

Aesthetics in education at technical universities

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ABSTRACT: Issues that arise from teaching aesthetics at a technical university are the focus of this article. In contemporary art, it is easy to notice a current style pertaining to our times and applied to the design of architecture, interior decoration, industrial forms and applied art. At the same time, the multiplicity in art, the variety of motifs and, above all, the parallelism of artistic phenomena can confuse the audience. Therefore, becoming familiar with these aspects and learning of their complexities seem to be a necessary feature on the curriculum in education. Thus, aesthetics taught at technical universities appears to play an important role for the future architectural professional, especially where there is creation of the concepts of new cities, buildings, interiors, equipment, machines and devices improving life for humanity. Presented in this article are experiences regarding the preliminary and principal education of architect engineers in the Faculty of Architecture at Cracow University of Technology (FA-CUT), in Kraków, Poland.

INTRODUCTION

While addressing the issue of aesthetics in the context of education at technical universities, it is necessary to pause at the definition of the concept of beauty because, in principle, it is difficult to talk objectively about it. It is an ephemeral value. Some appreciate asceticism and emptiness, the hygiene of modernism, brightness, the sun, while others prefer artistic disarray, the mess, baroque abundance and the mood. The greatness of art today is said to be measured in terms of publicity. At the same time, there is the opinion of the Polish philosopher Władysław Tatarkiewicz, who wrote that *...there is not a thing which someone did not once consider beautiful, or a thing which someone did not once deny beauty* [1].

Over the centuries, the concept of *beauty* has been interpreted in different ways. The ancients saw in it moral attributes rather than the values close to the contemporary understanding of the term in aesthetics. Plato used this term to define one of the values that make up his famous triad (*venustas, utilitas* and *firmitas*), along with truth and goodness. On the other hand, the Pythagorean Theorem determined beauty by means of mathematical proportions based on numbers, while the term, art, then referred to artistic skills rather than artistic values.

AESTHETICS

The 20th Century became a training ground for presenting architectural phenomena, the essential feature of which was innovativeness. These phenomena were created to differ from everything erected before and to amaze the world. Such were the origins of Sagrada Familia, a large, unfinished church and the building, Casa Milà, also known as *La Pedrera* or *the stone quarry*, by architect Antoni Gaudí. Strenuous efforts to classify Gaudí's works as *secession* are somewhat elusive, and it seems their most appropriate place is in the category where originality is the supreme value. Here, the issue of beauty has become ambivalent. The following opinion is quite funny, but not completely uncommon:

...Something equally hideous would be hard to find. This is like using Art Nouveau to build a cormorant nest combined with a coral reef, a dirty car wash sponge, and splattering it with clay mixed with water. Gaudí's creation is gigantic in size, one's hair stands on end at the sight of the nightmarish form, the most ardent believer's faith evaporates [2].

A little later, Le Corbusier's original architecture appeared, with the concept of a house as a machine for living. This extremely avant-garde trend promoted social values, gaining the sympathy of people. But beauty was not a priority there. The projects, Ville Contemporaine (1922), Plan Voisin (1925) or Ville Radieuse (1935) were aimed at advocating modernity, functionality, utility and hygiene. Their author made no mention of their aesthetic values.

In this context, discussion about defining beauty ceased to be relevant, because the basic criterion became innovativeness, originality as a worked-out state, often deliberately staged. That is why in the 20th Century there were allegations of the death of art or closing a stage in the history of humanity. The term, beauty, became an inaccurate concept.

The postmodern world is characterised by the parallelism of artistic activities, each of which has a meaning. The succession of phenomena has given way to co-presence. In this polyphony of activity it is hard to find unequivocal replies. Equally apparent are leading trends, aesthetic fashions and dominant phenomena. Despite their fluctuations and transformations, they demonstrate distinct contemporary style pertaining to our times and are preferred in the design of architecture, interiors, industrial forms and applied art. Thus, education in aesthetics at technical universities appears to play an important role, especially in places where there are concepts of new cities, buildings, interiors, equipment, machines and devices improving the life of humanity.

