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## *Synergy in the design process – contemporary tools used in the recording and implementation of the design idea*

### *Introduction*

The architectural design process, which ends with a construction, begins with a stage of idea formation that in turn has its origin in the realm of imagination. The specific environment of creation makes it possible to move freely in areas closely related to design, allowing the proper arrangement of space with respect to the existing context. It is the basic element responsible for the quality, character and effect of each design phase. At the stage of shaping the idea, tools are used that are often far from the analog form of the concept sketch, and often combine various means of artistic expression, thereby enriching the toolbox and expanding the range of possibilities for verifying the records. An important aspect is also the deepening and broadening of imagination itself, occurring with the participation of multisensory perception of space and openness to the freedom of message creation. In order to test the above-mentioned relations, an attempt was made to study them on an experimental basis, based on the semester topics introduced in 2020–2022 to the curriculum of the Faculty of Architecture of Poznan University of Technology in the subjects Drawing – methods of architectural presentation and Multimedia II, based on the use of two paths of perception of selected architectural spaces: analogue media (drawing, graphics, painting) and digital notation (film track). The article presents chrono-

logically the process of the experiment, the essence of which was to obtain comprehensive information about the “site” as a basis for formulating correct design conclusions and successful implementation. The various stages of the process, from the initial assumptions to the results, are described, highlighting in particular the quality of the materials obtained and the value of the message.

### *Related research*

Modern methods for optimizing design processes are based on elements conventionally used in representations of architectural ideas. These include techniques such as pencil, pen, watercolor, crayon or mixed techniques. In addition, designers and students of architecture are reaching for newer and newer ways to make their work easier or speed up the effect of their actions. For this, they use digital tools that offer the possibility of exploring space in 2D and 3D. The implementation of new methods of architectural installation used in research is addressed by Arkadiusz Polewka and Agnieszka Lamprecht [1], discussing a case study of modeling and simulation of E3 architectural installation and the use of architectural installation as a teaching tool in experiencing real space. On the relationship of perception and interpretation in relation to the comprehension of reality, valuable material can be found in the publication by Jean-Jacques Wunenburger *Philosophie des images* [The Philosophy of Images] [2]. Polewka also comments on the significance of drawing and model, treating both as essential ways of presenting an architectural work [3]. Also in her article, Katarzyna Słuchocka addressed the problem of supporting thought processes, deepening, developing imagination and consciousness in relation to teaching and design experiences on the basis of interpretive autonomy, implying unconventional solutions

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affecting the enhancement of creativity [4]. Enriched by experience, the interdisciplinarity of the activities carried out manifests itself as a manifesto of independent thinking and creative expressions, while being a source of educational experience and a factor optimizing teaching and design processes. In the article *Architecture drawings. Architect's archive*, Stanisław Wojtkiewicz attempts to present architectural drawing as an important element in the process of architectural design, saying that *Drawn Architecture defines the grammatical syntax of building real architecture* [5, p. 72]. In the study *Rysunek architektoniczny w praktyce, czyli jak patrzeć ze zrozumieniem* [Architectural drawing in practice, or how to look with understanding], Mirosław Orzechowski addresses theoretical and practical issues related to drawing, while emphasizing the relevance of drawing as a component of creative thinking processes and a tool for illustrating space [6]. The topic of the essence of drawing records in the course of design processes also appears in the article *Drawing – the autograph of spatial sensitivity* showing that this tool, in addition to the value of analytical activity, is additionally important in communication between the investor and the designer, and also as a documentary material and a means of artistic expression at the same time [7]. Maria Żychowska [8] also talks about the essence and need for visual arts activities in the curriculum of the technical sciences area. Michał Suffczyński deals with the function of structural drawing in architectural work, which is meant to serve as a way of depicting space according to the laws of vision and painterly perspective. He draws attention to the consideration of both the external aspects of the depicted objects and their spatial relationships [9].

Another form of recording and transmitting information about the surrounding space is the art of photography and film, which, by its uniqueness in terms of recording reality, can make a significant contribution to the recognition of a place, not only visually, but also sonically or in terms of recording phenomena occurring over time. At the same time – in addition to chronicling accuracy and objectivity – these arts, properly applied, can be a creative way to search for meanings and impressions of the space being explored. These issues can be found in the work of Krzysztof Groń [10], who emphasizes the role of photography in the visual arts and in architecture. The author points out the wide range of content and richness of intellectual meanings conveyed in the registered images, emphasizing the documentary and inspirational significance for his own creative explorations. It is worth comparing the above statements to the thoughts contained in the study *Szkicownik architekta* [Sketchbook of an architect] by Ewa Pruska. This author points out that [...] [a sketchbook] is a silent thinking about things in which the architect is interested, [...] a sketchbook becomes a diary of time, things, people, it is a mirror, a reflection of personality, temperament. It is a set of ideas, interests, reminders [11, p. 114]. This comparison gives rise to the compatibility of the two tools – photographic and drawing in the context of author's notes and holistic site search. The importance of author's notes – in the context of the need for in-depth site exploration – is also the basis for design activities for

