

Propaedeutics of teaching drawing to architects

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ABSTRACT: Teaching freehand drawing is an important task in the education of architects. It is vital to formulate the goals and functions of freehand drawing. The main role of drawing is to develop spatial awareness based on the knowledge of the construction of forms and the ability to represent them as a form of communication. The basic method of teaching drawing at the initial stage of architects' education has been the nature study. It is also necessary for architects to be able to draw from memory, documentation and imagination. An important skill is sketching, which should be accurate and precise in exploring the elements of space that are in the sphere of interest of the person who draws. The initial period of teaching drawing is important, because it can influence future achievements of students of architecture. In this article, the author discusses contemporary issues related to the use of freehand drawings in the education process of future architects, in the context of learning outcomes of the freehand drawing course given to first-year students, to instill required skills and competencies.

Keywords: Visual communication, medium of communication, freehand drawing, sketching, methods of teaching drawing

INTRODUCTION

Aim

Teaching freehand drawing is one of the basic elements of an architect's education. It is vital to formulate properly the goals and functions of freehand drawing in the process of educating architects. The initial stage of teaching is crucial. The curriculum should be planned so as to include all the tasks of freehand drawing.

Methods

The author has carried out research on freehand drawing education at European and Polish faculties of architecture. For 12 years, the author planned curricula and taught preparatory drawing courses for architecture candidates; he has also taught freehand drawing in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland, for more than 40 years. In research the author has also surveyed the literature on the subject. The knowledge accumulated therefore can be the basis for an attempt to present issues related to the teaching of drawing at the initial stage of an architect's education.

BASIC FUNCTIONS OF DRAWING IN ARCHITECTS' EDUCATION

While planning a freehand drawing course for students of architecture, it is necessary, first of all, to define the purpose of the course. Students of architecture must gain knowledge and the practical skills necessary for shaping space, from landscape and urban areas through building complexes to individual objects. Drawing, painting or modelling are means to this end. Thus, for obvious reasons, they play a crucial role in informing the student of architecture.

In the architect's education and work, drawing serves two fundamental purposes. One of them is to stimulate and develop spatial awareness. The awareness should be based on the knowledge of forms and the ability to represent them. With drawing, the purpose is served by generating and testing the architect's visions [1].

First, ideas are conceived in the architect's imagination, and then they are recorded in the form of a drawing. Even if the idea develops simultaneously with its graphic visualisation, the main role is still played by imagination. Imagination also

is the place where subsequent stages of the project develop until the final concept is realised. Imagination, combined with the knowledge of spatial composition, i.e. the rhythm, balance, symmetry or asymmetry, is indispensable at every stage of design. The idea need not be immediately in the form of drawing, but the architect should *see* in the mind's eye the designed form and the surrounding space. Although imagination is individual, it seems impossible to visualise forms in space without knowledge of their construction.

The other purpose of drawing is to serve as a vehicle for communication and information. It is necessary to use it throughout studies not only with respect to designing, but also to address historical and technical issues. The architect uses drawing as a basic means of communication with the client.

The educational process also should consider that drawing forms from nature improves the skills of perception. As a result, things observed, while drawing more firmly stick in the mind [1]. This broadens the scope of knowledge of both the student of architecture and the practising architect.

AIMS AND METHODS OF TEACHING DRAWING IN ARCHITECTS' EDUCATION

After defining fundamental purposes served by drawing in the architect's education and work, it is necessary to define the aim of the architect's education. The fundamental purpose of drawing is to stimulate and support the design process. This always has been set as a goal.

Teaching the basics of drawing has always begun with the nature study. Until the Renaissance, the fundamental method of teaching drawing had been to copy existing works of art. During the Renaissance, still life was the source of artistic exploration and its study was extended by learning the principles of perspective and anatomy. The schools for architects, which were founded at the time, had precise educational aims. Teaching was based on the nature study. The method is still used in many present-day schools of architecture. It ought to be stressed that the method does not consist in copying nature since this can be done by applying existing mechanical tools. The aim of the nature study is not only to explore the structure and composition of the drawn forms, but also to artistically express their character, as well as to learn about the objects themselves and the space around them. The person producing the drawing should have the necessary knowledge of composition, construction, proportions, perspective and anatomy.