STANDARDS AND FASHIONS

For centuries, technical constructions have been treated as utilitarian buildings and beauty has not been discerned in them. Claude Monet made a type of breakthrough in 1887 by painting the Saint-Lazare railway station in Paris. It was one of the first attempts to record aesthetic values in the openwork, cast-iron structure of a railway station. That innovative iron structures, such as the train station or the Eiffel Tower fascinated artists with their original beauty was a coincident rather than their designer's intention.

For many years, art critics have repeatedly insisted that society should be taught to understand contemporary art with its abstract, processed form. However, the question remains whether it is necessary to expose the audience to images they find incomprehensible, or whether it is possible to look for artistically valuable solutions in a more traditional way that would be comprehensible for the average person. Acceptance of modern design in architecture and applied art is similar, although fascination with technological novelties along with their modern form is often manifest.

Clearly, perception of aesthetics differs from country to country around the world. Other patterns are preferred in Poland, still others in Germany and France, where the latest modern achievements predominate. There, too, artists generally compete in presenting more and more innovative formal and technological solutions, while the traditional approach to design is a closed book. In Poland, on the other hand, popular demand fosters production of aesthetically outdated objects and architecture that is traditional in form and departs from the world's leading trends. This is not only due to financial restrictions. Therefore, it seems that the necessity of education in aesthetics is now justified at all technical universities, the graduates of which become designers of bridges, viaducts, architecture, motor and rail vehicles, as well as everyday equipment.

PRELIMINARY EDUCATION

In recent years, great importance has been attached to teaching children and youth the issues related to the popularisation of architecture. On the one hand, some interesting phenomena are shown, allowing awareness of this field of knowledge not necessarily gained at the primary and secondary levels of education. On the other hand, students are given the opportunity to try their skills in implementing simple projects. In this regard, drawing classes are conducted illustrating the topics and, sometime later, followed by a task in spatial modelling of architectural structures.

Such educational tasks are undertaken by employees of architectural faculties, whose activities are intended to help solve the problem of *shortage of students, insufficient preparation of first-year students and an increase in the number of people dropping out of university* [3].

Education of this type makes use of children's and young people's curiosity, and satisfies their needs to explore new areas of knowledge that help acquire information. During further engineering studies, it is their curiosity that fosters creativity in design [4]. The authors of these projects also discuss the role of the teacher in creating such an educational environment. However, issues concerning the programme of shaping aesthetic views are ignored.

Specialist classes in aesthetics are conducted at many stages of the education of future architect engineers in the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland. They are important at the initial stage of preparation for qualifying examinations, because they form future students, teach them how to make choices and force them to be independent in the perception of the abundant information available. This mainly concerns the presentation of architectural issues. Courses preparing for engineering studies integrate practical drawing classes with knowledge of contemporary architecture and its styles [5].

These courses support students' access to the faculties of architecture, landscape architecture and industrial design engineering. The practical drawing curriculum is varied and adjusted to the scope of requirements for candidates for particular fields of study. The scope of lectures in theory covers aspects of the history of contemporary architecture and 20th Century aesthetics that dominate design and modern architecture. The richness of aesthetic trends and the multiplicity of changes that occurred in the past century are reflected in the curriculum, with emphasis on the leading trends.

An important aspect is the contact of learners with a greater number of teachers, presenting their own creative experiences and diverse aesthetic views. In addition to lectures, the topic of drawing is supplemented with extended introductory information increasing the students' knowledge of drawing. It allows the students to make their own interpretation of individual tasks, present personal ideas about beauty, and thus choose their own aesthetic preferences in the implementation of particular projects.

Such a broad approach to knowledge is an obstacle for learners because, in the absence of their own, definite aesthetic preferences and their lack of knowledge of the subject, it creates an additional challenge. It is worth noting that this type of creative freedom initially is difficult for learners since they expect ready-made models and standard solutions, which can be copied with little intellectual effort. Typically, in similar drawing schools, students receive a catalogue of reference models, examples of drawings for successfully passing the FA-CUT entrance examination. These usually are illustrations of examination topics interpreted and drawn by the instructors to be automatically copied by learners with no need for any analysis.

