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## DRAWING AS A UNIVERSAL RESEARCH TOOL ON THE EXAMPLE OF A STUDENT DESIGN WORKSHOP

This paper discusses the role of freehand drawing as a research instrument in educating future architects. The now widespread use of the computer cannot replace freehand drawing, which remains the primary means of developing the student's sensitivity and imagination. Drawing is often treated as something less valuable, incomplete, as a preliminary, ancillary stage. On the one hand, not as impressive and durable as painting, on the other, not as attractive in skillset terms as graphics. The main aim of this work is to demonstrate the importance of drawing and sketching in developing the professional skills of architecture students. An analysis of the historical context of art and drawing as a craft was performed, and its contemporary role was highlighted. This study is based on literature research and an analysis of a student design workshop that took place in Świerkocin, in the Mazury region, in 2020. Drawing, regardless of skill level, can be an excellent tool for learning architecture: a research tool that aids in understanding the structure and complexity of the surrounding space, an intellectual tool that enables a critical analysis of space and the development of abstract thinking.

**Keywords:** sketch, *disegno*, architectural drawing, student design workshop, design process

### 1. INTRODUCTION

The drawing and the sketch. It is the simplest language of communication. It is transnational and cross-cultural. The quickest and most personal way to record a fleeting thought, a creative intent, an idea, an impression or a momentary dazzle. The most direct and irreplaceable way of materialising thoughts in all areas of the visual arts: from painting, sculpture, graphics, stage design, all kinds of design and new media, to architecture and urban planning. Drawing is also a tool needed to shape sensitivity – a multi-year process that no computer can replace. As a means of human expression, it was born in the secret caves of the prehistoric era. The most outstanding

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examples of this original art can be seen in the Altamira caves near Santander in northern Spain and the Lascaux caves in the Montignac region of France.

Drawing is often treated as something less valuable, incomplete, as a preliminary, ancillary stage. On the one hand, not as impressive and durable as painting, on the other, not as attractive in skillset terms as graphics. And yet, as a medium that materialises the initial thought, that records a three-dimensional world on a plane, is the most personal form of expression, whose greatest value is the spontaneity and directness of the record. It is like one's handwriting – one cannot get rid of it, it makes one recognisable. Sketching, as a sort of creative release, can be a perfect manner of annotating and documenting, as well as a method of intellectual concentration. For instance, recording travel experiences can become an essential and necessary tool needed to shape spatial sensitivity and imagination. Drawing, as a lesson in looking at and taming space, generates a continuous and secondary 'experience' of a place, perpetuating its memory to the extent that it can be synthetically reproduced years later. A remembered image is an experiential capital that can be used in the future during all phases of design. However, drawing and sketching is not only a medium that meanders between disciplines, it is also a fully-fledged artistic statement. Sometimes a sketch remains at this stage because it has a particular potential to develop, but it can also persist in its embryonic, primary phase (fig. 1, 2).

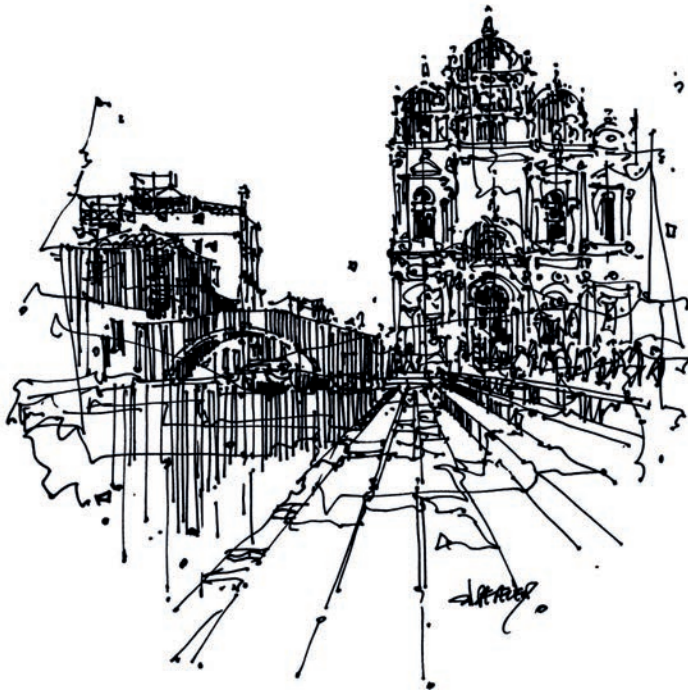


Fig. 1. Fondamenta Dandolo, Venice (original drawing)

