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7 DESIGN METHODS IN ARCHITECTURE

7 METOD PROJEKTOWYCH W ARCHITEKTURZE

Abstract

The process of designing architecture is one in which the creator makes a variety of decisions. One wishes they knew such methods that would enable creating a project without preconceptions; intuitively but in a systematic way. Every decision made during the design process impacts the final solution. Developing the final design follows a winding and challenging road, which doesn't necessarily lead directly to the goal. The process of developing the final result needs to be improved by applying appropriate methods. The methods presented in the paper open a set of methods supporting architectural design. The seven methods are not exhaustive; this will be an open set. Each method is explained by a figure and a description. The considered methods will include: (1) the ad absurdum method, (2) the symbol method, (3) the initial target method, (4) the meta-observer method, (5) the discretization method, (6) the sign method, (7) the dwelling method.

Keywords: methods, design, heuristics, exploitation, process

Streszczenie

Projektowanie architektury, to proces, w którym twórca podejmuje różne decyzje. Chciałoby się znać takie metody, które umożliwią tworzenie projektu bez przyzwyczajzeń, intuicyjnie, ale w sposób usystematyzowany. Podążanie do końcowego rozwiązania projektu, to kręta i wyboista droga nie zawsze prowadząca bezpośrednio do celu. Należy usprawnić proces podążania do wyniku końcowego przez stosowanie odpowiednich metod. Przedstawione metody w referacie rozpoczynają zbiór metod wspomagających projektowanie architektury. Siedem metod nie wyczerpuje zagadnienia, będzie to otwarty zbiór. Każda metoda jest objaśniona grafiką i opisem. Metody o których będzie niniejsza publikacja to: (1) metoda ad absurdum, (2) metoda symbolowa, (3) metoda początkowego założenia, (4) metoda metaobserwatora, (5) metoda dyskretyzacji, (6) metoda znakowa, (7) metoda zamieszkiwania.

Słowa kluczowe: metody, projektowanie, heurystyka, eksploatacja, proces

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1. Introduction

As an activity, designing is the preparation of a change; it is exploitation. Other design activities involve exploitation. These activities should be considered as a system – one, which becomes a utility system with time. By design, it is the creation of a system that transforms the current state of affairs into a more convenient one, by creating a new one, or modifying the existing. In order to change the existing state of affairs, one should understand it and imagine the desired state of affairs – literature calls it the ideal model – then apply the appropriate tools and proceed with the change.¹ Note that none of these steps exists as design separately. Only together they create activities that can be called designing. Understanding the current state of affairs, examining it, is not designing. Nor is creating a tool that allows changing the current state of affairs. Shaping the product, its production, is neither designing. The main activity is exploitation, followed by the change of the current state of affairs. When these stages are followed, the process can be called designing. Note that in this description of designing the focus is on exploitation activities. What is important is the project's purpose, and the shape's role is secondary. The paramount aspect is the change to be made by the project.

2.1. The ad absurdum method

Heuristic methods play an important role in solving problems and are used to search for ideas. The term heuristics derives from the Greek word “*heuriskō*”², meaning the ability to make discoveries. Heuristics is the ability to detect new facts and their mutual relations; it allows arriving at new truths. The essence of heuristic methods is to hypothesise, to come up with ideas that still need verification. This can be observed in the brainstorming method, which uses the uncertain nature of ideas, as discussed below.

Alex Osborn, head of an advertising agency and the pioneer of creative methods, used with his team an activity he called “brainstorming”. This method is based on an observation that humans spontaneously seek solutions to the tasks set in front of them. Osborn believes everyone is capable of creative activity, yet there are conditions that favor the search for solutions and those that hamper creative thinking. The team and its manager should ensure that everyone can present their ideas freely. In brainstorming, the phase of creating ideas is separated from the phase of its evaluation. The goal of brainstorming is for the problem solving team to invent as many new ideas as possible. Sometimes the most absurd ideas become the foundation for a project as the idea that seems unlikely at the beginning is refined and implemented. Absurd ideas release new associations in the group, and blur thought patterns. The most surprising ideas create an atmosphere of freedom and competition. The method of absurd ideas can be combined with a brainstorm in which several people are involved. After collecting all ideas, the team evaluates them. That is why the method is treated as a deferred assessment method, since premature assessment often results in:

¹ A. Pawłowski, *Inicjacje*, p. 186–191.

² Z. Pietrański, *Myślenie twórcze*, p. 58–59.

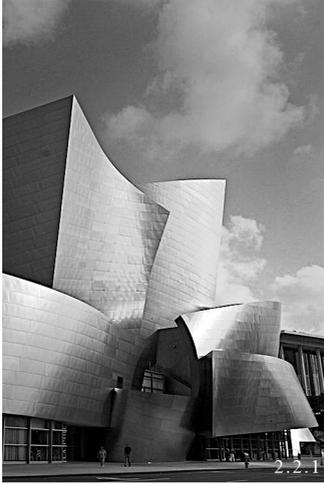
- rejecting original ideas only because they are obsolete or not fixed in the thought patterns,
- closing the search after submitting a proposal that is possible to implement,
- seeking arguments for and against, which interrupts the course of creative thinking and searching.