Marian Fikus [12], [13]. Orzechowski [14] draws interesting conclusions with regard to the didactic experiment described in this article, maintaining that the synergy of the arts is advisable in the processes of in-depth recognition of issues and drawing accurate design proposals, also with a special focus on didactic practice. The topic of the holistic and dynamic nature of place is also addressed by Angelika Lasiewicz-Sych [15]. In the collective monograph edited by Orzechowski, we also find representations of architectural spaces by well-known designers, which prove the high quality of artistic technique that translates directly into spatial thinking in the design context [16].

The dynamics of place as a complex of phenomena of individual and group actions, experiences, environmental location is described by David Seamon [17]. In this context, the choice of film, a multimedia tool that offers a dynamic, reliable, and at the same time individualized, artistic approach to place as a unique phenomenon, seems to be an apt choice for conducting research work. Jerzy Kaczmarek [18] points out similar qualities of film. In the "Invisible City" project he describes, he emphasizes the role of film as a medium that allows us to show and record emotions, the broader context of the situation and occurring processes (events), enabling a more complete illustration of the space complemented by sound impressions. The author uses the name "film note", indicating its usefulness in didactic processes. The usefulness and beneficial impact on the teaching process in the context of integrated arts education is also discussed by Xiaodong Sun et al. [19]. They point to the positive impact of multimedia on the attitude to the tasks performed, satisfaction with their performance, and the opportunities arising from the use of technical media in distance learning. The beneficial translation of the preparation of film elaborations by students on the quality of the didactic process in the field of architecture in the context of artistic, substantive and historical recognition is also indicated by Borys Siewczyński [20]. His publication also presents aspects of the student's interdisciplinary development in the field of film technique and art and contemporary digital workshop. The tool of film as a medium for recording space and phenomena over time can also be useful, according to the position of Augustyn Bańka [21], who argues that in architectural design it is necessary to record the environment to allow an in-depth understanding of a place, and that it is necessary to study human interactions with the environment consisting of such components as elements of physical form, environmental factors, and the state of individual elements at a given time.

### Research method

Conducted in 2020–2022 as part of the didactic classes at the Faculty of Architecture at Poznan University of Technology, in the subjects: Drawing – methods of architectural presentation and Multimedia II, our research was intended to help find answers to the questions of whether the mutual transfer of drawing and multimedia techniques can be indicated as an effective tool for optimization in creative and design work, and whether there is a synergy

effect of the arts. The planned didactic experiment consisted of a parallel approach to the issue of recognizing and recording a given place by means of plastic and multimedia performance techniques. The painting and multimedia classes were conducted in parallel, and the starting point of the joint activities was the assumption that film/multimedia analysis and painting, that is, plastic and impression analysis are research tools. The idea of the whole, planted on the simultaneous execution of both studies, was a kind of experiment, the initial thesis of which was based on the claim that the use of two different work paths can lead to a more comprehensive understanding and perception of space, implying a synergistic effect.

### *Drawing, painting, graphics*

The part of the study focused on visual arts activities concerned the notation of space using the methods of: study and comparative analysis of selected cases, observation and sensory perception. A group of third-year full-time students had a choice of an architectural object or its fragment, an architectural interior or any detail, characteristic of a particular type of space. After the field reconnaissance, individual decision and determination of the given research topic as corresponding to the problem of the study task, the next stage of work included the so-called detailed tasks. These included conceptual sketches of the observed spatial phenomenon involving analysis and autopsy recording of the perceived reality in relation to the context, taking into account important compositional assumptions (structure, proportion, rhythm, perspective). The initial phase of the interpretation process consisted in the search for a drawing or painting definition of the selected space, using an appropriate technique designed to emphasize the meaning of plastic articulation. Particular attention had to be paid to the selection of original compositional solutions (shots, frames) for the author's forms of artistic expression, which were to lead to the implementation of a series of thematically and qualitatively related works. Regardless of the type of means of expression used, all the depicted spaces were united by a common denominator, i.e. the goal of the research, which was to capture the existing spatial situation with its various features in the most illustrative and meaningful way possible. It should be noted that the selection of spaces to be the subject of the study was based on personal motives, largely related to sensory experience of the space, implying positive or negative perception and message. In the end, the defined spaces were the author's sets of images constituting a kind of external characteristics of a given place, defined by means of a technique chosen to enhance the merit of the message. Consistent in expression and composition, the sets of works were distinguished by the colour scheme adopted, the technique and the format of the works selected for it, as well as the starting material on which they were worked. Depending on this, cycles were created consisting of a varying number of paintings – from several to a dozen. The most common elaboration techniques used during the process of interpreting a space were pencil drawing, crayon, brush, acrylic painting, watercolor,