In this paper, the author discusses the role of freehand drawing as a research tool in educating future architects. The currently widespread use of the computer is no substitute for freehand drawing, which remains the primary means of developing the student's sensitivity and imagination. The main aim of this work is to demonstrate the importance of drawing and sketching in developing the professional skills of architecture students. To do so, this study employed a student design workshop that took place in Świerkocin in the Mazury region, during a brief pause in the pandemic, in September 2020.

## 2. ARCHITECTURAL DRAWING

Architectural drawing is a special type of artistic expression. It gained the status of an autonomous work of art rather late – in the second half of the 20th century. Nevertheless, Vitruvius, having developed the knowledge of the Greek philosophers, was the first to refer to freehand drawing used in the work of a designer. In Book One of *De architettura libri decem*, he wrote that an architect 'must have a knowledge of drawing so that he can readily make sketches to show the appearance of the work which he proposes' [Vitruvius 1956: 11-12].

An intensive development of drawing took place during the period of the great cathedrals, and the architect's position rose significantly in social hierarchy due to their knowledge of engineering, which was inaccessible to the public. Drawing then becomes the basis for the unity of artistic language: architecture, painting, sculpture and craftsmanship. The famous sketchbook of the Picardy master builder Villard de Honnecourt continues to be an invaluable source of architectural, engineering and natural science knowledge to this day [Białkiewicz 2006: 54].

The Renaissance elevated the role and significance of disegno – drawings based on studies from nature. The study of drawing, which was considered the source and essence of all arts, became the foundation of artistic education. Masaccio's fresco *The Holy Trinity* (1425) in the Florentine church of Santa Maria Novella was the first painting with geometrically drawn linear perspective. Brunelleschi and Alberti's revolutionary invention – a scientific instrument called perspective – allowed drawing to become a logical representation of the visible world and to develop into a precise system of design presentation [Malinowska-Petelenz 2015].

In his article 'Disegno w teorii artystycznej XVI w.: Italia', Zygmunt Ważbiński shows the prominent status that drawing is given in the treatises on art by Cennino Cennini, Leone Battista Alberti, Lorenzo Ghiberti, Leonardo da Vinci, as well as in the writings of Giorgio Vasari [Ważbiński 2000].

The term *disegno* was coined in the early 15th century by Cennino Cennini, an Italian painter and art theorist, who called drawing the foundation of art. In his treatise *Il libro dell'arte* from around 1400, he devoted the first thirty-five chapters to the art of drawing. This remarkable document reflects the painting practice of the

second half of the 14th century. *Disegno* in Renaissance artistic theory meant drawing and artistic ideas and all manners of spiritual concepts, also in a religious sense. According to Cennini, it was through drawing that journeymen learned painting in the workshops of their masters. Drawing was an important part of preparing a work of art: a painting, a fresco or a stained glass window. The revolution that Cennini initiated raised the status of the sketch and drawing to that of an equal to the finished work [Cennini 1955].

In the 16th century, Giorgio Vasari coined the term ‘drawing arts’ [Vasari 1980], which combined the great triad: painting – sculpture – architecture, and separated them – as artistic professions – from crafts and science. *Disegno*, whose unrivalled master, according to Vasari, was Michelangelo, is a particular artistic idea expressed in a work, which the artist creates in their mind as a result of observation and selection of appropriate elements [Michałowicz 2012: 183].

