THE ACT OF DESIGN – BEYOND THE DIGITAL?

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Abstract

The aim of this paper is to discuss a very initial stage of architectural design. To achieve that, the way architects work at the early phase of design task is taken into consideration. For the purpose of analysing the process, two groups of designers are distinguished, viz.: novice and familiar with digital media. A few experiments are described in order to reveal a process of creative thinking and, what is more, to point out a hybrid analogue-digital environment as a preferred setting to study and deal with a design problem. However, it is difficult to assign the act of creation itself to certain rules and methodologies since it seems to exist somewhere beyond – elusive and unpredictable.

Keywords: design methodology; digital - analogue cognitive thinking; hybrid design environment

INTRODUCTION

The subject of an early stage of design process has been present in numerous publications for decades. Such organisations and conferences as eCAADe, ACADIA, CAADRIA, SIGRADI and CAAD Futures have become the best forum of sharing knowledge and experience in this field. One of the main areas has been focused on discussion the role of emerging technology and various digital media in architectural practice. As a result, the concept of Direct Design in virtual space was presented at the eCAADe Conference in 2002 as an opponent to two-dimensional and not interactive working environment (Asanowicz, 2002).

According to some researchers, nowadays a distinction between real and digital has become pointless since information and communication technology has embedded in the physical world and sunk into it deeply (Brown, Winchester, Knight, 2008). This process is observed in everyday life where development of multimedia influences the perception methods of contemporary generations, who absorb knowledge in a different way than their predecessors. The question is if architectural design sphere has fully settled in the ubiquitous computing world.

Actually, architects to explain issues related to a project, use more than one medium - they take a piece of paper and a pencil, and then, if it is at presence of a client, they sketch and talk simultaneously. It is somehow their natural manner of communicating a design concept. By doing that they intensify the feeling of catching the problem and getting to a clue, to a concept.

Comparing traditional versus virtual or real versus digital might lead us to unexpected discovery that forms created in virtual space are much more realistic than those shaped with the use of traditional tools. The reason for that is the latter is more abstract in nature. According to Asanowicz: "(…) currently, we often meet the opinion that the project completed using traditional tools is much more virtual than the project completed in virtual space. Nowadays, the Virtual is much more Real than the old Real ever was. Traditional drawings present the ideas that arise in our mind, in a very simplified form. It shows only a very approximate appearance of a future object. The forms created in virtual space are much more realistic than the traditional reality. We create and at the same time we see the result of our creative actions" (Asanowicz, 2012).

1. THE ACT OF DESIGN – THE CREATIVITY PHENOMENA

A very early stage of creation, when the idea is not "there" yet, seems to be elusive and unpredictable, since it is impossible to estimate time required and result achieved. As a result, a question emerges what tools and media may occur helpful to find, express and transform that idea. Referring to Asanowicz: "The design process is an expression of abstract ideas through images and its transformation in a design of the building. Designing is considered a multilevel activity in which there is no universal tool to solve all design problems. Therefore an environment in which communication between various design tools will be possible is needed. It is necessary to create such conditions of work where the possibilities of the chosen tool will not limit the creative potential of the architect. Working space should allow drawing, writing, modeling and searching for information in a natural and intuitive way. Intuitiveness of work in the new space is extremely important as it allows the designer to concentrate on design problems, instead of on how to use the tool. On the other hand, tools should provide maximum flexibility, due to the lack of determined rules and indefiniteness of the early stages of design" (Asanowicz, 2012).

For the purpose of analysing the characteristics of an early stage of a design process, two groups of designers have been distinguished, viz.: novice and familiar with digital media.

