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Industrial design and graphic design in architectural education

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Abstract: The paper presents possible approaches to integrating industrial design and graphic design in architectural higher education. The specific methods used in the seminar, as well as the results of the practical works made by the students in the Faculty of Architecture of Timisoara are presented and discussed. As a conclusion, in all areas that require cooperation among various specialties, knowledge of specific issues from related fields has a highly positive effect.
Keywords: industrial design, graphic design, architecture, education.

1. INTRODUCTION

The definition of design, as that of architecture, is hard to establish. Being complex, interdisciplinary fields, they both need skills in visual arts and knowledge in techniques [1]. In Collins Dictionary architecture is “the art and science of designing and supervising the construction of buildings” and industrial design is “the art or practice of designing any object for manufacture”. These two definitions point out an essential difference between the two fields. The activity of the architect continues, after the first stage of the project, with the supervision of the construction works. The fact that every building is, at some extend at least, unique, transforms every step of the erection in a first time action. The industrial designers work finishes before the mass production begins. The whole decision making ends when the large series production starts, that is before the fabrication of the actual products begins.

Other differences can be pointed out. Often architecture is valued by its oneness. Even when the erection costs of a building are grossly exaggerated, its value as symbol and its attraction can make the investment logical and worthy. Such a generous approach is not possible in industrial design. The fact that an object is industrially multiplied in large series commands a different point of view. Every time one exceeds the costs, this addition is multiplied over and over again.

On the other hand, architecture is one of the oldest fine arts, and was the container and recipient of painting and sculpture till the Renaissance. Design only appeared when industrial production reached the level of production where the consumer could make a choice from a rage of similar products. Its necessity in industry became universally recognized only in the second half of the 20th century. Industrial design is a comparatively new field. It appeared immediately after the moment when the divorce between art and technique, which had appeared in the early stages of the industrial revolution, came to an end, and, in the theories of architecture, a new reconciliation was promoted. The well known Bauhaus motto “Kunst und Technik - eine neue Einheit” („Art and technology - a new unity”) was the expression of this new attitude [1].

But it is the main resemblance between the two fields that is overwhelming. Placed between art and technique (technology, materials etc.), the similarities between architecture and industrial design are more important than the differences. Originality, ingeniousness and novelty are valued in both fields.

2. INDUSTRIAL DESIGN IN ROMANIA

Industrial design in Romania only appeared in the late sixties. Industrial development in a formerly agrarian country was a target of the communist regime, put into place forcibly and at an accelerated pace. Like in the first stage of the industrial revolution, after WWII in Romania, the production of merchandise in itself was sufficient. Products were scarce and commerce was meager. When opening to external economical relations, the lack of competitiveness of Romanian products became visible. The lack of trained personnel was acutely felt.

The only existing professional training forms were: the Faculty of Interior Architecture and Furniture in Cluj (now Cluj-Napoca) functioning between 1951 and 1955; the departments for textile industry and for art of pottery from Bucharest and Cluj [2].

The first departments for the higher education in industrial design appeared in artistic universities. In 1969 the Office for the Aesthetics of Merchandise initiates industrial design courses at the Faculty of Decorative Arts in Bucharest and in 1971 in Cluj. The professionals invited to activate in the new departments were architects: Adrian Visan in Bucharest (later, the teaching staff was completed with two other architects: Paul Constantin and Paul Bortnovski) and Virgil Salvanu in Cluj. Even the first students were recruited from the faculty of

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architecture of Bucharest. The same year an experimental high school in the field of design appeared in Timisoara, where a very active group of artists, called Sigma (Stefan Bertalan, Elisei Rusu, Lucan Codreanu, Ion Gaita, Doru Tulcan, Constantin Flondor), activated as a vanguard and protesting organization between 1969 and 1978.

After the political changes having occurred in 1990, numerous new industrial design departments appeared in various state and private universities, always part of fine arts faculties. On the other hand, the specialized offices in factories disappeared, the designers working as free lancers.

3. THE IMPORTANCE OF INDUSTRIAL AND GRAPHIC DESIGN IN THE TRAINING OF ARCHITECTS

Industry is prone to become more and more diversified. Merchandise can reach better technical performances, use more adequate technologies and have better aesthetical levels at a lower cost when produced industrially in large series. The world wide information systems, the development of international commerce, the increased possibilities of industries to elastic diversification of a certain range of products etc. offers multiple possibilities to the architects.

At the beginning of the 20th century every interior, every set of furniture, every panelling, every lamp and lighting system were part of the architectural project. Today, the architect has a general idea about the kind of atmosphere he wishes to create in an interior and seeks the adequate products for his goals. Industry provides plenty of them. Industry can vary dimensions, colours, textures and finishing materials. It is quicker, cheaper and has sufficient variables.

But the interior space is not the only one where industry provides the needed merchandise. Today the urban space is enriched, aesthetically and functionally, with urban furniture, public lighting, artistic lighting, electronic text panels, parapets etc. Most of them, if any, are not manufactured. Industry provides them, even if they need a specific design.