The term *disegno* was also used by Alberti in his treatise *De Pictura* (1435), in which he wrote about the leading role of drawing for every painter [Alberti 1963]. In a later treatise on architecture: *De re aedificatoria libri decem* (c. 1450) Alberti discussed drawing in relation to architecture [Alberti 1960]. He believed that an architectural drawing was not just a collection of individual lines, but a work of the mind expressed by those lines. In Alberti’s theory, drawing was given a significantly higher position than it had been in the Middle Ages. A *disegno* was not a mere drawing, but a complex record, a creative thought initiated in the mind [Tatarkiewicz 2009: 111]. The Renaissance concept of *disegno* finds its peak in the thought of theorist Federico Zuccari, who, in his dissertation on drawing *L’idea de’ pittori, scultori et architetti*, distinguished between external and internal drawing, or *disegno esterno*: the material basis of the work, the line on paper, or the ‘body’ of the drawing, and *disegno interno*: the idea of the artist contained within it, the ‘soul’ of the drawing [Zuccari 1607].

Since then, the Renaissance philosophy of drawing-based records has formed the basis of all artistic creative outputs. The drawing supported the analysis, the discernment of the theoretical and practical problem, and provided the basis for the formulation of the design. Drawing was ascribed value as a creative activity: ‘in this sense, drawing represented value as an active, creative element in each of the arts, including architecture’ [Misiągiewicz 1999: 44-45].

It was only in the second half of the 20th century – as a result of changes in contemporary art – that drawing achieved complete independence. For drawing ‘assimilates easily to other forms of expression, giving them a particular, expressive, bodily feature’ [Ryczkowska 2020], which is why it is used in areas of contemporary visual arts ranging from fields such as architecture, painting, sculpture, design or scenography to graffiti, video art, multimedia works or cinema. As Maria Misiągiewicz notes, ‘drawing is not matter, body or substance, it is the result of indications dictated by the mind and the eye as order, pattern, rule and form. In fact, drawing, as Edgar Degas wishes it, is not a form, but a way of seeing a form, because only

a certain kind of penetrating vision, Rudolf Arnheim adds, leads to the creation of works of art' [Misiągiewicz 2004: 103]. Today, drawings by famous architects are displayed in major galleries and museums such as the Pompidou Centre, Vienna's Albertina or Mumok or Rome's MAXXI. Concept sketches by Zaha Hadid, Renzo Piano or Frank Gehry function as autonomous works of art in complete isolation from the buildings depicted on them. Like the internationally admired and peculiar current of autonomous drawings whose roots still go back to Piranesi's masterful imaginaria, manifesting itself in the extraordinary work of, among others, Massimo Scolari, John Heyduk or Lebbeus Woods.



Fig. 2. Nové Město na Moravě (original drawing)

Research problems related to architectural drawing were discussed by Marian Fikus, Ryszard Natusiewicz, Piotr Patoczka, Jan Bruzda and many others. Maria Misiągiewicz writes about architectural drawing in her comprehensive monograph *O prezentacji idei architektonicznej*. There, she mentions Drawn Architecture, which is the result of two types of work: 'reproductive' drawings-paintings, subjected to actual buildings, and design paintings-drawings that are created independently of the real world, but with the intent to 'enter this world' [7]. Leszek Maluga, on the other hand, in his book *Autonomiczne rysunki architektoniczne*, among other things, precisely explains the scope of the term 'architectural drawing' by defining it as three concentric collections with a gradually increasing scope: architectural design drawings, the architect's drawings and drawings on architectural subjects [Maluga 2006: 22]. We also cannot ignore the extensive publication *Rysunek architektoniczny*

*w praktyce, czyli jak patrzeć ze zrozumieniem* which presents theoretical and practical subjects associated with drawing – as an architectural tool used in space imaging. The issues presented are based on, among other things, the psychology and physiology of vision, art history, the history of architectural drawing and, above all, the drawing and teaching practice of the authors, eminent draughtsmen and painters associated with the Faculty of Architecture of the Warsaw University of Technology [Balcerzak et al. 2019].

