

Education of architects: historical and contemporary aspects of teaching freehand drawing

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ABSTRACT: In this article, the author discusses the history of teaching architects freehand drawing at the Accademia di San Luca in Rome, one of the oldest academies of painting, sculpture and architecture in Italy. Under the Academy name drawing competitions were organised, which encouraged rivalry between students. The collection of works resulting from these competitions is in the Archives of the Academy. Reflected in this article is the passion for drawing, for presenting the projected reality, which has remained unchanged for centuries, even though the styles and the artists' names have changed. While choosing the architects for this presentation, the author took into account the collection of architectural drawings of the Howard Gilman Foundation, registered in the Museum of Modern Art (MoMA), New York. They come from the 1960s and 1970s. Looking at the sketches of well-known architects, it is clear they are not only professional messages, but also reflect subjective reactions and intangible assumptions.

INTRODUCTION

In this article, the author presents historical and contemporary methods of teaching freehand drawing to the architect. Reference is made in the article to the history of teaching architecture in the context of teaching drawing at the Accademia di San Luca in Rome, one of the oldest academies of painting, sculpture and architecture in Italy. The methods of teaching architecture that were developed at this university had an influence on architectural education in later periods. Freehand drawing is the language of architecture and the oldest means of its representation. Drawing is an essential element of the architect's professional toolkit. That is why teaching architects to draw has always been most important. For centuries, architects have indulged a passion for drawing, which they used to present their designs. In architecture, there is a whole sphere of abstract concepts, which contain sketches that are records of individual ideas. They often remain only on paper. Recorded in this article is not only the form of the drawing, but also the emotional charge, the power of expression and historical connotations.

METHODS

The author has for 40 years taught freehand drawing to architectural students at the Faculty of Architecture at Cracow University of Technology. He has conducted research on both the historical and contemporary aspects of freehand drawing at European and Polish architectural faculties. In addition, the author has analysed many original drawings by renowned architects. Also referenced in this research is the literature on the subject.

HISTORICAL ASPECTS OF TEACHING ARCHITECTS FREEHAND DRAWING

For over 2000 years, architects and theorists of architecture have opined about the education for architects, paying particular attention to drawing [1]. Their views evolved with the progress in drawing techniques, and the enhanced possibilities of presenting objects and projects by means of drawings. The development of architecture and stylistic transformations determined by structural engineering and construction technologies also influenced changes in the views regarding this issue. Until the 15th Century, architectural drawing served primarily a utilitarian purpose. It was just a medium of communication between the designer and the contractor and lacked aesthetic value. At the time, drawing was not meant to be a presentation to the client.

The demand for objects with new functions, whose designs were to be presented and approved by investors required architects' drawings to take on new qualities. Their task was to present the building in a communicative way not only to the contractors, but first of all to the client. The task was facilitated by the discovery of the principles of presenting forms in a perspective, which was largely a contribution of the Renaissance artists, as well as theoreticians and practitioners of architecture from the epochs that followed. They include: Philip Brunelleschi (1377-1446) [2-4]; Leon Battista Alberti (1404-1472) [5][6]; Piero della Francesca (c. 1415/20-1492) [7]; Leonardo da Vinci (1452-1519)

[4][8][9]; Albrecht Dürer (1471-1528) [10-12]; Sebastiano Serlio (1475-1554) [13][14]; and many others. After developing the methods of constructing perspectives, the drawing technique of architects approached that of the painters, the perspective became an art, and architects often presented their projects also at competitions.

When organised architectural education did not exist, architects gained basic knowledge by travelling, and drawing completed buildings. Apart from master and guild training in the Middle Ages, it can be assumed that organised architectural education was created in Italy during the Renaissance.

One of the oldest academies of painting, sculpture and architecture in Italy was the Academy of Saint Luke (Accademia di San Luca) in Rome approved by Pope Gregory XIII on 15 December 1577. Teaching there started in November 1593. Analysing architectural education, Zachwatowicz states that

...architecture treated as one of the elements of a great family of fine arts is associated with art academies - sculpture, painting and architecture. (...) Italian schools in general and the Academy of Saint Luke in Rome, in particular, became an oracle and a model for architectural education that would establish the principles of academic classicism for years to come [15].