Informative systems, publicity, store signs etc. are elements that can give personality and life to urban spaces. These are the products of graphic design, an area of design intimately linked to fine arts.

4. INDUSTRIAL AND GRAPHIC DESIGN IN THE CURRICULUM OF THE FACULTY OF ARCHITECTURE OF TIMISOARA

Designed industrial products have become, as shown before, overwhelmingly present in the lives and surroundings of contemporary mankind. They became essential elements of the architects' trade. On this basis, an optional course of "Industrial Design and Ergonomics" was introduced in the curriculum of the 7th semester in the architecture studies, with 2 weekly lecture hours and an application work every second week.

The main lecture subjects are:

- Definition of industrial design; history, importance and field of industrial design;
- Ergonomics: definition, history, importance and field of ergonomics [3] ;
- Anthropometry and body position;
- Natural and artificial light;
- Form and formal expressivity;
- Technologies and materials;
- Colour, chromatic composition, functional colours and colour in ergonomics;
- Control and command systems;
- Graphic design, logos, ideograms [4].

The seven practical works are directly linked to the lecture presentations and are mostly chosen at the border between design and architecture. Furniture elements, the correct use of natural light, shops sign by day and night, advertisement systems are subject in which artistic skills, expression means and technical pragmatic knowledge are exercised and tested.

Examples of seminar topics related to graphic design and industrial design as well as some students works will be presented as follows.

One seminar theme related to graphic design and logos and signs is the design of a logo for a company of natural products and the use graphic sign on a series of promotional materials: business cards, memo sheets, pens, mugs, ashtrays or other products that can be used as gifts or advertisement. The students work are presented in Fig. 1-3.

Fig. 1 Example of a student work for the theme: logo for a company of natural products - Leac

Fig. 2 Example of a student work for the theme: logo for a company of natural products – Tea garden

Fig. 3 Example of a student work for the theme: logo for a company of natural products – Atomic leaf

Another theme related with ergonomic requirements is the designing of an object involving a hand grip ergonomic solution. The object is chosen by the student from a range of various objects (door handle, knob, handle fixed, button furniture, hand tool, handbag, drinking container of various types etc.).

As seen in Fig.4 and Fig.5, one of the requirements is the hand drawing presentation of the solutions. This type of exercise can also be made in the form of a 1:1 scale model made of modelling clay, in order to better understand the ergonomics of the object (in the case of a small object). In this case, the hand drawing was used.

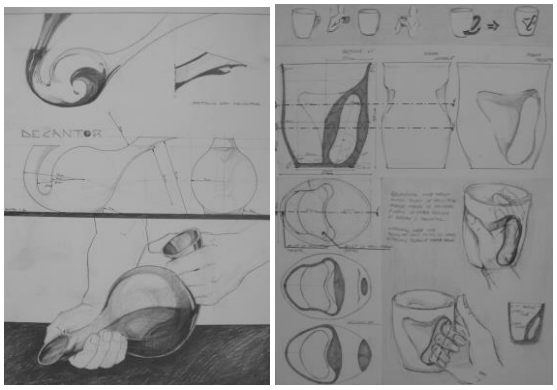

Fig. 4 Example of two student works for the theme: designing of an object with a hand grip ergonomic solution – objects related to drinking

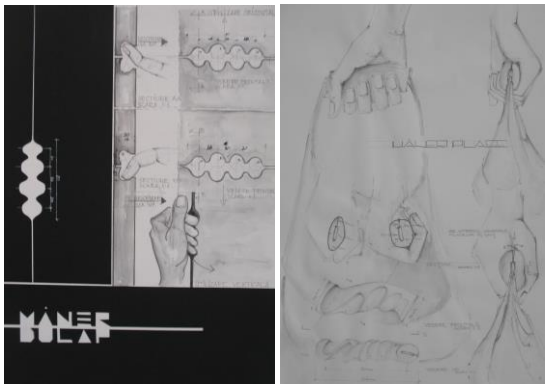

Fig. 5 Example of two student works for the theme: designing of an object with a hand grip ergonomic solution – locker handle and plastic handle for bags

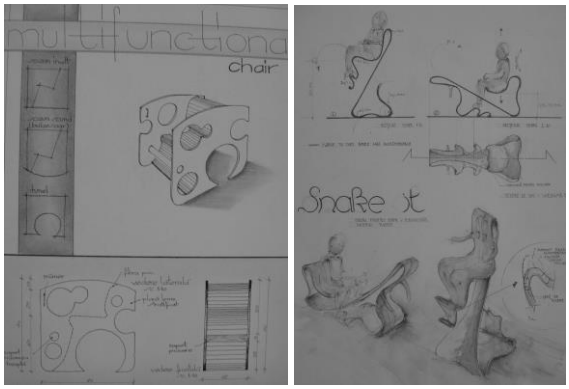

Fig. 6 Example of two student works for the theme: multifunctional chair for children

A very interesting theme related with industrial design, specifically furniture design is a project for a multifunctional chair for children. The students are asked to imagine a high chair with backrest and handles for toddlers with a height of 80-115 cm. Seat height is about 60 cm and have a minimum size of 30x30 cm. One of the requirements is the proposal of a means of climbing on the chair and a footrest, variable in height. By overthrowing the chair, by detaching parts or/and using other means the chair will be used to play, it can become shorter chair, rocking chair, tunnel through which children pass, bench and table design etc. Some of the he works are presented in Fig. 6, showing various and imaginative solutions. Colour and material were considered also important isssues for this theme.

