While drawing they discovered uniqueness and beauty of postindustrial architecture. Such facilities were immortalized in those drawings: the mines ‘Ludwik’, ‘Luiza’, ‘Guido’ and ‘Mikulczyce’, the Zabrze steelworks, water towers, the Maciej pit-shafts in Maciejowo, the heat and power station as well as working class housing estates. In order to enable the students of the Faculty of Architecture to have access to particular monuments of architecture, the cooperation with the institutions owning and using these objects was established. The students had the opportunity to learn about the monuments of architecture, which were not accessible to the public, such as postindustrial buildings.

3.5. Churches of the Gliwice Diocese

In 2001 a 14-day open-air workshops took place, the topic of which was the churches of the Gliwice Diocese. The culmination thereof was the exhibition of the students’ works in Post-Cistercian Abbey and Church in Rudy and the publication of picture albums with the students’ works entitled ‘Churches of Gliwice Diocese in drawings’ (edited by: Stanisław Słodowy, Beata Komar, Beata Kucharczyk-Brus, Joanna Zabawa-Krzyzkowska, the Formation and Educational Centre of Gliwice Diocese in Rudy, Gliwice-Rudy 2002). The students drew, among other things, one of the most precious monuments of architecture in the Gliwice Diocese, namely the Church of the Assumption of the Virgin Mary in Rudy as well as buildings of the Post-Cistercian Abbey and Church in Rudy. The workshops took place under the tutelage of Joanna Zabawa-Krzyzkowska PhD, Arch., Beata Komar PhD, Arch., Beata Kucharczyk-Brus PhD, Arch.

4. Selected examples of students’ open-air workshop works – summary

The whole process of creation, making choices, analysing, the choice of perspective, a frame, exhibiting some of the elements, omitting others was a unique exercise for every graphic artists. The process of creating was combined with the process of learning, which was an additional chief asset of those encounters with architecture. Learning the architecture that we can see gives us the opportunity to feel the scale, context and atmosphere, which are the inherent parts of a given object or place. As Maria Misiągiewicz writes: “Grasping a real image in a drawing is the effect of a spontaneous play of senses and conscious searching as well as insightful tracking down. The degree of faithfulness of the record in relation to the original form suits the category of the “reproductive” drawing: impression, cataloguing, reconstruction, analysis’. ‘Reproduction’ is not a mirror image of the real world, but a creative presentation, interpretative ‘reproduction’ [3].

However, in spite of the development of computer techniques freehand drawing still remains a convenient design tool, means of visual communication, recording of the surroundings or our own idea, multi-planes means of expression in the search of a new form making it possible to develop our sensitivity.

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**FREEHAND DRAWING FOR ARCHITECTS:
DISPENSABLE – INDISPENSABLE**

**RYSUNEK ODREĆCZNY DLA ARCHITEKTÓW:
ZBĘDNY, NIEZBĘDNY**

JERZY GOMÓŁKA*

ARCHITECTURAL DRAWING AS A MEANS OF COMMUNICATION

RYSUNEK JAKO FORMA KOMUNIKACJI

Abstract

Drawing is the most natural way of recording a piece of architectural work. One line depicting the building has a huge narrative potential and that one line can communicate more and much more thoroughly than whole loads of paper full of verbal description, or than even the most suggestive pantomimic show. In my opinion, an architectural drawing is for architecture what musical notation system is for a musical work. It is a code that enables to move a piece of work in time and space. It tells about the architecture beyond linguistic barriers.

Keywords: drawing, dialogue

Streszczenie

Najbardziej naturalnym sposobem zapisu dzieła architektury jest rysunek. Rysunek przedstawiający budowlę posiada ogromny potencjał narracyjny. Jedna linia potrafi przekazać więcej i dokładniej niż całe strony słownego opisu lub najbardziej sugestywny pokaz pantomimiczny. Rysunek jest dla architektury tym czym zapis nutowy dla muzyki. Jest kodem o mocy przenoszenia dzieła w przestrzeni i czasie, potrafi opowiedzieć o architekturze ponad barierami językowymi.

Słowa kluczowe: rysunek, dialog

* Ph.D. Arch. Jerzy Gomółka, Faculty of Architecture, Wrocław University of Technology.

The views expressed in this article will be presented from the position that is beyond the main strand of the discipline generally defined as architectural drawing.

As a practicing architect and a teacher of architectural design, I use drawing and teach how to draw daily. Nevertheless, I feel like a stranger among the “drawing” architects. This impression does not come only from the fact that I have always drawn poorly.

The fact is that the average level of performance in this area has discouraged me from perceiving architectural drawing as the aim of my creative activity.

I do not frame the drawings or hang them on a wall, I do not exhibit them. I draw to talk. I draw to think. I draw to build.

In my opinion, architectural drawing is for architecture what a musical notation system is for a musical work. It is a code that enables to move a piece of work in time and space. It allows the specialists, who can read it, to complete the task. It tells about the architecture beyond linguistic barriers.

The commonly used and difficult to substitute project design deserves to be called a “language” of the architects. This metaphor is inseparably connected to the dialogue. An architect, with a drawing’s help, communicates with the recipients of his work: the investors, the users and the contractors of the future building, and not only with them.

I draw to think

The language is also used in a monologue. One delivers a monologue in order to present oneself with a problem to be solved – “to be or not to be”. A monologue can also serve as a preparation before the dialogue. A drawing – monologue is a record of the ideas and options in the first stage of a project creation. A drawing, just like a thought, can be wandering. In my opinion a drawing is inevitable. I think, therefore I draw. There is not much to survive of an unwritten thought. Just like some phrases of a monologue can be used in the subsequent dialogue and some can never be heard, it is the same with the drawings. Sometimes the final resolution is presented, some other time the set of the previous sketches depict the way to achieving the goal.

I draw to talk

The creator engages in a dialogue using a drawing as a help. The form of drawings should comply with their purpose. The future user’s interest in the concept of the form will differ from the contractor’s. For the recipient of the final work (an investor or a user) the most important thing is: what it looks like when it is finished. He is concerned with its appearance, dimensions, functional solutions. An investor expects the architect’s drawing to present the illusion of the future reality.

I draw to build

Different requirements toward a designer are set by the contractors, they ask a substantial question: how to build IT? They need a portrayal of a building that can unambiguously transfer its dimensions and the ways to erect it to the construction site. This process can be simplified by two-dimensional representations of an object. These are flat views (top down perspective, front view and side view). Two-dimensional drawings enable to scale an object. As a result, its dimensions from the drawing will be multiplied by a constant value and it will result in the real measurements of the object.

I hand over these personal thoughts to the practitioners. Providing the “introduction to the architectural design” classes, my task is to teach the basic skills of the architectural craft. My first lecture is about drawing. Contrary to expectations, its clichéd theses meet fierce opposition in practice. No one protests against the fact that drawing is the most natural way of recording a piece of architectural work. Everyone agrees that a drawing depicting the building has a huge narrative potential and that one line can communicate more and much more thoroughly than whole loads of paper full of verbal description, or than even the most suggestive pantomimic show. Nevertheless, it is difficult for some students to start expressing their ideas by means of a drawing. At first, they want to tell specifically about their project, with gestures’ help.

Only when supported by the acceptance of their vision, do they start drawing.

They present their projects using graphic experience gained while preparing to take the drawing entrance exam to the Faculty of Architecture.

It is a new experience for the students when they hear that the project drawing is characteristic of its media aspect. Contrary to the “artistic” drawing, project drawing is not an end in itself but a means to create the final work – the building. This distinctiveness has its formal consequences. If the drawing person does it “from their nature” or “from their imagination”, they are looking for the image on the plane of the observed or imaginary forms. This search is expressed in the form of drawing. Drawing the objects from their nature is created with the bars of repeatedly multiplied lines, added after further verifications. The search for this one, right contour, resembles the artillery aiming at the target.

Project drawing does not „search for” the image of the form, it “defines” it. The line whose task is to accomplish the material form should be drawn unambiguously, without any doubts concerning its run, thickness, beginning and end. It is meaningless whether the line is drawn by hand, with the help of technical drawing instruments or a computer. When teaching architectural design, I expect such a manner of drawing from the very first concept. I advise students to eliminate ambiguity and understatement of the impressionistic drawing, so that these features are not present in a project disposition.

What is of particular concern to me is the fact that a project drawing becomes the main activity of designers. They move in the world of drawing and they are astounded by how different from their first perception is the space created on the base of this drawing.

“Very often the architects get used to working on the concepts, forms. They consider a plan as a plan and a drawing as a drawing. I am not interested in a sheet of paper. I am looking for architecture. I want to know how to get into the drawing in order to see the truth. I need to move in the world of drawing but forget about the drawing itself.” Peter Zumthor in the interview for *Architecture and Business* in February 2003, p. 21.

An image of a building created on the plane of a sheet of paper according to universally acknowledged environmental rules, will continue to be the easiest way to conceptualize the existing or planned building for a long time to come. However, we notice dynamic changes in practising of our craft and it is difficult to say how long this state will be valid. Even now, it is rare to see an architect working with drawing instruments’ help and completing the working drawing with a precise hand draft. The contractors on construction sites expect electronic versions of a project, and they treat paper drawings as documents to deposit in the archives.

Nowadays there are programs that create the perspective, axonometric projection and architectural sections of a particular solid entered onto the computer.

It is possible that drawings in the present form will one day disappear from architectural studios; an investor will be introduced to his building thanks to spatial projections and the instructions for building robots will be sent through digital devices. But before our ideas are directly intercepted from our brains, and eagerly transferred to the computer's memory with implants' help, I do hope that the future buildings will arise in hand scrawling on the margin of a morning (paper, not electronic) newspaper in the form of a plan, section or a roughly sketched perspective.

BEATA MALINOWSKA-PETELENZ*

DRAWING – THE ART OF PORTRAYING SPACE

RYSUNEK – SZTUKA PORTRETOWANIA PRZESTRZENI

Abstract

Drawing is the easiest language to communicate. It is the fastest and most personal way to write down fleeting thoughts, creative plans, ideas, impressions, or momentary revelations. It is also a tool needed for shaping sensitivity – a long-lasting process, irreplaceable with any computer. This sensitivity is needed to read works of art. Architectural masterpieces are also read through images - while images are captured in our memory with drawings. The author reflects on the role of drawing in recording and memorizing space in all of its scales: from the landscape interior to the architectural detail.

Keywords: drawing, sketch, recording space, memory

Streszczenie

Rysunek jest najprostszym językiem porozumiewania się. To najszybszy i najbardziej osobisty sposób zapisu ulotnej myśli, twórczego zamysłu, idei, wrażenia czy chwilowego olśnienia. To również narzędzie potrzebne do kształtowania wrażliwości – wieloletniego procesu, którego żaden komputer nie zastąpi. Ta wrażliwość potrzebna jest do odczytywania dzieł sztuki. Dzieło sztuki architektonicznej również czytamy poprzez obraz – obraz zaś utrwalamy w pamięci właśnie za pomocą rysunku. Refleksje autorki dotyczą roli rysunku w zapisywaniu i zapamiętywaniu przestrzeni we wszystkich jej skalach: od wnętrza krajobrazowego aż po architektoniczny detal

Słowa kluczowe: rysunek, szkic, zapis przestrzeni, pamięć

* Ph.D. Arch. Beata Malinowska-Petelenz, lecturer, Institute of Urban Design, Faculty of Architecture, Cracow University of Technology.

Drawing is the art of communicating without words, quick transmission of information, it is also a way to write down a creative plan, a vision, an idea or a momentary revelation. For architects, a drawing can be either a presentation of reality or a vision of a design, as well as a whole range of intermediate states – a fascinating record of the evolution of a design: from the first idea to the finished work.

Drawing and sketching skills, so desirable at the departments of architecture, are, little by little, being replaced with computer graphics programs. Drawing has simply become unnecessary. Students, especially the younger ones, feed on this illusory thesis, fascinated by the machine-generated smooth, hyper realistic images. Young people escape from a pencil, pen and paper, from a systematic exploration of form, it is clearly noticeable already in the first year of study, during design classes. Yet sketch – as we continue saying during each course – is the fastest, easiest and cheapest language of communication between a developer and a client, as well as all professional groups involved in the design process.

The basis of art and all of its hand creations was drawing and painting

(C.Cennini, *Il libro dell'arte*)

Drawing, as a means of human expression, was born in the secret caves of the prehistoric era, partially covered with darkness. The most outstanding examples of this original art can be seen in the caves of Altamira near Santander in northern Spain and the Lascaux caves near Montignac, France.

Architectural sketching gained the status of an autonomous work of art rather late, in the 2nd half of the twentieth century. However, already Vitruvius, having developed the knowledge of Greek philosophers, was the first to allude several times to the subject of freehand drawing used in the work of designers.

Roman painting occasionally includes perspective approaches to architectural objects and landscape elements. In the era of great cathedrals, there was an intensive development of drawing, while the position of architects – no longer anonymous – significantly rose in the social hierarchy due to their possession of technical knowledge which was completely incomprehensible to the public¹. Builders and funders often etched their names on round stone slabs placed on the axis of the nave of a cathedral. The famous sketchbook of Villard de Honnecourt, a builder from Picardy, is still an invaluable source of knowledge of architecture, engineering and natural issues.

The revolutionary invention by Brunelleschi and Alberti of the scientific instrument called perspective allowed drawing to enter the third dimension, become a logical representation of the visible world and develop into a precise system of design presentation. In the sixteenth century, the name “plastic arts” or “fine arts” was not yet in use. The great triad of painting – sculpture – architecture was referred to as the “arts of drawing” – *arte del disegno*, as mentioned by Vasari in his *Lives of the Artists*². He concluded that “drawings

¹ A. Białkiewicz, *O rysunku architektonicznym*, Teka Kom. Arch. Urb. Stud. Krajobraz. – OL PAN, 2006, p. 54.

² W. Tatarkiewicz, *Dzieje sześciu pojęć*, PWN, Warszawa, 1988, p. 27.

are nothing more than the expression and visualization of the idea you have in your mind, or the one that someone else invents and produces according to their idea”, and Alberti stated that architectural drawings are not just collections of individual lines, but ,above all, works of minds expressed using these lines³. The position of drawings among the great theorists of the Renaissance: Alberti, Brunelleschi, Leonardo and Cennino Cennini, was incomparably higher than in the Middle Ages. “Disegno” was not just a drawing but rather a complex record of a creative idea originated in the mind of an artist. Władysław Tatarkiewicz mentions that Cennini’s disegno is “an active element of art” having “its source not in the object but in the subject, in the artist, in his project, design, idea, concept”⁴. Federico Zuccari, a Mannerist art theorist, accurately distinguished between the “disegno esterno”, the external drawing: a material basis of works, a line on paper (“body” of the drawing) and the “disegno interno” – the internal drawing: the idea of the artist it contains (“soul” of the drawing). Albrecht Dürer writes about perspective drawing and proportions of the human body⁵.

Do not take photos, draw! Sketches remain etched in the mind

(Le Corbusier 1927)

The complexity of the relationship between the creation and perception of architecture is associated not so much with the registration of reality, but mainly with the ability to choose and combine different images into a spatial whole. Drawing is the best lesson of looking and learning how to tame space. Biographies of great artists include traveling and stays in important artistic centers that became turning points in their work. Alberti went to Rome to check out antique buildings, and Vasari, writing his *Lives of the Artists*, had to cross the whole of Italy to see the work of its heroes. The mania of travelling – Grand Tour – which was born among the British aristocracy in the seventeenth century and was popularized by the often less prosperous Romantics in the nineteenth century, allowed them to understand how great is the educational value of observation. Bogdan Paczowski writes about the phenomenon of learning, watching and memory in an unusual paper entitled *Grand Tour*⁶.

A travelling architect, currently equipped with a camera and – increasingly rarely, unfortunately – a sketchbook, as a visual aid, gathers material to create own “memory library”. A kind of information storage for all scales – from the open landscape, through urban interiors, architecture, through to details. The process taking place between the eye, brain, hand and a piece of paper is the same when drawing the panorama of Salzburg, a street interior in Chartres and details of the west portal of the cathedral in Reims.

“Sketching is the easiest way of noting the observed, said or imagined body or an interior with only a few lines, backed up by a note or a highlighting, enriched with a character,

³ W. Tatarkiewicz, *Historia estetyki*, t. III, PWN Warszawa 2009, p. 111.

⁴ *Ibidem*, p. 42.

⁵ Two treatises by Dürer were published in the period 1523-28: *Nauka o mierzeniu* and *Cztery księgi o proporcjach*. They were the result of his many years of study and the basis of science of painting.

⁶ B. Paczowski, *Zobaczyć*, Gdańsk 2006.

so as to obtain a drawing being a simple, clear record of thoughts”⁷. Although sketching is not entirely a self-conscious process, but something of a creative discharge, drawing is a perfect medium, as a way of notation and documentation, but primarily, a method of intellectual concentration. Thus, recording travel experiences is an elementary and essential tool needed to shape sensitivity to the beauty of the city in all its scale. It generates continuous and secondary “experiencing” of the site, it perpetuates its memory to the extent allowing synthetic reproduction after years. A memorized image is a capital of experience, to be used in the future, realizing our architectural activity in all phases of the design.

Reproducing the world, in the landscape, urban, architectural and detail scale, is never a mechanically constructed model. Each of these spaces of memories is deeply filtered, processed and sometimes distorted by “instruments” that deform it, the eye, brushes, pens, pencils or even sticks. “Drawings can lie, cheat, like an illusion of photography or a poem. In every respect it is therefore equal to the speech and, as language, needs to be studied”⁸. This is particularly subjective, emotional information about the impressions gained by the author of the image by watching the slice of life.

To this day, we have been learning from the drawings by Stanisław Noakowski, characterized by terse and concise presentation of the topic, the selection of relevant details and some distortion or deformation. Wiktor Zin captured the overlooked or lost beauty in his frames, raised the awareness of the value of landscape, creating fascinating drawings in the presence of audience. Just like Franciszek Starowieyski, when he created his large-format *Theater of Drawing*⁹. Mention must also be made of the memorable drawings of Jan Knothe, whose influence on the shape of post-war architecture in Warsaw was invaluable, including his perspectives, an excellent document for the construction of the MDM district of Warsaw and the WZ expressway. Drawings and sketches are also an important part of the work of Andrzej Wajda who has traveled all his life with a sketchbook, and his “visual notes”¹⁰ often inspired his film images.

It's not my intention to revive French art. I struggle with unfortunate paper that did nothing wrong to me, and on which, believe me, I do not do any good.

(H. de Toulouse-Lautrec)

Today, drawing is still one of the means of communication – used in the areas of contemporary visual arts, from fields such as architecture, painting, sculpture, design and scenography, ending with graffiti, multimedia works or film art. Drawing “easily assimilates with other forms of expression, giving them a specific, clear, substantial form”¹¹.

⁷ P. Patoczka, *Uwagi o rysowaniu wewnątrz krajobrazowych*, PK, Kraków 1999, p. 4.

⁸ *Ibidem*, p. 3.

⁹ M. Misiągiewicz, *O prezentacji idei architektonicznej*, Kraków 2003, p. 85.

¹⁰ <http://www.artbiznes.pl/index.php/rezysyer-rysuje-wystawa-prac-andrzeja-wajdy-w-kazimierzu-dolnym/> (access: 11.02.2015).

¹¹ M. Ryczkowska, *Rysunki, Notatki wizualne, szkice – pierwotny sposób uwieczniania świata*, <http://magazyn.o.pl/2014/marta-ryczkowska-rysunki-notatki-wizualne-szkice/2/> (access on: 12.02.2015).

Customarily, drawing is seen as a transitional stage, the nucleus of work seeking its final form. Most movies, after the script stage, are first created on a sheet in the form of a storyboard, a rough draft of each scene. Similarly, the creative team of a marketing agency organize their work with ads drawing a shot after a shot of advertising scenes. On the basis of such a storyboard, among others, clients decide whether to start production or not. Architectural sketches can also serve as the first visual expression of the foundation of the finished work.

However, drawings may be finite, autonomous works, self-creations taking recipients into their unique quasi-fiction world, preaching to seek shapes, thoughts, impressions and experiences hidden in the tangled lines. The power of drawing, sketching is the fact that even the humblest is the first record, the prologue, the initial wording of ideas, beginning of thoughts, making a note of information that precedes works created using other techniques.

Sketching is an intimate part of the process of creating, and the line and its expression strongly illustrate the figure and character of the creator¹². Outstanding examples are the conceptual sketches by Renzo Piano, Zaha Hadid and Alvaro Siza – quick, emotional, nervous, sometimes rough, revealing the skeletal structure of the world. According to Piano, drawing is a “clear instrument” in the cyclic process of thinking and acting¹³. The sketches of Frank Gehry, showing a composition of mounting blocks, created using one undulating line, in a characteristic way enclose the form, exposing its wealth, even its Baroque style. And the laconic notes of Oscar Niemeyer consistently correspond to the characteristic search for pure forms.

I address the old-fashioned theme of sketching, or quick recording the places known and experienced. Old-fashioned in the period of computers and functional illiteracy of drawing

(K. Kucza-Kuczyński)

With these words the well-known architect, a professor and an eminent cartoonist, started, in the bi-monthly magazine entitled ARCH¹⁴, a discussion on sketching – the dying art of quick recording of space. It is hard to disagree with this frustrating thesis – drawing has become an uncomfortable, an extremely expensive way to get an index to study architecture. A few decades ago, learning to draw was based on the old, tried and painstaking methods of reaching proficiency in drawing. They consisted, among others, in continuous training of the hand and eye – apart from drawing from nature, memory and imagination, as well as copying the works of the great masters, performing hundreds of better and worse sketches, striving for mastery and the sense of scale and proportion. Today students of the first year, immediately after their drawing courses, absolutely reject

¹² D. Kronowski, *Rysunek odręczny w projektach mistrzów na przykładzie architektów Le Corbusiera i Zaha Hadid*, *Przestrzeń i Forma* '14, p. 268.

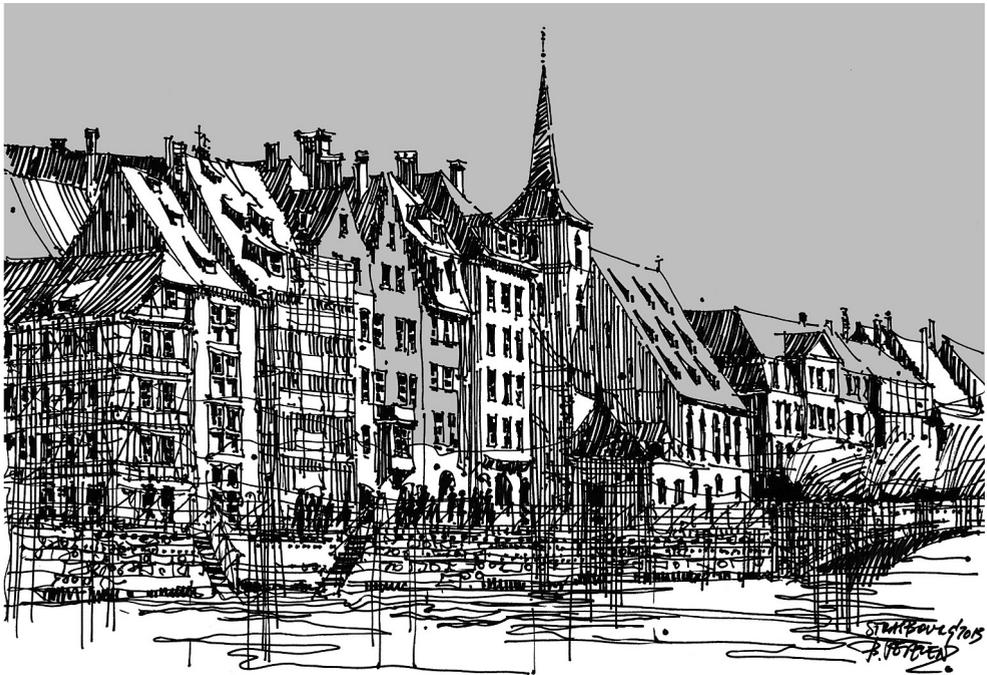
¹³ A. Asanowicz, *Szkie – język projektowania architektonicznego*, *Zeszyty Naukowe Politechniki Białostockiej, Architektura*, zeszyt 21, 2008, p. 12.

¹⁴ K. Kucza-Kuczyński, *Szkicowniki*, ARCH no. 3 (17), 2013, p. 116.

the paper, pencils and sketchbooks, bringing computers to design classes. Marcin Brataniec rightly sees the source of this in the constant rush and lack of time¹⁵. Undoubtedly – to transfer a piece of reality, emotions, a fleeting thought or a momentary revelation onto the paper – you have to stop, calm down, let the stimuli reach the brain slowly, and then be transferred to the image, which requires a great deal of effort and fortitude. It also requires courage and overcoming shame, it teaches humility, discipline and precision.

Computer graphics capabilities have badly weakened the interest of students in hand drawing within architectural design. The result of this process are adjustments made already in the first phase of design such as the use of laptops and tablets. And yet, all phases of designing require constant drawing of the forms and structures of space¹⁶ and only such a process can be considered a universal method of teaching both at the university and in professional practice. Hyper-realistic visuals and simple freehand sketches should not be competitors but ought to complement each other, although only the latter show the personality, sensitivity and temperament of their creator.