These differences in the teaching of drawing have further consequences, regardless of students' individual intellectual predispositions and drawing abilities. The reason is that even limited knowledge of contemporary architecture allows free selection of the preferred style of forms and details, triggers creativity and strengthens awareness and self-esteem. On the other hand, while the training in drawing specific motifs works in the first two semesters and in the implementation of the initial architectural curriculum, it can be a disqualifying burden at later stages.

Narrow perception of aesthetic issues, the lack of reflection and inability to search for individual forms of expression, on the one hand, reduce the value of the presented work, and, on the other, entail additional activities or cause frustration. The competence of independent interpretation of tasks, including decisions about the choice of forms and the way of their presentation, are conducive to achieving better results. It is also worth noting that theoretical knowledge of aesthetic trends is not synonymous with their efficient implementation in the project under development. This is because the effective use of acquired theoretical knowledge in design practice, including architectural drawings, requires taking into account the substantive message and giving it the desired aesthetic expression.

AESTHETICS IN THE PROCESS OF EDUCATION OF ARCHITECT ENGINEER

The education standards for the field of architecture provide that the graduate should have knowledge of the history and theory of architecture and urban planning, fine arts, construction and building technologies, structural engineering, building physics, as well as architectural and urban design. In this immensity of material to be acquired, there are also subjects in which the issues of aesthetics are paramount.

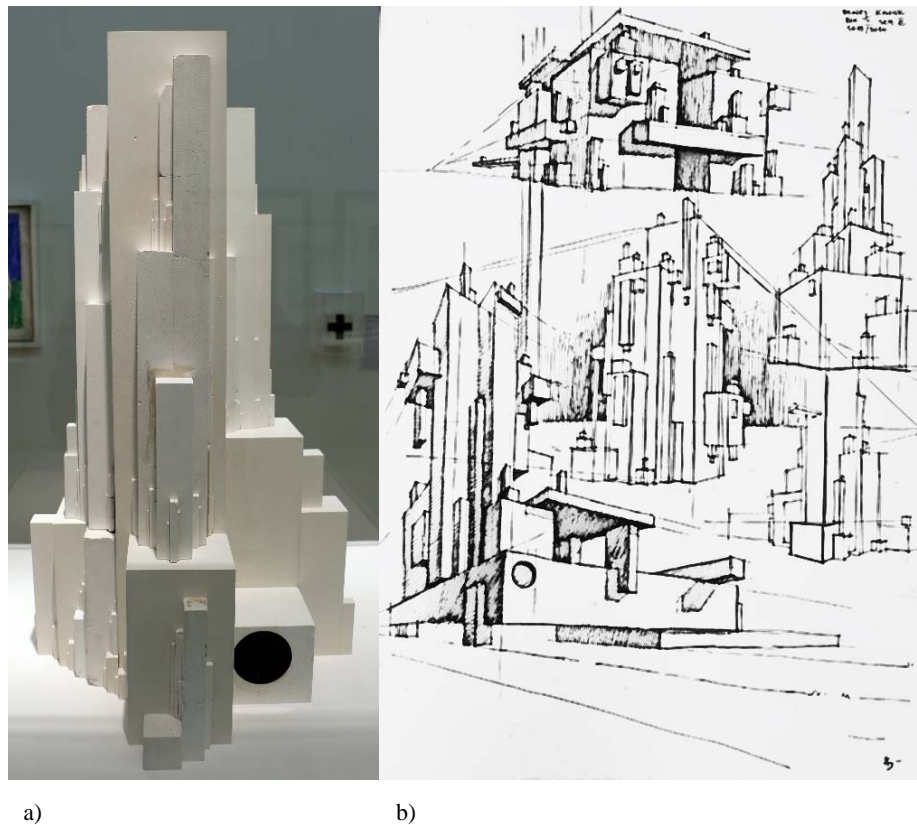
There are several examples, but master design classes are at the forefront. This is one of the forms of teaching architectural design. As a result of this method of teaching, selected aesthetic motifs indicated by the master appear in the students' works. The stylistic preferences of the teacher dominate in the projects. On the one hand, such a narrowing of the students' creativity favours an in-depth study of the indicated area but, on the other, significantly limits the possibilities of exploring new areas of aesthetics.