2. THE FIRST DESIGN STUDIO

Present-day students belong to a generation born in Internet era, so they are used to personal computers and various PDA devices enabling them to stay on-line and be informed constantly. However, it is observed computer literacy - in terms of using software as a design tool - is not so obvious. It is particularly noticeable in architectural domain since generally first year students are not familiar with computer aided design tools. In consequence, they are to make their first projects and presentations of concepts before they are acquainted with digital tools. Candidates for studying architecture are expected to be manually talented, not computer biased. So, their first design experience is analogue based and, what is more, they are getting used to designing with a support of traditional techniques. They focus on the task and they involve already possessed and tested skills since such techniques seem natural and suitable for expression of ideas and, additionally, do not limit a creator who suffers lack of CAD proficiency. They basically comprise of drawing with a pencil, pen or crayons, cutting and trimming with scissors, gluing and even building very simple mockups, resembling the exciting experience from the childhood (ready toolkits for kids, for example castles, airplanes, doll houses etc).

Not only a novice student but also an architect may feel uncomfortable while he/she is expected to find an idea and visualise it having just digital tools on his/her disposal. The creative process is limited or even blocked when necessary skills are missing. That is why such phenomena as dichotomy, dualism or hybridisation are associated with an early phase of design.

3. NOT A NOVICE DESIGNER

The second group taken into consideration is presented by students who have already been introduced to computer aided design tools. It allows for making some observations and comparisons.

So, it is clear that digital techniques have not replaced traditional tools so far and, it may be assumed they will never do. What is more, the latter methods appear more natural and in tune with human mind. They allow for immediate recording of first ideas, blurred impressions and imprecise forms. Even if it is a momentum only, nothing more than a sketch, a few lines before the idea is transformed into digital environment, this act of catching and registering an idea remains analogue. It leads to a conclusion that there is a strong relation between mind and a hand - stronger than between mind and a computer.

It is worth noting that students who start a design task by opening a certain program need much more time to come up with an idea, since they are limited not only by their imagination but also by chosen software capabilities. They are less effective and the results often resemble more a collage of ready to use software libraries than a genuine concept. It is observed that predefined working environment has an evident impact on a creative process. It may block natural dynamics of the process and a brain storm phase. Moreover, it may limit variations to fit certain rules and procedures. Instead of a holistic vision the result is poor intellectually and can not be satisfactory.