Drawing and sketching. Constantly striving to tame the world, a few economical movements, freedom of gesture, intensity of experiencing, emotions and passion – this is the whole wealth of drawing. These are the things that computer will never replace.



III. 1. Strasbourg (drawn by Beata Malinowska-Petelenz)

¹⁵ M. Brataniec, *Szkice-analogowe podziemie: rysunki z podróży*, ARCH, nr 18/2013, p. 112.

¹⁶ M. Fikus, *Przestrzeń w zapisach architekta*, Poznań-Kraków 1999, p. 27.



III. 2. Venice – marketplace (drawn by Beata Malinowska-Petelenz)

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MAŁGORZATA MELGES*

THE SIGNIFICANCE OF FREEHAND DRAWING IN THE TEACHING PROCESS IN GENERAL CONSTRUCTION PROJECT CLASSES

ZNACZENIE RYSUNKU ODRĘCZNEGO W PROCESIE DYDAKTYCZNY NA ZAJĘCIACH PROJEKTOWYCH Z PRZEDMIOTU BUDOWNICTWO OGÓLNE

Abstract

As you know, the first requirement faced by the candidate wishing to study at the Faculty of Architecture is freehand drawing; passing the examination in it is the basis for admission. Freehand drawing in both the teaching process, and then in the professional activity is an expression of artistic and spatial sensitivity of every student and architect. It also has a high priority in the design process, especially at the stage of an idea, concept and architectural creation. Before there appeared the possibility of using the computer, concepts and student projects had been performed manually during the teaching of all design subjects. It was a rule to prepare designs in pencil techniques, in ink, and other tools and techniques – e.g. watercolor, tempera, feather, etc. The creative process required understanding and analysis of the developed vision or architectural issue in the context of brain – eye – hand relations. In the era of universal computerization these relations and correlations have been weakened, which, as can be seen in practice, does not always produce good – expected – results in the teaching process. First of all, probably, due to the deterioration of the function of **imagination** (including aesthetic one) among entrants and the strengthening of their tendency to **laziness** (including taking “shortcuts”), which in a sense is – for artistic professions – even murderous. Therefore, observing messages of creativity among students of architecture, one can state that the computer can, of course, be an aid, but it cannot be the main tool in mental, emotional and creative development process.

Keywords: brain, eye, hand, sketch, imagination, computer, language of communication

Streszczenie

Jak wiadomo, pierwszym wymogiem, z którym styka się kandydat do studiów na Wydziale Architektury, jest rysunek odręczny; zdanie z niego egzaminu jest podstawą przyjęcia na studia. Rysunek odręczny w procesie dydaktycznym i w działalności zawodowej jest wyrazem wrażliwości plastycznej i przestrzennej każdego studenta i architekta. Ma też priorytetowe znaczenie w procesie projektowym, a zwłaszcza na etapie pomysłu, koncepcji i kreacji architektonicznej. Do momentu pojawienia się możliwości użycia komputera koncepcje i projekty studenckie wykonywane były manualnie w trakcie nauczania wszystkich przedmiotów projektowych. Obowiązywała zasada wykonywania projektów w technikach ołówkowych, w tuszu oraz innych narzędziach i technikach plastycznych – np. akwareli, tempery, piórka itp. Proces tworzenia wymagał pojmowania i analizy opracowywanej wizji lub zagadnienia architektonicznego w kontekście relacji mózg–oko–ręka. W dobie powszechnej komputeryzacji te relacje i korelacje zostają osłabione, co, jak widać w praktyce, nie zawsze przynosi w procesie dydaktycznym dobre – oczekiwane – rezultaty. Przede wszystkim, prawdopodobnie, na skutek osłabiania u adeptów zawodu funkcji **wyobraźni** (także estetycznej) oraz wzmacniania w nich tendencji do **wygodnictwa** (w tym obierania dróg „na skróty”), które w pewnym sensie jest – dla zwodów artystycznych – wręcz mordercze. Dlatego, obserwując przekazy inwencji twórczej studentów na studiach architektonicznych, stwierdza się, że komputer może być, oczywiście, narzędziem pomocniczym, ale nie może stanowić narzędzia głównego przy procesie myślowo-emocjonalnego i twórczego rozwoju.

Słowa kluczowe: mózg, oko, ręka, szkic, wyobraźnia, komputer, język komunikacji

* Ph.D. Arch. Małgorzata Melges, The Institute of Building Design, Faculty of Architecture, Cracow University of Technology.

1. Introduction

People have used drawing and sketch drawing (or various forms of graphic messages) for thousands of years. Given the centuries-old legacy (in a different dimension of the message) of drawing achievements of the human population, it can be argued that drawing is one of the most primal (if not the original) expression of the aesthetic and cognitive needs as well as human talent and emotions. It serves as a specific form of language in many cultural and scientific areas and it is certainly a precursor of all writing systems.

Every man, to a greater or lesser extent, has the ability to draw and sketch. Obviously, the quality of a picture (including accuracy, readability, aesthetic and even artistic values) requires some talent and personal emotional predispositions. Together they make up the so-called artistic personality. However, such personality not always reveals itself on its own; it is often necessary to discover someone's talent, then it is necessary to work on its development whether it be under the guidance of a teacher-master or through self-education.

The so-called graphic message, which is reflected in a drawing is going to be different for each author – individual. This feature of individuality is the most valuable one of a drawing, being the expression of the author's creative design and intuition.

A drawing or a sketch can become a substantial medium of communicating both humanistic and technical issues. The Institute of Building Design at the Faculty of Architecture of Cracow University of Technology organizes a course in “general construction”. This is a subject of architectural, construction and technical nature. Before each academic year commencing cyclically, the scope of technical and practical nature of teaching design classes is clarified. There are discussions on the introduction of new methods of teaching, as well as ways to maintain the existing perennial teaching process.

We are fully aware that the opportunities that computer programs and technology offer now are solutions which were absolutely unimaginable, for example, thirty ago. We also believe that the potential of computerization and development of digital technologies will be continually expanded and will even surprise us with revolutionary ideas and inventions. Progress in this area is incredibly dynamic and fast. In the wake of human thought progress, processes of miniaturization of computing devices follow¹. Computer programs are created for all specialties related to education, work and other areas of life. Various problems are solved with their aid. Using the computer, as one knows, we can draw, design, paint, create design systems, visualizations, copy, create graphic compositions, photographs, make all sorts of picture treatments, paste, compile, reproduce, etc. These briefly mentioned possibilities of computers constitute only a small portion. Knowledge related to the ability to use computers must be constantly reviewed and supplemented, because the process of its development, experts believe, is only the beginning of the possibility of human thought.

In the light of this technical progress a question might be asked: And what about all the things produced by human thought over thousands of years? Have they already lost

¹ *Systems that work together can fit in a single miniature chip and be mass produced very cheaply*, Wolszczan A., *Nowoczesna komunikacja – NAUKAEKSTRA*, Biblioteka Gazety Wyborczej 20, Agora 2012, pp. 9-10.

their relevance? How, then, to understand and to “set” the teaching process in the context of these opportunities, which the computer gives man today? These are the questions which we are constantly looking for answers to.

Working with students – particularly in the first years of study – verifies these concerns and even “orders” us to approach the previously-developed processes of teaching students of architecture in a humble way.

2. The purpose and significance of freehand drawing

Drawing can also be classified as one of universal areas of human life (despite the different ways of presentations and graphic communication). Owing to this kind of “genetic” universality it is a common language of communication and comprehensible to all social groups and cultural areas. Since childhood, and later in adulthood, we customarily, ludically, artistically or scientifically draw, sketch, paint. One can even be delighted with different graphic forms usually created spontaneously by means of emotion – reviewing e.g. used phone books or calendars whose pages are covered with doodles. An interesting phenomenon (probably mostly psychological) from the scope of this method of drawing are pictures on the trees in the forest, on the walls, and even in toilets.

Freehand drawing, depending on what we want to present to the recipient, may be very expressive (impressionistic-realistic or surreal) or of a technical nature e.g. in the architectural and construction documentation. Especially in the case of technical drawing, freehand drawing skill is an important tool for clear communication of substantive message. Robert Gill, who cites various definitions of the significance of drawing, rightly notices that. Two of them have been selected here².

The analysis of the literature in the field of drawing, allows one to identify and characterize the basic objectives, that define the essence of its meaning, especially in the artistic and technical fields³. When it comes to architecture, good graphic message of a freehand drawing is essential. It is in fact the basic form of information to explain the architectural and construction systems, materials, details, structure and technology. Drawing is therefore a fundamental base in preparation for the profession of an architect. Within the interdisciplinary methods of preparation of project documentation and execution process, drawing is in fact the main form of recording a work of architecture. It is also a necessary tool for effective communication with “people from the industry” and contractors of various professional qualifications. For instance, A perspective (spatial) projection of a detail is

² Gill R., *Zasady rysunku realistycznego, Książka dla projektantów, ilustratorów i artystów*, Galaktyka, Spółka z o.o., Łódź 1997, p. 12: “(...) Drawing is the process of graphical interpretation of what one sees and knows. (...) Knowledge and learned skills are necessary condition for a good drawing, practice – for an even better one”.

³ Jan Knothe accurately describes the usefulness of drawing; he states among other things: “Drawing is a utility tool as some of its categories have become a form of language in international communication, e.g. technical drawing (drawing standards and graphic designations) and signs (e.g. road and cartographic)”; Knothe J., *Z żabiej perspektywy*, Nasza Księgarnia, Warszawa 1977, p. 138.

more readable and understandable than its flat presentation. Obviously one should also take the addressee of the graphic record in the form of a drawing into account.

3. The usefulness of teaching freehand drawing in the implementation of the curriculum of “general construction”

Drawing is commonly understood to belong mainly to one of the areas of visual arts. In the context of the work and technical solutions it would seem that drawing as such has no special application. The specificity of the construction and technical issues in architecture is presented, however, mainly through technical drawing⁴. Each technical drawing is completed with technical word written as a substantive piece of information. Technical drawings require technical writing, which is done by hand, with a template or using a computer. Construction processes are typically based on different technologies subject to such design and executive modules as: the size of a brick, ceramic brick, precast slab element. Modern technological solutions apply various system modules. The synchronization of knowledge of these modular design and material systems and skill of matching proportions in created freehand sketches exercises spatial imagination useful, or even essential, for understanding a construction problem (e.g. in regard to design: foundations, walls, stairs, floors, roofs, flat roofs, building structure, finishing details, etc.).

As it is generally accepted, teaching students in the first phase of architectural education involves, inter alia, teaching the basics of technical drawing – based on learning the types and characteristics of building materials and of existing standards of construction law regarding graphic signs⁵. Even at this first stage of studying, it can be noticed that students –despite having no knowledge related to technical drawing – have a special artistic sensitivity and skills developed in preparation for studying architecture or otherwise. They are then fixed and further developed in the first years of studying in classes at the Institute of Drawing, Painting and Sculpture.

The process of formation of drawing and artistic skills and spatial imagination is, as one knows, constantly reviewed in relation to the requirements and needs posed in changing curricula⁶. Referring to my personal experience, I can state that almost all the elements of knowledge and artistic skills that I gained while studying at the Faculty of Architecture

⁴ Technical drawing for the most part is made with the use of drawing tools, and is now mainly based on computer graphics. Graphic standards, scale and dimensioning of individual technical drawings should be used in technical drawing, e.g.: projections, sections, elevations, details, etc.

⁵ Speaking of drawing J. Knothe poses the question, which is also the answer: “Is drawing the art or a skill (...) drawing is information (...) drawing always recreates something (...) drawing is the name embracing so many things (...) a pattern on the fabric and architectural plan and a typeface of written and printed words (...)”; Knothe J., *Z żabiej...*, *op. cit.*, p. 137.

⁶ The process of teaching the evolution of artistic sensitivity of architects, from the beginning of the formation of the Faculty of Architecture of Cracow, in a scientific manner and very informative on the background of European training methods, was introduced by A. Białkiewicz, *Rola rysunku w warsztacie architekta. Szkoła krakowska w kontekście dokonań wybranych uczelni europejskich i polskich*, Monograph 315, Politechnika Krakowska, Kraków 2004.

of Cracow University of Technology, are strictly necessary to me in general construction issues. To this day, I have been using them in virtually every class with students during critiques.

The design course of “general construction” is commonly referred to as mainly technical one. And that is the case. But also here, as it turns out, in the course of implementation of the educational process in different semesters, freehand drawing skills are always a basic requirement in addressing the building issues and technical “conversation” between a lecturer and a student. As it follows from teaching practice and general architectural experience, the use of freehand drawing skills is also necessary in the phase, which precedes the diagnosis of selection of different concepts to solve technical problems.

The above mentioned teaching process involved in “general building” course and verified after each semester, shows educators how important in teaching the technical subject is the element of freehand drawing. Developed for many years, the system of the implementation of the program assumes that technical drawings are made with the use of drawing tools and computer devices. In contrast, the acquired construction knowledge is checked during tests in freehand drawing. These tests are based on the graphical handwritten transmission of construction issues in a clear way, keeping proportions, scale and required graphic and material standards (III. 1).

An analysis and evaluation of students’ work indicates that students have great difficulty in expressing their knowledge through freehand drawing. As in every test of this type, different level of knowledge is mastered by students, which probably also affects the possibility of expressing it with a drawing. Students’ works can be very different regarding the level. The outstanding ones present substantive content expressed through a well presented freehand drawing skill, taking account of clarity, the proportions, well-chosen lines, spatial imagination, projection drawing skills. A notable feature of good solutions that demonstrate the understanding of the topic is also an individual way of drawing the presentation which complies with the criteria and construction standards. Such elaborations can be described as ones presenting good eye – brain – eye – hand correlation, and further demonstrate the artistic and individual personality of the author (III. 2).

In evaluating the effects of end of semester technical projects made by students, it can be observed in most of the examples that good and correct works both in terms of content and graphics coincide with good proficiency in freehand drawing.

4. Freehand drawing during inventories

An important part of the educational process is to teach the student the correct mapping of the actual state of a building, or making the so called architectural and building inventory. To carry out such diagnoses and study, one uses both freehand drawing techniques, as well as currently available computer measurement methods (and more precisely: laser and geodetic which are later subjected to computer treatment); however, they are not widely available due to the high cost of such equipment and its susceptibility to damage. And they will not probably be available for students for a long time.

Inventory refers in particular to historic buildings which are to be repaired or regenerated (III. 3).

Spatial imagination is also necessary in inventory. It allows the execution of drawings of the inventoried parts of a building or its details (sometimes very difficult to access even for laser equipment) and the application (onto these drawings) of the performed measurements (obtained values). In particular the execution of a large inventory of historic roof rafters, as well as church towers and signatures, tends to be difficult. As the practice teaches, the complex inventory drawings also consist of sketches, which are often used to identify structural schema of an inventoried facility.

In the course of construction apprenticeship students are required to take notes in the form of drawing of construction processes. This method preserves the knowledge of the observed processes, while deepening specific, detailed cognition – of e.g. non-standard construction and building systems, etc.

5. Conclusions

Using computer programs to perform architectural projects and compile documentation has extremely facilitated the work of architects. The computer gives the universal potential for replication of projects and their possible compilation or modification on the basis of prepared solutions. However, such work with a computer can also lower the level of abilities (**and readiness**) to come up with individual and creative solutions, and therefore also weaken the development of personality and destroy the exploratory project creativity.

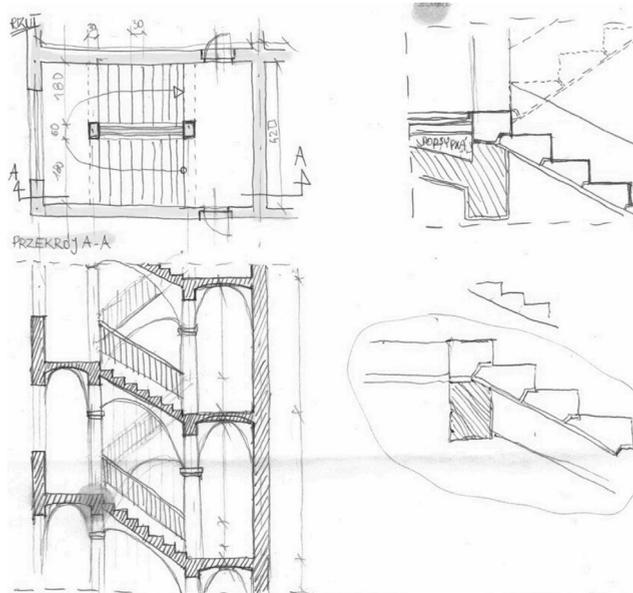
Computer technologies are and will be an even more perfect working tool. But there is no substitute, it seems, for the natural “neuro” connection between the head and the hand of man, which is reflected in the extraordinary abilities (possibilities), that lie at the origin of all use of the tools and their creation (including handcrafts, arts, playing instruments, martial arts, acrobatics, games, etc.).

The author thinks that the validity of the above opinions (shared by many architects-practitioners and theorists, including educators) should be constantly taken into account and nurtured in the departments of architecture.

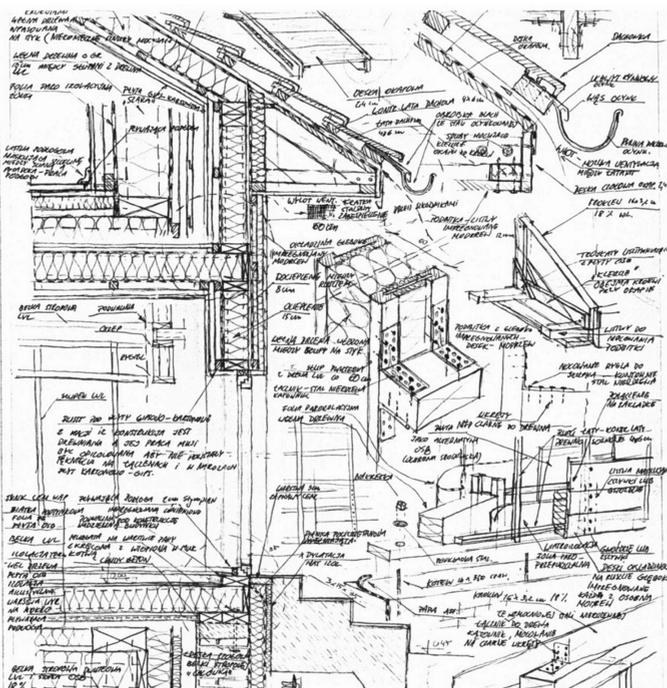
A prominent Japanese professor Akio Hizume of Ryukoku University in Japan gave lectures and workshops for students of architecture in January 2015 at Cracow University of Technology, Faculty of Architecture. In his research on structures and solutions of spatial structures he used the latest computer techniques. And yet (or perhaps because of this) professor frequently stressed the need to use freehand drawing and not to separate science from art during various lectures. In his opinion, both of these areas are in fact the same humanistic forms of creativity. Even when explaining complex issues buildings’ durability in seismic areas, he used sophisticated, great, freehand sketches (III. 4–5).

At the same time, he pointed out that individual drawing is highly valued in the teaching process in Japan and that it is combined with manual workshops for the designed architectural visions.

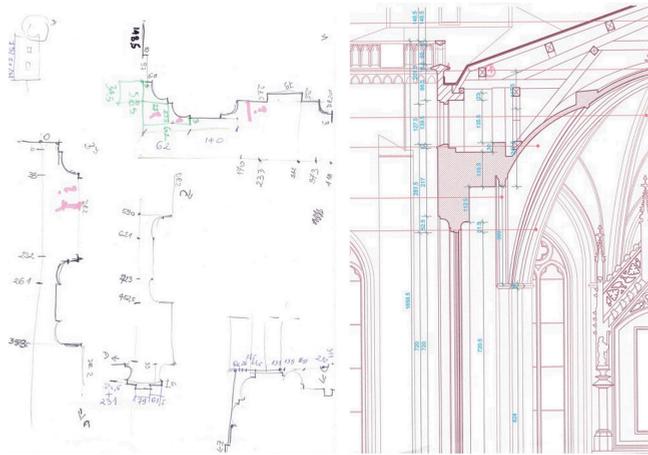
Considering the work of outstanding creators of architecture – from the earliest times to the present day – one can draw the conclusion that the showcase of their creative mastery were and still are *inter alia*, excellent drawings showing their talents and personality.



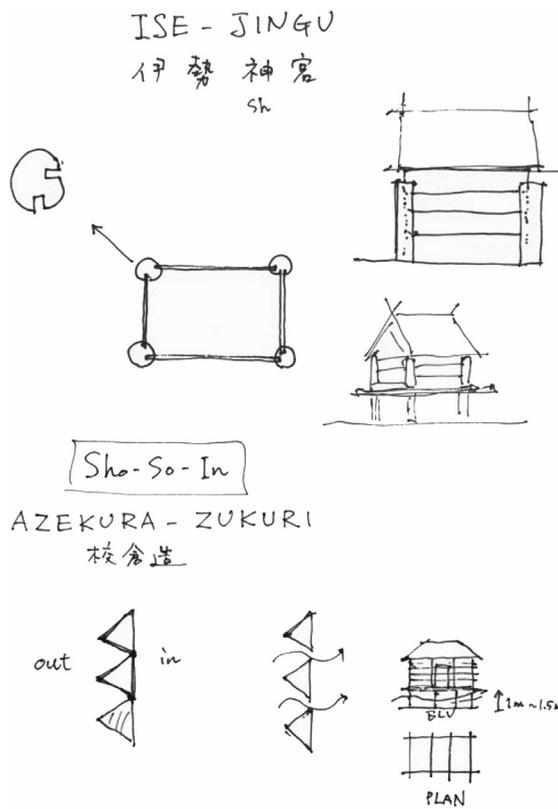
III. 1. Students' sketches, within General Construction



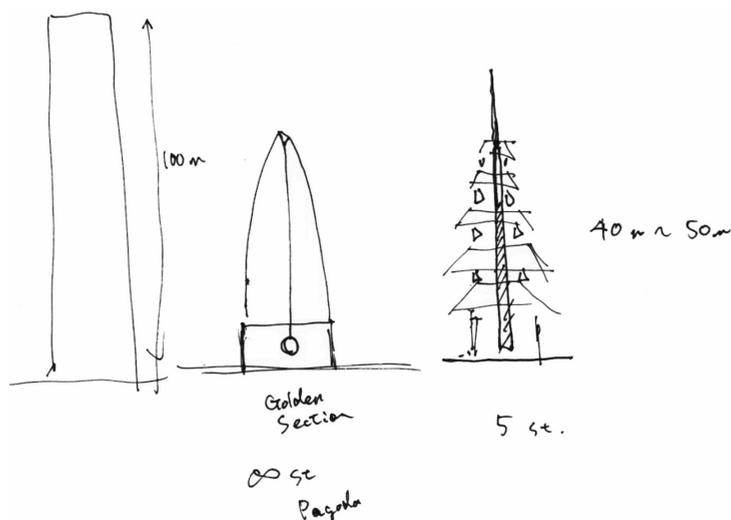
III. 2. Student's work, the test in Materials



III. 3. Inventory sketches phase and final drawing of the part of inventory in the parish church of St. Martin in Krzeszowice



III. 4. Professor Akio Hizume's sketches, explaining the structures of historic houses in Japan



III. 5. Professor Akio Hizume's sketches, explaining the principle of statics of historic buildings in seismic areas in Japan

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PIOTR SETKOWICZ*

IS IT STILL WORTH THINKING WITH HANDS?

CZY WARTO (JESZCZE) MYŚLEĆ DŁOŃMI?

Abstract

Three tendencies which go far beyond the narrowly understood technological issues seem to currently coexist in contemporary architectural practice. Some architects continue to regard hand drawing as being of primary importance at all stages of professional education as well as of the actual design process. Others, relying on the sensitivity and knowledge developed by their own personal experience with drawing, have accepted new technologies – perceiving the computer as an additional useful tool. At the same time the number of architects and students of architecture, for whom the era which preceded the information revolution constitutes a very distant past and the “analog” methods of imaging are pure exoticism, is continually on the increase. Trying to convince the skeptical representatives of the generation which has from the very beginning been shaped by digital media of the numerous benefits which can be derived from hand drawing – no doubt constitutes a fascinating challenge.

Keywords: hand drawing, digital models, architecture, art

Streszczenie

We współczesnej praktyce architektonicznej koegzystują trzy tendencje wykraczające poza wąsko pojmowane kwestie warsztatowe. Część architektów nadal przypisuje rysunkowi odręcznemu wiodącą rolę na niemal wszystkich etapach edukacji zawodowej oraz procesu projektowania. Inni, bazując na wrażliwości i wiedzy rozwiniętych przez osobiste doświadczenia rysunkowe, zaakceptowali nowe technologie – widząc w komputerze dodatkowe użyteczne narzędzie. Jednocześnie stale powiększa się grono architektów i studentów, dla których epoka przed rewolucją informacyjną stanowi odległą przeszłość, a „analogowe” sposoby obrazowania to jedynie egzotyka. Przekonanie sceptycznych przedstawicieli pokolenia ukształtowanego od zarania przez kontakt z mediami cyfrowymi do rozlicznych korzyści płynących z praktykowania rysunku odręcznego – stanowi pasjonujące wyzwanie.