We should not criticize ideas during discussion as this discourages team members from coming up with more ideas, and leads them to defensiveness. Absence of criticism, according to Osborn's research³, doubles the number of ideas. In teaching architecture, we should create among students an atmosphere in which everyone feels welcome and can present their ideas unintimidated. We should especially ensure that everyone reports even the ideas that seem unrealistic. These unrealistic ideas will contribute to the emergence of new ones by helping to overcome the psychological resistance that hinders the emergence of new ideas. Verification of these ideas should take place after the discussion. One should consider pros and cons, combine and improve collected ideas. The ownership of ideas should be abandoned, they are the property of the discussion group. The make-up of the team, as well as working conditions and the appropriate organization of the discussion process affect the quality and quantity of ideas. The group secretary is responsible for recording all ideas, and after the meeting a verification group gathers, to assess the usefulness of the ideas and determine those that are worth refining, and finally assigning duties among the team members.

Thanks to this method, the architectural design will be the result of many ideas that have sprouted not from an established mental pattern, but from an inner need for change. This method can be used when making minor decisions: choosing a shower or a lamp clip. Decisions regarding larger objects, or even their location, can also be the result of an absurd idea that evolved over time and became reality. Absurd ideas create their own, new environment in which new tools for their implementation should be invented. This contributes not only to the emergence of new ideas but to the creation of new objects, tools and systems. They create new professions and new social situations:

- One can guess that in the case of the chair presented, the ideas revolved around the idea of sitting on a sponge because it looked comfortable. The sponge itself is not suitable for sitting; a supporting structure has been constructed for it, with boards and wooden legs supporting the sponge in such a way that it is suitable for sitting (Ill. 2.1.1.).
- A roof can also be a seat. The seat is designated by the legs and a backrest that supports it (Ill. 2.1.2.).
- The mental scheme suggests that the binding joists be parallel to the ceiling. The designer assumed that he would make them anyhow, as long as they uphold the building's structure (Ill. 2.1.3.).

³ Z. Pietrasinski, *Myslenie tworcze*, p. 48–53.



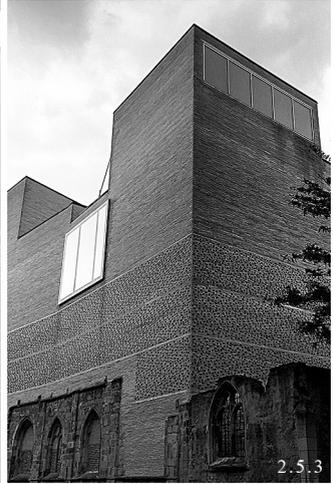
2.2. The symbol method

It might happen that the commissioned design has a theme: a house that should look like a sail, like a balloon, a face, etc. Conscious design is one that starts with (1) understanding the user's needs, then (2) defining customer needs, later moving to (3) the creative phase and (4) prototyping with experimenting, to finally arrive at (5) testing with the involvement of users so that they can provide feedback, based on which the designer could improve the prototype.⁴ By taking such actions in the right order, one avoids the discrepancies between the client and the project, and adjusts the final effect to the specific usage needs. An interview with the client provides information about the intended application and the client's individual needs. The client is used to their day and night routine, with which the designer should not interfere. The client should feel good inside the project, and the project should meet all their requirements, even the smallest. If the client's intentions were understood and read correctly, one should define their primary needs, and secondary that complement them. If one offers a terrace in front of the house, let them investigate if the structure was intended support large family events, or is it all right to just design it for two deckchairs and a clothes hanger. By creating a needs program, one simulates the layout of the rooms and the walls on the prototype. We materialize the previously known needs. We should scrupulously follow the path of the client and other people who move around the project, because once a wall is placed, it is not transferable. There is a number of possibilities.

The design process also offers room for the creative phase. A creative usability program would be one that meets the needs of the client. For example, knowing that the terrace was to be used for family events, the designer not only added more surface to it, but combined it with the kitchen to make preparing meals more efficient. In addition to the creatively solved utility program, i.e. unconventional use of material, there is also the symbolism of the project. Some projects carry a message, and they will be called symbol projects. This message may refer to the form understood as the shape of architecture, and it will reveal itself to us, or the form in connection with a naturally intertwining application program. They both use examples. A form that communicates a lot about itself is the *Walt Disney Concert Hall* by Frank Ghery (Ill. 2.2.1.). The contorted titanium steel on the façade is just as fancy as Disney's cartoons. The form combined with a naturally interwoven application program is the 7132 Therme in Vals by Peter Zumthor (Ill. 2.2.2.), where the form creates the atmosphere of caves, symbolizing the first refuge of man. Design should be created according to specific rules and not top-down symbolism. A thorough and fact-based interview with the client, combined with a suitably defined application program will create the symbolism of the project, as the ultimate result.