Similar situation was experienced in the early years of CAAD, when imagination was constrained by modest array of tool palettes on the one hand and insufficient computer literacy on the other hand. Digital aids to architectural design process seemed to be more an obstacle than facilitation. In consequence, they were regarded as an option and evoked negative attitudes since they were not recognised as a change of paradigm.
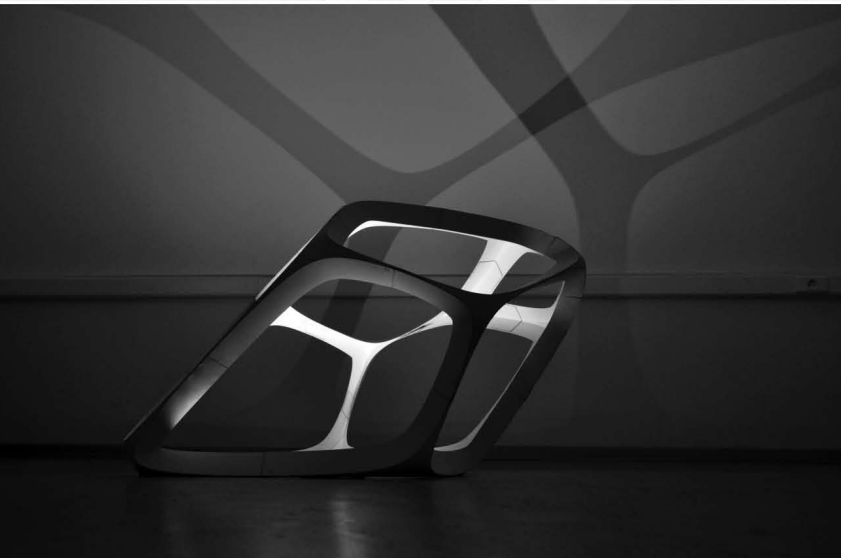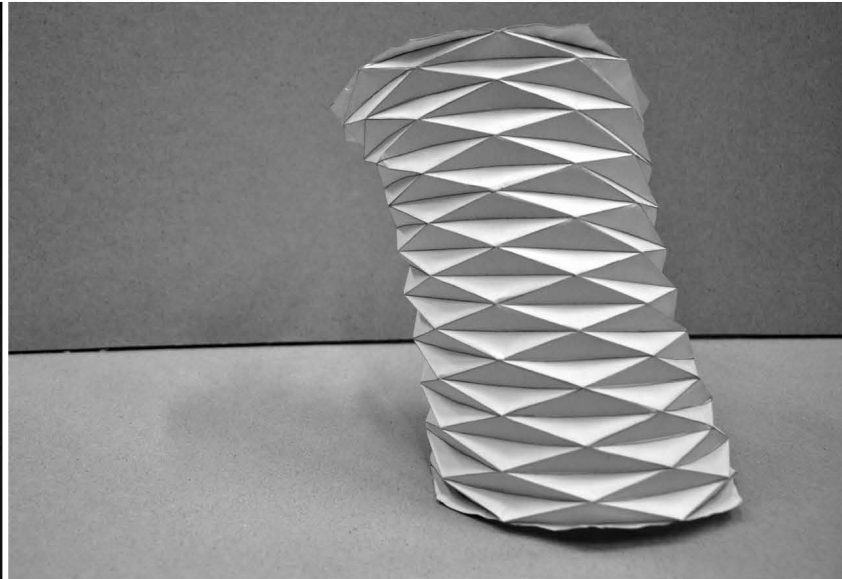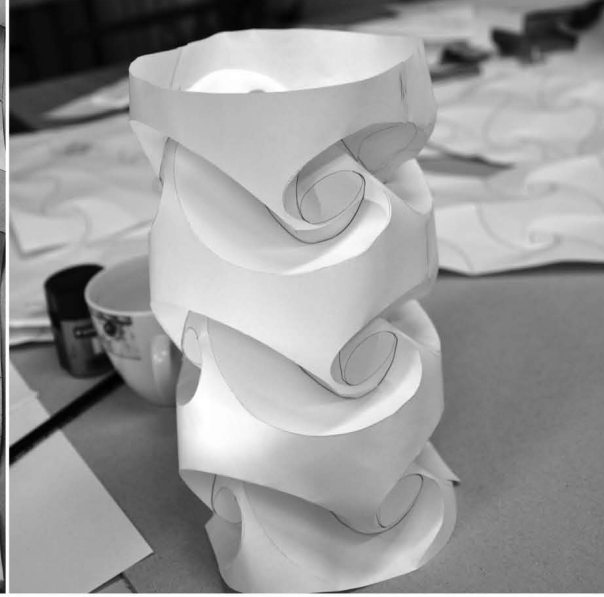
4. THE ACT OF DESIGN – STUDY OF A CONTEXT

There is no doubt digital tools have become crucial at the early stage of design as a background support. They are widely used for gathering information about the problem, gathering information about the site and surroundings, for spatial modeling of the place and neighbourhood, for developing various analyses in order to visualise and understand a context. A variety of devices and systems are used, for example 3D scanners, laser cutters, 3D printers, video capture.

To sum up, the registration of collected information is mostly arranged in digital format and, what is more, from digital (Internet) sources. However, despite such careful and precise preparation of background conditions the question how to support creative thinking with digital tools needs further investigation.

5. CASE STUDIES

A few experiments have been chosen in order to reveal a problem of creative thinking while designing in hybrid environment.