ink, digital graphics, and a mixed technique combining elaboration with classical methods of artistic expression and digital tools. Focal points that students focused on while working on a given characteristic of a space were its general atmosphere, technical condition, external and artificial lighting, connection to the context, as well as the function and form of the whole.

### *Multimedia*

The film assignment was developed in the course of Multimedia II classes. The goal of the class was to prepare a short film etude depicting a space, interior or set of interiors selected by the students, coherent visually and conceptually. Lasting about two minutes, the film, made with the use of image, sound, music, interior dynamics, time sequence, was to be a coherent interpretation made on the basis of impressions made during a visit to an architectural object. It was assumed that too long a form could make it difficult to achieve a synthetic and succinct message, while the number of technical issues in developing a longer etude could take away valuable time in the semester that could be spent on substantive and architectural issues. Specific conditions for the work and detailed tasks were set before the class participants. The basis was the author's film and sound notes of the studied space. From this material the final study had to be created. The most important issue was to emphasize and convey the personal feeling associated with the interior, while the form of the film presentation should emphasize the individualized perception. Thus, an effort was made to give the character of an author's note to the work being developed. To this end, it was necessary to record, elaborate and creatively show selected, observed spatial, light and plastic effects. Students were encouraged to study the objects in a variety of situations of dynamically functioning spaces, at different times of the day, under varying conditions of use. Students were expected to capture the mood of the interiors with the help of film media, report on the character of the space, observed characteristic elements of the space. In retrospect, it should be noted that it was extremely valuable and inspiring during the creation of film studies to find an aspect of the space in which the student is personally interested, which contributed to emotional involvement, deeper analysis and, as a result, more successful works. Students were required to create their film studies using multimedia means of expression – image and sound. In the sound layer, the use of sounds recorded in the environment was preferred. It was allowed to supplement the film track with sound effects downloaded from publicly available Internet sources. Students also returned to the research site to make further recordings if the previous ones did not meet expectations – either for technical reasons or fortuitous reasons (the recording of the material took place in field conditions). Sound processing with the available editing tools was also allowed. The film could be illustrated with selected music emphasizing the character of the space shown. In terms of film technique, only one's own photographs resulting from author's field studies could be used. Archival footage was



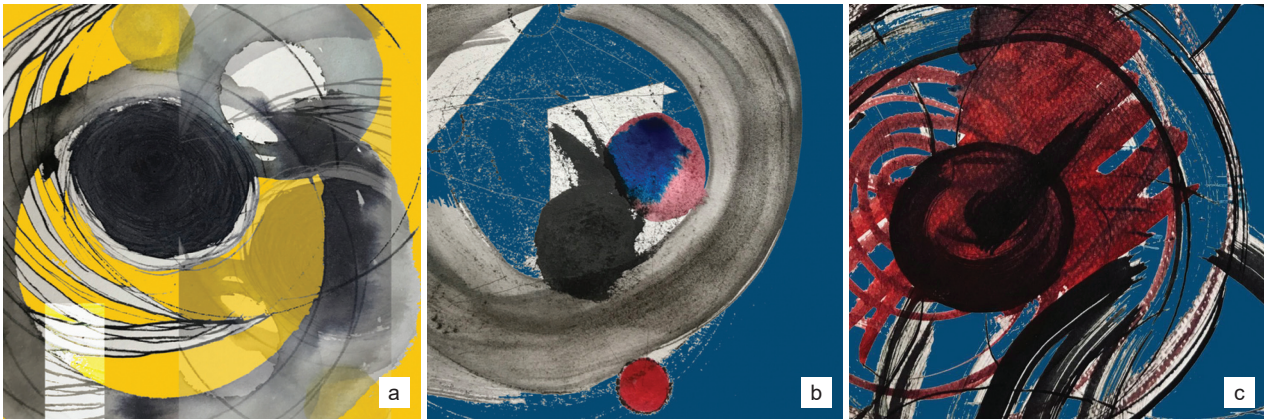


Fig. 1. Plastic interpretation of architectural space (former department store “Okraślak”, Poznań), technique: digital graphics (by A. Piwowarek)

