Systematic approach to design

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Abstract. The article analyzes the basic algorithm of the professional activity of a designer as a complex, voluminous, complex process, consisting of a number of successive stages. Definitions, concepts related to the basics of project activities are given. The need for the formation of a universal design method as a complex technological process related to the collection of a large amount of information and factual material has been actualized. The author’s approved methods are analyzed, the design principles are systematized. The technology of a systematic approach to working design as an algorithm of phased actions is revealed. The competencies of the designer, which helps to increase his reputation and competitiveness in the services market, are indicated. The information collected will give impetus to design activities aimed at solving design problems.

1. Introduction
In the culture of the 21st century, design is a phenomenon that combines the irrational and the rational, the market and culture, the sphere of mass consumption and the aesthetic environment of a person. A comprehensive definition of design as a type of project activity (as a process) is given by Viktor Papanek: ‘Planning your actions in accordance with the set goal is the essence of design’ [1]. Projecting is a synonym for the word design, which in a broad sense means working on a design object. In other words, the design process is a complex, voluminous, complex process, consisting of a number of successive stages.

The work of the designer is to solve the task assigned to him. The complexity of the work of the designer or designer lies in the complex solution of seemingly contradictory tasks: ‘for what?’ an object is being designed, how to produce it in an industrial way, how to give it a memorable design? There is a need for a universal method, an algorithm of actions that can structure and thereby streamline this process.

When developing design objects, an aesthetic task is also set – this is to maintain a common style. The attractiveness of the developed system or facility should be reflected in positive user associations. In addition, design is an integral part of the corporate identity of the company, book publishing, navigation system and other objects. Its important task is, for example, supporting the general atmosphere of an institution, creating an individual graphic design for a magazine publication or a recognizable brand of a company, etc.

2. Analysis of proven methods and approaches in design
For the formation of a basic algorithm, an analysis of the design process, the identification of the main stages and their relationships is necessary. Designers such as Viktor Papanek, author of Design for the Real World, Artemy Lebedev, founder of the studio of the same name, Sergey Kulinkovich, art
director of Artemy Lebedev Studio, Danil Kovchy, leading designer of Yandex, dealt with this issue. Their studies are both integrated techniques and single principles, which can be the basis of project activities.

To solve a design problem, a designer needs to group ideas into selected categories - from simple to complex, from general to particular. A number of tasks are a way to achieve the goal. The technical task is intended to clearly define the function of the object being developed. The role of the designer is to develop a stylish, memorable image of the object, preserving its function. The most effective method is often the formation of a system of restrictions, or, in other words, the conditions and context of the existence of a future solution.

The generally accepted design basics are the following algorithm for achieving the goal:

- study of the scope of the product,
- study of analogues,
- identification of problems,
- search and selection of ideas for solving a design problem,
- selection of an original solution and verification of compliance with the goal and the conditions of the task (concept development),
- assessment of resources, time and budget,
- project development.

Studying the scope of the designed product will help to understand the market and customer needs, determine the goal and existing problems. The information collected will give an impetus to design activities aimed at solving a design problem.

An important stage is the study of analogues. Only having an idea of already existing solutions to a similar problem can one solve it in a new, original way. Having skipped this stage, the designer runs the risk of wasting time. It is also important that this stage forms a personal ‘observation’, which allows forming a different level of decision from the quantity and quality of the visual range. Anyone who knows what good decisions are will not do worse than what he saw.

To identify problems and search for original ideas, traditionally use clauses, numerous sketch searches.

The solution of the design problem will be facilitated by the determination of the function of the developed product. V. Papanek defines a function as a mode of action by which a design fulfills its purpose. If the functional part of the design is not defined, then work on the form will not bring results. In other words, ‘form follows function’ [1]. However, the search for an aesthetically harmonious form, in some cases, is a paramount design goal.

A. Lebedev believes that only one thing is discussed in design: whether the task is solved or not. The quality of the decision depends on the amount of time spent, budget and available funds [2].

In existing market relations, the originality of a design solution is the key to promoting a new product in a competitive environment, which in fact determines the essence of design activity.

Setting goals and design tasks is the first and invariable stage from which the logic of subsequent actions follows.

S. Kulinkovich in a lecture entitled ‘What is good? ’ proposes to include in the algorithm of project activities the ‘Three C Principle’, which includes: content, contrast, context – the main components of design [3].

Content is meaning and function. The implementation of content is the primary concern in design engineering. The contrast is divided into internal and external: in the first case, we are talking about the relationship of all internal elements and design components, in the second – about how the desired design looks relative to other products. The context includes the environment and living conditions of future design.

A design structured in such a way can be easily analyzed, which significantly speeds up the process of identifying flaws and errors at any design stage.