Giving up such experiences for the sake of other, not entirely proven methods, usually results in a significant limitation of the student's creative capacities. The process of gaining information about a form, while drawing it from observation, is an individual experience and impacts the diversity of creation. Drawing is a kind of dialogue between the reality and the draughtsman. This dialogue becomes a creative interpretation.

Another stage of drawing from nature is the creation of new values and forms of expression. This is a combination of the cognitive and creative processes. It is essential that they should support the future architect's education. The topics ought to concern contemporary and historical architecture, as well as town planning, greenery and landscaping. However, elements seemingly unrelated to architectural problems should not be completely excluded. Also, at this stage of drawing, the cognitive source is to a certain extent a subjective experience.

At the initial level of teaching, it is also important to develop the students' skills of drawing from memory, documentation and imagination. Generally, this kind of drawing is a record of forms, which emerge in imagination no matter if it is a drawing from memory, documentation or from imagination. To produce this kind of drawing requires knowledge of the principles of form structure, perspective, composition or anatomy. Imagination should be enhanced by experiences of drawing from nature. Drawing from imagination is directly related to the process of architectural design, which starts in the first year of studies of architecture.

The skill of sketching is most important for both the student of architecture and the practising architect. The architectural sketch is a form of drawing that requires the ability to draw from observation and imagination. It is the architect's fundamental tool. The advantage of this method of drawing is the speed of noting down what is seen or conceived in imagination. In creative work, it is important to be able to record the designed forms that appear in imagination.

Sketches help to capture and specify the particular stages of the project as it develops. It is one of the basic forms of design. Besides, sketches are the most often used means of communication between the architect and the client. Although the sketch primarily is utilitarian by nature, it should not lack artistic qualities. There are analytical and synthetic sketches. The former are detailed representations of a form drawn from observation or imagination. The latter present the essential features of a form. What matters in this type of sketch is the conscious choice of important elements and the omission of the insignificant ones. Sketches should demonstrate accuracy and precision in solving the problems of spatial elements in the sphere of interest.

Teaching drawing mostly takes the form of individual reviews as a dialogue between the teacher and the student. The aim of the review also should be to reveal new, significant values of the work. From the start, it should foster the

student's individual talent and creativity. The result cannot be only thoughtless, mechanical following of the teacher's instructions.

PREPARATION OF CANDIDATES FOR STUDIES AT THE FA-CUT

Defining the purposes that drawing should serve at the initial stage of educating architects can form the basis for planning the programme of teaching the subject. Students of architecture usually are graduates from secondary schools, art colleges and construction technical schools. As in other European countries [2], they have to take an entrance examination, which tests their predispositions to architecture and artistic talents. During the entrance examination in the FA-CUT, candidates are set two tasks. One is a drawing from nature based on a composition of elementary solids or their derivatives. The other is an architectural composition. The candidate has to make a drawing from imagination presenting a specifically defined composition.

Most candidates attend a preparatory drawing course before the entrance examination. This is an important period as some candidates are only beginning to learn to draw, and the way they are taught can have an influence on their future performance. There are many drawing courses. For some schools, the only purpose of teaching is to prepare the student to pass the entrance examination. In such cases, the development of spatial awareness or even perception of space is irrelevant. Sometimes, the candidate merely copies two-dimensional forms from the presented drawings. Often, the still life composed of solids is not drawn from observation but from a photograph. The pupil fails to see and study the space and the three-dimensional structure of the solids, but merely copies the two-dimensional composition from the photograph. The learning outcome achieved by means of such a teaching programme is completely inconsistent with the needs of a future student of architecture. The only consolation is that only a very few people taught in this way become students of the FA-CUT.