Three themes related to graphic design and to fine arts are presented below. One theme is about formal transformations an optical ilusions, requiring to design a composition on a square placed on a horizontal A3 format (420 X 294 mm.), the composition being based on one of the following graphic means (see Fig.7-9):

- volume impression made on flat surface using brightness, network lines, etc.;
- impossible or deformed perspectives;
- formal transformations;
- optical illusions, impossible objects, etc.

Another topic from this chapter is color. The choice was to illustrate one of the seven color constrasts defined by J. Itten:

- contrast of hue,
- light-dark contrast,
- cold-warm contrast,
- complementary contrast,
- simultaneous contrast,
- contrast of saturation and
- contrast of extension.

The composition is made in acrylic colours, so this theme is also a good choice for introducing alternative techniques of graphic representation.

The third topic discussed is the gift packaging. The theme requires a proposal for a gift wrap for Christmas and New Year: decorative paper packaging, paper bag or plastic box, decorative and promotional items etc. Graphic signs may be: geometric or figurative suggestions, colors, letters, numbers, logos or graphic signs of companies (existing or imagined by the student), humorous texts, etc.

Fig. 7 Formal transformations and optical ilusions

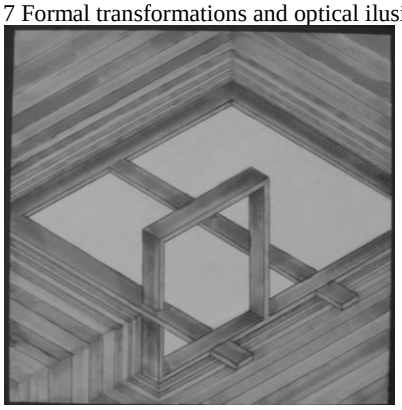

Fig. 8 Formal transformations and optical ilusions

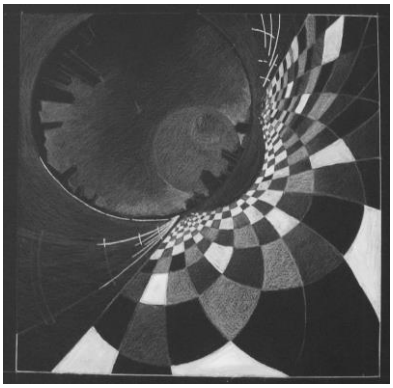

Fig.9 Formal transformations and optical ilusions

Some themes related with architecture that were used over the years are: telephone boots, bus station, light in architecture, redesigning a kitchen furniture by applying the idea of a minimum number of moves in space during meal preparation and serving, etc.

The examples presented above are a part of the student work from the year 2012-2013.

5. COMPLEMENTARY KNOWLEDGE IN THE TRAINING OF ARCHITECTS - A PATH TO THE FUTURE

As shown in chapter 3, the importance of industrial and graphic design in the training of the architects is due to the breaking of the borderlines between these professions in the last decades. Although each discipline speaks in its own unique language, each has historically attempted a dialogue with the other. Today the limits are not clearly marked and many architects are working in both fields [5].

Being aware and understanding the common parts and the differences between how these two professions approach the design can lead to a better relationship not only in the professional environment, but also in training the architects for the future.

Architecture and industrial design are two professions where values play a vital role. Individual designers are characterized not only by their various professional values, but also by their "distinctive individual" design values. These types of values are considered to be one of the fundamental explanatory models as to why architects and industrial designers conduct design differently [6].

Outwardly there are many similarities. Both professions require that the practitioners know how to visualize, draw, render, build models, draft and think critically. However the differences are profound: scale is the first obvious difference and the other one is the iteration process. But the most important ones are the outlook and values. Each profession approaches the design process and evaluates the success of the final product differently. Industrial design is very much about form making and one of the main factors driving aesthetics is the target market, while in architecture each building design is based on an intellectual process that has an important narrative component and various types of relationships with other disciplines involved.

6. CONCLUSIONS

This optional course introduced into the curriculum of Faculty of Architecture explains all this different set of values in order to enrich the theoretical knowledge of the architects. The practical works made by the students are a step further towards understang the values, methods and the process of designing an object from a different perspective.

The built environment that we experience in our everyday lives relies upon graphic design to communicate information and identity, shape our perception and memory of a sense of place, enrich and humanize our lives. That is why a formation of an architect needs to contain these types of knowledge. Furthermore, in all areas that require cooperation among various specialties, knowledge of specific issues from related fields has a highly positive effect.

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