Słowa kluczowe: rysunek odręczny, modelowanie cyfrowe, architektura, sztuka

* Ph.D. Arch. Piotr Setkowicz, Division of Drawing, Painting and Sculpture, Faculty of Architecture, Cracow University of Technology.

1. Introduction

During the World Economic Forum in 1996, the President of Microsoft Bill Gates who had been invited to Davos declared that the “interactive computer technologies and virtual reality belong to those inventions whose long-term effects we are unable to predict”. Reportedly, it was precisely in Davos that the concepts “Before Christ” and “After Christ” changed their significance to “Before Computer” and “After Computer” [4]. The scope and rapid pace of the approaching changes were all the more puzzling for the Polish society which, at the time, was still going through an early phase of a radical transformation and the real popularization of information technologies remained exclusively in the sphere of dreams. The year 1991 can be regarded as a crucial and indeed a symbolic one, for after the abolition of the restrictions by the United States, the free Poland obtained full access to the global computer network.

The specificity of an architect’s profession and the educational requirements in this universal discipline led to an additional acceleration of the process of implementing new technologies. At the same time, young trainee architects and creative individuals open to innovations enthusiastically supported and themselves initiated successive phases of transformation of the traditional designer studio. Last but not least, in Polish conditions, the instant adaptation of computer-assisted architectural design methods was supported by a number of original research papers inspired by a systemic approach. Recognizing design as a process [1], whose procedures consist in processing information, resulted in a natural rapprochement between architects and computer technicians. In the 70’s and 80’s of the 20th century, the Faculty of Architecture at Warsaw University of Technology and the Faculty of Construction and Architecture at the Szczecin University of Technology, distinguished themselves by carrying out incisive research into ways of introducing “the methodology of systemic design with the use of a computer as an active tool assisting the design process”. Yet what still constituted a nearly insurmountable barrier to the practical uses of the new design methods was the drastically small availability of both Polish-made and imported computers [7]. That is why, as has already been mentioned, the 90’s were characterized by a rapid “new opening” of Polish architecture to the computer-assisted design techniques.

2. Computer versus hand drawing

Machines are more and more effective in “aiding” architects; they shorten the time which the latter used to spend on introducing laborious corrections and improvements into the design documentation and on preparing presentations and visualizations. Freeing architects from the above prosaic obligations should lead, at least theoretically, to an unprecedented liberation of their imagination and creativity – thanks to a concentration of the creators on a search for innovative solutions. Apparently, there are no grounds here for a conflict with hand drawing, which has been present in an architect’s methodology “from time immemorial” [2] and which is supposed to ensure to the trainee architect a freedom of individual expression based on knowledge and professional proficiency.

Yet the experience accumulated over the last quarter of a century proves that the natural expansion of the above-mentioned computer-assisted design, is also taking place at the expense of the education of future architects, particularly as regards the sphere of drawing, painting and sculpture. In this context, Andrzej Białkiewicz's paper entitled "Rola rysunku w warsztacie architekta" (The Role of Drawing in an Architect's Design Technique), though evidently written from purely constructive motives, reveals its polemic dimension. Despite the fact that the attacks which undermine the legitimacy of the classical models of education rarely have an open character, a climate of apparent obsolescence and even outright redundancy is being created around the "manual" forms of architectural expression. The best proof of the threat posed by the indiscriminate enthusiasts of digital techniques of imaging is the continually decreasing number of classes devoted to hand drawing. Although undoubtedly the above changes do contribute to the current updating of the educational program, yet at the same time, they lead to compromises which may threaten the realization of the fundamental goals of education [3].

Augusto Romano Burelli, who works in Venice and Berlin, recalls with nostalgia the times when it was exclusively hand drawing that decided about admission to the faculty of architecture. He poses a question: "What should we require from candidates to the modern-day schools of architecture?". The answer is provided by him in the next few sentences. "How can we fail to rediscover that hand drawing is definitely the fastest tool which allows one to halt the trace of human thought, in a way that nothing and nobody can match? How can we forget that an architect's hand is an organ which is in direct contact with his brain, as Rene Descartes is reported to have said". Unfortunately the above questions are no longer rhetorical. For the process of "deification" of digital tools which is supposed to characterize the inhabitants of the Far East or India, has also affected "us", who according to Burelli – should be protected against it by the legacy of the "Greek Logos" [6]. "It seems that in recent years, we have been dealing with an uncontrolled domination of technological innovations, which has taken on a form of faith in its magical possibilities, particularly among the young (...). The tool, that is a computer equipped with a suitable software, has unexpectedly become a source and inspiration; it has imperceptibly begun to supplement the creator" – writes Mirosław Orzechowski [8].

3. The Contemporary Role of Hand Drawing

The dilemmas which accompany the transformation of the techniques used by Polish architects, due to the expansion of digital technology, do not differ in any substantial way from the dilemmas experienced by architects in other parts of the world. The smaller degree of saturation with technological novelties is effectively compensated for by us with zealotry which is characteristic of neophytes. In most cases, the oldest generation of architects, on whose work and attitude the digital tools have exerted practically no impact, withdraw from pursuing their professional activity in an active way. Yet their testimony continues to be extremely important. Not infrequently the achievements of the luminaries of architecture prove their ability to control in a masterly way every, even "curvilinear" architectural form, exclusively by resorting to the use of a "computer built

exclusively from water and fat” – as the human mind was called by Ryszard Tadeusiewicz. In their case, a resignation from the support of digital tools, does not constitute an expression of backwardness or abnegation, but proves that they have been able to achieve extraordinary proficiency within the traditional professional methodology. To senior architects, the key importance of hand drawing at all stages of the process of architectural training and design, is quite obvious. They tend to look for sources of fascination with free form and ecology (whose popularization is attributed to CAD technologies) in the sketches of Hermann Finsterlin, Hans Scharoun, Eero Saarinen, Oskar Niemeyer... [5].

To the older and middle generation of active architects, cooperation “with” and “through the computer” is already an obvious necessity. Yet regardless of whether they accept this fact with an aversion, indifference or else with enthusiasm – the computer remains exclusively a tool for them. For their sensitivity and imagination have been formed, at least in part, in the “analog era”, at a time, when hand drawing and practice of related disciplines had played a significant role. “The first few lines, drawn with a soft pencil, felt-pen or crayon may provide an over-all conception of the project (...) – declares Maciej Miłobędzki. “This ability to “revolve” objects in space, the way one does it on a computer today, is a professional attribute” adds Konrad Kucza-Kuczyński. “I have been sitting in front of a computer ...for the last twenty years, but I still consider hand drawing as a skill which is necessary in our profession. I am not a staunch enemy of computers, but I think that they pose a threat to imagination” concludes Marcin Sadowski [8]. In turn Adam Maria Szymiski emphasizes that “from the point of view of analog design and construction, curvilinear forms pose some serious problems”, chiefly as regards their imaging. He therefore postulates greater popularization of digital tools which permit a “full geometrical control of any, even of a most complex shape or architectural form that is being designed” [12]. Yet in tutorials devoted to parametric modeling which he conducts, conceptual hand sketches always play an important role – as according to Szymiski, they prove that the student is really in control of the designed form and the set of digital tools that he/she is using [13]!

This is extremely important as for the youngest generation of architects (and especially for students of architecture) elements of an “analog” design methodology often constitute very remote history. “I think that all architects are able to draw; yet some do so more frequently and willingly” declares Sławomir Gzell. But is the situation still the same today? “I think that even those projects which were created in the process of computer-assisted parametric design, (that is those which would have been impossible to implement without the use of computer techniques), had their origin in the drawing “notes” recorded by the creator’s hand. And if it was not so, the young generation would surely treat such projects as defective – avant garde but deprived of a soul” – states Sławomir Kowal [8].

However, one may suspect that the opinion of “our” generation (in the broad sense), differs from views entertained by those who design and admire “digital architecture”. What is more, the testimony of the former should be regarded as particularly important today. For it is precisely the polemic with the opponents that may contribute to the emergence of new arguments in support of the ever present need to take advantage of the architects’ own personal experiences associated with drawing, painting or sculpture and consider them as part of their methodology.

4. Summing up

I have my doubts as to whether indeed all modern-day architects draw. But I am absolutely convinced that they all should do. In my own experience of trying to teach hand drawing to candidates to the architectural profession and students of the Faculty of Architecture of the Krakow University of Technology, I have had the honor and pleasure to cooperate with a group of pedagogues and my own Masters who have never for a moment let me entertain any doubts as to the importance and topicality of the task which confronts us. I am also happy to be in touch with successive generations of Young People who (fortunately) do not let us forget about the pace of changes which take place in the world. It is from those students that I have been able to learn that a contact with a pencil or paints is sometimes no more than a hazy childhood memory, while a proficient use of digital media may in some cases precede the first attempts to use the “archaic” and “obsolete” means of expression. At the same time, it is from among those young people that there arises a new generation of individuals who really do “draw” and who are aware of the sense of continual improvement in this field. However, many student candidates look upon drawing as no more than an obstacle on the way to the much dreamt-of studies where it is the computer that reigns indivisibly. The latter group limit themselves to mastering the “technique of exam passing” which consists in a rather counter-productive compilation of “drawing templates” [11].

Breaking through this invisible barrier, making students realize what a genuine study from nature is, teaching them the ability to synthesize and finally explore unknown spheres of imagination by means of drawing – constitutes a really challenging task.

5. Conclusions

In his excellent book entitled “The Thinking Hand”, Juhani Pallasmaa draws attention to the tendency to separate body and spirit which is deeply ingrained in Western philosophy. In the modern-day world of mass industrial production and expansion of virtual reality, this tendency has reached its climax. People are prone to forget that the civilization which surrounds them is in an equal degree the work of mind and hands; the process of cognitive thinking is also taking place via the hands! “Architectural problems are in their essence too complex and profoundly existential to be solved exclusively with the powers of the mind and consciousness ... The role of this fundamental truth – unrealized, silent and existential – in the work of an architect is universally underestimated...” – declares Pallasmaa, postulating that one should restore to the hands their proper role and function [10].

The threat associated with taking over control of the architectural creation by “soulless algorithms” is not a consequence of continual improvement of the digital tools. The more and more numerous procedures that are used in the sphere of architectural design may and indeed should be realized by resorting to the use of computers. The real problem consists in the continually resumed efforts to reduce the whole sphere of art that architecture regards itself to be, to purely technical issues. Imagination, intuition and a hand holding a pencil, remain

indispensable in the relation: man – machine. Conceptual sketches prove the sovereignty of the choices that are made and not only of the choices suggested by the computer.

Apparently “today we should learn from the future, in exactly the same manner as at one time we used to learn from the past and the present” [9]. Even if this is the whole truth – this future still remains literally “in our hands” and not in the memory of the machines! That is why, it is certainly worth thinking with our hands; they are still able to surprise us.

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KATARZYNA SŁUCHOCKA*

WHEN ARCHITECTURE BECOMES AN IMAGE AND THE IMAGE IS READ AS ARCHITECTURE

GDY ARCHITEKTURA STAJE SIĘ OBRAZEM, A OBRAZ CZYTANY JEST JAK ARCHITEKTURA

Abstract

The interdisciplinarity of space creation opens up the opportunities for multifaceted research into sources, objectives and methods of expression. The reciprocal nature of relationships between illustrated visions and forms that capture imagination is an introduction to the subsequent design decisions. It is an excuse for transferring technical graphs into painting or drawing planes, which are closely linked to the quality of the design composition. Pure, abstracted artistic message inspires and encourages a different look at architecture while pointing to the unlimited possibilities for promoting architectural ideas. It also emphasises the importance of the impact the image has on viewer's imagination, as well as stimulates and provokes further dialogue. "Architecture becomes an image – the image is read as architecture".

Keywords: plan, view, representation, interpretation, image

Streszczenie

Interdyscyplinarność kreacji przestrzeni otwiera możliwości wielopłaszczyznowego poszukiwania źródeł, celu i metod ekspresji. Zwrotny charakter relacji pomiędzy zobrazowanymi wizjami i anektującymi wyobraźnię formami stanowi wstęp do implementacji kolejnych decyzji projektowych. Jest pretekstem do transferu technicznych grafów na malarskie czy rysunkowe płaszczyzny, powiązane ściśle z jakością kompozycji projektowej. Czysty, wyabstrahowany przekaz plastyczny inspirować oraz zachęcać do innego spojrzenia na architekturę, zwraca uwagę na nieograniczone możliwości upowszechniania idei architektonicznych, podkreśla wagę oddziaływania obrazem na wyobraźnię odbiorcy, uaktywnia i prowokuje do dalszego dialogu. „Architektura staje się obrazem – obraz czytany jest jak architektura”.

Słowa kluczowe: rzut, przekrój, zapis, interpretacja, obraz

* Ph.D. Arch. Katarzyna Słuchocka, Chair of Drawing, Painting, Sculpture and Visual Arts Faculty of Architecture, Poznan University of Technology.

you record the space
 with the line of proportion
 shaping the object
 dressed in future
 you compose the place
 with the context of colour
 and the texture of emotion
 so that one day
 you could decode
 this inspiration for continuation
 you record the space...

“The form is the foundation; the conception of art depends on thorough understanding of the form”¹.

In the field of art the form defines those characteristics, which are related to shape (sculpture, architecture) and the structure of representation, notation (poetry, novels, music). Although the form itself does not have a direct impact on the content of a work of art, it determines the way the work of art is perceived. The concept of form can be considered in two ways: as a composition and as a shape. In ancient times, the composition was associated with harmony, symmetry and compositional order. The Pythagoreans maintained that there can be no art without proportion and proportion is expressed by numbers. Thus all art is created with numbers. There is a certain ratio in sculptures and in paintings. Thanks to the proportion, the absolute correctness of a work of art can be achieved. Generally, all art is a system of perceptions and the system is expressed in numbers, so we can rightly say that “thanks to numbers everything looks beautiful”².

Rudolf Arnheim wrote: “When perceiving a shape we always, consciously or unconsciously, assume that this shape represents something and, as a result, it is a form of a certain content”³.

The normative nature and the visible shape of content can be encapsulated in a series of drawings and paintings depicting the space represented by technical notation – floor plan, plan view – in the form of an independent artistic message. The dualism combines architectural composition (based on proportions, modules, numbers) with the shape of the outer shell, which is a sculptural element enhanced by the technical content of the function. Interpretation – an original graphical record of technical notation, which is the vehicle for engineering ideas – acts as an incentive to exploring the area of individualisation of defining a named space. It points to the unlimited possibilities for promotion of architectural ideas, emphasises the importance of the impact an image has on the viewer’s imagination,

¹ A. Osęka, *Spojrzenie na sztukę*, Wiedza Powszechna, Warszawa 1987, p. 8.

² W. Tatarkiewicz, *Historia estetyki. T. I.: Estetyka starożytna. Estetyka pitagorejczyków. Teksty pitagorejczyków i Heraklita*, Wrocław–Kraków 1960, s. 103-105.

³ R. Arnheim, *Sztuka i percepcja wzrokowa, Psychologia twórczego oka*, Oficyna s.c., p. 54-76.

stimulates and provokes further dialogue, at the same time creating a new quality. The new quality here is a kind of a mediator whose task is to put the viewer into a desired state of mind, with the emphasis on emotions, cognition and identity⁴. The illustrative architecture – a visual commentary on plans and views of a specific construction, in a form of drawings or paintings – is a part of the creative process as well as the confirmation of relationship between the value of a design structure and the value of an artistic image. The purity of shapes, proportions, the genuineness of materials. Simplicity resulting from well-considered, perused assumptions. The non-obvious in the obvious. The perfection that encourages continuation of the already partially completed plans. Architectural plans and views as a representation of space in a planar form, a carefully composed cohesive whole, with a great attention to detail, is an intriguing proposal for further development of the subject, broadening the spectrum of the designer's expression. The prerequisite here is the quality of the captured-designed space of architectural interiors and urban spaces, which developed into 3D accompany us in everyday life. They give us a sense of security while comforting us both physically and mentally. The perfection of architectural creation is an indicator in terms of composition, colours and execution of the main object. Architecture becomes the fabric of the image, causing the image to be perceived as architecture. Every stroke of brush is a piece of information, the combination of colours is a result of the observation of structure and detail, shades create depth and space, an ambiguity in the subjective perception of interpretation. The system of norms, numbers, line-connected shapes presented in the form of an artistic message, translates into relationships between craft and pure art. The art may have many incarnations and each one of them has their own *raison d'être*⁵. Its multidimensionality allows for crossing symbolic borders, bringing to life new means of cognition. Collections of graphs create a transposition into the planes of imaginary worlds, recorded on paper or canvas. The existence of these in different contexts and environments leads to a new quality of impressionistic perception. This is a reflexive relationship. The consequence of this in the process of space creation is taking inspiration from painting compositions. There are known examples of translating parts of a painting into the initial concept phase of a retail-banking complex, after previous studies, analyses and research on correspondence and interdependence of the meaning⁶. The simultaneity of events highlights the interdisciplinary nature of the architect's work, caught up in the macro and micro scales, in relationships between them and conclusions drawn from them. An architect "who is born with an innate duty" to promote the culture, to create a functioning beauty, and who is obliged to find a compromise between higher values and investor's satisfaction. And, finally, the "craftsman-artist" architect, independently developing their technique. Following the thought of Peter Zumthor who says, "Architecture has its own area of existence. It is neither the message nor the sign, but the frame and the background for the transient life, a sensitive

⁴ S. Gzell, *O Architekturze, Szkice pisane i rysowane*, Wydawnictwo Blue Bird, Warszawa 2014, p. 55-66.

⁵ A. Osęka, *op. cit.*, p. 97-109.

⁶ K. Śluchocka, *Centrum Biznesu, Dyplom magisterski*, Instytut Architektury i Planowania Przemysłowego, Wydział Budownictwa Lądowego, Politechnika Poznańska, Poznań 1991.

vessel for the rhythm of steps, for the focus at work and the silence at night⁷⁷, you can add that architecture as a representation also provokes the creation of artistic visions through painting and drawing, which is the confirmation of the vibrancy of life in real spaces, adding to the impressionistic perception and viewer's field of visual perception, visions which can also be an excuse for both future project implementations and formal discussions on numbers and shapes.

architecture – space and emotions

The dualism represented by the geometric surface structure, marked by the emotion of gesture, enclosed in a selected range of colour – separable – in the structure of the image, constitutes a formal unity. The synergy of an assumption in the impressionistic perception enhances the interactivity and dialogue with various painting traditions as well as opens up interesting prospects for initiating diverse cultural reflections and discussions, concerning not only the potential of perfectly formed piece of architectural work. The diffusion of fascination associated with one area of culture into another, with the noticeably oppositional nature and identity, intensifies the clarity of the artistic message, which depends on time, place and context. It is also form-dependant. The transfer of architectural qualities into the medium of painting determines the direction of its own creative pursuits. The author's statement that architectural, drawing and painting representations – are the worlds where there is a clear attempt to find the meaning and the truth, discover secret, unexpected corners of the space, it is a way leading to the new, it is the diffusion of the real world into the world of imagination, resulting in the series of paintings entitled "Interpretations". The allusions of architectural experiences combined with painting-related composition order are an example of the interdisciplinary creative articulations where one piece of work takes advantage of solutions belonging to the areas of different media. Transformation of the autonomous considerations supported by the architect's work experience into a language of artistic expression shows the cognitive methodology may be used here, resulting in the positive transfer in the areas of architecture and painting (practising in one area will help to improve the other). The representation of architectural drawings, the main form of communication on an engineering level, is a collection of pieces of information on compositional matrix, a precise structure. The grid of lines is a code for construction, understood by designers. As a graphic message it inspires and invites to taking a different look at architecture. It provokes, it sets the target which is to add to the two dimensions the third one, the most important one: the depth, which is based on the analysis and synthesis of a specific construction, its interior or exterior components. It stimulates imagination, initiating the journey into the unlimited world of questions and answers arising during the creation of works and finding an explanation in the works that follow.

interpretation ↔ image ↔ cognitive reaction

ARCHITECTURE – ARCHEOLOGY – Archaeological Reserve *Genius loci* in Poznan – in the pursuit of painting and drawing inspirations.

⁷⁷ P. Zumthor, *Myslenie architektury*, Karakter, Kraków 2010, p. 12.

Archaeological Reserve *Genius loci* is a kind of architectural frame – a contemporary illustration of ancient builders’ construction achievements, which gives us a chance for “time travels”. The architectural form of the object, developed on the basis of existing data – timber and stone defensive structure of the stronghold of the first rulers – the Piast dynasty, dating back to the second half of the 10th century and the adjoining relics of defensive walls built by Bishop Lubranski in the 16th century, is a testimony of the technical thought of the past, which we can now admire while creating the next chapters of history. The layers of the earth revealing the stages of the construction works, the use and the destruction of the stronghold can be described as carefully collected messages which we can now employ by decoding them. Exploring the secrets of the past, presented in the Archaeological Reserve *Genius loci* as well as in the further parts of the series of paintings “Interpretations”, we can find the record of the space of architectural world which treats subjectively the abstracted and re-composed in an artistic way parts of the museum plan, transferred into vertical planes of canvass. This transfer into lightly coloured but precisely formed spheres of imagination linked with the association of the actual place. The author’s provocation, putting the viewer into the “viewing from above” position, dedicates this moment to the dialogue with the creator, so that we can forget about everything else and just be “right now, right there”⁸. The focus on identifying lines, systems of the symbols and colour details automatically opens up the range of cognitive possibilities through the number and quality of the stimuli which are capturing our imagination and increasing the receptiveness of our mind, facilitating the assimilation of, in this case, historical data as well as the results of archaeologists’ work. The process of interaction imposes on us an increased perceptive and interpretative activity. The composition of paintings invites us to exploring our own areas, rich in words – terms transformed into geometrical forms. They should be read on many levels, just as the archaeological layers. The technical drawing inspiration, the plan of one of the floors, filled with grey and white, in a form of vigorously put patches of colour, opens the door into the labyrinth of the past, which is almost tangible, and at the same time playing with the recipient’s imagination, where the proverbial drawing board becomes a game board, and we are the creators of the space. Each gesture applied raises out awareness, every noticeable mark of a tool expands our knowledge, and every stroke of a brush is another piece of the jigsaw, intricately woven history of events. The colour scheme used in the series of paintings, limited to the shades of grey and ashy browns, in places saturated with red, refers to the colours of the earth and its hidden secrets, and also to the colours of glass and concrete slabs which are the finishing building materials of the object. This unification contributes to the bringing to the fore the problem of content notation, while evoking the associations with the Archaeological Reserve. It creates a well-knit series of images which could still be on the diary pages of a Poznań resident and at the same time it could be a form of architect’s artistic expression.

⁸ T. Matuszewicz, *Katarzyny Słuchockiej Malarska Zasada Nie Obiektywizmu*, VIA STUDIO Radosław Karbowski, Poznań 2014, p. 5-6.



III. 1. Personal Distance (Odległość personalna), acrylic, 130×50, K. Słuchocka

III. 2. Duality of Matter (Dwoistość materii), acrylic, 130×50, K. Słuchocka

III. 3. Assigned (Wyznaczone), acrylic, 130×50, K. Słuchocka

III. 4. Inside (Wewnątrz), acrylic, 65×50, K. Słuchocka

III. 5. Cooped Up (W zamknięciu), acrylic, 65×50, K. Słuchocka

III. 6. Layers (Warstwowość), acrylic, 65×50, K. Słuchocka

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**AN ARCHITECT AND HIS DRAWING
WORKSHOP**

ARCHITEKT I JEGO WARSZTAT RYSUNKOWY

RADOSŁAW JAN BALCERZAK*

INVISIBLE BUILDINGS OR A PAINTER'S PERSPECTIVE ON COLOUR IN ARCHITECTURE

NIEWIDZIALNE BUDYNKI, CZYLI MALARSKIE SPOJRZENIE NA BARWĘ W ARCHITEKTURZE

Abstract

My day-to-day observations made me reflect on whether the role of colour in architecture today is properly understood and whether it has not been pushed into the background. In this paper, I intend to show that painting classes in architectural schools aim at filling a certain gap. Using multiple examples and selected tasks, I hope to demonstrate the inseparability of the colour from the form, the influence of an appropriately selected colour on the architectural shape and the importance of combining colours depending on the form, space and light, as well as the way such combinations affect the perception of the shape and colour itself. This last variable inevitably makes us realise the significance of the so-called local colour. To conclude, the understanding of space, form, colour and light begins with practising the skills of "seeing".

Keywords: colour, light, architecture

Streszczenie

Przemyslenia oparte na obserwacji skłoniły mnie do postawienia pytania, czy rola barwy w architekturze jest obecnie dostatecznie rozumiana i czy nie została zepchnięta na daleki plan. W artykule pokazuję, że zajęcia malarskie w szkołach architektonicznych mają na celu wypełnienie luki. Na podstawie przykładów oraz wybranych zadań, staram się pokazać nierozłączność barwy z formą, wpływ odpowiednio dobranej barwy na bryłę. Ważkość zestawiania kolorów w zależności od takich czynników jak forma, przestrzeń oraz światło i to, jaki jest jego wpływ na odbieranie kształtów oraz samej barwy. Ostatni z wymienionych czynników zmusza do zauważenia zjawiska koloru lokalnego. Punktem wyjścia do zrozumienia przestrzeni, formy, barwy i światła jest ćwiczenie umiejętności „patrzenia”.