The FA-CUT has been running drawing courses for candidates for several decades. There are three categories of course. The elementary course is intended for everyone interested in learning freehand drawing, but mostly for first- and second-formers of secondary schools who wish to study at the FA-CUT. There is also a one-year course intended for second- and third-formers of secondary schools who want to study at the FA-CUT. Finally, there is an intensive course for candidates, which runs five to six weeks before the entrance examination, where classes are taught almost a daily. The participants have already learnt to draw and want to consolidate their knowledge and gain more experience before the examination. Each of the courses starts with a presentation of the basics of optics, perspective, form structure and composition. This is followed by drawing simple geometric solids from nature. The aim is to consolidate the theoretical principles and gain practical skills.

During the one-year and the intensive course, the process is taken one step further by making students draw solids cut by a specific plane or permeating each other. The horizon from which the form is drawn is also set. Students draw the solids from nature. Each student's work is reviewed by several teachers. This approach helps unlock the student's artistic potential. Subsequent tasks deal with more complex solids and forms with diverse textures. The student has to determine the texture, chiaroscuro and the spatial distance. Next stages still involve drawings from nature, but outside the drawing room, in specifically set interiors. At first, these are architectural interiors. Prior to the drawing task, students are presented with the principles of perspective in such interiors. The final stage concerns specific urban interiors.

These classes are also preceded by presentation of the theoretical principles of perspective drawings of such interiors. Thus, students gain theoretical knowledge and practical experience of perspective drawing of architectural forms. They get to know the scale of interiors, the substance of architecture, the construction of space and architectural detail. To a great extent, this helps them not only to pass the entrance examination, but also to enhance their predisposition to architecture and develop their artistic talents. The course participants also gain a basic knowledge of architecture.

TEACHING DRAWING AT THE INITIAL STAGE OF EDUCATION AT THE FA-CUT

First-year students of architecture have passed the entrance examination, which confirmed their knowledge, predisposition to architecture, artistic talent and elementary practical skills. This significantly impacts the drawing programme at the start of the studies.

The first-year drawing course has the same aims as the ones described above, but the scope of the classes is significantly extended. The first semester classes in the FA-CUT provide students with practical knowledge of the principles of perspective drawing, construction of the architectural form, composition and reading architectural documentation. The drawing course is integrated with design subjects. Students also learn various techniques of expression, such as pencil, ink, colour.

The first drawing classes introduce students to the issues of representing architecture. The essence of the analytical and synthetic sketch is discussed before the first assignment is set. Students are required to present in the form of a sketch, information about the architecture of a selected detached building and the surrounding space. The sketches are the basis for a study of the object drawn from any given point of view. The sketches presenting the object are drawings from observation in the form of perspective, elevations and projections.

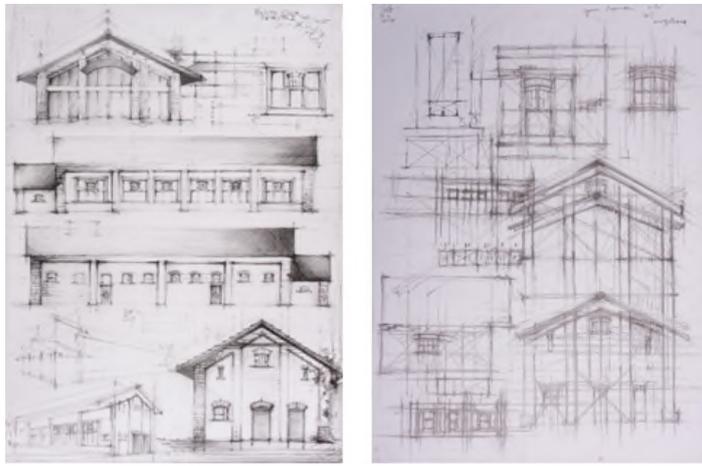


Figure 1: Students: Olga Niemiec and Szymon Gromadzki.