From the beginning, drawing was the principal subject studied at the Academy of Saint Luke. Federico Zuccari - a royal painter - raised to the rank of the Academy's Principe in 1593, thought that drawing could settle the dispute between painting, sculpture and architecture over their superiority [16].



Figure 1: G. Montiroli, Perspective view of the piazza to the entrance of Nazionale (no. kat. 2364). Reproduced: Marconi P., Disegni architettonici. In: La collezione dei disegni, De Luca Editore, Roma, 304 (1974).

It was noted that

...it is forbidden to discuss in the Academy the superiority of painting, sculpture or architecture, because if each of them is the daughter of the same father, as noble as disegno, they should have the same nobility and be as one (...), representatives of each of the arts should compete with one another for perfection and skill, and to master and cultivate each of the arts, like great Michelangelo who used to say that every painter should be a sculptor and an architect, while every sculptor and architect should be a painter, because it is one knowledge divided into three practices [17].

The basic features of academic education were formed in the 18th Century. They were based on the ideas of Giovanni Bottari who claimed that, in order to practise the architectural profession, it is necessary to draw expertly. He maintained that the architect should master drawing in order to

...be able to express painting and sculpture. The person who perfected this kind of art can call themselves an architect (...) It is certain that making many drawings and reaching perfection in the process makes man subtle and full of inventiveness, which is as unavoidable as getting tanned while walking in the sun [18].

Bottari developed his own apology for drawing and protested against only empirical education. He recommended academic teaching (anthropomorphic concepts of Vitruvius, drawings of nudes, mathematical sciences and poetry). What mattered to him were not only drawings, but the skill of drawing itself, as *arti del disegno*. He declared that drawing helped one to understand technical problems.

A good draftsman, exercising on canvas or in marble, will plan the layout of apartments, stairs, workshops, courtyards and other parts of the palace better than others. First of all because, in Vitruvius' words - it is impossible to show any one thing reasonably and beautifully without symmetry and proportions which cannot be mastered without reference to the members of a beautiful man's body, and besides, to do the task well one needs a great and flexible mind with easy and rich inventiveness. Nobody will excel in this part of architecture unless they have reached a certain perfection in these skills. Because we are indebted to many great inventions of illustrious drawing masters, among whom you will find many poets, this art also requires a great mind [18].

It is worth noting that the 18th-Century Academy competition drawings bear witness to the students being trained in all the arts of disegno: painting, sculpture and architecture.

The teaching curriculum included many fields of art. In the 18th Century, there were the following departments: theoretical architecture; practical architecture; elementary and decorative architecture; as well as two departments of nude drawing, two departments of sculpture, mythology, history, archaeology, anatomy, geometry, perspective, engraving in stone, chalcography and hydraulics in art [18].

In the Archives of the Academy there is a collection of drawings that were entered for the competitions, which were very important for the Academy. The drawings were divided into two groups. One included architectural tasks, while the other comprised compositions, landscapes and figurative drawings. Students of painting participated in architectural competitions, while architectural students also drew landscape and figurative compositions.

Detailed information about competitions dates back to 1702 when Pope Clement XI granted the Academy funds for their organisation. They were called Clementine competitions, after the pope. Each competition was followed by a release of an album, which contained, among other topics, names of jury members and winners. The albums bear testimony to the teaching of drawing and its significance at the Academy. The competition's rules set three topics, from a large composition placed in urban space or in an open landscape, through smaller projects, to a given architectural complex or detail drawn from nature. The topics were very often inspired by current problems that required solutions. In 1705, it was the restructuring of the façade of San Giovanni in the Lateran, which was then a very controversial issue, while in 1711 the theme was the project of the sacristy for the Basilica of San Pietro, on which the architects worked for the next 70 years.