For years, freehand drawing has played a special role in teaching at faculties of architecture. It is the subject of discussion, the topic of symposia and numerous academic conferences. These problems are of interest to those who teach both visual arts courses and design courses. Despite the dominance of digital technology, freehand drawing still plays an irreplaceable role in the teaching process. This is because the ability to draw is not only limited to manual skills, but is also a way of thinking, which translates into later professional competence. It is essential to teach future architects to express their thoughts via drawing, which ultimately contributes to enhancing a student's sensitivity, their internal discourse, analytical thinking, visual synthesis and inference.

One way of developing a broad artistic sensibility along with expanding design inventiveness can be through participation in workshops. Plen-air drawing and design classes may play a key role in developing creativity, technical skills and analytical abilities of future architects. Such workshops can become a platform for learning and experimenting with different drawing and design techniques, enabling an exchange of knowledge and experience between the participants – the students, the instructors-teachers and clients.

### 3. ŚWIERKOCIN 2020 STUDENT WORKSHOP

In September 2020, the staff and students of the Faculty of Architecture of the Cracow University of Technology went on a study trip to the village of Świerkocin in the Warmian-Masurian Voivodeship. The trip was combined with a painting workshop entitled 'Workshop with Watercolour' and was aimed at learning about the characteristics of rural architecture in the Warmia and Mazury region and designing an agrotourism complex in cooperation with a private client. The subject of the project was 'Habitat in Świerkocin'.

#### 3.1. Workshop overview

During the trip, the students familiarised themselves with the region's character, performed several analyses, interviewed the local residents, made study drawings and sketches, and inspected historical documentation and the provisions of the local spatial development plan.



Over the course of the workshop, the students carried out multi-stage studies and field research that focused on the Warmia and Mazury region, as well as the area around Olsztyn and the village of Świerkocin. Afterwards, they deepened their studies at the sites of two joined plots located in Świerkocin on Lake Czarne, which were the project site.

The Świerkocin local spatial development plan shows that one is a residential plot designated for agrotourism use, while the second has access to a pond and an archaeological site. The plots were owned by owner-builders.

### 3.2. Preparatory section – seminar

The workshop was divided into a preparatory section – a seminar – and a practical section, namely plein-air work. During the preparatory section, the students attended introductory seminars on the region's history, the characteristics of the village and its surroundings, the types of development, the natural features of the region and its cultural assets: monuments, tourist trails, preserves, museums or cultural parks. Particular attention was paid to the typology and archetype of local, traditional buildings in order to find possible connections and inspiration for the design.

Undoubtedly the highlight of the research trip was the painting and drawing workshop ('Workshop with Watercolour'), which also consisted of two sections. The first section – a seminar – focused on the theory of drawing as an excellent, universal and multi-functional medium of communication, notation and documentation. There was a series of lectures by Doctor Krzysztof Ludwin, an outstanding Polish painter and accomplished draughtsman, for many years a teacher of painting and drawing at the CUT FoA. The lectures covered the following topics:

- drawing as a method of recording information; drawing built according to the rules of perspective theory,
- intuitive drawing based on natural sensitivity and observation,
- drawing as an element in the cognitive process when drawing in situ – that influences the involvement of visual perception, the identification and interpretation of phenomena and their impact on the understanding of reality,
- drawing as a means of expressing the material qualities of three-dimensional space as well as the immaterial aspects of the surrounding space, *genius loci*.

The lectures primarily stressed the role of the sketch as the fastest and most effective way to discover and study reality, as well as the first and fundamental step to materialising thoughts and quick observations, and to correct the design process. Krzysztof Ludwin presented, among other things, his own works, on the basis of which he discussed undefined sketches, i.e., sketches that come to form from the chaos of lines (fig. 3).