Such an assignment forces the student to make independent decisions regarding the choice of places from, which the building is drawn so as to get maximum information about the building and its surroundings. Although orthogonal views are based on observation, the drawings are not mere projections of the view from nature. In an orthogonal view an object must be drawn in proportions, but in foreshortening perspectives that result from direct observation (Figure 1).

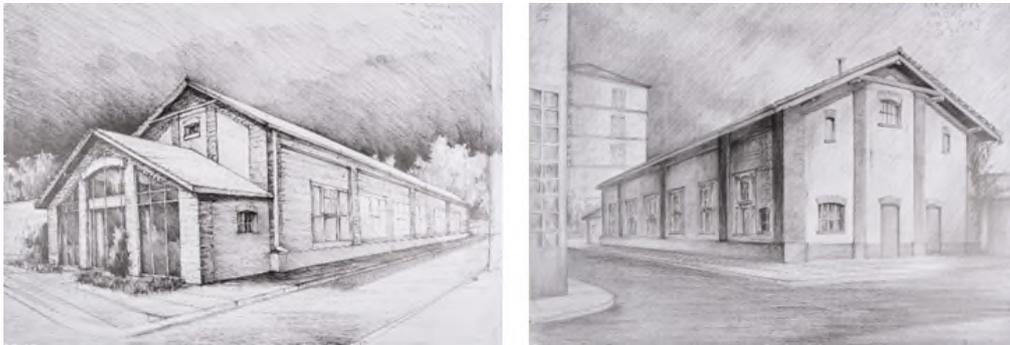


Figure 2: Students: Maja Bryniarska and Diana Szostecka.

The next class takes place in the drawing room. Students have to draw the object with its surroundings from a set point of view. The drawing is based on students' own documentation and they are also provided with the object's architectural documentation, which they can confront with their orthogonal sketches (Figure 2).

Another drawing is a study of still life composed of geometrical solids, ancient objects and fabrics. The task is to analyse value, with particular attention paid to the texture of the objects being drawn and the spaces between them. The model is lit with focused light. The forms and textures of the objects are most diverse. The lighting emphasises the spaces between the particular forms. The work makes reference to the fact that the architecture that surrounds us is composed of both contemporary and historic forms, the textures of which usually are highly diverse. Besides, architecture is built of spaces between forms. This exercise, in a way, improves perception of the surrounding architecture.

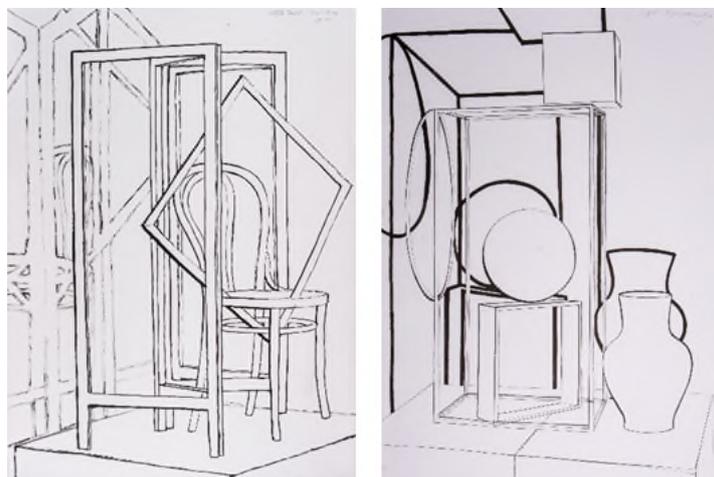


Figure 3: Students: Hanna Pacyno and Kaja Kinczkowska.

The next task involves value analysis. Using four to five different hues of grey, students must express the structure of the space composed of forms similar to the ones in the previous theme. Attention is paid to composition values. The drawing is made on the basis of observation from nature using acrylic or tempera paints, while the gradation of grey is achieved by mixing white and black.