Słowa kluczowe: kolor, światło, architektura

* MA (Fine Arts) Radosław Jan Balcerzak, Department of Architectural Heritage and Fine Arts, Faculty of Architecture, Warsaw University of Technology.

“What is colour? The nature of colour has intrigued human minds and sensitivity since antiquity. As early as in ancient Greece people wondered whether colour was an objective, constant feature of a given object, or just a sensation. Today, we know that colour is not only a physical and physical-chemical phenomenon, but also a physiological-psychological one. Attempts to grasp its nature and classify it in a coherent system have been undertaken since time immemorial by philosophers, artists and scientists alike. Colour has been studied from many perspectives and approached from many different angles, just as its multifaceted nature requires. This multitude of ways in which colour is analysed is still justified today; the study of colour is split among various disciplines. For a physicist, colour is measurable, it is an element of optical radiation with a specific wavelength carrying a certain energy load. For a physiologist, it is created by a series of stimuli captured by the eye and processed as sensory input by the brain. A psychologist studies the influence of colour on human behaviour and mental structure”¹ – this short characteristic of colour, being a mere introduction to a two-volume essay on the topic, shows how broad a concept we are dealing with. If we extend our discussion of colour to architecture, our task becomes even more complex and complicated.

Architecture is an inherent feature of the surrounding space. It dominates everyday experience or at least supplements it in a very visible way. Its many shapes and sizes are always inextricably linked to materials and, naturally, colours. Leaving aside the different aspects of architecture, as they are not the topic of this paper, it is light that supplements the visual perception: natural or artificial, sharp and clear or soft, focused or dispersed, warm or cool, shed from different angles or emitted from a single constant source. Light, especially its natural variation, which can be extremely dynamic, changing along with the weather, day times and seasons.

This brief summary of the basic features of light, its overlapping and permeating layers, shows how truly important it is for modifying our perceptions of shapes and colours, and how it can be intentionally applied or consciously taken into consideration.

A seemingly transparent task, which is nonetheless far from easy. It seems that the real obstacle is not so much an incomplete knowledge about the combined effect of colour, light and form as it is the inability to “see”. There is no point arguing that seeing is not one of our individual predispositions and sensitivities. Yet by appreciating the skill of “seeing” and by honing it in a conscious way, we can gradually become proficient in using our sight.

The following tasks focusing on the interactions between light, colours and shapes may help us identify and illuminate the problem as well as “see” several all too often unnoticed interrelations which also seem to be considered less important.

The first task, the purpose of which is to simplify the composition observed, involves a still life depicting objects representing a full range of colours. To simplify, in this case, means to limit oneself to six colours (three primary colours: yellow, red and blue, and three secondary colours: green, purple and orange) without mixing them, so that no accidental colours are derived. Paradoxically, it is through simplification that this synthesis, coupled with the courage to use certain colours, which results from attempting to select from a limited

¹ Rzepińska, Maria, *Historia koloru w dziejach malarstwa europejskiego (The history of colour in European painting)*, Arkady, 1989.

range of available colours in a given situation, demonstrates the capacity of the primary colours, providing more room for manoeuvre while selecting them.

The next composition, which builds on the previous one, is a still life composed of a green material with green vegetables and fruit placed upon the fabric. Such an arrangement, seemingly homogenous in terms of colour, forces the observer to notice as many hues of green, a very complex colour, as possible. As a secondary colour, green is basically derived from blue and yellow; yet different proportions of these two elements ensure an enormous “quality” spectrum of the resulting colour green (not to mention further implications). Combined with red and achromatic colours, the diversity of green has no limits. If we focus and observe the above composition very closely, our sight will allow us to notice the richness of this colour all around us.

The third and the most demanding task involves a composition which presents the role of light as a factor of decisive importance to the perception of shapes and colours. The study objects are two “snow-white” busts, of which the first is illuminated with a single clear source of cool-coloured light, while the second is exposed to exceptionally warm light. This simple variation enables us to observe what happens to white, achromatic matter depending on the colour temperature of the light. In addition, it reveals, in an evocative way, the principle of colour complementarity as well as the differences in perception of the same form depending on the intensity and angle of the light shed on a particular shape. As a result, it also illuminates the question of local colour, which is influenced, among many other factors, by the specificity of the given light.

To conclude, bearing in mind that they form a part of a broader spectrum, the awareness of the role of light and colour significantly broadens the range of possible ways of influencing the variety of architectural shapes and of interpreting them through the lens of colour, which is shaped, to varying degrees, by specific external factors. It is therefore worth asking whether it would not be advisable to devote more attention to the study of colour and light, clearly pointing to studies of this subject based on careful observation.

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JANUSZ BARNAŚ*

THE DISCREET CHARM OF THE SKETCH

DYSKRETNY UROK SZKICU

Abstract

The sketch is an inseparable part of the process of creating an architectural space, being present at every stage of its development – during the stage when an idea is formed, all the way to the moment of the work itself. It is useful as a means of writing down an architect's thoughts, in presenting his work to a client, as well as a supporting tool during the process of overseeing the construction of a building. Thanks to its indeterminate nature it stimulates the imagination during the early stages of design, being at the same time the easiest means of communicating one's thoughts on the construction site. The article outlines the usefulness of the sketch as a tool that an architect can use, basing on the examples provided by contemporary creators of architecture.

Keywords: sketch, architectural object, perception, space

Streszczenie

Szkic architektoniczny jest nieodłącznym elementem procesu kreacji przestrzeni architektonicznej, towarzysząc jej na każdym etapie powstawania zarówno idei, jak i samego dzieła. Jest przydatny jako element zapisu myśli architekta, jako element prezentacji w kontaktach z zamawiającym, ale również jako uzupełniające narzędzie w procesie nadzoru nad wznoszeniem obiektu. Dzięki swej wieloznaczności jest elementem pobudzającym wyobraźnię na etapie wstępnym powstawania projektu, a jednocześnie dzięki łatwości tworzenia szkicu jest najprostszym sposobem kontaktu i przekazu myśli również na placu budowy. Artykuł przedstawia przydatność szkicu jako narzędzia w pracy architekta na przykładach twórczości współczesnych twórców architektury

Słowa kluczowe: szkic, obiekt architektoniczny, percepcja, przestrzeń

* Ph.D. Arch. Janusz Barnaś, Institute of Architectural Design, Faculty of Architecture, Cracow University of Technology.

1. Introduction/the role of the sketch

When discussing the topic of the sketch, architects usually think of similar concepts. To them, it is one of the steps of arriving at the final design solutions of a design in the form of recording their thoughts with the use of a freehand drawing. At the initial stage of the development of an idea, there exist many doubts and questions about the shape of an idea, its logical structure and its final form. This process is often accompanied by a sort of creative restlessness. The sketch can be seen as an emanation of this restlessness. It often leaves a lot of room for interpretation as it frequently consists of a large number of overlapping lines, which often signifies the multitude of ideas that are spawned in the imagination of the author. At times, it is so complicated that without knowing what its author really meant we can arrive at a somewhat different conclusion. There is, however, no doubt that the sketch stimulates the imagination. The sketch is a sort of errata – whether used during the first meetings with the client, during negotiations and meetings discussing technical matters, even when the idea has its form fixed and accepted. The discussion can move on to a specific element or part of the composition, while having as an axis a fixed and defined object. The role of the sketch, with some modifications, is similar during a design's construction phase. It can depict certain technological solutions, which can be read by contractors at a construction site. It illustrates an interpretation of clearly defined drawings that had been developed earlier. It can also be a means of presenting alternative design solutions on the go, including technical details.

2. The drawing and its role

Throughout history, freehand drawing has been one of the first means of communication between people, as well as of recording information. It is used to record the events of one's life and the emotions tied to them (ill. 2). The first writing systems were also based on drawings¹.

To this day, the drawing is the most universal method of illustration, used both in high and applied art. Throughout the course of the development of drawing, the tools used to perform it and the theory behind it have been greatly expanded.

The first plans of Egyptian buildings were drawn on sheets of papyrus, specially treated pieces of wood or on a layer of gypsum.

The very term “to draw” in some languages can be derived from the tool that was used to perform the action. In ancient Greece, the action of drawing, painting or writing was defined with a single term “graphein”. It stemmed from the name of a drawing utensil. During later periods, the word gained additional meaning, yet that which pertained to the act of drawing

¹ Proper writing systems were developed from pictograms, with the writing systems of the Cheyennes and Iroquois of North America, the writing of the Jukagirs of northern Syberia, as well as old Egyptian hieroglyphics, in which word-pictures represented a particular idea, creating an ideographic writing system, *Encyklopedia PWN*, Wydawnictwo Naukowe PWN, electronic edition (<http://encyklopedia.pwn.pl/haslo/pismo;3957699.html>).

was still related to the word “grapho” (ie. skiagraphé, perspective drawing). The Romans used the Greek term “graphis” at first². Afterwards, the term “linea” came to be understood as a line on a drawing, hence Pliny the Elder’s³ term *pictura linearis*.

During the early Middle Ages, drawing was not used on a large scale to depict buildings or their plans. There are findings which point to the use of illustrative drawings. Buildings and their designs were again depicted in drawn form during the Gothic period. However, it was the Renaissance that brought with it the full potential of the drawing as a tool for precise illustration of an author’s idea. Painting, sculpture and architecture were described using the term “*arti del disegno*”, or the drawing arts⁴. The Italian word *disegno* meant the idea, the concept, but also a drawing. Lorenzo Ghiberti⁵ was the first to claim that drawing is the foundation of all other arts. All of the writers of the time, who wrote about the arts, were in agreement that the drawing is an integral part of a good work. Michelangelo supposedly claimed that “The skill of drawing is the source and core of the art of painting, sculpture and architecture, and of all depiction of what the senses can perceive (...). The draftsman who becomes the master of this skill, has in his possession an invaluable treasure”⁶.

The architectural freehand drawing was often treated as a part of the design documentation that was required to construct a building, or as a means of reaching the final design solutions (ill. 2). The techniques used in drawing have entered common usage, becoming an important element of architectural education⁷.

The role of drawing as a means of presenting architectural ideas became more and more prized as time went on.

At times, the drawing of a building can illustrate the idea behind it much better, as well as provide a clarity of thought, due to the fact that the built result is often a compromise between the audacity of the author and factors like the financial capabilities of the client, or other mundane factors, like the local zoning conditions present at the site. This is an

² A described by Vitruvius, *De Architectura Libri Decem*, Wydawnictwo Prószyński i S-ka, Warszawa 2004.

³ *Wiątki co do sztuk z trzech rozdziałów Pliniusza ściągające się do malarstwa y snycerstwa u dawnych*, W Drukarni Piarskiéy, a publication financed with the help of grants from the „System upowszechniania piśmienniczych zbiorów specjalnych OSSOLINEUM we Wrocławiu poprzez digitalizację i publikację internetową jako promocja i popularyzacja dziedzictwa kulturowego” project; oai:www.dbc.wroc.pl:publication:6705; *O sztuce u dawnych, czyli Winkelman Polski, Stanisława Potockiego* (http://www.europeana.eu/portal/record/09404/id_oai_www_dbc_wroc_pl_6189.html?query=pliniusza+starszego&qt=false).

⁴ *Encyklopedia PWN*, Wydawnictwo Naukowe PWN, digital edition (<http://encyklopedia.pwn.pl/haslo/sztuka;3983499.html>).

⁵ L. Ghiberti, *I commentarii*, wyd. Giunti, 1998.

⁶ F. de Hollanda, *Dialogki Romani* (1548), a fragment in *Disegno – rysunek u źródeł sztuki nowożytnej*, red. T. J. Żuchowski, S. Dudzik, Wyd. Uniwersytetu Mikołaja Kopernika, Toruń 2001, scientific session proceedings material, Toruń 2000.

⁷ Białkiewicz A., *O rysunku architektonicznym*, Teka Kom. Arch. Urb. Stud. Krajobr. – OL PAN, 53-60, 2006, s. 56.

important situation, as it shows that we can take interest in architectural drawings as a separate issue⁸.

3. The drawing and the sketch during the construction phase of a design

Constructing buildings is a costly affair. The physical process of building a structure requires sound preparation. Over time, there has developed a system of organizing and communicating the architectural idea and its presentation, which includes ways to depict the development of an idea and the way it is meant to be implemented. The drawing, regardless of how it is made, and the architectural sketch are the two most often used forms of depicting an architectural idea. The sketch⁹ communicates an early phase of the development of an idea, it is, by nature, unfinished, which does not mean that it is imperfect¹⁰. The sketch not only illustrates the end result of the creative process, it also shows the very process of creation. We can observe, through the multitude of lines that mutually overlap, the search for the final form of the depiction of a work and the multiple choices the author needs to make until the very end. These thoughts, registered in the multitude of uneven lines become a drawing – a “static endpoint”, as Arnheim puts it¹¹. The large number of lines causes the effect that the sketch can be interpreted in many ways.

The sketch also proves to be a useful tool at a later design stage. This stage is most often the search for inspiration, the means to record it and analyze it. The sketch is used here akin to writer’s notepad, used to collect the author’s impressions and thoughts at work, during travel (Ill. 3) or while looking at other works of architecture.

The way the leading creators of modern architecture work shows us the importance of the sketch and freehand drawing. Each of their buildings shows us that they too can emphasize the importance of freehand drawing in the process of design. Many architects record their vision of their design in the form of an artistically and spatially defined image – although very basic in its form – an image that is drawn at the beginning of the creative process. Most of the ideas that are recorded in the form of sketches remain an integral part of the work until it is finished. They are recordings of the main spatial solutions.

P. Zumthor was content with a sketch that illustrates the basic factors that shape the functioning of a building (Ill. 4). The sketches of Dominique Perrault, although highly

⁸ Drawing museum – Sir John Sloane’s Museum, founded in 1833 at the architect’s home, 13 Lincoln’s Inn Fields, London, Great Britain, it contains a large collection of architectural drawings from as early as the XVI century, as well as architectural models and other items of material culture (<http://www.soane.org>).

⁹ “The sketch – the first recording of the concept of an artistic work, the design of an artistic work (of a painting or sculpture), made hastily using a simple technique, evaluated and modified over the course of creative work”, *Encyklopedia PWN*, Wydawnictwo Naukowe PWN, digital edition (<http://encyklopedia.pwn.pl/encyklopedia/szkic;1.html>).

¹⁰ See the works of Tatarkiewicz and his thoughts on the nature of completeness and perfection, P. Gajewski, *Zapisy myśli o przestrzeni*, Politechnika Krakowska, Kraków 2001, p. 114.

¹¹ R. Arnheim, *Sztuka i percepcja wzrokowa*, Słowo/Obraz/Terytoria, Gdańsk 2004, p. 201.

synthetic and of an uneven line, are a sort of a resume of the idea of the building and contain only the basic information regarding the volume of the geometry of the building of the Bibliothèque Nationale de France in Paris and their relations, as well as information regarding the number of levels and the important elements that influence the functionality of the complex as functional mechanisms (Ill. 5). The sketches of the Planetarium in Valencia by Santiago Calatrava are a search for inspiration, relations and a point of egress into a concept, and are a recording of the path of its evolution (Ill. 6). The sketches of Zaha Hadid are, on the other hand, full of expression and highly synthetic, being more of an impression and the impulse to create a dynamic architectural space of the Museum of XXI Century Art in Rome (Ill. 7), or the Salerno Maritime Terminal (Ill. 8), rather than being a presentation of the geometry of the buildings themselves.

The currently active architectural schools can be divided into those, that stress the matter of teaching freehand drawing and those that do not. The elimination of the teaching of freehand drawing often has its source at the fascination with the possibilities offered by computer aided design and the ever growing improvement of graphics design software. The technical possibilities are impressive in this regard. These tendencies are visible especially in the USA and the countries of Western Europe. Digital design techniques play an important role in making it easier to develop design documentation at the technical and construction stages, allowing the entire construction process to be much smoother and faster. Computer aided design allows us to make our documentation much more precise, as well as permits simplifications and calculations that need to be performed. There is a visible trend towards the return to the teaching of freehand drawing where it was previously not included in the curriculum. It seems evident then, that the restriction in teaching freehand drawing has negatively impacted the entire process of teaching architectural design. Currently, one of the basic rules of educating architects and their further professional development is that they are to be taught the art of realistic freehand drawing based on perspective and the proper construction of geometry. The sketch is a very general form of drawing. IT is treated as the first phase of recording one's idea of a building and can serve as a means of arriving at a point in the creative process where it can become the subject of a fully fledged realistic image.

4. Conclusions

“Reality is not digital, it is not binary, it is analog. It is something gradual,. In other words, reality is a quality of objects in the same manner as they have mass”¹². This view is often the winning argument in whether or not a school of architecture should teach freehand drawing as a part of the design process of a building. We can observe that despite computer aided design becoming the factual norm, the importance of freehand drawing is rising, and it is viewed as a basic tool to stimulate one's spatial imagination. During an architect's

¹² A. Asanowicz, *Zapis przestrzeni jest przestrzenią*, [in:] *Definiowanie przestrzeni architektonicznej – Zapis przestrzeni architektonicznej*, M. Misiągiewicz, D. Kozłowski (red.), Monography 441, vol. 2, Architecture series, Wydawnictwo PK, Kraków 2013, p. 7.

work, the drawing and sketch fulfil two very basic roles: they develop a precise spatial imagination, which is the cornerstone of the creative process, in addition to being the basic means of communication.

- III. 1. Leang Bulu Betue cave paintings, discovered near the Indonesian village of Maros on the island of Sulawesi, during the 1960's by Clementine Heeren-Pal, dated in 2014 by the team of Dr Maxime Aubert from Griffith University in Australia to around 40 000 BC, thought to be the oldest of its kind in the world (<http://www.world-archaeology.com/world/asia/indonesia/artistic-origins-redefined.htm>)
- III. 2. Fragment of one of the pages of Leonardo da Vinci's manuscript dedicated to the construction of an ideal city (source: Luciano Berti, Marco Rosci, *Sztuka Świata*, Arkady, Warszawa 1994, p. 272)
- III. 3. Sketch of the Manhattan island from the ocean side, Le Corbusier, 1937 (source: *Le Corbusier's Secret Laboratory, From Painting to Architecture*, Hatje Cantz Verlag, Ostfildern, 2013, p. 79)
- III. 4. Sketch of the Kunsthau Bregenz building, Zumthor P. (source: Ch. Spiegel, *Kunsthau Bregenz*, Verlag Gerd Hatje, Ostfildern, Ruit, 1999, p. 11)
- III. 5. Sketch of the Bibliotheque Nationale de France building, Dominique Perrault (source: E. Guttman, C. Chamberlain, *In interview with Dominique Perrault* (<http://www.mlstudio.co.uk/blog/tag/hda>))
- III. 6. Sketch of the Planetarium building in Valencia, Santiago Calatrava (source: P. Jodidio, *Calatrava Complete Works 1979–2009*, Verlag Taschen GmbH, Koeln, 2009, p. 218-219)
- III. 7. Sketch of the Museum of XXI Century Art in Rome, Zaha Hadid (source: <http://www.zaha-hadid.com/architecture/maxxi>)
- III. 8. Sketch of the Salerno Maritime Terminal building in Salerno, Zaha Hadid (source: <http://www.zaha-hadid.com/architecture/salerno-maritime-terminal>)

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PRZEMYSŁAW BIGAJ*

ARCHITECTURAL DRAWING – ILLUSTRATING THE ELEMENTS OF THE INVENTED WORLD

RYSUNEK ARCHITEKTONICZNY – OBRAZOWANIE ELEMENTÓW ŚWIATA WYMYŚLONEGO

Abstract

An architectural design is still the main means of artistic expression in illustrating the elements of the world invented by architects. For the last two decades this elementary way of expressing artistic intentions has been consequently replaced by new devices – a computer and software which enable digital modeling of the designed objects. This phenomenon proceeds mainly in the issues connected with presenting an architectural idea, so that it concerns the analyses that finish the artistic process of an object designed. Even at the level of competitions more and more often visualizations and not the drawings of an object are becoming the obligatory element of the work submitted. The article discusses today's role and importance of an architectural drawing in the artistic process and architect's artistic workshop.

Keywords: architectural drawing, illustrating, record, presentation of an idea

Streszczenie

Rysunek architektoniczny pozostaje wciąż podstawowym środkiem wyrazu artystycznego w obrazowaniu elementów świata wymyślanego przez architektów. Przez ostatnie dwie dekady ten elementarny sposób przekazywania intencji twórczych jest konsekwentnie wypierany przez nowe narzędzia – komputer i oprogramowanie, pozwalające na cyfrowe modelowanie projektowanych obiektów. Zjawisko to postępuje zwłaszcza w kwestiach związanych z prezentacją idei architektonicznej, a więc dotyczy opracowań wieńczących proces twórczy projektowanej rzeczy. Nawet na etapie konkursów coraz częściej to wizualizacje, a nie rysunki obiektu stają się obligatoryjnym elementem zakresu składanej pracy. W artykule przybliżono dzisiaj rolę i znaczenie rysunku architektonicznego w procesie twórczym i warsztacie architekta.

Słowa kluczowe: rysunek architektoniczny, obrazowanie, zapis, prezentacja idei

* Ph.D. Arch. Przemysław Bigaj, Department of Housing and Architectural Composition, Faculty of Architecture, Cracow University of Technology.

“The best graphic artist may be a weak architect. The best architect may be a weak graphic artist. While choosing an occupation of an architect one should be graphically talented. Our whole new architecture was invented at the drawing board and the pictures drawn this way are presented artistically, similarly to the paintings in panoptikum”¹.

Adolf Loos, *Architecture*, 1910

“An architect (...) shall know the drawing in order to easily create the picture of intended work of art with the use of sketches”². A lot of beginners in architecture met these words by Marcus Vitruvius Pollio from the work *De architectura libri decem* at the beginning of their career. The drawing is the basic skill, although just one among many others, which is necessary, according to Vitruvius, in trying to reach “the top of the temple of architecture”. This pragmatic statement carries the essence of the aim of the art of drawing in the architect’s job – it is the ability to illustrate the elements of the world invented by the artist. This ability to present the idea of the work of art has become not only a form of communication with masters of building craftsmanship but mainly an element of the job which allowed to present and explain the suggested design solutions in order to persuade the patronage to execute artistic intentions. Those who mastered and brought this ability to the level of art many times gained the titles of masters and became authorities in the area of architecture. Nowadays, it seems that this situation has changed a lot. Although freehand drawing is still the main means of artistic expression it has been consequently displaced by new devices such as a computer and software enabling digital modeling and visualizing of a construction designed.

In the years 2011–2013 a small Museum of Architectural Drawing in Berlin run by Tchoban Foundation was built in the area of old Pfefferberg industrial building (the author: SPEECH Tchoban & Kuznetsov). This museum owns a collection of both old works, coming from the 16th century, and modern works by architects from the 20th and 21st centuries. One of the aims of this initiative was “to revive the interest in architectural drawing”³. The crisis in hand drawing architecture putting emphasis on an author’s study of an object designed is confirmed by creating such kinds of modern buildings – institutions. It induces further reflection on today’s role and importance of architectural drawing not only in the artistic process and workshop of an architect but also in accordance with modern ways of presentation of architectural works in which drawing is more often displaced by new computer technology.

It seems that only two decades were enough to popularize computer methods of modeling and visualizing objects in order to marginalize centuries-old role and importance of architectural drawing in illustrating invented buildings. This phenomenon proceeds dynamically mainly in the issues connected with presentation of an architectural idea, so it concerns individual study finishing artistic process of the designed object. A drawing

¹ A. Loos, *Architektura*, 1910, [in:] A. Loos, *Ornament i zbrodnia. Eseje wybrane*, translated by A. Stępnikowska-Berns, Fundacja Centrum Architektury, Warszawa 2013, p. 147.

² Witruwiusz, *O architekturze ksiąg dziesięć*, translated K. Kumaniecki, Prószyński i S-ka, Warszawa 2004, pp. 24-25.

³ P. Olszewska, *Rysunki na Pieprzowej Górze*, Architektura & Biznes, nr 7/8, 2013, pp. 70-73.

that illustrates the final vision of an architectural thing becomes a niche phenomenon in the professional practice. This ongoing process dominates even at the stage of settling architectural competitions in which more often computer visualizations of a building and not drawings by hand become an obligatory element of a work submitted. Gradual abandoning hand drawn architecture seems to marginalize artistic ethos of an artist – architect, whose job has been perceived until now as an occupation connected with liberal arts. The masters of Renaissance such as Federico Zuccari (treatise *Ideas of painters, sculptors and architects*, 1607) strived for such an image propagating the idea of the term *disegno*⁴. Not without reason a triad of the visual arts, painting, sculpture and architecture, was determined then as *arti del disegno*, i.e. “drawing arts”. It should be notified that the architect’s profession, though including a lot of branches and abilities, in ancient times did not gain the range of “liberal art”. Władysław Tatarkiewicz writes about it in his work *Historia estetyki*, “High education was required from an architect by ancient theoreticians – but nevertheless they did not decide to treat his work as liberal art. Cicero (...) considered architects to be ordinary artificers, peons who are the opposites of educated men, studios excellentes”⁵.

