Freehand drawings and *hybrid drawing techniques:* skills for the 21st Century architect

Beata Makowska

Cracow University of Technology
Kraków, Poland

ABSTRACT: This article is an attempt to respond to the issue of technological disruption in the traditional process of design and its impact on the architect's way of thinking. The author elaborates on the potential that stems from the combination of freehand drawing, software and other tools offered by modern technology. The aim of this article is to present modifications to architectural education based on drawings by landscape architecture students in the Faculty of Architecture at Cracow University of Technology, Kraków, Poland. The author emphasises that both traditional and innovative digital tools have important roles in the education of future architects. The integration of traditional freehand drawing with *hybrid drawing techniques* expands the architect`s creativity and the design process, because they both play an important role in the development of skills for the 21st Century architect.

INTRODUCTION

Architectural drawing in the 21st Century has become a versatile and multi-layered vehicle for conveying information. When it comes to the representation of space, the role of *hybrid techniques* - a combination of freehand drawing, photos and computer-aided design - continues to grow. The one striking quality that distinguishes students today is their increasing reliance on motifs found on the Internet. The growing importance of Google images in the design process is observed; understood as commonly available tools making use of a virtual library of photography. Copying, *quoting* (reusing, remixing), interpretations, manipulations - these are, unfortunately, the most common ways of searching for ideas based on images in the virtual world [1]. Only a handful of students dare to independently look for inspirations to create original forms and ideas. These make attempts at finding a unique solution to a task and strive to break through mental stereotypes.

The contemporary way of perceiving the world, described by the sociologist and philosopher Bauman as snapshot seeing, is characterised by a degree of superficiality and rush …*We obviously need to look to focus the lens on the desired object. But we look without seeing* [2]. This way of seeing is devoid of the capacity to prioritise information and engage in a deeper reflection and understanding. By focusing on photography, less information is memorised that could feed imagination in the future. It also reduces the possibility of encountering architecture and art in a more intimate, dispassionate way. Meanwhile, insightful seeing - a crucial skill for an architect *in spe* (future architect) - requires patience and involvement. Sketching can be most helpful in learning this ability, as the memorised works can serve as a source of inspiration for future creative endeavours, because …*Memory is a part of our conscious and subconscious mind; it is impossible to escape its presence and influence, thus, it has significant influence upon imagination and fantasy* [3].

However, increasingly students at the Faculty of Architecture at Cracow University of Technology (FA-CUT), Kraków, Poland, resort to a new method of work and instead of drawing interiors and objects in front of them from sight, they copy them from a picture taken with their phone. It is easier and faster to mechanically copy a picture, and no deeper reflection is required (it is enough to copy-paste). As a result, digital photography, highly popular and undoubtedly having lots of advantages competes with freehand drawing. It seems to offer a faster and easier way of recording space. Compared to photography, freehand drawing fosters insightful observation, in-depth analysis of dependencies between the observed forms and encourages an internal dialogue, because …*In sketches the image exists close to the border between reality and unreality* [4].

The aim of freehand drawing classes for landscape architecture in the FA-CUT is to develop students' imagination, liberate them from the Internet prompts on mobile phones, and to introduce them to the methodology of creative work. For this purpose, the teaching curriculum is built around carefully selected topics.

METHODOLOGY

Academic Experience and Student Perceptions

This research is based on the author's 30-year experiences as a drawing teacher in the Division of Freehand Drawing, Painting and Sculpture at the FA-CUT. The author has conducted research concerning drawing for future architects and contemporary aspects of teaching freehand drawing in architectural faculties. She has published eight articles and presented numerous papers at conferences concerning these subjects, among others viz. Aix-en-Provence in 2012, Copenhagen in 2014, Valencia in 2018 and 2019 and in Poland: Szklarska Poręba in 2017, Kraków in 2013, 2015 and 2019. The event in 2019 was the Conference on Engineering and Architecture Design Education organised by the World Institute for Engineering and Technology Education (WIETE); the paper presented was *Innovative methods in teaching improve the creativity of landscape architecture students*.

Curriculum Improvements

The author has also organised several exhibitions for students, with one being *The future of drawing - freehand and hybrid techniques of spatial representation*. It consisted of drawings prepared by students of various years who responded to a question on the future of freehand techniques in architectural representation. Students posited that traditional and computer-based techniques of spatial recording complement each other. They also emphasised their multi-layered nature. The exchange of experiences with students of the FA-CUT has significantly influenced changes made by the author to the curriculum in the Landscape Architecture course. Recently, the author prepared the new syllabus and also teaches first-year students of landscape architecture.