Il. 1. Plastyczna interpretacja przestrzeni architektonicznej (były dom towarowy “Okraślak”, Poznań), technika: grafika cyfrowa (rys. A. Piwowarek)

allowed as an exception. The footage could be edited by introducing visual effects included in image processing programs. It was interesting to explore the use of currently unused cinematography techniques, such as VHS. Traditional film was not experimented with, remaining with digital recording for practical reasons. Finished films had to be saved in FullHD format (1920/1080, 24–30 frames per second, 16:9). In certain justified cases (VHS), other aspect ratios were allowed. No restrictions were placed on the editing, video and audio processing software used. It was suggested that students use the open source program ShotCut to allow access to the software regardless of financial resources. It should be noted here that the use of the university’s computer labs was hampered due to the ongoing online teaching at the time. The semester’s work after selecting the space – the research issue – began with going to the field and making the first sound and video recordings. During the revision, the concept of the film was discussed, along with intriguing phenomena observed in the space, and the choice of further study and exploration was made, directing the work towards a film etude. After determining the further path of exploration, as a rule, repeated field studies followed. The next steps were to start editing, developing and synchronizing soundtracks with the image, adding visual effects, artistic and typographic development of the film’s subtitles. The progress of the work performed simultaneously in the classes: Drawing – methods of architectural presentation and Multimedia II was discussed with the instructors through individual consultations in the technical and artistic fields. At the same time, the discussion of works in the wider student group was undertaken on issues that required such consultations. This procedure made it possible to initiate discussions in the forum, also providing an incentive for constructive criticism and joint work. There were also simultaneous consultations on both art and film works with the participation of the instructors of both subjects. The resulting images made using traditional techniques were also integrated into the visual layer of the film, in case the author’s idea required it. As a result of the work carried out, more than a dozen film shorts were

created with the set technical parameters describing the studied spaces in an authorial, individualized and sensitive way, along with artworks complementary to them in expression. The two-pronged task generated complementary sets constituting authorial stories about the selected spaces.

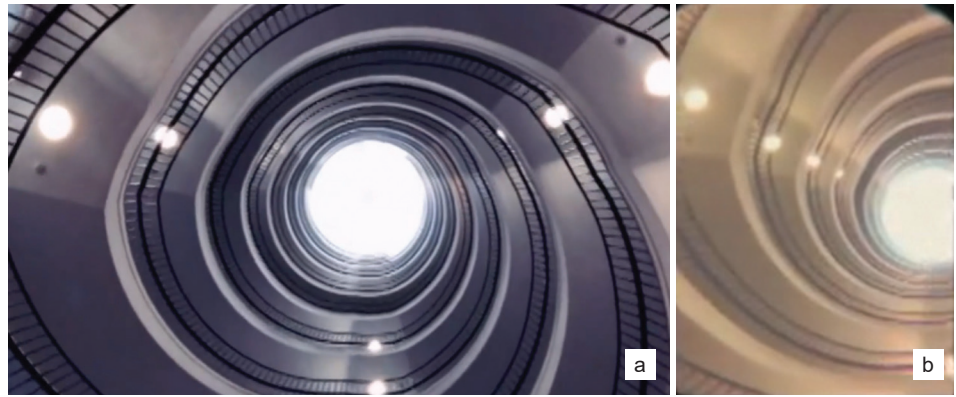
## Results

The works presented below are examples that are the outcomes of the conducted research experiment related to the selected task and presenting the results of activities in the field of drawing, painting and graphic arts and multimedia. Of the 16 sets of works (sets of elaborations in the field of drawing, painting, graphics, mixed technique and multimedia), the article presents in detail the works of two authors. The choice was determined by the most eloquent character of the works, the degree of adequacy of capturing the characteristic features of the analyzed spaces and the quality of execution (N. Dulowska, A. Piwowarek). In the aspect of the diversity of representations and a proper approach to the subject taken up, the juxtaposition of the next three effects of implementation was also additionally referred to (A. Chodzyńska, P. Dubińska, M. Grześkowiak). The selected examples presented a high level of elaboration and a good use of means of artistic expression, emphasizing the main objectives of the author.