Art classes, such as drawing or sculpture, from the very beginning are focused on artistic trends and styles that clearly refer to the modern times. However, the long and deeply rooted practice of teaching these subjects does not result in the teaching of historic aesthetic patterns [6]. It seems the currentness and topicality of artistic motifs increase the attractiveness of the classes. In the third and fourth semesters of the second year of studies in the FA-CUT, the curriculum of the drawing classes includes information on leading phenomena in 20th Century aesthetics. They are not a topic in themselves, but define the convention in which subsequent tasks should be performed. Students' exercises consist, first of all, in familiarity with the given style, learning its characteristic means of expression, and then performing the set task, such as a drawing, project or exercise. Two example tasks are shown below.

Task 1

Task 1 relates to the breakthrough work of Kazimir Malewicz, a Russian avant-garde artist and art theorist. He created the concept of an art movement called Suprematism, which was to become a proposal of art for modern society in the early 20th Century. The abstract and non-objective qualities of his artworks were a radical departure from representational painting. In addition to these revolutionary proposals, he created spatial models called *architectons* (prismatic, almost-architectural sculptures). They were compositions of simple geometrical forms laid horizontally or vertically (see Figure 1).

According to their author, they were supposed to indicate the principles of modern shaping of building forms, and thus of shaping architecture itself. In principle, these prophetic works still can be a current inspiration for artists as regards ways of architectural composition. Therefore, the students' task consists in creating their own concept of an *architecton* based on Malewicz's principles and entirely following this convention but without copying the existing models. An additional task is to create a graphic representation adequate to the explored topic and individual artistic preferences.



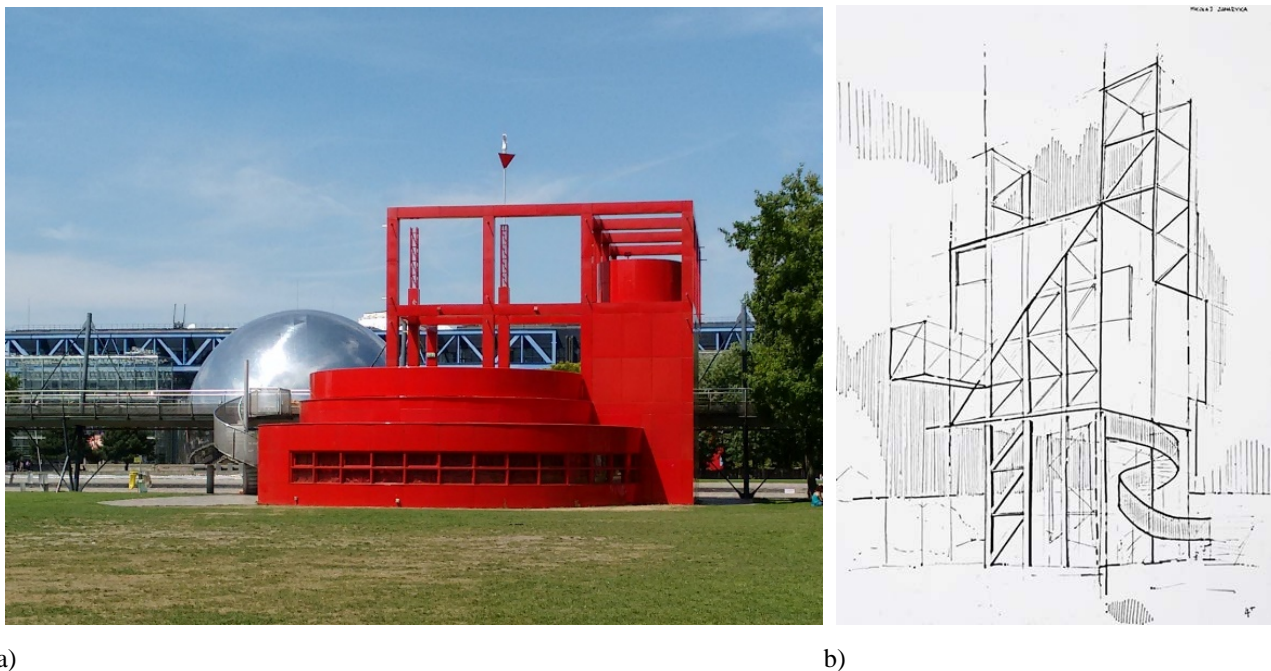
a)