HYBRID DRAWING TECHNIQUES

Multi-layered Images

Nowadays, new computer software enables students to create multi-layered images. It facilitates corrections and makes it easy to restore previous versions of a design. Thanks to the virtual presentation mode, the designed forms can be viewed at various angles and from many directions; just as they are perceived in the actual world view. One important aspect of such tools is their interactive character and customisable parameters of forms. Buildings are presented in their virtual surroundings: pasted into a photograph or a visualisation representing their actual context (see Figure 1a and Figure 1b) that presents students' work using different techniques at the FA-CUT (photographs by the author).

In this design process, views and sections are on the finish line rather than a starting point. The presentation of forms in perspective, based on two-dimensional views and sections, has been replaced with volumetric presentations. Parallel to this, the reception of a design has become more active, since software enables ongoing modifications. The new methods of designing architecture (3D modelling, rendering) allow for a higher degree of realism than freehand drawing, but perhaps at the expense of expressive power. According to Uddin, *the contemporary influence of composite hybrid graphics ... [means] that designers will learn a new method of reading and drawing the fourth dimension, acknowledging the nonstationary nature of architectural views* [5].

a)   b)

Figure 1a and Figure b: The exhibition, *Architecture in arts space 2019* (Curator: Prof. Małgorzata Mizia, Krakow's Palace of Art, April 2019).

The manipulation of scale and surroundings, faking the greenery to enhance the attractiveness of a place, adding idealised human figures: all of these choices contribute to the final responses of the viewers to the designed space.

As a result, just as in advertising, the design *sells* better. Renderings have their specific stylistics, often addressing human aspirations and dreams. They represent architecture designed in a homogenous way (homogenous aesthetics).

The prevalence of computer-aided design over freehand drawing can lead to the unification of the visual message. But, the designer's individualism and creativity can be lost in the process, and the role of their personality, so instrumental especially at the initial stage, can be constrained. The individual nature of a designer's line is lost when the drawing is made with a computer. The architect's independence from software tips and hints, the lack of reliance on fixed patterns and clichés is instrumental to the design process. Despite the development of technology, direct communication between the designer's mind and hand in the creative process is indispensable.

In the case of teamwork relying on modern techniques, the issue of authorship of a design may emerge. According to Plummer-Fernandez, based on the building design one can also identify the software with which the forms were created, as they are characterised by certain repeatable, typical features: …*So much of the aesthetics [of a building] is inherited from the software without you realising it, (…) you can almost spot what sort of software applications have been used for a particular building. Much contemporary architecture could be considered the product of* a sort of composite authorship *between the software and person using it* [6].

To render visualisations is relatively fast and easy (save for the initial process), while to develop the skill of drawing and using colour, and the ability to employ them to express thoughts is much more time-consuming, which, given the pace of lives today, is certainly not an advantage. The primary role of a computer is to assist users in creating images, while ideas originate in the minds of the artists and the best way to record them is to sketch. Photograph-like design visualisations generated by computer software often convey the message in a way devoid of imperceptible light effects. They lack emotions that accompany the response to a drawing by a human hand.

The reduction of the number of hours dedicated to teaching freehand drawing to leave more space for computer-aided design has adversely impacted the development of students' creativity [6]. Because education at faculties of architecture nowadays is focused less on drawing than in the past, students find it increasingly difficult to develop their skill of creative *thinking on paper* [7]. Research in America also has shown that the reduction in the number of hours dedicated to freehand drawing in architecture curricula has had a negative impact on the development of students' creativity [8].

Computer-aided Synthesis

Nonetheless, modern presentation techniques, constantly developed and improved, enhance the traditional design process by improving the efficiency and quality of drawings, providing greater accuracy. The term, *hybrid graphics* usually refer to …*those in which two or more previously separated mediums are combined, or those which apply an accepted or innovative medium to an unexpected surface* [9].

Hybrid techniques can involve various computer-aided processes (rendering, scanning, Photoshop filtering, milling) combined with freehand drawing. They offer a synthesis of the good qualities of their *parents* - the traditional drawing and the new computer software - …*drawings created with both hand and digital graphic tools can have almost infinite variations without the limitations of their parental graphics types. …all graphic types play different roles in communication with different groups of clients* [9]. According to Uddin: *Hybrids, in some cases, may become larger and more vigorous than either of their parents* [5].

The increased availability of information has enormously extended the pool of knowledge accessible by students. The ubiquity of digital images and the use of graphic design software help to develop composition skills, facilitate synthesis (images processed in graphic design programmes) and improve spatial vision. However, it is important that such novelties be applied consciously (analysing mutual relationships between forms), rather than mechanically (by way of simple copying and assembling image parts without comprehending their interdependencies).