Nowadays, architecture drawn by hand often finishes its existence at the stage of architectural education as a necessary cognitive element in teaching process. The art of drawing the architecture in further professional practice seems to limit its existence to sketches that present only creative process of thought and show the forms of intended works in succinct way – sometimes they present some lines – a record of the intentions of the author. It is seen in specialist publications, architectural output exhibitions and studies presenting the ideas of projects – sketches are dominant. Only a few architects representing the new generation of architecture artists cultivate tricks of “old school” and present artistic character of object through original drawings by hand. This phenomenon extends with the increase of accessibility of new technologies supporting the designing process. It often leads to a kind of professional pathology – limitation in architectural output to creating the works based only on technical drawings which do not present the essence of design issue – the image of a building, and Janusz Krupiński pays attention to it by writing, “Unfortunately we often deal with architects who work only at the level of a technical drawing. Such drawing relates to a building and not the image of a building. Some authors have enough imagination to imagine the final result... But if they are victims of a functionalist doctrine which disregards, negates the importance of a building image, they do not have any need to see the form of a building – from the user’s perspective. Will computer programmes, virtual reality technique replace imagination? Which *disegno* are they created with?”⁶.

⁴ F. Zuccari, *Idea malarzy, rzeźbiarzy i architektów*, 1607, [in:] *Teoretycy, pisarze i artyści o sztuce. 1500–1600*, chosen and worked out by J. Białostocki, słowo/obraz/terytoria, Gdańsk 2007, pp. 386-401.

⁵ W. Tatarkiewicz, *Historia Estetyki*, v. 1, Arkady, Warszawa 1988, p. 253.

⁶ J. Krupiński, *Disegno. Renesansowa idea disegno jako teoria estetyki świata*, *Estetyka i krytyka*, 7/8 (2/2004-1/2005), UJ, Kraków 2005, p. 57 (look: a footnote nr 16), [in:] http://www.krupinski.asp.krakow.pl/index.php?page=docs/disegno...teoria_estetyki.htm&type=teksty. J. Krupiński also wrote about this issue in the text: *Funkcjonalizm, zapoznana kategoria obrazu*, *Architektura & Biznes*, nr 6, 2002, pp. 68-73.

It seems that an architect's occupation, thanks to modern devices and computer technology development, is going to enter a new stage of development which has been unavailable so far. From now on an author's drawing will be gradually replaced by pictures generated by specialist programmes supporting the process of designing. Nowadays BIM software (*Building Information Modeling*) is being introduced. It enables to model the structure of a construction and determine at the same time its functional and physical parameters reflecting their real features in digital recording of an area. An unavoidable phenomenon is gradual transferring an artistic process into virtual reality presented in digital version without author's participation – a drawing by hand which crowns the designed work. Tools and media are changing, the essence of creating – *internal disegno* – remains. It will turn out in the future to what extent it will be a natural process of evolution of this profession, changing only the way of illustrating an architectural construction and being the source of a need of an original presentation of a building form, and to what extent it will be a process forced by obligatory market or legal conditions dictated by economic rationality of designing process. Then, may the pleasure of drawing an invented architectural construction be replaced by the pleasure of visualizing it in virtual reality? It does not depend only on an author but also on a receiver – a sponsor who also notices an exceptional and unique quality in this architectural craftsmanship. Paradoxically software that converts designed virtual reality into a form of presentation – an imitation of a drawing – has been invented. It confirms that there is a further need to create drawing architecture even in virtual reality.

Up to the end of 19th and the beginning of 20th centuries an architectural drawing became such a dominant element in an architect's workshop that this profession started to be associated with the profession of an artist – a graphic designer of architecture, and not with its creator – a builder. Adolf Loos pays attention to this fact in his essay *Architecture* (1910) focusing on the real use of this ability and demanding to treat the drawing as a means to achieve the goal which is architecture, just like it was in the past. A. Loos writes, “Art of building has come closer to the level of graphic art. Not the one who can build well lands the contract but the one whose works look the best in paper form. And these are antipodes”⁷. And further he talks about the importance of drawing in an architect's work. “For old masters a drawing was only a means that made it easier to communicate with a craftsman. Like in the case of a poet – for him the means of expression is the written word”⁸. Loos also explains the differences between illustrating architecture with the use of drawings and the essence of authenticity of experiencing the realised building. He writes, “It is getting really awful when an architectural drawing, which must be considered as an art because of the way of its presentation – and there are a lot of artists of graphics among architects – so it is really terrible when this drawing is realised in stone, iron or glass. The sign of authentically experienced building is the fact that it does not make any impression when it is on the surface”⁹. Rationalistic attitude to the occupation presented by Loos treats drawing architecture as a means to picture the creator's invention. The final form, a realised building, gives an

⁷ A. Loos, *op. cit.*, p. 147.

⁸ *Ibidem*, pp.147-148.

⁹ *Ibidem*, p. 148.

authentic complete impression in experiencing an element of material culture. Heading for synthesis in the recording of a picture of an invented architectural construction, just like it was in the case of painting, soon became a basis to abandon historicizing, figurative forms known from the past and to develop trends of abstractionism which form the bases for new aesthetics in modern art.

While analysing the 20th century output of drawing architecture it makes you think that it was the last age in which the skill to show work with the use of a hand drawing was a key element of an artistic presentation carrying substantial marks of individualism and authenticity of artistic work. With the coming of the new millennium a significant departure from freehand drawing techniques is noticed in practical activity of architects. They started to use computer made visualizations of buildings. It happens even while presenting a final picture of a designed building which shows an emotional relationship of a creator with an invented work and displays his subjective opinion about the character of a construction.

A drawing by hand, for ages of its existence, has not only been a unique illustration of an artist's intention but also a presentation of an architectural area, which is at the same time an element creating an expression of architect's artistic identity. We may mention here some people from the world of architecture, for example G.B. Piranesi, K.F. Schinkel, Le Corbusier, E. Mendelsohn, M. Botta, A. Rossi, J. Hejduk, L. Krier, Z. Hadid, M. Scolari or L. Woods and on the basis of their way of illustrating the elements of the invented world we may notice the originality and artistry of "artistic mannerism" which is a sign of a peculiar "style" of an architect. He may be identified through his creative output – a drawing. Technological imperative of devices supporting the process of designing made an artistic act be more a technical activity than artistic one. An architect more often becomes not a graphic artist of architecture but a graphic designer using specialist software which makes it easier to present an artistic work. The art of presenting the invented work has never been changing its form so rapidly and quickly before. Still undeniable is the importance and value of drawing architecture in the teaching and cognitive process for the trainee graduates of this art. Also, in the case of theoretical works, the role of drawing seems to be prominent in the presentation of rules and artistic ideas. There is also a pleasure to draw architecture; it exists just for the pleasure of creating the pictures of architecture, often abstract, irrational or surrealist. Publications by Maria Misiągiewicz *About the presentation of the architectural idea*, and by Leszek Maluga *Autonomous architectural drawings* discuss this subject.

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MARCIN CHARCIAREK*

IDEALIZATION AND ARRANGEMENT IN DRAWN ARCHITECTURE

IDEALIZACJA I UPORZĄDKOWANIE W ARCHITEKTURZE RYSOWANEJ

Abstract

The creator of a drawing in the process of unifying idea and architectural material is giving that relation a suitable aesthetic dimension, trying to see in it a clear unity of form and matter. Recording, sketching, drawing – in the face of such delimitation, establish an appropriate range of imagination and organize thinking about architecture – from the idea of illustrating the shape of the intention to making it materialize. Drawing requires an effort of mind and thoughts, matter- that of ordering and selection.

Keywords: idea-matter, image of matter, notation of idea

Streszczenie

Twórca w rysunkowym procesie jednoczenia idei i tworzywa architektonicznego nadaje tej relacji wymiaru estetycznego, starając się dostrzec w niej klarowną jedność formy i materii. Zapis, szkic, rysunek – wobec tak wytyczonego zagadnienia relacji idei i materii ustanawia zakres wyobrażenia i uporządkowania myślenia o architekturze – od idei obrazującej intencję aż do kształtu zrealizowania w konkretnej materii. Rysunek wymagał wysiłku umysłu i myśli, materia – uporządkowania i wyboru.

Słowa kluczowe: idea-materia, zapis idei, obraz materii

* Ph.D. Arch. Marcin Charciarek, Chair of Housing Architecture and Architectural Composition, Faculty of Architecture, Cracow University of Technology.

Idealization of “paper reality”. In architecture, the image of reality has always seemed to be inadequate. This encourages the belief that a work of art is not only a form relating directly to the moment of creation, but has an independent broader context of the eternal search for the perfect architectural space.

Viewing the issue of architectural drawing as a search for the *ideal*, as a metaphoric formula – an element expressing the unity with the epoch, has another, discursive aspect in addition to the functional one. Jan Białostocki writes about this issue, stressing the fact that many aspects of art can be understood much better when expressed as a crystallization of desires, rather than a picture of reality. The critic writes that art always contains an element of “leveling” of a dearth of reality – even today it retains *compensatory* function: “(...) Very often art was not a mirror image, reflection, expression of life, but compensation, it was giving a shape to what was missing in life, supplementing the existence of the elements which man needed”¹.

Like other disciplines, drawn architecture (as a dream of ideality, improving reality) is not only a reflection, but a juxtaposition of the imaginary world and the real world. It creates substitutes and myths rather than images of what it is. The compensatory functions of drawn, painted or sketched architectural works lead sometimes to the impression of aesthetic experience and create a basis for metaphorization and symbolization. Built on this thesis, is a popular belief that one of the basic tasks of art is the creation of artificial worlds – imaginary ones, in which creative imagination has the task of creating alternative, often contradictory, “ideal” basis of understanding the essence of aesthetics and its perception. In this case, the metaphor as a poetic tool for disregarding the realism of temporality, becomes the primary function of creating an idealized fiction.

Compensatory nature of the image, however, is something other than a metaphorical role of the building. The image is able to reproduce a model of architecture that can lose its identity in a three-dimensional and physical artwork, contained within the walls, the ceiling and the floor of a real structure. On the other hand, the material can give a new meaning, impressions, which cannot be found in the sphere of drawn architecture.

The image of the idea. In the drawing process of unification of idea and material, the architect will give an aesthetic dimension to this relationship by trying to give it an architectural unity. Recording, sketching, drawing – in the face of the relationship delineated in this manner, establish the way and orderliness of thinking about architecture – are a record of the idea illustrating the *intention* to materialize.

From the time of the Renaissance the “studies of perspective” allowed the architect to link architecture with theoretical thought and imaging, thus giving it the status of ideological and intellectual work. Drawing required effort of mind and thought, matter that of ordering and selection by which architects proved that a work of architecture was nothing more than matter, but matter shaped in a unique way expressing the artist’s specific idea known as a *style*. According to Leon Battista Alberti, the record seemed to be an attempt to “substantialize” idea through the designation of boundaries by means of perspective, axonometry, plans, sections, interdependencies between the elements of the composition².

¹ J. Białostocki, *Sztuka i kompensacja*, [w:] *Refleksje i syntezy ze świata sztuki*, Warszawa 1978, s. 204.

² L. B. Alberti, *Książ dziesięć o sztuce budowania*, Warszawa 1960, p. 16.

A specific correlation in this record of the idea seems to be a presentation of the tension between “the resistance of matter” and the requirements of intent, trying to bring out matter’s capabilities for a perfect, absolute self-determination and organization. The “embodiment” of an image is therefore a step to transfer thoughts and words into the visible world, the reality of bodies, things, objects and knowable senses – not only ideologically. Rudolf Wittkower’s idea, which reveals another role of architectural record as the one allowing a deeper vision of spatial things, and their appropriate record of idea/material, also makes it possible to recognize the nature of the things, while keeping a certain distance from the image³. Subordination of the whole to the part and the part to the whole is an automatic recognition of the form’s order. The record outlining the *idea* is the beginning of *harmony* derived from the architect’s thought, in the context of which *matter* seems to be a complementary factor (present in many other buildings), but a significant one, hiding in itself an *ordering* of the idea in matter.

The link between the real (material) world of architecture and the drawn one (mapping ideas) constitutes an ongoing experience in the history of building, continuously generating new interpretations of the perception and recording of architecture. This changeable account of the transition from the plasticity of an image through rational choices of figure shapes to mathematical and physical categorization of the structure allows the world of architecture to be seen as something dynamic between something conceived and sketched and later plotted and erected. That is why in the *Sophist* the philosopher wonders if we do not make some structures by the ability to build and others by the ability to create the image which is a kind of a *dreamy vision*⁴. This confirms the thesis that a drawn record does not only reflect the aesthetic value but its visual expression adds or generates a metaphor necessary to create an architecture which the artist considers ideal. In this way, we can perceive the drawing as a model, but with a different, immaterial quality worthy of poetic things. It results from an impact, through the drawing, of the “fictitious reality” of the record of imaginary architectural space which is a representation of architecture on a piece of paper initially devoid of any “resistance” of matter and imperfections. It happens that subsequent categories of the artwork’s materialization cause a transformation and disintegration of the ideological sense of the architectural record – what is ideal and what is real, what is formal and what material.

The intentional image is thus able to reproduce a model of architecture. The classification of these images, though rich and multidirectional can in fact be interpreted in two ways – firstly, it is to present (through free interpretation) the chosen architectural idea, and secondly – it is a physical carrier of the architect’s material intentions and a record of the first matter transformed into the physicality of the work of architecture. Any image of *drawn architecture* seems to be a reference point for material ordering of illusion which, by way of approximation from a conception (outline) to the construction project (built structure) – reaches an appropriate degree of information content approaching the essence of perception of architecture or attempting to do so.

³ R. Wittkower, *Interpretacja symboli wizualnych*, [w:] *Symboli i symbolika*, Warszawa 1991, p. 343.

⁴ Platon, *Sofista, Polityk*, Kęty 2002, p. 72.

Arrangement of matter. It is believed that the whole theory of architecture can be explained in terms of material factors. It is the available matter that determines the idea showing a certain order, a force resulting from the relationship of individual parts to one another and their relationship to the whole. Changing the hierarchy of importance does not seem to affect the eternal form-matter “opposition”, but only suggests an alternative way of understanding the form as a result of the *transition* of the world of ideas and the *changeability* (*novelty*) of matter. Massimo Scolari (situating drawn architecture outside of the field of art) claims that it is through technical dimension (matter) that architecture releases all the qualities which make it an expression of collective beauty as it reduces the range of possibilities to one most appropriate solution immediately and ‘voicelessly’⁵. A formal analysis alone cannot reveal the properties of non-homogenous elements which create the imperceptible cohesion of architecture, and that is why, when we look at a drawing, what we can see is a resultant “residue” of what has been designed as an entity in matter.

This is not a new attitude. Gottfried Semper was the first to see an artwork not as a reflection of ideas, but as a phenomenon of material space united in a holistic structure. Among the followers of the material version of the history of architecture which illustrates various changes in the structure by means of projection, cross-section or axonometry, we can find other distinguished critics of architecture – Emil Kaufmann, Kenneth Frampton and Colin Rowe. For each of them, the basis for the study of architecture was the relationship between the drawn plan (as a tool for illustrating the material possibilities) and the ideal shape of the architecture. However, for the critics, the most significant moments in the history of architecture are the ones that indicate breaking or maintaining the continuity of formal and structural systems through adjusting them to the “new” perception of matter and its technology.

For Kaufmann the cause of change in the autonomy of the eighteenth century neoclassical architecture was the discrepancy between ideas and the used materials which lacked the “potency” to construct – as demonstrated by the drawn utopias of Claude Nicolas Ledoux’s and Etienne Louis Boullée’s.

Kenneth Frampton considers important the changes in terms of perfect tectonics – purely spatial transformations of architecture based on a solid, irreducible plan. Similarly, Coline Rowe thinks that material interpretation of architecture is a constant search for the purity of the drawn plan dependent on used building material, beginning from villas Rotonda and Malcontenta by Andrea Palladio and ending with the concrete villas Stein and Savoye by Le Corbusier. Comparing architectural masterpieces, critics focus on indicating the internal opposition of the idea-matter and use of different structural systems – in Palladio’s villas shown in vertical elevations and cross sections; in the works of Le Corbusier – an innovative layout – *open plan* hidden behind a simple, horizontal plane of the facade supported by a row of posts.

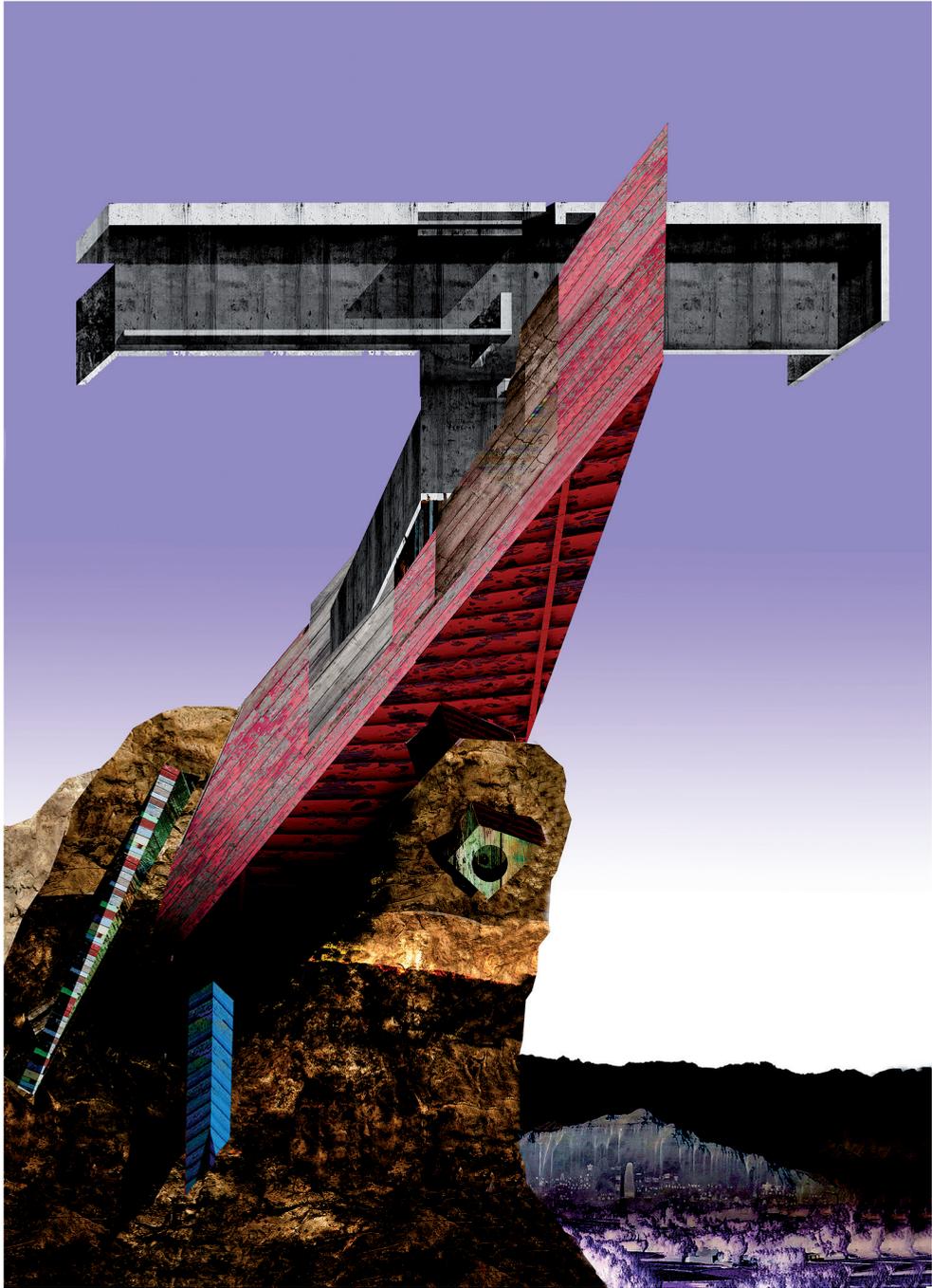
The theory of drawn architecture determined in this way claims that changes in the creation of idealistic architectural space are dependent on defining architectural matter, through which the content of the building in the form of a drawn architectural plan and cross-section is described in terms of its potentiality. Layout, section or architectural detail,

⁵ M. Scolari, *Aporie de l’architecture*, l’Architecture d’Aujourd’hui, nr 190/1977.

therefore, have become a standard way to represent the *material principle* of architecture, which, regulated by the imagined form with its 'ideal' meaning, reflects the way of using matter.

Therefore architectural drawing as a tool for representing matter is not a process of animating matter but rather a process of forming and organizing matter in accordance with a certain idea. The formation of the artwork and the formation of matter are not two processes. They constitute one integral process and the "intensity" of the correlation between the formal idea and matter requires interpretation (Il. 1)⁶.

⁶ A reference to the relationship between architectural ideas in terms of selected matter are architectural competitions – including the UNESCO concept competition, Cultural Centre at Bamiyan in Afghanistan (01'2015). The aim of the competition was to create such a form whose identity would fit in with the cultural heritage of the valley of the Hindu Kush – land adjacent to the temples and niches of the Buddhist statues carved in the rock, destroyed in 2001. For the authors (project team including: arch. K. Tarnowski, arch. M. Charciarek, visualizations: arch. W. Cieplucha, Arch. M. Kozieł) the first foundation of the construction of meanings was the term "reminiscence" – code for rebuilding forms of city, located in the past on the route of the Silk Road. This reminiscence is treated as a memory of the myth as a major source of potential shapes and building material typology *caravaserail* (geometry of central plan, wall, dome, garden, courtyard) as well as through the use of natural building materials. The material *Mausoleum*, located above the town and chromatic nostalgia created with solid walls, covered with carpets and lined painted wood, are the author's version of the space which discovers peaceful memories of the past – color, smells, tastes and textures. Mausoleum memorial project will serve as a reminder of ongoing reconstruction of the world – its destruction and deconstruction, renewal of meanings and reconstruction through the eternal conflict of heaven and earth – confrontation between vertical and horizontal, where MEMORY constitutes a metaphor of architecture.



III. 1. *Mausoleum*, first sketch, Bamiyan Cultrural Center competition, 2015 (author)

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KRZYSZTOF KOSZEWSKI*

WHY DO ARCHITECTS STILL DRAW (USING COMPUTER)? REMARKS ON TECHNIQUES COEXISTENCE

DLACZEGO ARCHITEKCI WCIĄŻ RYSUJĄ (UŻYWAJĄC KOMPUTERA)? REFLEKSJE NA TEMAT WSPÓLISTNIENIA TECHNIK

Abstract

As a discipline, architecture constantly needs to take on new challenges. Currently, a significant share of them regards presenting architectural ideas in the face of the IT revolution. In this context, it is reasonable to return to the question of why architects (still) draw. What – especially now – really is architectural drawing? What is the array of its unique features like in comparison with computer techniques? What is the unique potential of the latter, and is there a choice between them or are they mutually exclusive? One of the provided answers is to indicate a need for a critical analysis of the methods to present design ideas, regardless of the means used.

Keywords: *architectural drawing, IT in design, architectural visualisations*

Streszczenie

Architektura jako dyscyplina charakteryzuje się koniecznością podejmowania wciąż nowych wyzwań. Istotną ich część dotyczy obecnie przekazu idei architektonicznej w obliczu wyzwań rewolucji informatycznej. W tym kontekście zasadny jest powrót do pytania: dlaczego architekci (wciąż) rysują? Czym jest – zwłaszcza obecnie – rysunek architektoniczny? Jaki jest katalog jego unikalnych wartości w zestawieniu z technikami komputerowymi? Jaki jest z kolei niepowtarzalny potencjał tych ostatnich i czy rzeczywiście istnieje pomiędzy nimi wybór w postaci alternatywy wykluczającej? Czy i w jakich warunkach można mówić raczej o niezbędnej koniunkcji? Jedną z przytoczonych odpowiedzi jest wskazanie konieczności krytycznej analizy formy przekazu, niezależnie od stosowanych środków.

Słowa kluczowe: *rysunek architektoniczny, techniki komputerowe w projektowaniu, wizualizacje architektoniczne*

* Ph.D. Arch. Krzysztof Koszewski, Chair of Architectural Design, Faculty of Architecture, Warsaw University of Technology.

Why do architects (still) draw? This question, asked in the age of dynamic changes leading to a knowledge-based society, indirectly shows the particular division between the traditional and modern forms of communication in architecture. The fact that the question has been asked is significant in itself (is it not obvious?); on the other hand, the question has its thesis: if it is asked, this means that in fact architects really draw. The word *still* suggest remaining within the tradition. It has been taken from the title of Paolo Belardi's book *Why architects still draw*, in which he discusses the state of the drawing in the age of inevitable presence of digital tools [1].

When attempting to analyse the junction between the traditional (pen and paper) and the new (digital) presentation techniques in architecture, one needs to ask some systematizing questions. When beginning to define the architectural drawing¹, one could ask what is its nature? Is it, as the conference theses stated, both a drawing presenting architecture and a drawing made by an architect? Let us trace the possibilities to define this notion – as in every discourse, precision is of utmost importance. The purpose of these deliberations will not be to present a definition – which seems to be significantly difficult – but to indicate features in the light of which new forms of presentation may be analysed.