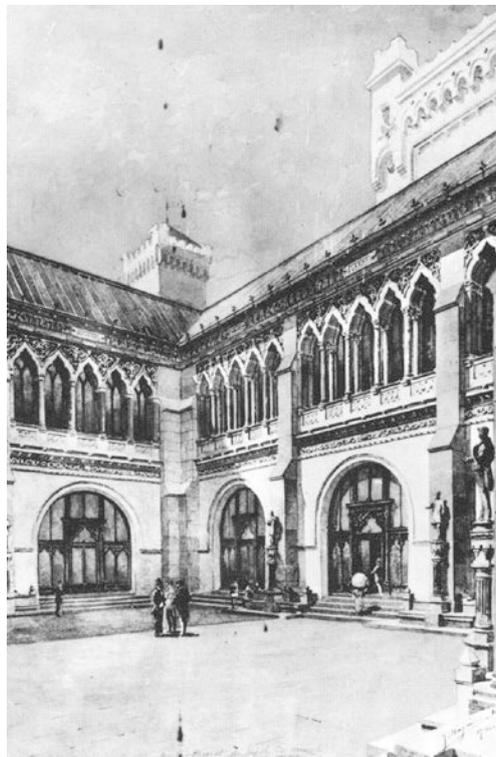


Figure 2: G. Magni, Perspective unidentified town hall to be built in Romania: courtyard (no. kat.2008). Reproduced: Marconi P., *Disegni architettonici*. In: *La collezione dei disegni*, De Luca Editore, Roma, 307 (1974).

Although competition works demonstrate high precision of execution, the artistic aspect was not neglected. In orthogonal drawings, the contour line of varying thickness was combined with a patch of different values of grey and distinct textures. This allowed the spatiality of the object, its third dimension, to be achieved in an orthogonal drawing. The texture and materials from which the volume was to be made were determined precisely. In perspective drawings, objects were placed in the landscape, and their scale was further defined with the figures of people.

The rules of the competitions where the topics included compositions, landscape or figurative representations defined precisely the composition guidelines that had to be followed. That meant that students did not compete solely for the accuracy of representation of the forms observed from life, which could have amounted to mere copying. The competition rules were adjusted for three classes of student. Members of the third class, the youngest students, were expected to draw antique sculptures from life, while the second- and first-class students were supposed to develop a specific theme.

Apart from the Clementine competitions, others were Carl Pio Balestra, held from 1768. The competition topics were important architectural issues, such as the rearrangement of Ripa Grande park (1768) or the rebuilding of Piazza del

Popolo (1773). Another competition was supported by Canova and named after him. The last competitions at the Academy, which survived the transition to the Piedmont period, were the Poletti and Montiroli contests. Academic competitions survived until the 20th Century, constituting the culmination of didactics and a kind of *Master's degree*. Between 1870 and 1930, only students from Rome entered the competitions. As education was nationalised, the competitions lost their status of a Master's degree, while the didactic role of the Academy was lost. It is now known as Reale Accademia Romana di San Luca and, since 1934, has been situated in Palazzo Carpegna.

An analysis of the curricula and drawings preserved at the Academy proves that drawing was the basic form of expression by its students. It was both a medium of communication and a work of art, as reflected particularly in the competition entries, which were autonomous artworks in addition to their precise, informative content. The authors of them took care of expression, composition and quality of execution, achieving formal virtuosity. Perfect command of perspective is clearly visible, especially in the drawings of complex historical interiors. The students used the line of varying thickness, sometimes vanishing or turning into a patch, perfectly defining the space, form and chiaroscuro. Contour drawing was very often combined with value drawing. Linear perspective was used in combination with an aerial perspective.

The guidelines which were developed by the Academy had a significant impact on the methods of teaching in architectural schools. It can be said that this, in a sense, *artistic* concept of the architectural school continued until the 20th Century, also in the avant-garde circles, since Gropius stated that

...architectural design and other areas of creative art do not differ in essence, but in the scope of the problems they solve. Inclusion of the architect's education in the framework of artistic education (the Academy of Fine Arts, Bauhaus) was a reflection of this concept [19].

In France, architectural education took a more rational direction than the artistic Italian approach. It was set by the Royal Academy of Architecture, which was established in Paris in the 17th Century. However, teaching drawing together with supplementary subjects, such as artistic anatomy or perspective was an important element of the architect's education. Nowadays, the Faculty of Architecture is also a part of the Academy of Fine Arts (Académie des Beaux-Arts). Students can choose an arts course from five subjects taught at the Department of Art Practices. The basic one is freehand drawing. Studies of ancient forms and figures are done here. They aim at sensitising students to the proportion of forms. Attention is paid to the technical and artistic aspects of drawing space on the plane and the various ways in which this can be done.