Another theme is the synthetic linear sketch of still life. Three sketches are made by applying three different tools (a stick, a pen, a paint brush). The task is to define the form using a line, provided it is not a contour. The line's thickness must vary. The line sometimes can fade or turn into a stain. In this way, forms are defined with the spaces between them and chiaroscuro (Figure 3).

At the end of the first semester, students make perspective drawings of the architectural projects they are working on at their departments of design [3]. The first drawings are perspective sketches, while the final work is a study. Attention is paid to a detailed analysis of the designed forms and spaces. Sometimes, the drawings result in the need for making some changes in the students' projects.



Figure 4: Student Małgorzata Pawlowska.



Figure 5: Student Ivan Lavrychuk.

The classes in the second semester start with drawings based on architectural documentation. The first one concerns a contemporary architectural object. It is usually a public transport stop, e.g. the one designed by Alexander Brodsky in Krumbach (Austria) (Figure 4) or by Philippe Starck in Nimes (France) (Figure 5).

The students must draw the object in perspective from a specific point of view. The other task is the drawing of an historical object, e.g. the helm of St Ann's Church in Kraków. Students practise the skill of reading architectural documentation. On this basis, they draw the object in perspective from a specific point of view. They also become acquainted with historical and contemporary buildings, their composition and architectural details.



Figure 6: Students: Dem Tran and Ewelina Kozyra.

The next theme is sketching figures. Apart from practising the skill of sketching, students define proportions, capture the figure's movement and anatomy. The drawing is an introduction to another theme. It is drawing from nature selected architectural interiors in objects, such as Collegium Novum, the main building of the Mining Academy (Figure 6) or the cloisters in the Dominican and Franciscan monasteries in Kraków. Besides representing the character and details of the interiors, the students define their scale. Drawing the figures of the people inside helps to define the size of the interiors.

Another work is a study of urban interiors. This is a drawing from nature [4]. The theme is similar to that of the previous drawing, but the space to be defined has a much larger size and scale, more like the spaces where architects often realise their projects.

The semester ends with perspective drawings of students' own projects carried out in the design departments. They are both sketches and studies (Figure 7).



Figure 7: Students: Kinga Szczudlik and Bartłomiej Mierczak.

CONCLUSIONS

The learning outcomes after the freehand drawing course in the first year of studies are the skills and competencies allowing students to make use of drawing for representing the observed forms and space, as well as to make perspective drawings of any architectural form from documentation, memory or imagination.

After completing the first year of studies, students can solve complex problems of perspective constructions by themselves. They can also define the scale of an interior and perceive space. They have acquired the skill of sketching and learnt various techniques, such as value and linear drawing, permanent technique and colour [5]. They can use drawing as a medium of communication.

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BIOGRAPHY



Andrzej Biakiewicz graduated in architecture from Cracow University of Technology (CUT), Kraków, Poland in 1978. He completed his PhD and DSc in 1987 and 2005, respectively. He is a practising architect and a full Professor in the Faculty of Architecture, at Cracow University of Technology and, at present, is Vice-Rector of the University. His professional interests include, among others, history of modern architecture, in particular interest in sacral architecture, and drawings for architects. His professional creative works (more than 160 projects) include conservation projects of historical objects, interior decoration, ecclesiastic architecture and public utility objects, to name a few. He has recently completed a conservation design of a pre-war building in Kraków to be adapted for a higher education institution. Professor Biakiewicz has published extensively including books and peer-refereed articles in journals and conference proceedings on the theory and practice of architecture and architectural freehand drawings, in particular. He is a member of numerous national and international professional and scientific organisations and associations, including such bodies as *Ars Vitrea Polona*; *ICOMOS - International Council on Monuments and Sites - Poland (Commission on 20th Century)*; and *Docomomo International*.