Fig. 3. Seminar section of the workshop – lecture by Doctor Krzysztof Ludwin

The lectures also emphasised the impact of colour on the viewer and the importance of optical illusions, which is often overlooked by architects in the hierarchy of design actions. According to Krzysztof Ludwin, ‘Colour is seemingly obvious to architects, but it seems scattered and relegated to the final design stage’ [Ludwin 2008: 404]. He addressed issues such as the phenomenon of simultaneous contrast, the afterimage, reflected colour and irradiation. On this occasion, he presented the work of various authors in different techniques and ways of drawing, including the Akwarela art club.

### 3.3. Practical section – field studies

The second – practical – section consisted of specific field research and recording it in the form of quick sketches, using pencil, pen and watercolour.

The plein-air sketch, emphasised Krzysztof Ludwin – even if technically imperfect, is the most effective way to analyse views, synthesise them and, consequently, learn composition (fig. 4). He reminded the students that while drawing, we learn to see the hidden relationships between elements, which is crucial during the later stage of design decisions. In the case of the landscape, it was important to objectivise the aesthetic expression of the cultural landscape by logically displaying its individual components: the background and the landmarks – the terrain, water or greenery complexes. Equipped with paints, markers, pencils and sketchbooks, the students worked in the field, performing a quick analysis and synthesis of the surrounding space, picking up on the characteristic signs of the area’s spatial identity and thus developing their perceptiveness and sensory sensitivity to form, colour and light. The students also sketched seemingly unimportant elements, but always ones that caught their attention for some reason. The resulting valuable impression ‘notes’ were a record of ideas, insights and information, as well as the key content of the observed image.





Fig. 4. Drawing and sketching as part of the thought process – field research

This was followed by the first freehand sketches as a quick record of thoughts, ideas or the first very general design ideas, as well as the first sketches for the development of the plot (fig. 5, 6, 7).



Fig. 5. Impressionistic watercolour sketches, student Dominika Skupień

As part of the field research, the students also carried out a number of historical and environmental studies and analyses, familiarised themselves with the local development plan and interviewed local residents. Most were in favour of development directed towards agrotourism. As residents of an area with a long distinctive history, they would like to see new residential architecture embedded in the rich traditions of the place and the region, which is in line with the local development plan for the recreational development area within Świerkocin. This includes the use of materials such as stone, brick, wood, white plaster and red tile for roofing. During the interviews, residents were reluctant to advocate asphaltting and concreting areas, even for access roads. The ideas were mostly about homestead development on larger plots of land and agriculture in the form of orchards and crops, as well as the creation of natural spaces for animals (e.g., bee farms, cideries, cow, sheep and Polish horse farms) dominated.



Fig. 6. Initial conceptual sketches, student Klaudia Krzyżanowska



Fig. 7. Sketches of archetypal rural architecture of Warmia and Mazury for the area of Świerkocin and its surroundings, student Karolina Włodarczyk

The results of the students' work and in-situ research were used to draw up guidelines for the site plan and then the architectural design of a residential development intended for agrotourism in the village of Świerkocin. The result was fifteen Bachelor's thesis projects which were ambitious attempts at creatively pursuing the atmosphere of contemporary architecture, heavily rooted in place-based tradition and properly blended into the Masurian landscape of the Land of a Thousand Lakes. The selected Bachelor's thesis projects presented below were created in the academic year 2020/2021 under the supervision of Professor Magdalena Jagiełło-Kowalczyk and Professor Beata Malinowska Petelenz, with the collaboration of Doctor Bogdan Siedlecki serving as a structural engineering consultant (fig. 8, 9, 10). The ideas presented in the works are diverse, but all respond to the suggestions and priorities of the region's residents [Jagiełło-Kowalczyk 2021: 116].

## 4. CONCLUSIONS

Typically, the teaching methods used in drawing and design workshops include direct lectures by the instructors, practical classes in the field, group exercises and result in individual projects. In the case of the workshop in Świerkocin – the design classes, preceded by a theoretical section that introduced the subject matter, together

with study visits to the sites, interviews with clients and residents, in situ analyses, joint sketching and critiques on site, were much more effective than working only in the conditions of a closed classroom. This sentiment was shared by all students who had the opportunity to participate in these classes [Jagiello-Kowalczyk et al. 2023].