The first example deals with a question of a digital form generated by a computer versus physical imagination boundaries of a designer. To explain the problem I chose examples of two workshops on algorithmic design techniques (Kepczynska-Walczak, 2008). Students tried to write a proper script in order to achieve a spatial form in a controlled way. It was observed the visual solutions depended mainly on cognition of algorithmic design and programming skills. Though, not in every case computing skills followed imagination and, in consequence, some students were not successful. Moreover, another problem of designer's imagination limits was revealed: visualisation of transformation of figures. It is possible to obtain the final shape with the support of appropriate software but is it possible to imagine it before the results appear on the screen?

The second example is opposite to the first one since this time a workshop intended to explore students imagination by playing with a sheet of paper. Participants started with folding it to understand how valleys and mountains influence the originally flat geometry (a rectangle).

The basis of the methodology adopted was to learn by experience (Kepczynska-Walczak, 2013). According to Kolb, an experience is fundamental to learning and development. This process involves the following stages: experimentation; observation and reflection; formulation of abstract concepts and generalisations; and then applying gained knowledge and skills in new conditions (Kolb, 1984).

The exercise strongly based on geometry logics and spatial imagination capabilities of participants. No computing - only manual elaboration as the first phase of finding an idea. It was very interesting to observe the process of testing the features of paper to invent a new spatial form. Even though the group participating in the workshop was not novice to design tasks and computer techniques, the theme and methodology of the workshop appeared very novel to them. To find an idea students not only tested the natural behaviour of folded paper, but, what is more, they studied examples as a basis for their inspirations. Then, students were encouraged to use Rhino and Grasshopper to elaborate on new patterns (Figure 1). The results were expected in two days, so apparently the task turned out not to be easy since creative thinking is not linear and it is not possible to predict how much time it will consume to find a satisfactory answer to design task.

SUMMARY AND CONCLUSIONS

The main thesis of 2014 International eCAADe Workshop is that designing proceeds "somewhere in between". It means the space where manual, digital, virtual are mixing, overlapping, and transforming one into the other. While exploring the early creative stages of a design process a vague question is posed: "In what way do we design, what tools/means/medium do we use?"

According to Cheng : "Design requires a balance between free play and discipline (…) Familiarity with a wide range of techniques gives designers the agility to integrate appropriate approaches for each phase of new situations. as each project will require a different set of tools." Cheng analysed a hybrid design approach and how physical and digital processes can inform each other in a multivalent design cycle: "In ap-

Fig. 1: Examples of students work and a final model; authors (from left top, to right down): Workshop led by: Suryansh Chandra - Senior Designer ZAHA HADID Architects, Anetta Kępczyńska-Walczak, PhD - Head of CAD Unit Lodz University of Technology, Sebastian Białkowski, MSc - doctoral student;
Students, workshop participants:I. Barańska, M. Kilańczyk, P. Krych, M. Muszalak, J. Pabian, K. Pasternak,
P. Pastuszka, M. Piechowiak, K. Pytel, N. Rimsky, K. Rutkowska, D. Sokołowski, K. Stawicki, M. Sybilski, M. Trąbski, J. Wojciechowska,
E. Wojciechowski, S. Zieliński

proaching a design problem, it is important to find efficient and effective tools for each stage of the project. Each tool that reveals specific perspectives and stimulates different creative opportunities" (Cheng, 2012) .

It is not surprising then that the issue of integrating virtual worlds into design teaching is widely discussed. Some authors propose strategies for integrating virtual worlds into architectural education as a contribution towards the revitalization of the architectural design curriculum (Pak, Newton, Verbeke, 2012).

There is no doubt a relationship between a designer and a digital tool has been changing. However, if there is no direct link between a designer's mind and designing tool, a designer becomes rather a reviewer than a creator. This conclusion resembles the thought of Aart Bijl, who considered the ease of use as a single most important criterion of judging the importance of new developments in digital technology. More than three decades later the question can be asked again: "Know your technology or can computers understand designers?" (Bijl, 1983).

To conclude: are we ready for Direct Design? Is virtual design space flexible enough and seamless in use to become a platform not only for representation of ideas but, primarily, for creative process?

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