FREEHAND DRAWING AS AN IMPORTANT ARCHITECT`S SKILL

Freehand drawing in the 21st Century remains a crucial element of education, and is particularly relevant at the first stage of design …*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 effect* [10]. Sketching extends knowledge, develops creativity and stimulates imagination and the emergence of new ideas in students' minds (see Figure 2); during the process of drawing, new and sometimes unrecognised relationships between elements or ideas emerge.

Computers cannot make up for the fundamental role of freehand drawing in the initial phase of the design process. Sketches are less complicated than technological advanced drawing techniques. They help in making open-ended changes creatively in architectural space description. Chuprakova underlines the role of the traditional method of visualisation …*The speed of creating a drawing, along with the compactness of materials needed, make it a universally*

ideal tool for exploring spatial relationships, capturing fleeting impressions of a location, as well as generating and demonstrating ideas in the process of discovery [9]. Sketches are a continuous conversation between a drawing and its author. They reveal the truth about the designer, which is deeply rooted in his or her life. Freehand drawing has remained the primary vehicle for conceptualisation in architectural design.

a)   b)

Figure 2: Students' drawings from the archives at the Division of Drawing, Painting and Sculpture; a) drawing by Weronika Zielińska (2018); and b) drawing by Zofia Frączek (2018) (Photographs by the Author, 2019).

Preliminary freehand drawings created through the interaction between a student's mind and their hand give an opportunity to develop the concept of the project in an unrestrained manner. They do not require a lot of work, and thus do not interfere with creative freedom, which is consequential for further stages of the design process. What is more, freehand drawing gives students the opportunity to create an emotion-infused record of their thoughts. It reflects their personality and expresses their emotions. None of this takes place when an image is simply *copied* from the computer screen. A future architect who lives with a sketchbook can record and compare thoughts; in the future he or she can easier select the best ideas.
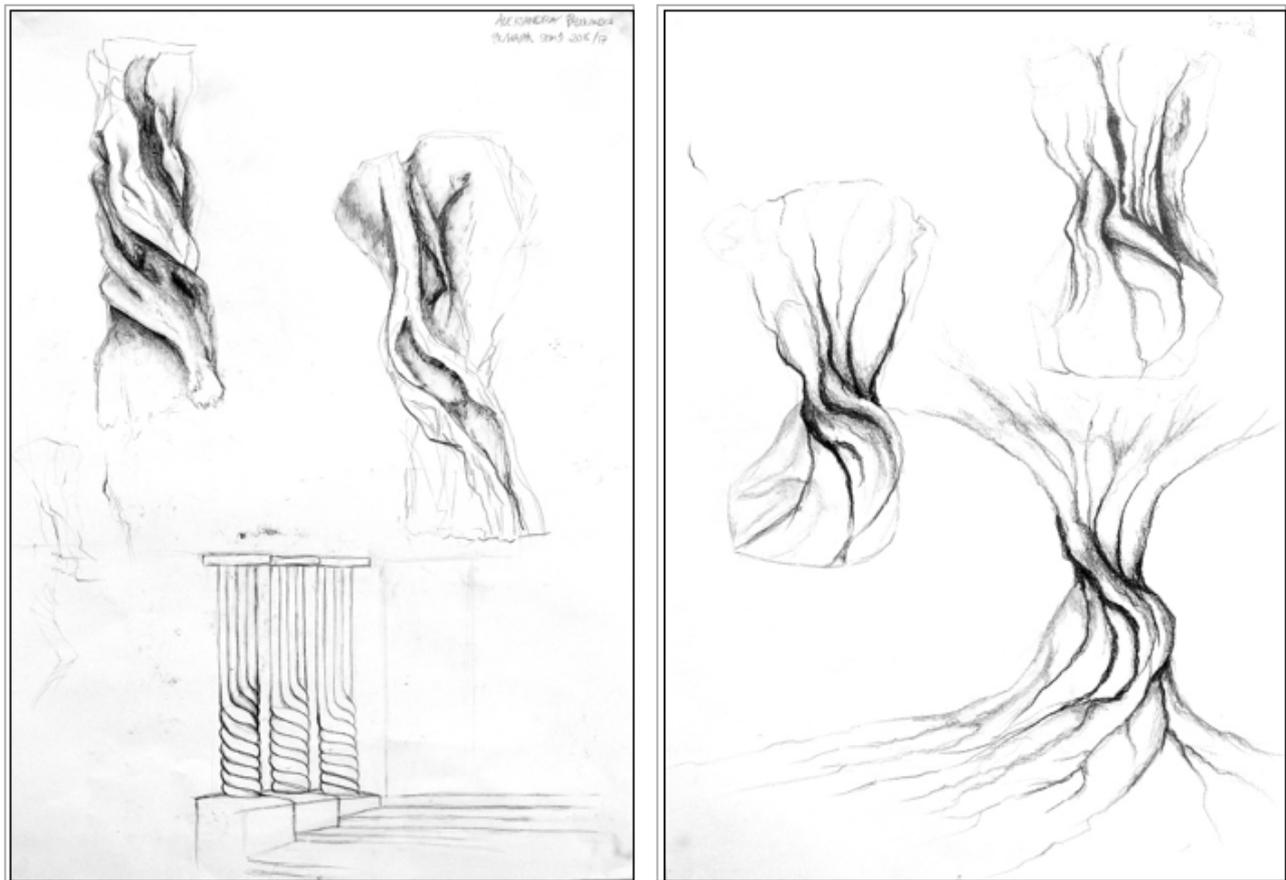
When teaching students the artistic skills that support creativity, it is important that each seeks an individual perspective and strives to go out from stereotypes [11]. Students with poorer drawing skills quickly resort to computer-aided design or to a combination of computer-aided and freehand techniques. *Hybrid techniques*, including freehand drawing, enable a versatile approach to project visualisation, which fosters the development of students' individual gifts. The opportunity to choose the manner of design presentation, adjusting it to students' abilities and talents, is an important factor stimulating students' growth …*We live in a complicated and messy world in which work for most of our graduates is a continuous stream of problems that have no simple or unique solutions. Being able to work creatively will help your students survive and thrive in this world and help them to lead more satisfying and meaningful lives* [12].