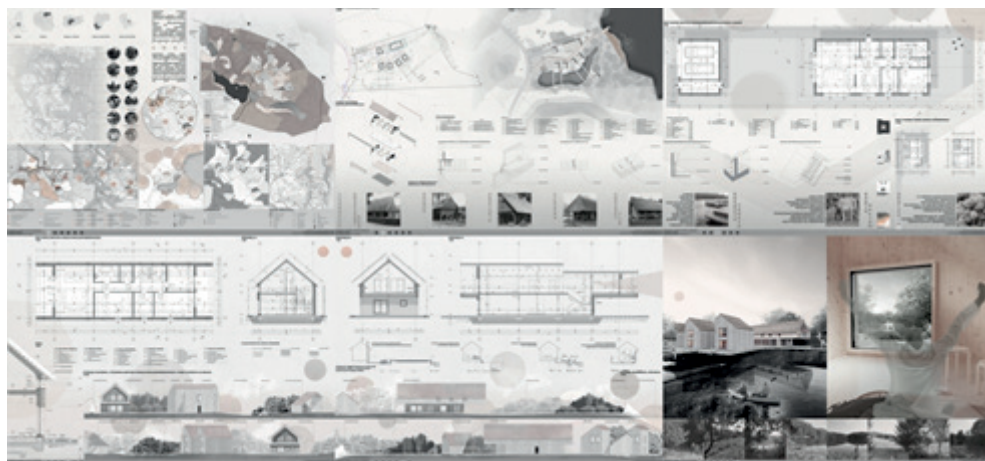


Fig. 8. Eco-friendly horse ranch in symbiosis with Nature in Świerkocin, student Klaudia Krzyżanowska

In turn, the formula of the ‘Workshop with Watercolour’ allowed for a better understanding of what freehand drawing can be – as a multi-dimensional and universal research tool:

- The architectural and landscape design workshop ‘Świerkocin 2020’ combined with the ‘Workshop with Watercolour’ was an unconventional attempt to formulate an action plan and guidelines for the design of an agrotourism complex in cooperation with a private client.
- Their effect was to present contemporary, attractive formal solutions in the shaping of housing in agrotourism farms in the Mazury region, based on the extraordinary potential of the place and the unique qualities of its natural environment.
- The workshop’s additional result was to experience the design process using the traditional tool of freehand drawing.