The first of the selected works is an interpretation of the modernist building “Okraślak” located in the center of Poznań (14 Mielżyńskiego Street, at the corner of 27 Grudnia Street), designed by Marek Leykam and constructed in 1948–1954. For more than 50 years it served as a department store, later transformed into an office and service building. Its characteristic form resembling a tube provided a reason for taking up the subject and creating a story to illustrate the prevailing atmosphere inside. The dynamic composition of the graphic works was to be associated with a whirling movement (behind the shape of the projection and the peculiar character of the object’s interior), at the same time recalling the silhouette of a dancer in motion (Fig. 1). The contrasts used were to illustrate

Fig. 2. A frame from the film “Overandover” which is a cinematic, dynamic note from the “Okraślak” building in Poznań (by A. Piwowarek)

Il. 2. Kadr z filmu “Overandover” będący filmową dynamiczną notatką z budynku “Okraślak” w Poznaniu (aut. A. Piwowarek)



the varied sounds of the music, which is the soundtrack of the film. In the film presentation, the author used dynamic shots, rotating camera movement and close-ups along the inner axis of the building in order to highlight the character of the interior, the concentration of light under the gable section, the dynamics of the movement of users heading up the fan-shaped staircase (Fig. 2). The varying pace of the shots, the acceleration of movement emphasize the spiral architectural forms that enrich the recorded interior. The author also implemented selected frames of artworks in an interesting way, incorporating them in key moments of the film etude. The whole was complemented by frames showing selected materials used in the facility, as well as contrast and brightness effects of individual shots, which harmonized with the set of artworks. The film is illustrated by dynamic, intense music aptly matched to the visual expression and mood of the visual layer.

Another example of interpreting space is a photographic collage made on the basis of a photo register and a work realized in acrylic technique on cardboard. The analyzed space is the headquarters of the Faculty of Architecture and Faculty of Management Engineering of Poznan University of Technology (proj. by S. Rosolski, 2019) (Fig. 3a–c).

The dynamism evident in the works was related to the observed play of light and shadow, which pours phenomenal streaks of light into the cold interior of the facility’s lobby, creating an unreal atmosphere, contrasted with the strong expressive character of the entire architectural establishment. The same idea can be seen both in the digital representation and in the painting work, in which the effect of movement was further enhanced by a strong linear painting gesture.

In the multimedia study (Fig. 4), the author focused on showing the geometric, contemporary and contrasting nature of space, working with calm camera movement, dynamic depth of field. The student showed the repetition of observable spatial patterns on both macro and micro scales, interweaving them in the film’s timeline. The aforementioned deliberate use of depth-of-field adjustments allowed the author to convey the time-varying, consistent character of the interior, ranging from detail to large-scale construction, from the massiveness of the façade walls to the games of reflections in the glass panes. It employed a non-simultaneous though complementary type of interior perception. The movement of the camera makes it possible to show

the dynamics of changes in the play of light on different planes, illusion effects, mirrored reflections, anisotropy and smoothness of finishing materials. The unity of the diverse scale is complemented by the change of shots linked to the rhythm of the music.

It is worth mentioning that across the entire group of students, the dualistic approach to the subject expanded the research area and enriched the spectrum of tools they used. An intensification of cognitive abilities characterized by greater attention to important details of the place, greater attentiveness and sensitivity to the surrounding reality could be observed among the participants of the didactic classes. The two-pronged work conducted by the students provoked them to further exploration and research. They activated the mutually supporting senses, expanding the stock of insights and research materials. The students’ drawing, painting, graphic design and multimedia action skills were developed to a definite degree. Situational reconnaissance taking place with the effective use of new research and creative methods and tools contributed to the creation of parallel artistic works, while implying the development of artistic and design personality.

The juxtaposition of images shown in Figure 5, consisting of a compilation of works from drawing, painting, printmaking along with frames from films made by selected authors, presents a dualistic way of perceiving the reality under analysis, while bearing evidence to the complementary actions and transfer of techniques.

## Conclusions

Based on the analysis and examples of work presented above, the following conclusions can be proposed:

1. The simultaneous use of two paths of work – film and drawing/painting to analyze space has allowed a more in-depth understanding of it.

2. The simultaneous depiction of space in the form of static and dynamic analysis has expanded the scope of its cognition.

3. The use of drawing/painting tools has influenced the better recognition of the plastic layer, the quality of the plastic message, the complementarity of the image layer in the multimedia work.