The versatility of techniques applied makes their work more attractive. Freehand techniques give them the pleasure of physical contact with materials and tools, because …*the practice of producing images of architecture is a combination between representation and expression* [13].

Often, a student's imagination has more free space when advanced technology is lacking. Independent from the computer and its hints, it has the opportunity to liberate itself from schemes and familiar methods. In particular, open air drawings are an excellent way of making a permanent record in a designer's memory. The world displayed on a computer screen differs from the direct experience of drawing forms seen in nature. Direct experience makes student observation more individual, enabling them to notice things that are particular or important. Thus, it is important to experience the designed reality directly, rather than by the mediation of computer or mobile phone screen.

Open air drawings teach observation skills and foster better comprehension of the actual and not only virtual space. Imagination is a synthesis of perception and memory, and as already quoted …*Memory belongs both to our consciousness and unconsciousness; we cannot escape its presence and influence and thus it exerts a major impact on our imagination and fantasy* [3].

Freehand drawing teachers at the FA-CUT make attempts to develop students' skill of independent, creative thinking and individualised manner of drawing. The selected topics (Figure 3) at freehand drawing classes aim at extending students' imagination and helping them develop a degree of independence from computers and the Internet, which should be treated as a tool rather than a library of topics and motifs. Modern technologies breed homogenisation of the visual language, can erase the author or restrict the role of the author's personality in the design [14].

a)   b)

Figure 3: Students' drawings from the archives at the Division of Drawing, Painting and Sculpture; a) drawing by Aleksandra Paszkowska (2017); b) drawing by Szymon Chromik (2017) (Photographs by the Author, 2018).

RESULTS

Based on analysing students' work and approach to solving design problems presented during freehand drawing classes of the Landscape Architecture in the FA-CUT, the following results were found:

- New technologies have accelerated and streamlined the design process (*quick* thinking); they have rendered students' work significantly easier, but to some extent they also restricted the imagination.
- Preliminary drawing in the design process particularly requires extensive analysis and the *slow* thinking that takes place during freehand drawing.
- The world displayed on a computer screen differs from the direct experience of a student drawing forms seen in nature; direct experience makes observation more individual, enabling the observer (the student) to notice things that are particular or important.
- It is crucial to experience the designed reality directly (for example, the context of design form), rather than by the mediation of the computer or mobile phone screen.
- *Hybrid techniques* enable a versatile approach to project visualisation, which fosters the development of students' individual gifts.
- Experienced, talented designers, especially in freehand drawing, are more conscious about the use of the *hybrid techniques* and obtain superior outcomes, while students with poorer drawing skills quickly resort to computer-aided design presentation or to a combination of computer-aided and freehand techniques.

CONCLUSIONS

The research results justify the following conclusions:

It is most important to integrate traditional freehand drawing with *hybrid techniques* to expand the architect's creativity in the design process, because both computer tools and freehand drawing play an important role in the development of skills for the 21st Century architect. Modern technologies speed up the design process, but the application of computer programs can result in reliance on typical templates and repeatable model solutions.

Freehand drawing remains an important element of education. Computers cannot make up for the fundamental role of freehand drawing in the initial phase of the design process. Sketches are less complicated than technological advanced drawing techniques, which helps in making open-ended changes creatively.

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