⁴ Geanie Asante, *Effective Design Methodologies* [in:] *Design Management Review*, p. 10–15.

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- 2.1.1. Furniture exhibition, Museum of Art, Zurich, Photo by author
 - 2.1.2. Bench in front of the National Theater in London, Photo by author
 - 2.1.3. Staircase at the Jewish Museum in Berlin, arch. Daniel Libeskind, Photo by author
 - 2.2.1. Walt Disney Museum, arch. Frank Ghery, Source: Wikipedia.pl
 - 2.2.2. 7132 Therme in Vals, arch. Peter Zumthor, Photo by author
 - 2.3.1. Exhibition in Berlin Hamburger Bahnhof, Photo by author
 - 2.4.1. Museum in Chur, arch. Peter Zumthor, Photo by author



2.3. The initial target method

The initial target method would focus on devising a project in such a way that it started from a single object (Ill. 2.3.1.), e.g. a door handle, bed or headphones. Thoughts would be led through stages in which new, previously unknown situations would arise. Let us upturn our habits and focus on the new intuition that would come to us with every step. The process of creation won't be, as before, applying the memorized principles of other people. One wouldn't copy ideas, nor borrow them. There won't be any "style". One would begin designing with devising a scenario that the user would carry out step by step. Starting "from the door handle", the focus would be on aspects strictly related to the utilitarian needs, on the places dedicated to the man's presence. One's thoughts would not be entangled in the pursuit of a single, determined form, nor seek previously seen solutions. Assisted by intuition, the mind would attempt to seek that, which is necessary in a given spatial situation, that, which is favorable to man. It is not about creating in line with great theories, but about a minor preliminary target, which doesn't determine the final effect, the final form of architecture. Using this method, the project would reveal itself, growing like a plant, and not imitate other works. Let the train of thought search for its own track. We would solve problems as they appear, using our natural logic and not learned attitudes. The project would be created naturally; it would be flawless. It would strive for originality, but not at any price; in this case originality would be secondary.

2.4. The meta-observer method

Observing ourselves at work, we are able to take a step away and look at ourselves as a narrator in the book. We can watch ourselves in everyday activities, notice certain regularities and the solutions that work for us, and strive towards improving ourselves.

Poincaré wrote: *The role of unconscious work in mathematical discoveries often seems to be indisputable. Often when one is working on a difficult issue, initially there is no success. The researcher rests and returns to work. Another unfruitful half an hour passes – and suddenly he comes up with a decisive idea. One could say that conscious work after the break proved to be more effective, because rest restored the mind's strength and freshness. However, what is probably more important is the fact that the rest was filled with unconscious work (...) As for the conditions of this unconscious work, one can only notice that it is impossible or unsuccessful if it wasn't preceded and followed by a period of conscious work*⁵. In the meta-observer method one

⁵ B. Puszkin, *Problems in Heuristics*, p. 130

2.5.1. Costume exhibition, Museum of Art, Zurich, Photo by author

2.5.2. Self Passage, George Trakas, Louisiana Museum of Modern Art, Copenhagen, Denmark, Photo by author

2.5.3. Museum in Chur, arch. Peter Zumthor, Photo by author

2.6.1. Furniture exhibition, Art Museum, Zurich, Photo by author

2.6.2. Neues Museum, arch. David Chipperfield, Photo by author

2.7.1. Pavillon, arch. Le Corbusier, Photo by author

2.7.2. Table at the pier, Zurich, Photo by author

would observe oneself during the creative process by taking a step away and observing one's actions as a narrator in a story or a film. This would allow drawing conclusions on when decisions are right and when they are not. Only designers themselves can make a self-amendment. We are everything in the body and mind, no one will look inside us as accurately as we do. Let us observe ourselves at work, watch ourselves closely when we make the right decisions. Let us remember which situations are conducive to our work, and at what time we are in a good frame of mind. Poincaré writes: *Often this [having the right idea] happened to me in the morning, after waking up (...) However, ideas often appeared when I walked peacefully through forested hills in sunny weather*⁶. Architects need distance to think about architecture. Ill. 2.4.1. illustrates that the entrance does not necessarily need to be an internal part of the building. The designer or customer can enter the building wherever they want, simply by moving the entrance. Observing one's habits, we will adjust the entrance according to their own needs, without interfering with the internal structure of the building.