4. The use of film/film tools realizing the richness of the sensations felt and the possibilities of perception influenced



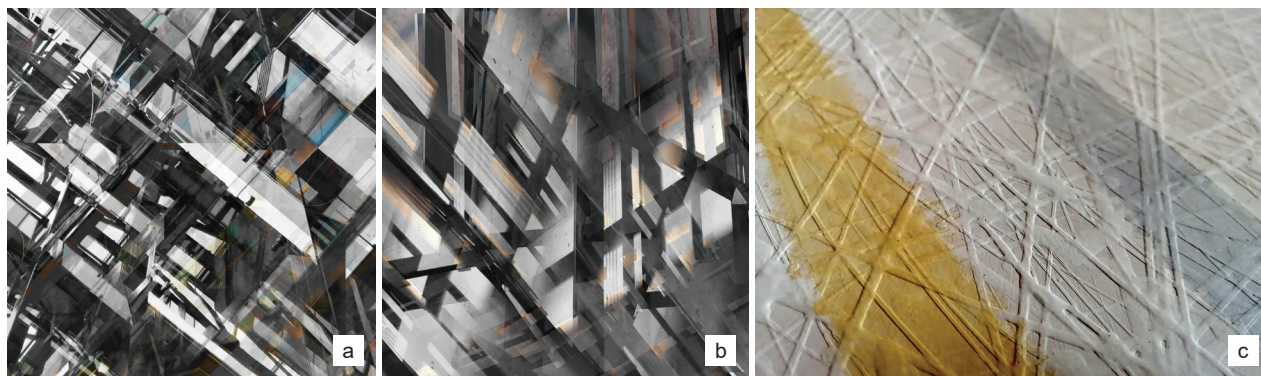


Fig. 3. Artistic interpretation of architectural space:  
a, b) lobby of the building of the Faculty of Architecture and Faculty of Management Engineering of Poznan University of Technology,  
technique: digital graphics (by N. Dulowska),  
c) painting work depicting sun rays falling into the interior of this lobby, technique: acrylic on cardboard (by N. Dulowska)

II. 3. Plastikarna interpretacja przestrzeni architektonicznej:  
a, b) hol budynku Wydziału Architektury i Wydziału Inżynierii Zarządzania Politechniki Poznańskiej,  
technika: grafika cyfrowa (rys. N. Dulowska),  
c) praca malarska obrazująca wpadające promienie słońca do wnętrza tego holu,  
technika: akryl na kartonie (rys. N. Dulowska)

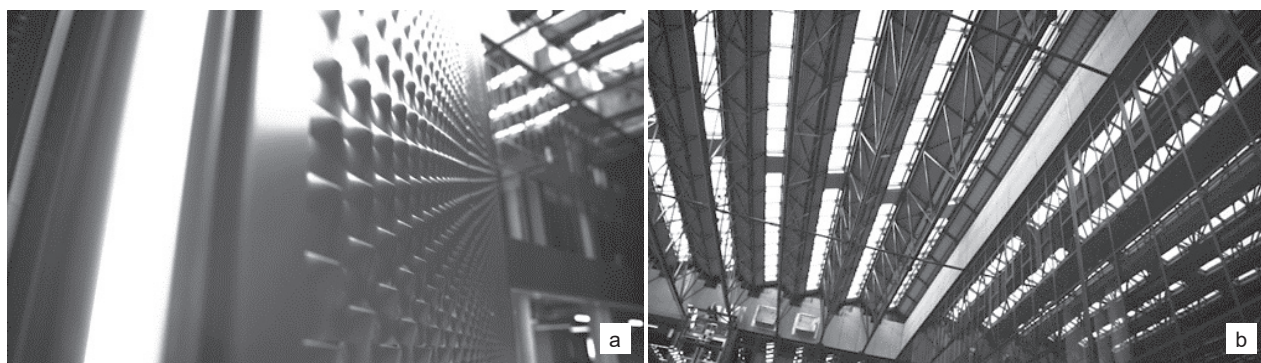


Fig. 4. Selected shots from the film etude “Contrasts” made as part of the multimedia II course:  
a) a frame from one of the sequences showing an architectural detail in the main lobby of the building of the Faculty of Architecture and Faculty of Management Engineering of Poznan University of Technology,  
b) contrasting geometric forms of the large-scale canopy in the film note (by N. Dulowska)

II. 4. Wybrane ujęcia z etudy filmowej “Kontrasty” wykonanej w ramach zajęć z przedmiotu multimedia II:  
a) kadr z jednej z sekwencji ukazujących detal architektoniczny w holu głównym  
budynku Wydziału Architektury i Wydziału Inżynierii Zarządzania Politechniki Poznańskiej,  
b) kontrastowe, geometryczne formy wielkoprzestrzennego zadarszenia w notatce filmowej (aut. N. Dulowska)

the attempt to represent them in the form of a painting work.