In Russia, the development of architecture was greatly influenced by the Faculty of Architecture established at the Imperial Academy of Fine Arts in St Petersburg in the second half of the 17th Century [20]. Other faculties at the Academy included the Faculty of Painting and the Faculty of Sculpture. Education at the Academy was mostly based on the teaching experience in Western Europe. In 1944, the school changed its name to I.E. Repin St Petersburg State Academic Institute of Painting, Sculpture and Architecture. The institute continues the tradition of the Academy.

I.E. Repin Institute makes use of all the achievements of contemporary pedagogy with strict consistency in the teaching of professional habits, high artistic culture, as well as the principles of the school of Russian realism - careful study of nature, humanism, deep content [6].

The St Petersburg Institute has five faculties: painting, graphic arts, sculpture, architecture, theory and history of art. The 13 departments that make up the faculties include drawing, painting and composition and graphic art. Since the times of the Academy, freehand drawing has been considered one of the most essential subjects shaping the future architect. Particular attention is paid to composition, form structure, proportions, perspective, artistic anatomy, as well as knowledge of architectural detail and value.

In Germany, before the unification in 1871, in a multi-state system there existed numerous universities, Academies of Fine Arts and Technical Universities in the capitals of the duchies and kingdoms. Due to a shortage of professors, they often had the character of meister schule [master school]. Among the biggest was the Faculty of Architecture at the Technical University in Berlin-Charlottenburg. The system of education was traditionally academic regardless of the school type [15].

The first state school of architecture in Germany - the Royal Academy of Building in Berlin - was founded in 1799 by D. Gilly, J.A. Eytlewein and A.H. Riedl. F. Gilly then developed a curriculum called: *A collection of useful guidelines and information on construction* [21]. The curriculum included, among other things, freehand drawing, optics, perspective, science about solids and architectural drawing. In 1879, the Building Academy merged with the School of Crafts forming the Technical University of Berlin. Drawing always has been considered an important subject and has always been taught by outstanding professors, whose influence on the general direction of education has been decisive. Student drawings kept in the university archives demonstrate the quality of teaching the skill.

When analysing the education in European architectural universities, it can be stated that regardless of their general profile - whether they were technical universities or academies of fine arts - drawing was considered a fundamental element in the architect's education.

DRAWINGS BY SELECTED CONTEMPORARY ARCHITECTS

The aims of drawing determined the methods in which it was taught in the past and they still influence the way it is taught today. According to Robbins,

...drawing is used for generating, testing and preserving individual visions of the architect. (...) Drawing is the root of architecture. It is a tool which architecture uses in virtual and current existence. Architecture has created its cultural subject and objective thanks to drawing [22].

Passion for drawing, for presenting the designed reality, has remained unchanged for centuries. Some interesting architectural drawings from the 1960s and 1970s have been collected by the Howard Gilman Foundation [22][23] and transferred to the New York MoMA (Museum of Modern Art) [24]. The authors of them wanted to create paradigms in architecture corresponding to transformed living conditions and new aesthetics. When the drawings were created, they were treated as illustrations of the artists' ideas and plans. The artistic value of them was disregarded at the time. Nowadays they are considered works of art. The outstanding artworks, visionary images based on the technological achievements of the time together with historic insertions of icons characteristic of early postmodernism, are full of emotion and expression declaring the artists' belief in a better future.

Peter Cook, a co-founder of Archigram, member of the Royal Academy of Arts, representing the views of the British counterculture of the 1960s, regarded modernist functionalism as a worn-out concept. His diploma project featured a new concept of the city called Plug-in City, a megastructure with residential complexes, services and roads connecting parts of the city. The author introduced modules with houses, offices, shops, schools (see Figure 3). Each had an individual design and connected to the central system, hence the name Plug-in City. Each unit was designed to last 40 years. It was meant to be flexible, impermanent, reflecting the needs of future residents. Peter Cook continues to draw and exhibit his works in exhibitions across the world. His characteristic style and use of colour are easily recognisable and highly appreciated.