b)

Figure 1: *Architectons*: a) Kazimir Malewicz (https://commons.wikimedia.org/wiki/File:Kasimir_mal%C3%A9wicz,_gota,_1923-78,_01.JPG), 5 December 2019; b) author: Błażej Kmonk.

Task 2

Task 2 concerns the park, Parc de la Villette, designed by Bernard Tschumi in Paris in 1987. The numerous buildings in the park house cinemas, museums and exhibition halls. Particularly noteworthy is the original composition of this contemporary city park based on an orthogonal grid accentuated in the corners with red pavilions called *Les folies* (see Figure 2).



a)

b)

Figure 2: *Les folies*: a) Bernard Tschumi (https://commons.wikimedia.org/wiki/File:Rouge_cropped.jpg), 5 December 2019; b) author: Mikołaj Zamaryka.

There are 26 of them and they are highly characteristic spatial elements. They differ slightly from one another and do not serve any purpose except for decorating the area of the park in a modern way. They are miniature works of architecture. Their synthetic form attracts attention, with an economical composition, fragmented body and bright

colour. The designer's finesse and the objects' formal richness determine their uniqueness. The students' task is to create the concept of the 27th folly following the same stylistic convention.

Multiplicity, variety of motifs and, above all, parallelism of artistic phenomena can confuse the audience and therefore getting used to them and learning of their complexities seem to be a necessary feature of the curriculum. The above exercises are examples of a curriculum based on making use of the aesthetics that influenced 20th Century architecture. This curriculum has been followed for years but the motifs and examples have changed, to address the present trends and temporary fascinations.

The aesthetics imposed in the exercises forces students to study it and simultaneously to analyse the available means of expression. By drawing and applying specific principles of composition and style, students extend their knowledge of the issues and deepen their understanding of aesthetic value.

DISCUSSION AND CONCLUSIONS

In conclusion, it is worth mentioning freedom of choice and responsibility. It seems that, in the whole multitude of artistic proposals, it is easy to distinguish leading trends and niche phenomena. It is equally easy to recognise individual penchants, individual taste and personal aesthetic preferences. In the case of an architect whose profession is, to a large extent, a service, there also is the issue of responsibility for the entire project, including its aesthetic quality. Certainly, in both cases the assessment is highly subjective, but deserves attention.

Mostly, the discrepancies between the preferred aesthetic values of the investor and designer are significant. Taking, for example, a virtual single-family house, it can be assumed with high probability that a significant number of investors will be interested in the concept of a *manor house* with an imposing entrance, columns and driveway. However, reaching into the history of architecture and the best examples in this area, it can be assumed that the designer will propose a house in a contemporary, sometimes innovative shape. At the same time, it may happen that this *innovativeness* is in contrast to traditionally understood comfort or maintenance costs. Here, the question arises whether in this case both parties should meet halfway. It seems there is no unambiguous answer, because professional ethics is another aspect of practising the profession of architect.

In summary, it is clear the future architect engineer must become familiar with complexities to be met in their future profession, and these complexities are a necessary focus on the curriculum in education. Aesthetics taught at technical universities has a place in the profession, especially so where the concepts of new cities, buildings, interiors, and so on will improve modern lives.

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