The first possibility is to look for a classification criterion for an image that has already been created. We can do that by asking: who? or more precisely: who is the author? Unfortunately, it is not a strict criterion. A definition built on this basis may become too narrow or too imprecise. Who is an architect? One who designs buildings? One who drives at the design taking a real form by giving it a form of a work? One who received proper education? Or maybe one who has the skill to understand the complicated structure of space and is able to show it? On the other hand, said definition may appear too wide, especially when architects go outside the set borders of their profession. Without referring to Renaissance artists who worked in various fields such as architecture, painting or sculpting, let us mention some of the more modern ones. One can list many names and works, from paintings by Le Corbusier, through works of Oskar Hansen and Will Alsop, to finish with the drawings by Janusz Kapusta or posters by Rafał Olbiński and many, many more. These would always be works that do not directly refer to architecture but were made by architects².

Another question one might face when defining architectural drawing is: what? What is in the picture? Going for the most obvious answer, again we are faced with problems. A countless number of works show architecture without them being architectural drawings. Just look at splendid pictures that comprise travel notes and you can immediately see the difference in the approach to presenting architecture when done by architects, painters,

¹ Keeping in mind the possibilities for comparison of techniques, in this text, I am using the phrase *architectural drawing* in its broad meaning that does not only refer to the linear technique of putting the value onto a plane by leaving a mark from the tool. This includes all traditional methods of imaging connected with architecture (including painting techniques).

² It does not only include architects who work in the profession. In this case, the criterion was the architectural education which undoubtedly leaves a mark in the form of a particular view on the world.

graphic designers³ [7]. However, the definition made on the basis of the content of a drawing may not only become too wide, but also too narrow. When drawing a human figure, a machine or even a landscape – all in all, not architecture – architects deal less with likeness, but rather with a spatial and functional structure of the object, and draw from the areas of its morphology or even its genetic features.

Therefore, maybe one should ask: why? The Meaning built in this fashion focuses on the features of the drawing and sets aside its content or its creator (although, not depriving them of any significance). However, there is a problem in forming a set of features that would define such picture in a clear way, define it among the sea of others, bring out the features that are unique only to that picture. It is a question about the view on the world that goes beyond the frames of professional, technical or formal matching. This question may be most accurate among the ones mentioned here, but it is still open. Defining the mentioned features would be an ambitious task that exceeds the confines of this text; therefore, let us remain with the references to the structure and morphology of the subject.

Another way is to ask not about the characteristics or the driving force, but about the purpose behind making the drawing. This refers more to the process rather than the artefact. This is a path set by a question of why architects draw. It does not lead directly towards a definition, but it seems to show the nature of the architectural drawing. In this context, the question about the purpose could refer to the use of digital techniques, thus allowing for a comparative analysis.

It seems that the purposes may be three: one draws to record, to understand and to communicate. These purposes are not disjunctive, particular ones only seem to dominate in the intention of the message itself. And thus: the record is a personal form of expression that takes the shape of a drawing whose purpose is to preserve the observed reality – often in order to use its elements in a later process of creation. Secondly, the need to understand the object that is being presented, the introduction of a rational element – that is the fabric of architectural drawing. However, here, the order is somewhat reversed: an apt graphic artist often draws to understand, to find threads in his or her message that would lead to unobvious, often concealed connections, dependencies, determinants. Finally, the third purpose – communication – is maybe the most obvious, but if one treats a drawing as a message, it allows for further analyses. The message always has its sender and a receiver (who especially can be one and the same person – as in the case of design sketches made during the process of creation). The key to the message's effectiveness is that the latter interprets the former's intention in the same way. In this context, a drawing may be understood as a model (as seen by the systems theory) based on a part of reality presented in a simplified way which brings out the features that are important for the presented aspect, so that it can be easily understood.

This method of modelling the reality is very important. Most often we deal with a synthesis, a metaphor or a transformation. The first is connected with the craft, the nature

³ E. Salavisa, *Diários de viagem desenhos do quotidiano: 35 autores contemporâneos*, Lisboa 2008. Among 35 artists included in the book by Eduardo Salavisa we can find i.a. 5 architects, 7 painters, 11 illustrators/graphic designers, an interior architect, a landscape architect, 3 designers, a sculptor, an anthropologist, a geologist and others.

of a drawing – it requires the artist to select elements that are important, since it is impossible to show their whole abundance (whether it is a real scene or a design idea). Therefore, what is recorded is the most important and that which exists in a given object, item or scene. Thus, a type of reduction happens; however the reduction concerns the form rather than the content. The second method – a metaphor – is based on extracting the meaningful threads that do not need to be formally present in an object, but carry semantic information. This way the Ronchamp chapel becomes a sailing ship, and the Sidney opera transforms into swollen sails (or a group of nuns fighting). Both form (usually refers to the existing one) and the content are metaphoric. Finally, transformation that uses a certain type of an act of creation that is – somewhat accidentally – a carrier of the message content. These are sketches bordering with unintelligible forms (doodles), visions basing on interpretation of the geometry which exists (or could exist) in space and has been deformed, as well as purposeful transformations and reinterpretations of the known forms and meanings (like the works of Lebbeus Woods or drawings by Daniel Libeskind). Drawings belonging to the last group make the most subjective message that does not say anything about the imaged reality, but about the creator's approach presented by its transformation, or simply the creator's attitude. They become somewhat autonomous and have the features of both the message and the work of art in its own right⁴ [5].

We summarise these deliberations on the nature of architectural drawings in the context of the motivation for their creation by indicating three purposes:

- to record
- to understand
- to communicate

The architectural drawing as a message (or to go further – a model) can be created by using:

- synthesis
- metaphor
- transformation.

As said before, in all cases these areas are inseparable.

Considering such a description (yet not taxonomy) of architectural drawings, one may attempt to answer the question about the nature of digital techniques in imaging. This attempt will juxtapose the criteria for the purpose and the method for reaching it with images created using a computer.

How are the digital techniques used to record? – that includes recording objects in space. The simplest answer would be to indicate tools that use digital techniques – both those that record a moment, and changeability throughout time. However, there arises a question of their specific character that distinguishes them from the long-known techniques which use analogue recording methods. Here, one could notice two fundamental issues: universality and availability of the tools, and the nature of recording itself. The universality

⁴ Architectural drawings free of connections with creation of a work of architecture are covered in: Maluga, A., *Autonomiczne rysunki architektoniczne*, Wrocław 2006, where the author analysed in detail both the contents and the creators' intentions.

refers to the unification of devices which allow for recording both static and moving images in practically all conditions, while the technology itself becomes “transparent” – all-present, immediate and easy to use. The second feature refers to the nature of the digital recording, which processes the continuous reality into a discreet form, which results in easiness to be edited. Both features mentioned – quickness and availability, and easiness to be edited – can be treated (and often are) as flaws in the context of the use of traditional techniques which require the knowledge of the subject as well as thought. Such judgment is not the aim of this article. Here we deal with two recording methods that significantly differ in certain fields, while the question that needs to be asked regards proper use of the potential of those differences.

Another purpose mentioned is to understand the nature and structure of objects in space. Digital techniques can contribute to such understanding when their potential is used in simulations. These are design visions rather than a recording of physical reality. This may refer to an image which is not an attempt to create a photo-realistic plate of a potential form, but rather a tool used to explore and verify various possibilities, a tool for experimentation. Effectiveness of digital methods for creating images in terms of modifying their features (and the features of the image presented) may be used in a creative process as an instrument for understanding and valuing the selected aspects of a concept.

The third purpose – to communicate – seems the most obvious in terms of computer techniques. However, it is worth stating that this obviousness is misleading as it is mostly associated with digitally-generated images of a synthetic reality, which is mainly a marketing message. The form in which the project is recorded – currently, completely digital – is a premise for using computer techniques when visualising ideas. However, one should mention that the technological advancement has exceeded the forming of image poetics proper for this⁵ [4]. Nevertheless, it is not impossible to find creative analogies to modern visualisations of idea in the area of history of architectural communication⁶ [2].

Considering the methods used in digitally-generated image communication, in analogy to the drawing – synthesis, metaphor and transformation – one must say that these are areas that witness development; however, the process of creation itself is limited by the aspects of the user interacting with the machine. This especially regards the intuitive synthesis proper for a sketch drawing, for example, at the early stages of the designing process. In case of a metaphor which is mostly connected with semantics rather than tools, there are probably no significant differences. However, the transformation – both as a method of communicating and a tool in the designing process – has significant potential in the context of digital techniques. Needless to say, it has a possibility for real-time parametric control – not only of the form. One could provide examples of Marcos Novak, Greg Lynn, Stephen Perelli. It is surprising that some of those works (although made completely independently) are formally close to the visions of Lebbeus Woods (made without using

⁵ See: K. Koszewski, *Widzenie niedoskonałe – w poszukiwaniu języka wyrazu obrazów architektury*, [w:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej*. Praca zbiorowa, t. 2, M. Misiągiewicz, D. Kozłowski, Kraków 2013, pp. 252-257.

⁶ Peter Cook calls some analogies between collage and computer techniques, see: P. Cook, *Drawing: The Motive Force of Architecture*, Chichester 2008, pp. 22-23.

a computer). It is also possible to find a similar parallel with illustrations-paintings of Zaha Hadid which present formal consistency regardless of how they were created⁷ [2].

It is easy to indicate a seeming gap in the deliberations above that omit the method of mimetic recreation of reality without any syntheses, metaphors or transformations. Although that approach is popular, it seems that regardless of the tool used, it is an aspiration that is doomed to fail⁸. What is more, because it concentrates on the formal aspects of an idea, it impoverishes it. The craftsmanship in reproducing, although valuable, is secondary to the idea itself.

It seems that the question asked in the title: why do architects still draw (using a computer) may be answered: because they use all available tools to record, understand and communicate what surrounds them, and what they can add to the surroundings. Each technique with its specific nature may find appropriate use. It is necessary to critically evaluate each technique's potential in the context of changing conditions. Wrong use of each of them shows a lack of such analysis or a lack of skill in using the technique itself (more often the former).

To summarise our deliberations, one should quote Gottfried Semper: "The work of art will be seen as a result of all the factors involved in its creation. Technique will therefore be a very important issue to consider, but only insofar as it affects the principle of art's creation"⁹ [8]. If we assume that this concerns not only the technique in which the art itself is created, but also the technique used to communicate the idea about it (considering all the factors of art's creation mentioned by Semper, and following the nature of work of architecture¹⁰), one could also interpret this quote in the context of the variety of representation techniques. Reversing the quote, one could say that the technique is important as long as it reflects the rules of creating art accurately and clearly. As long as it is at one with the art influencing its nature, but not distorting the message.

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⁷ See: P. Cook, *op. cit.*, p. 63.

⁸ Deliberating on complicated issues of relationship between the image and the reality exceeds the limits of this article, what can be mentioned is the allegory of the Plato's Cave and the notes on the imitation from *Politeia*, see: Plato, *The Republic*, Polish translation by W. Witwicki, Warszawa 2008, remarks on imitation p. 408.

⁹ G. Semper, *Style in the technical and tectonic arts or Practical aesthetics*, transl. H.F. Mallgrave, M. Robinson, Los Angeles 2004, p. 72

¹⁰ Aptly phrased by Robert Evans who said that "Architects don't make buildings; they make drawings of buildings", see: R. Evans, *Architectural Projection* [in:] *Architecture and its Image*, E. Blau, E. Kaufman (red.), Cambridge 1989, p. 21.

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IZABELA KOZŁOWSKA*

FREEHAND DRAWING IN TEACHING HISTORY OF ARCHITECTURE

RYSUNEK ODRĘCZNY W NAUCZANIU HISTORII ARCHITEKTURY

Abstract

Apart from learning experience and reinforcement of knowledge required to pass tests and exams, the sketchbook enhances students' understanding of architectural forms and helps them develop the ability of conveying complicated historical spatial and urban facilities. Despite the common use of computers in the profession of an architect, this form of improving drawing skills is invaluable and fully justified. The maintaining of a sketchbook builds up students' skills and teaches them how to freely express themselves while conveying their objectives, ideas and designs.

Keywords: history of architecture, sketchbook, hand-made drawing

Streszczenie

W ramach przedmiotu historia architektury studenci kierunku architektura ZUT w Szczecinie mają do wykonania szkicowniki, które obok walorów poznawczych i utrwalających materiał objęty zakresem zaliczenia, umożliwiają pełniejsze zrozumienie formy architektonicznej oraz rozwijają umiejętności przekazu skomplikowanych historycznych układów przestrzennych i urbanistycznych. Wobec wszechobecnego imperatywu komputeryzacji w zawodzie architekta taka forma doskonalenia rysunku odręcznego, jest nie do przeceniania i w pełni uzasadniona. Szkicownik „buduje” warsztat studenta architektury oraz uczy swobody wypowiedzi w przekazywaniu własnych założeń ideowych i projektowych.

Słowa kluczowe: historia architektury, szkicownik, rysunek odręczny

* Ph.D. Arch. Izabela Kozłowska, Faculty of Civil Engineering and Architecture, West Pomeranian University of Technology, Szczecin.

1. Introduction

The Renaissance Italy was a cradle for defining the contemporary role and function of an architect and the system of educating young architects. There, the medieval tradition of the architect-bricklayer, member of a guild, evolved to develop the architect-artist, a member of academy. This is especially true about Florence where at the turn of the 14th and 15th centuries art and culture thrived both politically and economically. The foundation of the process was the development of education, as well as knowledge and art promoted by magnates, which started at the end of the 13th century. ‘It was one of few situations in the history when the measure of success in the struggle for military and political supremacy were, at least to a certain extent, achievements in culture’¹. Artists and architects ceased to be mere craftsmen but became high ranking members of the society, and architecture attracted children of potent people, such as Filippo Brunelleschi the son of Filippo Lapi, a public notary participating in diplomatic missions, and Leon Battista Alberti whose grandfather was a rich and influential Florence patrician.

One of several subjects taught in Renaissance Florence workshops, among painting, paint making, sculpture, metallurgy, mathematics, jewelry, literature, was drawing, in particular geometry rules defined by Filippo Brunelleschi. One of great individuals of the early Renaissance, Leon Battista Alberti, referred to the role of drawing in the trade of an architect in his treaty *Libri de Re aedificatoria decam*. One chapter in volume one was entitled *About drawings and their significance*. According to the author ‘the art of building involves drawing and executing’, and ‘The property and purpose of a drawing is to establish the location, dimensions, beautiful style and pleasant arrangement of a building through various attempts. This should facilitate defining the shape and proportions of the building’². A similar opinion was expressed by Antonio di Pietro Averlino also known as Filarete architect and theoretician, the author of the idea of an ideal city Sforzinda: ‘if you want to be an expert on (architectural) plans, you should first read and learn about drawing’³.

Another stage of developing the architectural drawing code involved *Fabbrica*, a building institution responsible for one of the most important Renaissance architectural projects of the early 16th century, namely St Peter Basilica in Rome. The institution was headed by the most distinguished artists and architects of the mature Renaissance, including Donato Bramante, Rafael Santi, Baldassare Peruzzio, Giacomo della Porte and Michelangelo. The output of the institution included about 300 drawings and contributed to developing the contemporary language of expressing ideas, concepts and architectural drawing⁴.

Architecture became free of guild limits under the patronage of St Luke the Evangelist who supported painters, embroiderers, sculptors and architects when a new institution

¹ P. Johson, *Krótką historia renesansu*, Wydawnictwo Dolnośląskie, Wrocław 2004, s. 39.

² L.B. Alberti, *Książ dziesięć o sztuce budowania*, Państwowe Wydawnictwo Naukowe, Warszawa 1960, s. 19.

³ K. Ulatowski, *Historia architektury renesansu włoskiego*, Państwowe Wydawnictwo Naukowe, Poznań 1957, s. 78.

⁴ I. Kozłowska, *Obrazy przeszłości*, Czasopismo Techniczne, A/2013, Wydawnictwo Politechniki Krakowskiej, Kraków 2013, s. 264.

developed, namely the academy. The first Accademia delle Arti del Disegno was established in Florence by Cosimo I de' Medici of Tuscany in 1563. The institution was run by Giorgio Vasari, an architect and painter, much appreciated for *Lives of the Most Excellent Painters, Sculptors, and Architects*. Equally appreciated was Accademia Nazionale di San Luca established by Pope Gregory XIII and mannerist painter Federico Zuccaro in Rome in 1577. The Statute of the academy was used as a model by other academia established later, and introduced regular lectures and exhibitions, thus developing tastes among general public and promoting new aesthetic theories.

2. Freehand drawing in teaching history of architecture

The model of architectural education developed in Renaissance was adopted by modern education institution in Europe, which at the turn of the 18th and 19th centuries started teaching architecture. A similar model of teaching has been applied from the beginning of the Szczecin University of Technology, the then Polytechnic of Szczecin⁵.

The history of architecture and urban planning included in the basic curriculum as a major subject at the S1 level is divided into 2 blocks: S1-3 and S4-5 and implemented in the form of lectures and laboratory classes⁶.

Block S1-3:

Semester 1 – history of ancient architecture (Egypt, Mesopotamia, Greece, Rome) 15 hours of lectures/30 hours of practical exercise. Person responsible: dr inż. arch. Maciej Płotkowiak, lead teacher: inż. arch. Agnieszka Lambrecht, inż. arch. Jakub Gołębiwski, dr inż. arch. Ewa Augustyn - Lenzion, and dr inż. arch. Halina Rutyna.

Semester 2 – history of medieval architecture (early Christian, pre-Roman and Roman architecture): 15 hours of lectures/30 hours of practical exercise. Person responsible: dr inż. arch. Maciej Płotkowiak, lead teacher: inż. arch. Jakub Gołębiwski and dr inż. arch. Ewa Lenzion.

Semester 3 – history of medieval architecture (gothic European and Polish architecture): 15 hours of lectures/30 hours of practical exercise. Person responsible: dr inż. arch. Maciej Płotkowiak, lead teacher: inż. arch. Jakub Gołębiwski and dr inż. arch. Ewa Lenzion.

⁵ In 1947 the School of Engineering was established which since 1948 had a separate Faculty of Architecture that was closed in 1952. In 1955 the School of Engineering became the Szczecin Polytechnic. In the academic year of 1969/70 the course on architecture was re-established. The merger of the Szczecin Polytechnic and Academia marked the establishing on 1st January 2009 of the Western Pomerania University of Technology (Source: <http://www.wbia.zut.edu.pl/wbia/o-wydziale/historia-wydzialu.html>).

⁶ Part of curriculum based on syllabus of 2014/2015 Course in Architecture: <http://www.krk.zut.edu.pl/pl/2014-2015/wydzial-budownictwa-i-architektury/architektura-i-urbanistyka-S1/sylabus-42789-historia-architektury-i-urbanistyki.html>.

Block S4-5:

Semester 4 – history of modern architecture (Renaissance in Italy, Europe and Poland): 15 hours of lectures/30 hours of practical exercise. Person responsible: dr inż. arch. Joanna Arlet, lead teacher: dr inż. arch. Izabela Kozłowska and dr inż. arch. Halina Rutyna.

Semester 5 – history of modern architecture (Baroque in Italy, Europe, Poland and Classicism in Europe and Poland): 15 hours of lectures/30 hours of practical exercise. Person responsible: dr inż. arch. Joanna Arlet, lead teacher: dr inż. arch. Izabela Kozłowska, dr inż. arch. Halina Rutyna.

At all levels of teaching history, including S1-3 and S4-5, a sketchbook is an integral part of laboratory classes. In total 5 semesters of teaching and contact with freehand drawing through drawing architectural facilities, from the simplest ones and less complex Egyptian architectural forms, through architecture of ancient Greece and Rome, Roman and Gothic forms, to more complex architectural facilities of Renaissance and Baroque.

According to the basic curriculum, the grade comprises a summary assessment of two multimedia presentations on selected topics and two written papers per semester and a grade for maintaining the sketchbook with drawings of selected facilities.

The maintaining of a sketchbook develops skills of presenting specific architectural facilities in a graphic form. Learning outcomes of A_1A_C-V/4-5_U01 education include specific drawing skills to be acquired by students by regular development of sketches. The learning outcomes of A_1A_C-V/4-5_W01 education include basic knowledge about the history of architecture and urban planning, the most distinguished architects of a period, major facilities for the development of architecture and theoretical works and aesthetic views. One of the assessment criteria, apart from recognizing architectural and urban facilities and their authors, is the ability of graphic presentation of projections and facades similar to their originals.

The proposed form of maintaining a sketchbook includes as minimum A4 format, Bristol board type of paper, and free drawing technique.

A sample scope of sketchbook requirements for semester 4 S1 includes the ability to draw projections and facades of 29 architectural and urban facilities in Europe and Poland, of which: 13 are facilities of Italian Renaissance, 6 architectural facilities of England, France, Netherlands and Spain, and 10 facilities of Polish Renaissance.

At this level of education, students should be able to sketch works by Filippo Brunelleschi: Spedale degli Innocenti and Pazzi Chapel; palaces of Florence: Strozzi Palace; works by Leon Battista Alberti: Santa Maria Novella Church in Florence and St Andrew Church of Mantua; by Michelangelo: St Peter Basilica, place of Capitol; Roman palaces: Farneze Palace; by Donato Bramante: Tempietto in Rome (Ill. 1); by Andrea Palladio –Villa Rotonda (Ill. 2), San Giorgio Maggiore Church in Venece; and squares: St Annunziata Square in Florence, St Mark Square in Venice, plans for ideal cities: Sforzinda, Palma Nova, Freudenstadt; and changes of windows in Italian Renaissance. As regards European Renaissance, students need to be able to develop projections of castles in Chambord, Fontainebleau and palaces such as the Louvre and Tuileries and Town Hall of Antwerp, palace of Carl V in Grenada and Queen's House Inigo Jones. As regards the Polish Renaissance, students in their sketchbooks present the following: the Renaissance extension to the Wawel Castle, Sigmund Chapel, Villa in Wola Justowska, Renaissance

extension of the Pomeranian Dukes Castle in Szczecin, Castle in Baranów Sandomierski, Town Hall in Poznań, functional arrangement of a Renaissance tenement house, development of Polish attic and urban schemes for Zamość and Gdańsk.

During laboratory classes on Renaissance architecture, each student is required to draw about 2 facilities during one class.

The variety of drawings in the sketchbook and details to be memorized frequently cause objections among students who demand the mandatory scope to be reduced. However, it seems that such requirements are not fully justified, since the intention of people running the architecture history course is to educate students as regards their ability to determine proportions, distinguish constituent parts and their mutual relations in architectural and urban facilities and their efficient and abbreviated presentation in the form of a freehand drawing.

Facilities to be exercised in the sketchbook are mandatory during written tests and final exams. Not only do students need to recognize them and draw them in their sketchbooks, but they are also required to show the ability of their graphic presentation during written tests. Two thirds of the questions in the test require answers in the form of a drawing, whereas during the written exam all questions are answered by drawing. Maintaining a sketchbook and drawing during tests and exams are a serious burden for a student and require good memory but, at the same time, they are fundamental as regards students' skills and are fast and cheap ways of presentation of architectural and urban forms, compared to CAD methods

3. Conclusions

Apart from learning experience and reinforcement of knowledge required to pass tests and exams, the sketchbook enhances students' understanding of architectural forms and helps them develop the ability of conveying complicated historical spatial and urban facilities. Despite the common use of computers in the profession of an architect, this form of improving drawing skills is invaluable and fully justified. The maintaining of a sketchbook builds up students' skills and teaches them how to freely express themselves while conveying their objectives, ideas and designs.



III. 1. The fragment of sketchbook, Tempietto in Rome – Donato Bramante (author: student Magdalena Andruszkiewicz, 2012)



III. 2. The fragment of sketchbook, Villa Rotonda – Andrea Palladio (author: student Magdalena Andruszkiewicz, 2012)

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PIOTR OBRACAJ, MARIUSZ TENCZYŃSKI*

THE MEANING OF FREEHAND DRAWING IN AN ARCHITECT'S PROFESSIONAL WORK

ZNACZENIE RYSUNKU ODRĘCZNEGO W PRACY ZAWODOWEJ ARCHITEKTA

Abstract

The article describes the importance of freehand drawing in the daily practice of an architectural design office. It presents the areas of activity in which freehand drawing is essential as well as those in which its importance has decreased. It presents the function of freehand drawing in communication with both an investor and other entities participating in the design process. The author emphasizes the individual character of every creator's freehand drawing as well as the easiness and freedom of thoughts expression offered by this tool in daily professional work.

Keywords: an architect's freehand drawing, an architect's sketches

Streszczenie

W artykule opisano znaczenie rysunku odręcznego w codziennej praktyce pracowni architektonicznej. Przybliżono obszary działalności, w których rysunek odręczny jest niezbędny, oraz te, w których jego znaczenie zmalało. Artykuł opisuje funkcję, jaką pełni szkic odręczny w komunikacji, zarówno z inwestorem, jak i pozostałymi podmiotami biorącymi udział w procesie projektowym. W treści zwrócono uwagę na indywidualny charakter rysunku odręcznego cechujący każdego twórcę. Podkreślono łatwość i swobodę wyrażania myśli, jaką daje to narzędzie w codziennej pracy zawodowej.