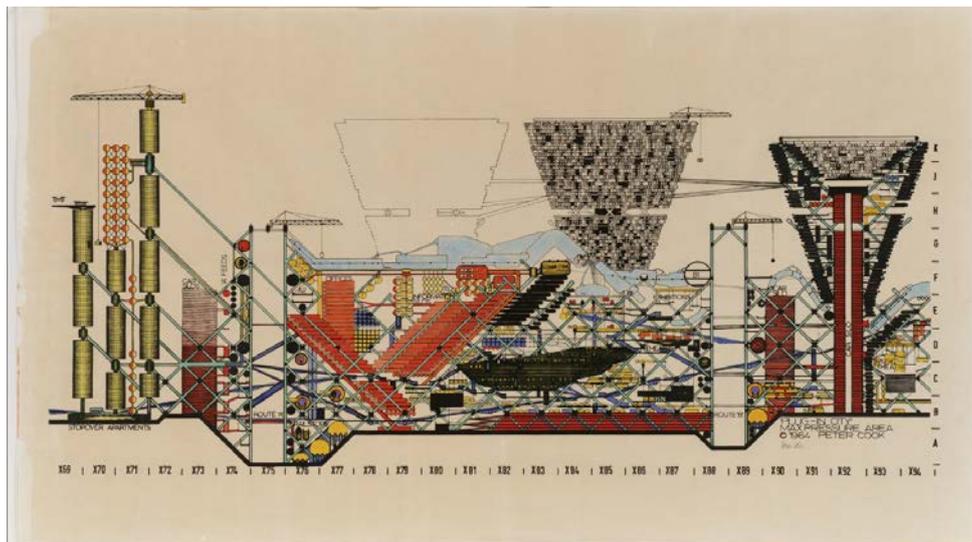


Figure 3: Cook, P., Plug-in City: Maximum Pressure Area, project (Section) (1964). Reproduced: Envisioning Architecture. Drawings from The Museum of Modern Art, editor: the Museum of Modern Art, New York, 143 (2002).

The collection of the Museum of Modern Art in New York also includes drawings by Aldo Rossi, the 1990 Pritzker Architecture Prize winner. His representations of metaphysical landscapes and fragments of cities seem particularly interesting. Rossi presents his own views on the development of cities and new guidelines for creating them. Some of the drawings come from the 1978 seminar project of the Venetian district of Cannaregio. The author presented massive fragments of the city, including the Teatro del Mondo, which was constructed a year later as a floating structure at the Venice Biennale. It expressed his conviction that architecture creates a stage for living with the public sphere for playing and the backstage for personal experiences. Referring to this project, he said that it was a place where architecture ended and the world of imagination began. Rossi described his ideas about urban architecture in his book [25].

Peter Eisenman, a member of the New York Five (i.e. five architects) and an outstanding representative of deconstructivism in American architecture, is another architect whose drawings are included in the MoMA collection. In the 1960s and 1970s, he made a series of 11 houses, which he described in Roman numerals. His intention was to prevent the objects from being associated with specific places or owners. They were supposed to be abstract works of art. For Eisenman, the drawing is in a sense a sequence of axonometry. Geometric elements that remain within the framework of a cubic form are divided and transformed based on the concept he developed. Each action is a logical sequence from the previous one; the cube is cut, elongated and rotated until the final effect is reached. Neither function nor form matter in the process.

CONCLUSIONS

It can be said that architecture cannot exist without the image and the sketch as a simplified drawing of a comprehensive study. In European schools of architecture, regardless of their general profile - whether technical universities or academies of fine arts - drawing always has been regarded as one of the fundamental subjects shaping the architect's education. Theoreticians and practitioners of architecture stress the importance of drawing in the architect's profession and point out that drawing is not only a form of training spatial imagination, but also a method of searching for the most perfect aesthetic effects. Also the drawings by renowned contemporary architects testify to the significance of freehand drawing as a tool in their architectural work.

Teaching drawing to architects was important in the past and remains so today. For many architects, drawing is a fundamental skill in their work making it possible to contain synthetic and factual information within a sketch, to present the project's complexity and the material, as well as intangible assumptions and parameters.

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