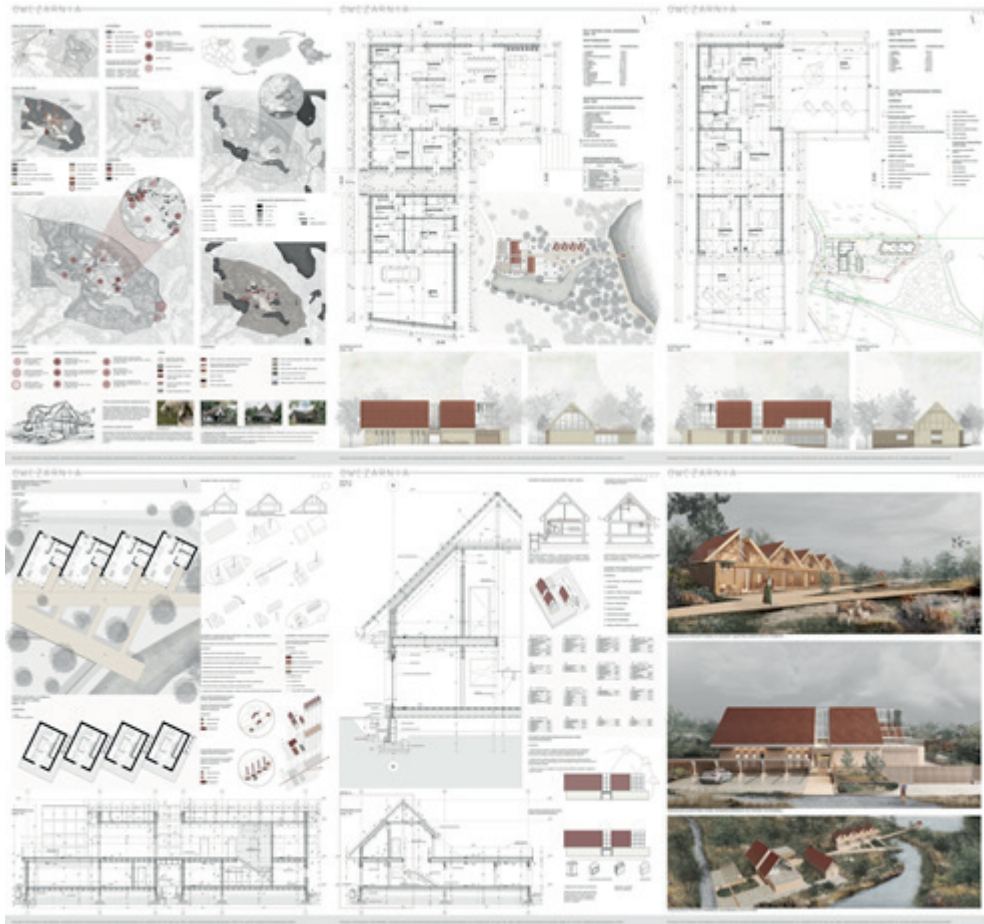


Fig. 9. Design of a complex of agrotourism buildings in the village of Świerkocin, student Sandra Trochimowicz

Drawing is still an integral part of architectural education, regardless of technological progress. For architecture students, drawing literacy is not just about being proficient in depicting reality. Drawing, regardless of skill level, can be an excellent tool for learning architecture: a research tool to help understand the structure and complexity of the surrounding space, an intellectual tool to critically analyse space and develop abstract thinking, as well as knowledge of how harmonious space is created. Its role in expressing ideas, shaping spatial thinking and developing creativity means that it remains one of the most important tools in an architect's work, both in terms of teaching and professional practice.



Fig. 10. Design of an agrotourism farm with a cider production plant in the village of Świerkocin, student Patryk Sobol

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## RYSUNEK JAKO UNIWERSALNE NARZĘDZIE BADAWCZE NA PRZYKŁADZIE STUDENCKICH WARSZTATÓW PROJEKTOWYCH

### Streszczenie

W artykule poruszono zagadnienia związane z rolą rysunku odręcznego jako instrumentu badawczego w procesie edukacji przyszłych architektów. Powszechnie obecnie posługiwanie się komputerem nie zastąpi rysunku odręcznego, który nadal pozostaje podstawowym środkiem rozwijającym wrażliwość i wyobraźnię studenta. Rysunek często traktowany jest jako coś mniej wartościowego, niepełnego, jako etap wstępny, pomocniczy. Z jednej strony nie tak efektywny i trwały jak malarstwo, z drugiej – nie tak atrakcyjny warsztatowo jak grafika. Głównym celem pracy jest wykazanie znaczenia rysunku i szkicu w rozwijaniu warsztatu zawodowego studentów architektury. Dokonano analizy historycznego kontekstu sztuki oraz rysunku jako rzemiosła z podkreśleniem jego współczesnej roli. W artykule oparto się na badaniach literatury oraz analizie studenckich warsztatów projektowych, które odbyły się w Świerkocinie na Mazurach w 2020 r. Rysunek, niezależnie od poziomu warsztatowego, może być znakomitym narzędziem do nauki architektury: narzędziem badawczym wspomagającym zrozumienie struktury i złożoności otaczającej przestrzeni, narzędziem intelektualnym pozwalającym na krytyczną analizę przestrzeni i rozwijanie myślenia abstrakcyjnego.

**Słowa kluczowe:** szkic, *disegno*, rysunek architektoniczny, studenckie warsztaty projektowe, proces projektowy