Słowa kluczowe: rysunek odręczny architekta, szkice architekta

* Ph.D. D.Sc. Arch. Assoc. Prof. Piotr Obracaj, M.Sc. Arch. Mariusz Tenczyński, Department of Civil Engineering and Architecture, Faculty of Civil Engineering, Opole University of Technology.

We live in very interesting times. Technological progress is discernible in all fields of professional work. New tools facilitating and accelerating design work, usually with no positive impact on the final effect, are being invented under our eyes. Most of them are connected with computer work. Graphics software generates aesthetically correct images, and designs developed by means of it can be quickly transformed and even more quickly transmitted through information networks. The pace of our work increases, similarly to the pace of life. Yet, in this constant process of development, the traditional technique of freehand drawing is still present.

Freehand drawing gives us the opportunity to make use of the simplest intuitive connection between the mind and the hand. Ideas and thoughts committed to paper very often become specific there and acquire a real shape. We also have the opportunity to intuitively underline the most significant ideas of a concept, which facilitates communication, since this technique is commonly known and understood.

Freehand drawing allows a consolidation of ideas developing in the process of creative thinking. Thoughts – very often elusive – written down or drawn on a sheet of paper become something permanent; they are the basis for further creative work, for the development of a concept. The thinking process recorded in the form of a drawing may be an inspiring basis for an analysis of creative work. In team work, one person's drawing may be subject to the creative interpretation of the remaining team members.

Each freehand drawing is characterized by the individuality of its creator. It is interesting that in the same object drawn by many persons different elements may be highlighted and stressed. The subjective perception of reality is thus presented in a graphic form. It is perfectly visible in freehand drawing or painting lessons in faculties of architecture and in all other fields of creative education.

Lectures in artistic fields enriched with a lecturer's freehand drawings explaining design solutions can attract students' attention. Such meetings remain in a future architect's memory forever and they are also a splendid example to follow. Every architect finds inspiration in his mentor's drawings. In a sense, it is comparable to handwriting; an author can be recognized by his drawings, and one can imitate his best patterns interpreting them in one's own manner. The place and atmosphere of work is of significant importance since concentration and quietness are required in creative work.

The immense easiness and freedom with which we can communicate and transfer our thoughts to others by means of a drawing is a unique characteristic of the profession of an architect. A drawing is a universal language, a product of the mind and the hand, directly and permanently connected. The language and the aesthetics of a drawing is the essence of graphic expression. Its perfection process will never end as it may be continued all life long. Thus our awareness and ability to transfer thoughts by means of a drawing are developed.

The emotional impact of sketches causes a situation of enchantment by the authenticity and spontaneity of freehand drawing.

An architect's own freehand sketch should be his pride and a manifesto to fire people's imagination. In the age of computers, freehand drawings have become even more precious.

In the daily practice of an architectural design office, freehand drawing is a matter of fact. Work on each design starts with an author's sketches. It is in these sketches that a concept's

evolution and the particular stages of the creative process can be seen. A characteristic feature of freehand drawing is the easiness of making changes and the possibility to achieve results fast, in the form of ready images. The process of analysis, for instance of the urban context, is frequently present in an architect's work. Freehand drawing on tracing paper allows a precise indication of the most important elements and components of even the most complicated structure. The handling of design problems by means of freehand drawing leads to the development of new or better versions of design solutions. It is very often a faster and more effective way to find a solution to a design problem than using even the most advanced 3D design tools. Freehand diagrams, analyses and pictographs resulting from an author's considerations perfectly enrich designs and allow a graphic presentation of the essence of a concept. Comparing a finished building to its first sketches, one can see what an architect was concentrating on at the first stage of work, what was of great, if not the greatest importance for him/her from the very beginning.

A drawing is an architect's language. The better he/she masters the skill, the better form of communication in work it becomes. Drawing skills can significantly accelerate the conceptual thinking process. The easier it is to commit thoughts to paper, the faster the best solution to a problem can be selected from among many. The development of drawing skills and their application in daily work accelerates the design process, because if one succeeds in solving fundamental problems and choosing the best solution in this way, then computer software will only serve as a tool for the presentation of a previously developed solution. A legible drawing is always personal, it is a direct presentation of a person's thoughts, it expresses his personality and creative potential.

An architect's skilful hand can sketch the essence of a design by means of a drawing, and highlight the most important characteristics of scale, space, and construction. Combining freehand drawing techniques with their computer processing is a new method of presenting designs. In this way, graphics software becomes only a tool complementing an architect's work; it does not deprive a design of an architect's individuality. Such a presentation helps to create a proper and unique atmosphere of work because it has also an emotional impact included in a drawing.

The selection of drawing tools helps us to achieve the intended result. Even the thickness of a line is of some importance. Good knowledge of available techniques is useful here. A discussion of a design based on sketches has another unique characteristic. It allows a smooth change of scale and perspective of a design. On a sheet of paper, we can freely move from the mass of a building to the elevation details and back.

One can also draw simply for pleasure and for oneself only. Ideas drawn many years earlier can be an inspiration in new designs today.

What is worth mentioning here is the early stages of work with computers and the first imperfect graphics software, not so very distant in time. Its appearance in an architect's work offered an opportunity to develop first 3D images of objects not completed yet, which certainly constituted a breakthrough. Very simple spatial images were developed then, and both architects and other people spoke about them with admiration. Today they make a positive impression and are the evidence of changes taking place in our work. Their imperfection resulting from still poorly developed software left some space of understatement, and some space for a recipient's imagination. Nowadays, works deceptively resemble photographs.

If there is a threat to freehand drawing posed by computer technology it is rather connected with an excessive and exaggerated use of computer software in independent drawing. It has been frequently repeated that this state of affairs has a negative impact on the quality of an architect's work, and deprives him/her of sensitivity and a sense of aesthetics. Individual approach and profound analysis is lost, and they are essential factors in searching for solutions to new design problems.

Freehand drawing is indispensable in an architect's work; it is a perfect tool for expressing thoughts and communicating with others. At the conceptual stage, freehand drawing allows a transition of the creative thinking process onto paper. The formulating of the first design intent in the form of a drawing is intuitive. In the subsequent stages of designing, a freehand diagram is an auxiliary tool. In an architect's professional work, drawings made during a meeting are a substitute, yet also an equivalent form of taking notes. Sheets of paper covered with sketches may be an excellent and fast way of presenting information concerning changes to a design, new solutions and details. A look at sketches brings back earlier discussions and arrangements.

In all inter-professional meetings, emphasis is put, among other things, on sketching design solutions. The best design solutions can be found by means of drawings. The details of solutions of significant elements in a design are quite frequently the effect of a drawing-based discussion between an architect and a contractor. Solving problems at a construction site is very often based on freehand drawing. It is an ideal solution when there is no computer or printer available.

Due to the ever increasing pace of work so much characteristic of an architect's profession, there is no time for drawing. Drawings are more and more frequently made by means of computer techniques only. The triumph of computer graphics is best visible in the young generation of designers who are strongly focused on generating graphic designs by means of ever newer and more advanced software.

Working with trainees, an experienced architect can frequently observe their poor preparedness in the area of drawing. The probable reason for such a state of affairs should be looked for in the changing study programmes or even in the very recruitment process itself. The possession of drawing skills is neither a point of professional honour nor an obligatory skill for the young generation of architects. If we look at job advertisements, such skills are no longer required. Potential candidates are required to know various kinds of computer software, in particular that responsible for 3D visualizations.

Computer software makes it possible to use any number of "special effects" which in principle are to shock and amaze the recipient. Quite frequently, under the shining layer of these effects there lies a substantially poor concept with very little creative value. It is more difficult to deceive the recipient by means of freehand drawing, because a drawing – in principle – is a simplified form of representing an idea or reality. There is no possibility of manipulating with perspective or light here.

In freehand drawing, we are limited by imagination and skills only. Skills can be developed and improved so that the message becomes as clear as possible.

Due to its simplicity, freehand drawing can be applied in virtually any situation and with any kind of tool.

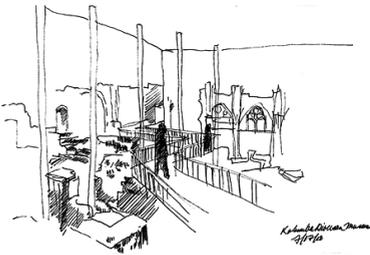
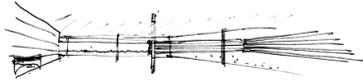
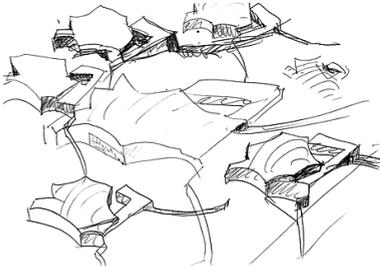
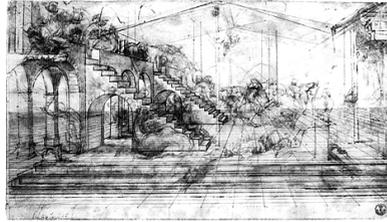
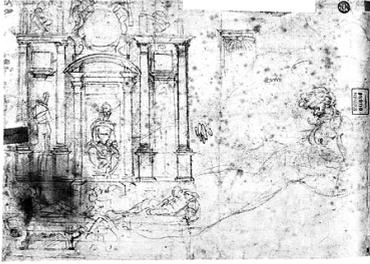
Computer-oriented education of young architects is very limiting for them. Young designers should be encouraged to improve their drawing skills. Without freehand drawing skills, soon an architect's only tool will be a computer, and without suitable software no design will be made. If the ability to communicate by means of freehand outlines of a concept is lost, designers will become addicted to computer software. Virtual reality will become the only work environment; it will become reality, in fact. Freehand drawing – an available yet unused technique – will become a virtual medium. An architect's work consists in developing space around us and creating objects. It is not possible to create good solutions being detached from reality.

An architect's communication with an investor depends largely on the former. The use of freehand drawing allows an explanation of doubts and a proper interpretation of the designed space. A good drawing technique is an excellent tool for the presentation of a design in the 3D perspective.

For investors, concept sketches are often a souvenir of the first meetings in an architect's studio. Due to the emotional impact and spontaneity, no visualization can replace an architect's freehand drawing, which is the best form of expression of his individuality. A good drawing, due to its understatement and absence of clarity, fires the recipient's imagination.

Comparing architecture to music and looking for inspiration for designing in it, we can understand how important it is to properly create recipients' frame of mind. The first sketches are the best form of expression used by an architect in his communication with investors in order to introduce them into a space yet unknown.

While computer software allows the presentation and recreation of a design idea, a conceptual freehand diagram is an integral part of designing. Working with a computer is working by means of a medium, i.e. software. Drawing is a simple process of committing ideas to paper. It is an intuitive and very personal activity which has an emotional impact the power of which depends on an author's creative potential. For a professional architect, it is not sufficient to draw well. One has to know what to draw. Freehand drawing itself is not a solution to any problem. It is a tool to provide a solution and it is an author who provides it. A drawing is as good as its author is professionally competent, and an architect should never stop improving his skills.



- III. 1. Design for a Double Tomb in the Medici Chapel by Michelangelo Buonarroti. Black chalk, 382 × 223 mm. Musée du Louvre, Paris (www.wga.hu)
- III. 2. Leonardo da Vinci's preparatory drawing for the painting "Adoration of the Magi" by Leonardo da Vinci (www.loc.gov)
- III. 3. Concept sketch, by Alvaro Siza (www.galleryhip.com)
- III. 4. Hubbe House, Magdeburg, Interior Perspective (1935), by Ludwig Mies van der Rohe (www.dokity.com)
- III. 5. Kolumba Museum, by Peter Zumthor (www.archinect.com)

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MACIEJ OLENDEREK*

ARCHITECT'S FREE HAND DRAWING AS A FORM OF PRESENTING THE ART OF SPACE SHAPING AS ILLUSTRATED BY THE EXAMPLE OF THE AUTHOR'S PROFESSION

RYSUNEK ODRĘCZNY ARCHITEKTA, JAKO FORMA SZTUKI PRZEKSZTAŁCANIA PRZESTRZENI, NA PRZYKŁADZIE AUTORSKIEJ PRAKTYKI ZAWODOWEJ

Abstract

What was and still is free hand drawing as an architect's tool for conveying the vision of an object, presenting the concept of creating, shaping the balance between the constructive matter and the creative abilities of the maker? Drawing serves as a presentation of an idea. The architect's draught is the result of a dialogue between thought, hand and an idea. Creating without emotion is not art. Drawing is only a form of recording. It is an endless act of perfecting the author's work. This text presents the main stages of development, examples of artistic narration, which is an alternative to the individual form of constructing conceptions of space and its critical factors. This article aims to explain the relations between life and art, which are analysed through two similar problems: how to successfully influence the investor's senses through the use of the drawing art. The author (through presenting the rank of drawing in his profession) aims to prove, that the architect's freehand drawing stimulates imagination, sensitivity, spiritual values, traditional aesthetics. It emphasizes colour, rhythm, order and dynamism. A work doesn't have to be created in the virtual world to become the full interaction between the inner and outer factors. The architect's freehand drawing reflects the unconstrained creation of the mind concerning the status of the form in space as an artistic event.

Keywords: drawing, sketch, architecture, transfer of experiences, form shaping

Streszczenie

Czym był i jest rysunek jako narzędzie towarzyszące architektowi w procesie przedstawiania wizji obiektu, obrazujące koncepcje tworzenia, kształtowania równowagi pomiędzy tworzywem budowlanym a możliwościami kreatywnymi twórcy? Rysunek służy prezentacji idei. Szkic architekta jest owocem dialogu pomiędzy myślą, ręką i ideą. Tworzenie bez emocji nie jest sztuką. Rysunek jest jedyną formą zapisu bezpośredniego. Jest aktem niustannego dążenia twórcy do doskonałości dzieła. W tekście przedstawiono główne etapy rozwoju, przykłady artystycznych narracji alternatywnych wobec indywidualnej formy konstruowania wyobrażeń o przestrzeni i krytycznych do niej odniesień. Przedmiotem artykułu jest próba wyjaśnienia relacji życia i sztuki, rozpatrywanych przez dwa uzupełniające się problemy, na ile obecność szkicu autorskiego gwarantuje oryginalność i niepowtarzalność dzieła i jak można skutecznie działać poprzez sztukę graficzną na zmysły inwestora. Autor przez pokazanie rangi szkicu architektonicznego w jego praktyce zawodowej pragnie dowieść, że rysunek odręczny architekta pobudza wyobraźnię, wrażliwość, odnosi się do wartości duchowych, estetyki, podkreśla barwność, porządek, rytmiczność i dynamizm. Dzieło niekoniecznie musi powstać w świecie wirtualnym, aby być pełną interakcją czynników wewnętrznych i zewnętrznych. Rysunek odręczny architekta stanowi odwzorowanie swobodnej kreacji mózgu dotyczącej notowania formy w przestrzeni jako wydarzenia artystycznego.

Słowa kluczowe: rysunek, szkic, architektura, przekazywanie doświadczeń, forma kształtująca

* Ph.D. Arch. Maciej Olenderk, Faculty of Civil Engineering, Architecture and Environmental Engineering, Lodz University of Technology.

In order to understand the value found in the process of drawing an architectural concept, we should ask ourselves how much strength (which comes from the continuity of the basic experience of the architectural drawing) we still have to continue making draughts. In what sense the classical notion of beauty is transformed through the ages and influences the contemporary draught, the fleeting sketch which reveals the soul of the design, its shape and the inner potential of the structure and its proportion. Prof. Andrzej Bialkiewicz, during his lecture in The Academy of St. Luke in Rome, described the role of the draught: "The objects in the drawings were situated among the landscape, their scale was defined by the people's silhouettes, put in various distances in perspective"¹. Presently, young architects who were educated in the spirit of the modernist or post modernist art, positively view the basic Vitruvian values of shaping the form; through searching for them in drawing, these references are still alive, providing the drawn message with creative power. Let us analyze the current definition of the presentation drawing as a sketch recording created during a meeting with an investor, showing the whole power of the building art, a truly realistic presentation of the designed spaces. The definition of the presentation draught (design concept) is still needed. Prof. Sławomir Gzell underlines the basic importance of drawing in his profession: "The draught was the participant in the talks between the architects, their co-workers and the clients. The speed of its creation, the accuracy of the summary as well as its readability were strong advantages in all such dealings"². This supports the author's stance concerning the pivotal role of the draught in the architect's development. Teaching drawing to architectural students is of great importance – it teaches the meaning of mission, ethics and the rank of the profession responsible for shaping the space around us. Another problem is the form of the drawing to be presented, how to choose the amount of time for the presentation, whether to draw in the presence of the investor or just show the „complete” draught as a full building shape. The methods used in the experiences of the "futuristic" American draftsmen (the interwar and post war period), showing a perspective sketch of the past and future of the American cities, could be of great use in this instance. Prof. Maria J. Żychowska describes a similar "futuristic" phenomenon: "The concept of architecture, its notion, seems to be as important as its final form. The draught seems to be a realization of the architect's intention, his philosophy and thoughts"³. Many interesting things took place in modernistic architecture in Lodz during the interwar period. Looking at most perspective drawings from that period, it is safe to assume, that new architecture in free Poland was presented in dynamic forms, optimistic visions full of movement, which were characteristic of the new identity in the future avant-garde Republic of Poland. Therefore it is justifiable to ask what is freehand

¹ A. Bialkiewicz, *O zapisach przestrzeni architektonicznej w Akademii Św. Łukasza w Rzymie*, [w:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej*, red. red. Maria Misiągiewicz, Dariusz Kozłowski, t. 1, Politechnika Krakowska, Kraków 2013, 23-28.

² S. Gzell, *Sketchbook (Czytaj: Szkicownik)*, [w:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej*, red. red. Maria Misiągiewicz, Dariusz Kozłowski, t. 1, Politechnika Krakowska, Kraków 2013, 88-91.

³ M. J. Żychowska, *Rysunek jako wyraz intencji architekta*, [w:] *Definiowanie przestrzeni architektonicznej. Zapis przestrzeni architektonicznej*, red. red. Maria Misiągiewicz, Dariusz Kozłowski, t. 1, Politechnika Krakowska, Kraków 2013, 204-209.

drawing. A draught is a quickly made drawing, a way to picture and develop an idea, which does not present a finished work. It is a kind of offer made of symbols for further development (both of these elements can be refined further). The first sketches are important, even if they are to be thrown away later on, because they serve as the main idea, around which vision can take shape. Such plans are used mainly to solve practical problems. In the early phase of design, blueprints serve to discover, design and transfer ideas and solutions, which are the basic tools in thinking, solving problems and communication in architecture. It is important to have a fully realized design idea before construction begins. The first draught is always important, even later on, when the architect has to follow the design scale. Future project presentations become a concrete creation, demanding sacrifice and commitment, full colour, rhythm, order and dynamism. What then is the art of building the shape of the presentation in hand drawn perspective? Architects often use computer software to present the object model. Although this method accelerates the process it is unacceptable for ethical reasons (and the purity of the freehand drawing). The basic presentation draught usually contains people, vehicles and nature, they are very similar in style to design draughts. Architectural drawings are “produced” for a specific goal and can be correctly rated. It is essential to see the presentation draught as a piece of art, an independent creation, a full and closed whole. In drawing the architect finds the strength of his expression, the clarity of the artistic gesture, energy, value sense and his own place. It is often an important moment for the creator of space to approach the architectural design with the use of drawing as a means of describing space and matter. It also underlines (in the global world) a certain duality and continuity of inspiration, showing what is personal and private, what is close and foreign for our recipients. For whom do we draw as architects? We prepare materials for both the individual investor and the society. The draught presentation helps the society accept the work. There is a need to either root the space shaping draught proposition in the history of a place or use it to search for new areas. The architect-artist has to constantly reconstruct his work through a dialogue about what is acceptable in society. There are transforming aspects, which assume changes, not standing still. Most architects actively search for innovation, increases the number of problems to solve. The members of the democratic society try to find out the architect’s vision for their city or settlement. The artistic values (which stem from the draught) were used historically as well as currently in order to gain support for the construction of new buildings or refurbishing older ones (promotion and gaining funds). They were also used as illustrations in articles (construction and history of architecture). Draughts offer live and unique sign alphabets, characteristic of authors. Those are constant elements of architectural culture and a way of presenting what can be called “a state of mind” in a defined interval. They create a code of identity, of access, symbols which link generations. Draught or drawing (presentation), through its varied forms of reception, influences history or the authenticity of architectural buildings. The drawing, however, (especially the free hand drawing), has lost its position of artistic presentation to computer generated alternative. Lately, however, it is making a come back (even the draft). Every sketch exerts a different pressure on the line adapting to the artist’s style, taking over the entire system and context through one drawn line. The architect can change his approach quickly, adapting the draught to the project. The draft definitely begins and ends on paper but unused space and lack of frame allow us to imagine a bigger context – the area of effect.

In consequence it is not only freedom of form but also a way to present our talent. We can find virtual and real worlds in our consciousness. New artists (in the last decade) talk about the “death” of the draught as a result of moving from drawing to calculations as the main means of communicating and designing in architecture. Analytically, it situates the author in the middle of the process of thinking, design and construction. The designs are created through “others” by the use of communication. They are not the result of singular genius, they do not show the unique creative personality on the paper during the creation process. The representative role of the draught is very important in shaping local patriotism and identity. The draught (before the final design) is the basis for the public presentation of the vision. We create hundreds of draughts before arriving at the idea. The drawn samples and term notes reflect an individual look at the architect’s work, they show how much work is ours or someone else’s. This dialogue with the present is an endless worry for the designers. This is why it is so important to build a cultural identity of the places of heritage through their individual sketch, analysing forms and creative interpretations of places close to our hearts. We put forward such a programme by building small countries through freehand drawing presentation during the fifth year of architecture classes at The Scientific University of Lodz. This presentation of the existing University buildings (both past and present) gives the notion of belonging to the drawn places. Students find new beauty in them, new aesthetic sensations, the continuity of existence. Let us analyze the philosopher’s approach to graphical presentations as exemplified by Immanuel Kant. His approach assumes the absence of any foundations except for basic logic. Time and space are forms, which are forced into our experiences through sensations. The other kind of forms are categories, which allow objects to be described by notions. The main two are: cause and substance. The presentation draught is a unique artistic event, which allows many generations of users to meet during the search for common local countries, creation of a multigenerational identity of the existing or future places for shared community life.



III. 1–4. Graphic work of students P.L. V sem. Kierunku Architektura i Urbanistyka (photos of the author, 2014)

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ADAM PODHALAŃSKI*

PERSPECTIVE IN THE URBAN INTERIORS
OF RESIDENTIAL COMPLEXES – EXAMPLES
BASED ON CONTEMPORARY REALIZATIONS
IN THE CITIES OF GERMANY

PERSPEKTYWA WE WNĘTRZACH
URBANISTYCZNYCH OSIEDLI MIESZKANIOWYCH
NA PRZYKŁADZIE WSPÓŁCZESNYCH REALIZACJI
W MIASTACH NIEMIECKICH

Abstract

Perspective, as a term used in the fields of architecture and photography, describes a method of depicting three dimensional objects within a space. The designer has the possibility of creating attractive perspective views within an urban composition of a residential complex, as well as views that have aesthetically pleasing foreshortenings and openings towards open vistas of the surrounding environment, or the creation of such an environment within the public spaces of a complex. During the various stages of the real property development process, the composition of a sequence of urban interiors is one of key elements, one that does not often suffer from bad influence on the part of the client, local zoning law or the restrictions of the building code. The aforementioned composition of a housing complex is largely left in the hands of the architect. A precision tool for supplementing one's spatial ability is offered in the form of computer aided design programs, which can help in the creation of a pseudo-photographic image, which becomes the best possible carrier of information regarding the appearance of a housing complex to its future residents. The level of meticulousness with which an architect must balance out the requirements of the market against the need of a user-friendly public and private space that should be designed for the residents of a particular housing complex can prove to be a challenge. The article is thus an attempt at finding a set of rules to be followed by designers in the creation of interesting public spaces of housing estates, based on contemporary examples of residential complexes of Germany.

Keywords: perspective, city space, residential complexes

Streszczenie

Perspektywa jest to określenie stosowane m.in. w architekturze i fotografii, oznaczające sposób przekazu trójwymiarowych obiektów i przestrzeni. Projektant może stworzyć atrakcyjne perspektywy w kompozycji urbanistycznej osiedli mieszkaniowych. Ma też szansę wytworzyć atrakcyjne skróty perspektywiczne oraz otwarcia widokowe na otaczającą przestrzeń lub wykreować je w przestrzeniach publicznych osiedla. Podczas procesu inwestycyjnego dzielącego się na różne etapy kompozycja sekwencji wnętrza urbanistycznych jest jednym z kluczowych elementów, a nie jest poddawana dużej ingerencji poprzez inwestorów. Prawo miejscowe zależy od warunków technicznych, jakim powinny odpowiadać budynki i ich usytuowanie. Wspomnianą sferę kompozycji osiedla mieszkaniowego w dużym stopniu pozostawia się zwykle architektowi. Precyzyjne wspomaganie wyobraźni przestrzennej oferują programy komputerowe, tworząc pseudofotograficzny obraz, który staje się najlepszym nośnikiem informacji na temat wyglądu osiedla dla przyszłych jego mieszkańców. Wycucie, z jakim architekt musi balansować pomiędzy wymaganiami rynku a przyjazną dla mieszkańców przestrzenią publiczną, poniekąd także i prywatną, a wytworzoną dla mieszkańców danego osiedla, jest sporym wyzwaniem. Na przykładzie zrealizowanych osiedli mieszkaniowych w Niemczech podjęta zostanie próba odszukania reguł tworzenia interesujących przestrzeni publicznych ułożonych w osiedlach mieszkaniowych.