5. The simultaneous use both paths of work contributed to the discovery of new aspects of the studied spaces.

### Conclusions

Research carried out in a parallel manner within the framework of teaching classes at the Faculty of Architecture of Poznan University of Technology in the subjects: Drawing – methods of architectural presentation and Multimedia II in 2020–2022 showed that it is possible to mutually transfer drawing and multimedia techniques as an effective tool for optimization in creative and design work. The dualistic approach to the issue gives confirmation that the synergy of action in the area of drawing,

painting, printmaking and mixed techniques, as well as the area of film-making (multimedia) results in a deeper analysis of space, the development of imagination and the ability to use new means of expression, and ultimately art and multimedia works that are interesting in form. The use of manual recording and multimedia recording in the process of perception of architectural spaces enriches the toolkit for optimizing the design processes of architecture and urbanism. The methods employed in the study (the method of comparison, individual cases, the heuristic method) used in the analysis of selected sets of graphic, drawing and painting interpretation and multimedia records (film tracks) had a positive effect, supporting the definition of the character of a given space and deepening the degree of its recognition, providing confirmation of their choice as research tools.

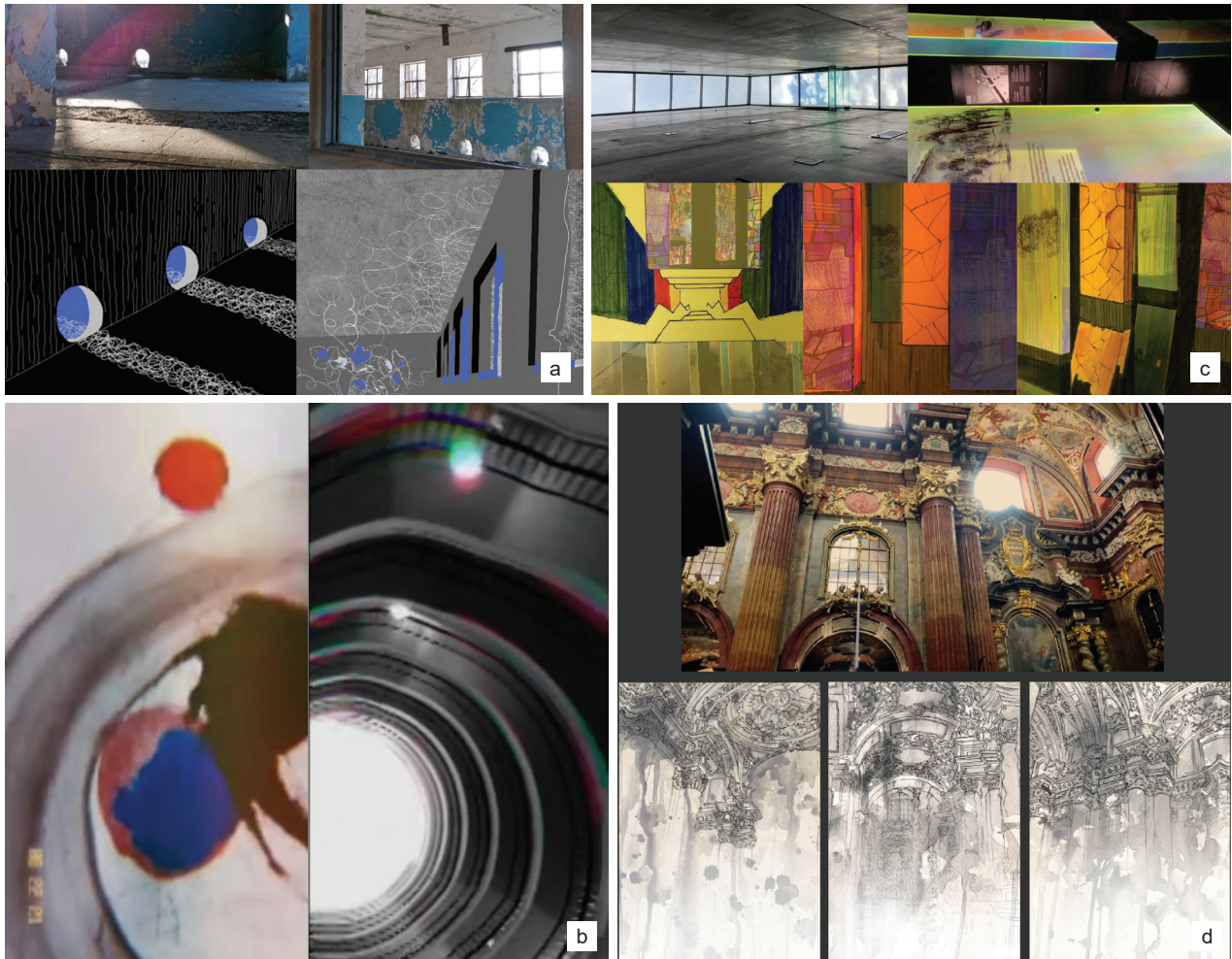


Fig. 5. Exemplary art and film works – collages being a juxtaposition of complementary drawing boards and frames from film shorts made by individual authors interpreting the studied space:  
a) M. Grześkowiak, b) A. Piwowarek, c) P. Dubińska, d) A. Chodzyńska