2.5. The discretization method

This part focuses on splitting the project into smaller parts so that the designer would consciously make changes on a given part. The overall design will not be a distraction to the designer. The space which will house objects in the future, and in which a man will live should be carefully delineated. The architect designs a scenario of needs, which differ per the client's financial status, their way of spending leisure time, the project's location, time of day etc. Ill. 2.5.1 illustrates a woman's dress. When one decides only about the back, it is clear that it can remain uncovered, but if these were hips, the most intimate part of the woman's body, one comes to the conclusion that it would have to be covered. Ill. 2.5.2 demonstrates the façade of a building, which has been designed and completed. Let us separate that, which is on it with what is outside, adjacent to it. The architect designs a passage by the façade to make the best use of the building's contact with its surroundings, but doesn't deal with the colors of the façade anymore, nor think about the material. The architect separates, dealing only with the edge of the façade and the lawn, or rock garden. Ill. 2.5.3 presents towers, ceilings of different heights. The designer didn't care if the building ended at different heights in several places. They lowered the bathroom because they needed them low, and the exhibition rooms were placed higher because this would be more comfortable. They separated the bathroom and communication path designs with that of exhibition rooms. As a result, towers and ceilings of different heights were created.

2.6. The sign method

One wishes he could design a building in such a way that the user instinctively knew how to use it, i.e. realized that they would enjoy sitting down on the terrace during sunset, or that they should mind their head when descending to the basement because the ceiling is low, or that they needed to open the window to let fresh air into a room.

⁶ B. Puszkin, *Problems in Heuristics*, p. 104

The sign is a triad. Its first element is the medium, i.e. an element that conveys the meaning. Recognition of the sign begins with the perception of the medium: seeing the image or hearing the word. To move on to the next stratum of the sign, one needs to receive the medium. With the help of perception, we reach the next stratum, i.e. understanding the mediating representation. Hearing a sound in an unknown language, perceiving it audibly without understanding, one is left with nothing. Perception allows us to reach the sign; it opens the door to interpreting it. Recognition of the sign is more than just perceiving the medium. Knowing the sign is reading the content that is contained within it, interpreting it, reading of the message that the sign conveys.

Architecture should be equipped with features that will facilitate its interpretation, i.e. reading its signs. Reading the signs in a direct experience supports the interpretation, which is done smoothly.

On approaching a chair (Ill. 2.6.1), one doesn't sit on it yet, but feels it would be comfortable to sit on, realize that they would be able to lean against it with the left or right side of the body. One intuitively chooses this piece of furniture for the anticipated comfort of sitting. The chair "spoke", and has taught one about how it worked. Ill. 2.6.2. illustrates the communication solution at the Neues Museum. The architect designed the entrance in such a way that the user can quickly learn where the stairs and walkways lead, how to get to the upper and lower level, to the toilets and to the cloakroom. After just a few seconds, one has learned how this part of the building works.

2.7. The dwelling method

Dwelling originates from the need of use. It is revealed in being in the space created by things (Ill. 2.7.2). Dwelling takes place if one makes decisions about a place. For a given place, one will choose an object that will stimulate them to action. In dwelling, an object is a means to meet a need. Dwelling can't be the same in different places; it can't be repeated, copied, undone, or restarted. Once initiated, dwelling doesn't end, stretching throughout one epoch, and in the next being called a tradition. Ways of dwelling are passed from generation to generation, and these are commonly referred to as housing habits or generational solutions.

Ill. 2.7.1 shows a roof detached from walls, resulting in a gap. The gap becomes that, which one utilizes it to be. In the case of a terrace, deckchairs and a table, as well as the view are conclusive. A basin and water poured into it allows deciding whether one is dealing with a rooftop swimming pool. Toys, climbers and a sandbox are conclusive for a kids playground. A good project is one in which the designer ensured many opportunities of developing a given location. Dwelling is expressed in creating a relationship between the object and the location, in which the object will be placed.

3. Conclusion

The path to constructing a building is winding, and not necessarily easy. The presented methods should make the process easier. Some of them solve problems rationally, some resort to our intuition and try to stimulate new ideas. What is the most important is the change,

which is possible thanks to the building in which the man will live. The building is a means, a tool that makes the change possible.

In the design process, we should try to go back to the beginning and try to understand what we have done, not be too proud of our own actions, rather humble with our decisions and consider many possibilities, do not follow blindly one core, which in advance we have put on ourselves.

Designing often is a decision-making process. Instead of focusing on deliberating the intention and focusing on defining the best solution, designers mitigate the negative effects of already existing projects. An architect or industrial designer might start their work when the basic decisions have been made, often by unqualified people, people who haven't been trained for designing, i.e. delineating, deliberating and developing an intention. The result of the project will then be foregone. The designer's role will be limited to showcasing on paper or via other media what the investor has planned, but cannot present himself. It is as writing notes for someone who wants to create a symphony, but can only discuss it.⁷

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⁷ A. Pawłowski, *Inicjacje*, p. 183–184.