Słowa kluczowe: perspektywa, przestrzeń miejska, osiedla mieszkaniowe

* M.Sc. Arch. Adam Podhalański, Faculty of Architecture, Cracow University of Technology.

1. Introduction

The housing complexes that are currently being built and designed in German cities are excellently balanced in terms of their energy efficiency, the use of cutting edge alternative energy generation technologies and the implementation of the policy of sustainable development that is the effect of a consequent approach towards implementing spatial policy. An important element of their appeal is their clear spatial composition, which is a result of implementing the tenets of urban design that allow the creation of a harmonious residential environment and, as a consequence, maintaining the proper proportions between the built environment and green spaces, the creation of urban interiors and linking them with open environments – to put it short, they preserve, and are a continuation of, the existing spatial harmony that can be observed in the majority of German cities. The average would-be resident of such a complex, both in Germany and in Poland, is most often first and foremost interested in the price per square meter of an apartment in such a complex. Only when this requirement is met, do other pros and cons come into play in the potential buyer's mind, including those of the surroundings of the potential place of living. The elements under analysis here include things such as: the distance to one's workplace, transportation access and the availability of basic and social services – their importance is rarely superseded by aesthetical factors. The entire sphere associated with urban composition, especially the visual quality of public spaces, the so-called first impression effect, is first and foremost dependant on perspective views, especially those from the pedestrian level, and is somewhere towards the end of the important factors list of a potential apartment buyer. The matters of the perception of these views of residential complex urban interiors are going to be the focus of the following deliberations.

By using contemporary multifamily housing complexes in Germany as an example, this work illustrates the implementation of the idea of an integrated layout, which is a friendly urban interior that highlights the forms of buildings that are beneficial in terms of energy efficiency, in its structure. It also discusses the possibility of integrating visually attractive and subconsciously beautiful perspective views of urban interiors and whether they can be counted among the tools used to improve the quality of life by reducing the costs of maintaining greenery and the introduction of modern technologies of generating power from alternative sources to fulfill the energy needs of large scale urban layouts.

2. Interiors of urban complexes located in city centers

2.1. Killesberg residential complex, Stuttgart

The Killesberg housing complex is located in the city center and takes up an area of roughly 15 ha. Its buildings, in addition to the surrounding park, are located on the site of a former exhibition space. The project had its beginning in 2004 in the form of a competition for the development of a feasibility study. After the exhibition grounds had had their location changed, the project was accepted by the municipal council and introduced into the local zoning plan. Building quarters were designed by various different architects, with the common denominator being their volume and a high energy efficiency.

The architects were given free reign over the architectural form, however, once everything had been finished, one was able to discern an overarching similarity and cohesiveness in their work. The Killesberg complex is surrounded on two sides with open park type greenery. This urban design decision allows the simultaneous provision of privacy and an increase in the area's attractiveness. A picturesque "piazza", contrary to its classical counterparts which dominate Italian towns, was designed in a manner which integrates the lax green spaces that surround the complex, simultaneously providing a sort of identity to the new center by articulating a strict center characterized by a dense building environment with a mix of commercial and residential buildings. The effect of this approach to urban composition is intriguing, as the existing complex is composed of buildings that are similar in size and architectural convention, rich with modern architectural detail, with a surrounding park with varied terrain, that encroaches into its interior. The composition of the aforementioned urban layout has the effect of a better integration of greenery with the built environment. In the case of this residential complex, the view openings towards the surrounding spaces are examples of one of the rules that allow such a space to be enriched. Killesberg is a complex that possesses a unique identity, which is founded upon its open spaces.

2.2. Am Ackermannbogen complex, Munich

The Am Ackermannbogen residential complex in Munich is located on an area of 41 ha of former military grounds. The project had its beginning in 1998 in the form of a competition for the development of a feasibility study and, in a manner similar to that of Killesberg, was then incorporated into the local zoning plan after the military grounds had been relocated. The buildings, composed into quarters, had been designed by various architects, with some of the quarters having strict and coherent spatial requirements, regarding, amongst other things, high energy efficiency. It is worth mentioning that the complex has been located in the center of the city in the close vicinity of the Olympic Park and its sports facilities, which hosted the Summer Olympics of 1972. The placement of the complex necessitated the correlation of the existing architecture of the landscape of the Olympic Park with the developed urban layout of the complex. On the western side of the quarter, in the closest vicinity of the park, the shape of the terrain was altered into a lax landscape, which introduces interesting perspective views into the spaces between the quarters and buildings of this systematically designed complex. On the other hand, while looking from inside the complex outwards, especially to the west, the view and the perspective is an integrated picture of the Olympic park and the buildings of the complex. Furthermore, a non-collision transportation scheme was implemented between the park and the complex in the form of a pedestrian and bicycle bridge. More open spaces were introduced, keeping in mind the various needs of the residents. They are located both in the interiors of the complex, as well as in the areas surrounding it. The aforementioned urban design solutions have created the impression felt by its residents that the complex is surrounded by a lot of greenery due to certain particularly well placed urban openings.

3. Interiors of residential complexes located on the outskirts of cities

3.1. Messestadt Riem, Munich

The Messestadt Riem complex is located in the suburbs of Munich. It occupies around 555 ha, with around 200 ha of its area being a park that surrounds the complex proper. The concept of the urban layout of the Messestadt Riem complex is the integration of residential, commercial and public functions within a ring of green parks. The project had been initiated in 1990 with the preparation of a feasibility study, which was later approved by the municipal authorities and implemented into the local zoning plan. The building quarters had been designed by multiple architects, who designed them with a certain compositional similarity and cohesiveness, as well as high energy efficiency in mind. An interesting development in their design process were the very detailed and in-depth specialist concept designs, including aspects such as environmental impact, energy use and the influence of these factors in relation to the spaces of playgrounds and parks. In short, the program and concept for Messestadt Riem called for the preservation of the balance between the various types of areas. This balance was as follows: a third of the overall area had been designated for commercial and exhibition buildings, another third for residential buildings and another third for parks and green areas. The master plan of Messestadt Riem called for the concentration of non-residential buildings in the northern part of the complex. The intensity of the built environment was to decrease away from this point in the direction of the open landscape to the south. The residential buildings dominate the southern part of the complex. The information material regarding the complex contains a statement that it provides around 17 m² of public green areas per resident, and 15 m² of private green areas per resident. In the case of this complex, we can see the effect of consequently implementing a sequence of semipublic green urban interiors which create an optimal climate within the complex, that are located within the quarters of buildings. In contrast to the Killesberg complex mentioned earlier, the green areas are rather flat with a dominance of geometric layouts. The Messestadt Riem complex is a composition of sequentially repeated urban interiors and view openings from each of the two main squares of the complex towards the other fragments of the layout. The perspectives from these openings are varied - from the opening towards the surrounding greenery to the fountains near the main transportation hub square of the complex. This allows the creation of friendly and private spaces in between each quarter in the form of urban interiors and to enrich the paved public spaces with a variety of view openings.

3.2. Scharnhäuser Park, Ostfildern, Stuttgart suburbs

The Scharnhäuser Park complex is located in the suburban area of Stuttgart and has an area of around 140 ha. Its inception was carried out in a manner analogous to the other examples in the article. In 1992 the project was initiated by the development of a feasibility study, followed by the implementation of the local zoning plan. The area was previously occupied by the military. In a manner similar to that of Messestadt Riem, the complex sports a series of urban interiors between the quarters of buildings, which provide a feeling of privacy in these semipublic spaces. The dominating compositional axis is a public space composed of large green terraces laid out in the form of a kind of flight of stairs, which

form the main element of the urban interior, providing it with a sort of green floor and an opening to the far away landscape. This layout forms an array of wonderful perspective viewpoints not only to the nearby mountain range which can be seen on the horizon in clear weather, but also within the urban composition of the complex itself.

It is interesting to note that the analysis of these examples yielded the observation that the complexes of Stuttgart tend to provide a much larger variation in terms of function than those of Munich.

4. Conclusions

1. The „Creed” of modern architecture – the proper relation between the interior and exterior open spaces of contemporary residential complexes, with the simultaneous preservation of the privacy of its inhabitants and the use of cutting edge technology in order to achieve a high level of energy efficiency was observed in the listed examples.
2. The examples in the article, in the author’s opinion, possess green public spaces that are friendly to their residents, which is at varying levels perceived as a private space.
3. A successfully implemented urban composition can create attractive foreshortenings and perspective viewpoints towards the surrounding spaces, or introduce them into the public spaces of the complex. The examples depicted in the article possessed not only attractive spaces that created sequences of urban interiors, but also played other roles. Retention tanks were placed underneath green spaces, which were used to rationalize the management of rainwater in Killesberg, for example. An important difference here is the holistic approach to creating green areas that can be attractive not only in a visual manner, but which can also be feasibly employed on the technical level.
4. The dual use of the areas of the complexes is one of the more important aspects that play a part in the overall energy efficiency of a residential complex. The examples illustrated above are currently in their late phases of construction or have just been built in Germany. Through the observation of how they are being used, one can arrive at interesting conclusions – in regard to how they are perceived on the visual, sensual and strictly technical level.



- III. 1. Am Ackermanbogen. Munich. View from an artificial hill containing a heat storage tank. (author's collection, 2015)
- III. 2. Am Ackermanbogen. Monachium. View of downtown housing (author's collection, 2015)
- III. 3. Killesberg. Bench located within a public garden. (photo by author, 2014)
- III. 4. Killesberg. Półpubliczna przestrzeń ukształtowana jako ogród typu francuskiego. Stuttgart. (fot. autora, 2014)
- III. 5. Messestadt Riem. Munich. A strip of greenery with a perspective viewpoint towards the faraway horizon, separating two rows of buildings (author's collection, 2015)
- III. 6. Messestadt Riem. Munich. Perspective of the semi-private space with playground for children. (author's collection, 2015)
- III. 7. Scharnhauser Park. Stuttgart. Main public space (grand stairs) with green terraces. (author's collection, 2013)
- III. 8. Scharnhauser Park. Stuttgart. The prospect of semi-private space. (author's collection, 2013)

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RAFAŁ ZIELIŃSKI*

IMPORTANCE OF SKETCHES, GRAPHICS AND COMPUTER IN DESIGNING GREEN WALLS

ZNACZENIE SZKICÓW, GRAFIKI I KOPMUTERA W PROJEKTOWANIU ZIELONYCH ELEWACJI

Abstract

Green facades are becoming more and more frequently used tools in the process of urban transformation. They are treated by architects and town planners as a new material which allows them to transform grey and unattractive urban environment. Their final look, however, requires careful decisions and selecting adequate floral arrangements. Graphics, paintings and drawings backed by the knowledge of botany may result in creating green walls which can be veritable floral masterpieces. Virtual 3D models, on the other hand, enable us to understand better the mutual interaction between the 'green facades' and the surrounding urban environment. When designing vertical gardens and green murals, it is worth remembering about all the possibilities offered by sketches and the computer in order to transform urban areas thoughtfully and consciously.

Keywords: green walls, vertical gardens, green graphics, green murals, green street art

Streszczenie

Zielone elewacje stają się coraz chętniej wykorzystywanym narzędziem w procesie transformacji miast. Urbaniści i projektanci traktują je jako nowy materiał pozwalający na zmianę szarej, miejskiej rzeczywistości. Ich ostateczny wygląd i odbiór wymaga jednak przemyślanych decyzji i dobrania odpowiedniej kompozycji. W drodze do osiągnięcia właściwego efektu wizualnego i społecznego projektant ma do dyspozycji coraz więcej narzędzi. Grafika, malarstwo i rysunek wsparte wiedzą z zakresu botaniki mogą stworzyć na elewacjach roślinne arcydzieła. Z kolei wizualizacje i modele 3D pozwalają na lepsze zrozumienie, w jaki sposób „zielone fasady” będą oddziaływać na otoczenie. Kształtując wertykalne ogrody lub zielone murale, należy pamiętać o możliwościach, jakie daje nam szkic i komputer, aby w pełni świadomie zmieniać nimi przestrzeń miejską.

Słowa kluczowe: zielone elewacje, wertykalne ogrody, zielone i murale, green street art

* M.Sc. Arch. Rafał Zieliński, Division of Descriptive Geometry, Technical Drawing&Engineering Graphics, Faculty of Architecture, Cracow University of Technology.

1. Introduction

While transforming urban landscape we are relying more and more on new concepts and ideas. Artists and town planners alike often find their inspiration in the surrounding nature which gets as far as the city outskirts, and then, with great effort slowly finds its way into cramped urban areas. Green facades are becoming more and more visible and, consequently, increasingly popular solutions in the struggle to change our urban landscape. In order to achieve the desired visual and social effect, contemporary urban designers and town planners seem to have more and more tools at their disposal. Graphics, pictures and sketches backed by the knowledge of botany may produce facades with floral masterpieces. Computer visualisations and 3D models, on the other hand, allow to understand the interaction between green facades and the surroundings. When designing vertical gardens or floral murals one has to remember about all the possibilities offered by sketches and computer so that the transformation of urban areas can be thoughtful and fully conscious. By creating vertical gardens it is as if we were painting heavily industrialised and hermetically-built urban areas with living colours. In this way green murals and graphics are integrating nature with urban environment.

2. Green walls – the role of sketches in the designing process

Designing, construction and maintenance of green walls requires selecting appropriate systems and providing vegetation with adequate conditions in terms of microclimate. Designing green walls is clearly a challenging task as one has to remember about many aspects concerning design and particular location. Apart from technical aspects such as the type of system or structure to be used, maintenance, careful choice of vegetation depending on geographical and climatic conditions, one has to remember about the equally important visual aspect of such an installation and its visual impact on the immediate surroundings¹. In such a situation, a sketch or graphic become an obvious tool in the designer's hands. Once we are able to see the colour composition of plants, planning and positioning of plants become easier. Understandably, designing green walls is a complex process and one which requires from the designer not only a great deal of composition skills but also thorough knowledge of plants. Seedlings need to be carefully selected as almost every plant has a different vegetation cycle². Depending on the season of the year, new colours will be appearing on the wall and, consequently, they will considerably change the whole colour scheme of the installation. Patrick Blanc's works can serve as a good example. Being a forerunner of vertical gardens, he created his own style, in which drawings and sketches of future installations play a crucial role. One can see that he divided his graphics into two types. The first type of graphics show merely the positioning of particular plants

¹ B.O. Timur, E. Karaca, *Advances in Landscape Architecture*, lipiec 2013, [In:] Vertical Gardens, rozdział 22.

² N. Villard, *Gardening vertically. 24 Ideas for Creating Your own green wall*, W.W. Norton & Company, New York 2012.

in a given area. Uneven shapes positioned side by side are provided with Latin names of particular plants. They resemble a patchwork item of clothing which does show, however, traits of a carefully planned composition. They may look to you a bit like children's colour-in books, which are just waiting there for you to be coloured in. The second type of his graphics show in more detail the actual composition conceived by the designer. His concept, although still without colours, is now beginning to make up a coherent whole. Thanks to the details of particular seedlings one gets the idea about the texture of plants and the size of their leaves³.

Green walls influence considerably urban tissue improving the quality of life and shaping the urban ecosystem. One of many positive aspects of introducing such types of solutions is the visual perception of vertical gardens and, consequently, the way they influence city dwellers⁴. In order to take full advantage of their potential, one has to adopt a much more humanistic approach in dealing with this idea. It is mainly the impressionistic and picturesque aspect that will be first noticed in the urban reality transformed by green walls. At this stage of the designing process a sketch seems to be a more effective tool than a computer as it is much easier to lend to paper colours and the final composition we want to achieve. Włodzimierz Karczmarzyk's sketches may serve to illustrate how beautifully the effect of vines creeping up the wall may be rendered on paper by skilful usage of black ink and coloured pencils⁵. When designing vertical gardens, it is not enough to position them inside the desired urban space, it is necessary to consider carefully their final look. Traditional tools such as sketches and graphics come in handy in this case.

3. Sketch or computer – architectural concepts of vertical gardens

A number of ideas which are at the stage of being conceived in artists head call for different designing techniques depending on the very stage of the designing process. When considering green walls in a wider architectural and town planning sense, it is not only a sketch or a graphic but, naturally, also a computer that proves to be a very useful tool. It is often much easier to see the ultimate effect of the city 'getting greener' on a virtual model of the city. The latest technology is especially helpful when trying to check how the urban reality changes after introducing parks, lawns and vertical gardens. Designers at this stage do not need to analyse particular types of plants or their vegetation cycles as it seems enough to check only how green points would affect the interior of the buildings, their facades, whole streets and housing estates of the city. A good illustration may be the works and designs of Vincent Callebaut who, with the help of visualisation techniques, changes large urban areas into vibrant green oases. At least one example is worth mentioning here,

³ P. Blanc, *The Vertical Garden*, W.W. Norton & Company, New York 2012.

⁴ I. Alcock, M.P. White, B.W. Wheeler, L.E. Fleming, M.H. Depledge, *Longitudinal Effects on Mental Health of Moving to Greener and Less Green Urban Areas*, [In:] *Environmental Science & Technology*, 2014.

⁵ W. Karczmarzyk, *Kraju rodzinnego portrety*, Wydawnictwo Karczmarzyk Włodzimierz, p. 50-51.

namely the concept of transforming an industrial district of Geneva in Switzerland, in which plant-covered buildings attempt to imitate hills⁶.

In heavily urbanised sections of the city introducing new green areas is far more difficult, hence the vertical gardens or green walls often present the only solution. With a computer-generated image it is possible to determine how green walls will be perceived by people. Adequate positioning of floral elements and green walls may create a completely new psychological effect and impact scale. Designers may determine then whether it is better to use it as ‘a picture,’ or perhaps to create a new interior by introducing it on the walls of buildings adjacent to the square, or in the interior courtyard of a townhouse. It is also possible to virtually design the so-called ‘green rooms’ between buildings and inside city quarters and see to what extent they would change the character of a particular urban area. Green walls will become in this case the walls of the room, and a square or a lawn will become its floor.

Although computer models are clearly more precise, sketches and graphics may serve equally well in presenting the designer’s vision, especially when they show nature and its interaction with architecture. This very technique has been used in presenting the design of Podlasie Opera and Philharmonics in Białystok. The building has been shown in sketches as fully covered with green vegetation, which in future will cover all its floors and the roof. Within eight years the vegetation supported by frameworks will have created a green cocoon dominating the city skyline. Thus one could say that both the sketch and the computer are becoming equally important tools at designers’ disposal. It is the designer who will determine at what stage of the designing process a sketch or a computer-generated virtual model will be more useful. And it is not impossible to merge the two techniques when designing green walls. Patrick Blanc in his latest works applies this very method: he creates his visions of green installations by overlaying his sketches on computer-generated buildings. A good example of such approach to designing concept is his design of the façades of Yes Hotel in Athens and European Central Bank in Frankfurt⁷.

4. Green murals, graphics and sculpture – green street art

Green walls are increasingly popular and a vast array of concepts and solutions offered is simply astonishing. In urban environment it is noticed that plants and vegetation have become the focus of interest for artists. One has to mention here the works of Anna Garforth, who uses letters covered with vegetation to create green graffiti. In a similar fashion, she is preparing smaller forms, such as ‘Big Bang’ wall painting in one of London’s night clubs. Her ideas and works have been noticed by architectural firm Squire and Partners and used during annual Festival of Architecture in London. She was asked to prepare a floral mosaic based on her sketches to be used in one of London streets⁸. Green walls and various vines

⁶ *Landscape, Geneva 2020*. Vincent Callebaut Architectures, <http://vincent.callebaut.org/page1-img-geneve.html> (access 2.03.2015).

⁷ P. Blanc, *The Vertical Garden*, W.W. Norton & Company, New York 2012.

⁸ *King’s Cross Picnic*, Anna Garforth, <http://www.annagarforth.co.uk/work/kingscrosspicnic.html> (access 7.03.2015).

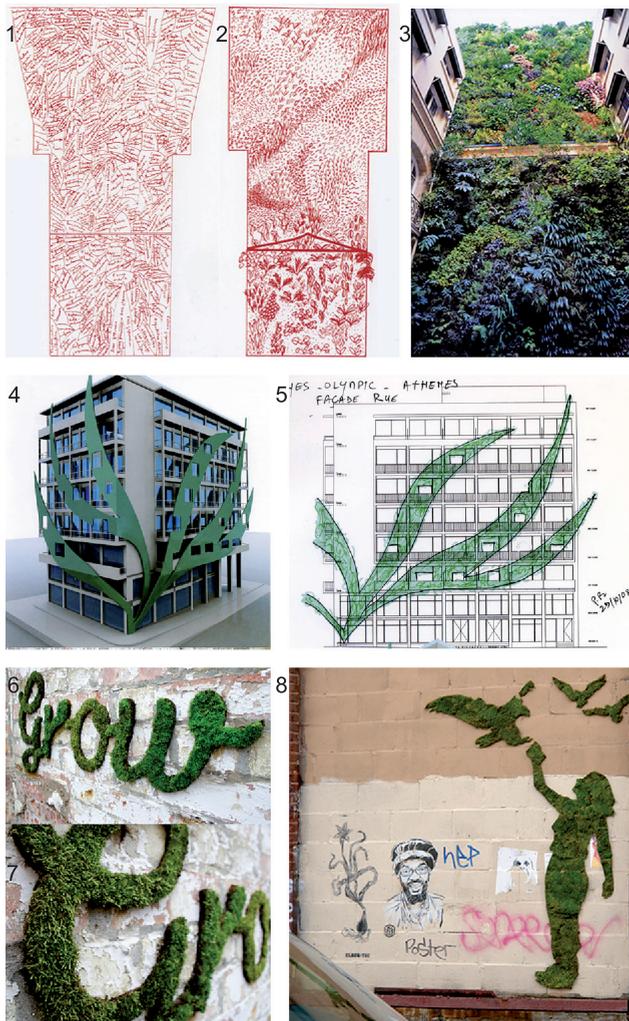
creeping up the walls are becoming a new source of inspiration, they have entered the so-called world of street art and it seems they are here to stay for good. This phenomenon can be noticed, for instance, in the form of increasingly popular urban murals. Stefaan de Croock-Strook, an artist from Belgium, created an interesting green mural opposite STUCK Arts Centre in Leuven using a natural base constituted by moss-covered walls. The only thing he had to do was to paint his picture using high-pressure water stream which, acting similarly to a painter's brush, formed a beautiful wall mural⁹. This example shows best how new and original graphics can be created. It appears that initiatives like these are beginning to attract whole groups of artists. New York is the place where Mosstika group is based. It attracts people for whom ecology and return to nature are pivotal in the creation process. They create their works on walls, so that all passers-by would be able to touch them and, at least momentarily, literally feel their connection with nature. Edina Tokodi, one of the group members, shows how floral graffiti may beautify grey and uninteresting urban reality. Taking advantage of animal motifs she paints the walls with intriguing pictures which remind passers-by about their connection with nature not only by means of image but also the texture of the plants used. Street art has now a new ally in the form of vines creeping up the walls¹⁰. Artists use every element of the street, pavement or building to create a work of art. Vertical gardens may also be designed as sculptures covered with vegetation. A good example here is the project of 'Papa' Jeff Koons opposite Guggenheim Museum in Bilbao. Temporary as well as permanent installations may be used to create sculptures or spatial structures, and in this way enriching urban environment and architectural interiors of buildings.

5. Conclusions

Green facades are becoming a more and more frequently used tool in the process of urban transformation. They are treated by designers and town planners as a new material which allows transformation of grey urban reality. When designing vertical gardens it is not enough to position them in particular location, one has to think very carefully about their final look. At each stage of planning and designing architects or artists need to choose the most appropriate tools. Sketches and graphics seem to be most useful when searching for the best composition and colour scheme. With their help selecting appropriate colours and textures may seem much easier. Virtual reality models, on the other hand, help with creating architectural and town planning concepts and with understanding the impact of vertical gardens on a particular section of the city or even the whole city. Sketches and computer have become equally important tools; with their help, thanks to novel architectural solutions and creeping-up vegetation, the walls no longer function as mere barriers. They are becoming a new additional space which can be utilized for creating city parks, green graphics and murals.

⁹ B. Meinhold, *Strook's Reverse Moss Graffiti Mural Emerges from a Wall of the STUCK Arts Centre In Belgium* (online), Inhabitat, <http://inhabitat.com/strooks-reverse-moss-graffiti-mural-emerges-from-a-wall-of-the-stuk-arts-centre-in-belgium> (access 5.03.2015).

¹⁰ B. Starr, *Mosstika: Street Art Greens the Urban Jungle* (online), Visual News, <http://www.visualnews.com/2012/06/mosstika-street-art-greens-the-urban-jungle> (access 5.03.2015).



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