- II. 5. Przykładowe prace plastyczne i filmowe – kolaże będące zestawieniem komplementarnych plansz rysunkowych i kadrów z etiud filmowych wykonanych przez poszczególnych autorów interpretujących badaną przestrzeń:  
a) M. Grześkowiak, b) A. Piwowarek, c) P. Dubińska, d) A. Chodzyńska

It can be considered that the parallel use of both paths of work contributes to broadening the field of research and deepening the diagnosis of model spaces. The use of a combined cognitive method, based on the mutual transfer of drawing and multimedia techniques, indicates that it can be considered an effective tool for optimization in teaching, creative and design work.

#### *Proposals for further research*

In order to confirm the effectiveness of the method of combining the paths of work from the area of fine arts and multimedia, it is advisable to conduct further

studies that would help to identify and check how the separate way of implementing the same topic will translate into the quality of works in drawing/painting and multimedia. Conducting a comparative analysis of the results of studies obtained from works carried out in a two-track manner and through separate paths could solidify the results of the research. Attempts to objectively analyze the results of work on separate tracks and determine the evaluation criteria would confirm whether the transfer of drawing and multimedia techniques is indeed an effective way and whether the synergy of the arts is an important factor for optimization in creative and design work.



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## Abstract

### *Synergy in the design process – contemporary tools used in the recording and implementation of the design idea*

The article presents the problem of using manual graphic recording and multimedia recording in the process of perception of architectural spaces, with the aim of searching for tools that can optimize the design processes of architecture and urbanism. The material refers to the research conducted by comparative analysis, individual cases (case study) using the heuristic method. Selected sets of graphic, drawing and painting interpretations, as well as records in the nature of film tracks, were analyzed in an effort to assess the merit of the method used in determining the character of a given space and the degree of its recognition. The simultaneous use of both tools contributed to broadening the research field and deepening the diagnosis of the spaces recognized by the students. The research undertaken showed the advisability of using a combined cognitive method, based on the mutual transfer of drawing and multimedia techniques, which can be an effective tool for optimization in creative and design work. The dualistic way of approaching the issue gave confirmation that the synergy of action can result in an expanded analysis of space, the development of imagination and the ability to use new means of expression, consequently forming interesting plastic and multimedia articulations.

**Key words:** graphical record, multimedia, design synergy

## Streszczenie

### *Synergia w procesie projektowym – wspólnie stosowane narzędzia w zapisie i realizacji idei projektowej*

W artykule poruszono problem wykorzystania manualnego zapisu graficznego oraz zapisu multimedialnego w procesie percepcji przestrzeni architektonicznych, celem poszukiwania narzędzi mogących zoptymalizować procesy projektowania architektury i urbanistyki. W materiale odniesiono się do badań prowadzonych metodą analizy porównawczej, indywidualnych przypadków (case study) z użyciem metody heurystycznej. Analizie poddano wybrane zestawy interpretacji graficznej, rysunkowej i malarskiej oraz zapisów o charakterze ścieżek filmowych, chcąc ocenić wartość merytoryczną stosowanej metody przy określaniu charakteru danej przestrzeni i stopnia jej rozpoznania. Równoległe stosowanie obu narzędzi przyczyniło się do poszerzenia pola badawczego i pogłębienia diagnozy rozpoznawanych przestrzeni. Podjęte badania wykazały celowość komplementarnego wykorzystywania metod poznawczych opierających się na wzajemnym transferze rysunku i technik multimedialnych, mogących stanowić skuteczne narzędzie optymalizacji w pracy twórczej i projektowej. Dualistyczny sposób podejścia do zagadnienia dał potwierdzenie, że synergia działania skutkować może poszerzoną analizą przestrzeni, rozwojem wyobraźni i umiejętności posługiwania się nowymi środkami wyrazu, w konsekwencji interesującymi w formie artykulacjami plastycznymi oraz multimedialnymi.

**Słowa kluczowe:** zapis graficzny, multimedia, synergia projektowa