Another view of design as a process was proposed by D. Kovchiy. The path of design was divided by him into three components: functionality, brand and visual language.
A visual language is a design form that is subordinate to a function, but the form also has its own brand identification function. A brand is a combination of all the sensations, impressions and associations that arise when interacting with a design product. One of the easiest ways to understand a particular brand is to imagine it as an animated creature with its own character and distinctive features.

The design process in accordance with this structure is as follows: the functional part is designed and fixed. Then, interconnected and interdependent visual language and brand are developed. The general principle of work can be formulated as follows: development of parts of the whole and fixation of the designed [4].

The selection of analogues is the basis of any project activity, so it is important for designers to own a visual culture or ‘watchfulness’. It is possible to acquire which by developing visual memory by viewing a large amount of material on the topic of design. ‘Consciousness’ is also needed in order to get a ‘good taste’ vaccine, in order to have a reporting point on what has been done to you and understand your contribution to the originality of the proposed solutions and think in design categories (function + aesthetic component).

At the stage of searching for ideas, we turned to Dan Roem’s technology, which he described in his ‘Practice of Visual Thinking’ [5].

3. Design as a system

The development of design is impossible without drawing attention to the capabilities of modern technologies, on the one hand, and increased demands on the ability of a designer to productive experimental thinking, on the other. Therefore, the professional competence of the designer includes design skills. The preference by the professional community of certain methods for solving design problems, the selective use of tools and methods determines the focus of the design avant-garde.

The practice of the formation of visual thinking ‘Watch, See, Envision, Submit’ by D. Roem [5] formed the basis of the technology of becoming the design of the South Ural school and is being built by us as the system presented in the table.

Table 1. Pre-project preparation practice.

| WATCH          | SEE            | ENVISION         | SUBMIT                                      |
|----------------|----------------|------------------|---------------------------------------------|
| What am I looking at? | What do I see? |                  |                                             |
| Where is it, for what and who is used? | What trends can be identified? | How to strengthen, This is what I saw, noted, formed, and this is what it means. |
| What are the boundaries style, function? | How to strengthen, The expected result turned out or not? |

The first stage is ‘Watch’. Watch actively. Active vision is a skill that needs to be constantly trained which will allow making decisions and execute these decisions in a more original way, using optimal means [6, 7]. In practical design, this means collecting factual material on the topic [8-10]. By collection of material we mean a large viewing of materials on a topic, search for analogues, video and photo materials, full-scale sketches, etc.

The second stage is ‘See’. From the collected material, it is necessary to select (see) that option that will help solve the task in the most figurative way. Why should you go through all the options for sketches, mentally modeling and varying them in your internal vision system. Until the ‘eye-brain’
find compositional patterns and a guide to actions for their meaningful use [11]. Thus, ‘eye-setting’ occurs, training of project thinking that governs our actions in conditions.

The third stage is ‘Envision’. If in the selected material we see elements that formulate a solution to a problem or answer our questions, a problem, notice the patterns associated with them and what needs to be changed in order to get what we want, then all that remains for us is to proceed to the selection of the optimal working sketch. That is, from raw options, using inferences and emotions (feelings, moods, sensations; numbers, measurements, proportions; setting goals, goals and determining step-by-step), come to the optimal solution to the problem and select one of the solutions.

The final stage is ‘Submit’. The problem is solved by those who see the possibilities of solving it. The selected solution remains to be implemented on a given scale, taking into account the creative task. At the same time, professionalism should not allow to break the logical series, and the choice of means to engage in pure embellishment that does not meet the task.

It is important to accompany each design stage with test questions that determine its logic, as well as the possibility of moving to the next stage. Such as ‘Is the environment for the future design sufficiently studied and understood?’; ‘Have you studied enough analogues to create a base of existing ideas and solutions? ’; ‘Have you done everything possible to implement the design function? ’; ‘Is the solution to the problem original? ’ [12-14]. This interaction algorithm is called basic and is illustrated in figure 1.

It is important to note that project activities exist within the framework of a system of restrictions, such as time, budget, materials, equipment. Therefore, the answers to the above questions are given subject to these restrictions.

It is important to master the presented algorithm of actions as a step-by-step conducting of the design work and fix it in practice for the successful solution of design tasks.

![Figure 1. Design as an algorithm of actions.](image)

4. Conclusion

Based on the experience of famous designers [15-21], an analysis of project activity as a complex, time-distributed process was carried out. Based on the experience gained, the basic algorithm for achieving the goal by solving design problems described in the article is developed, which contains a number of fundamental steps. A systematic approach to design is proposed, in the form of technology that considers the process as an algorithm of sequential actions. This approach to solving design problems requires a thoughtful, flexible and original implementation, while the algorithm remains a reliable guide throughout the process of fulfilling the design specification.

The designer's language consists of active selectivity and focused perception, turning from a visual image (sketch) into a logical thought (concept), then into a product (project) specified by the customer. Also, when solving a design problem, it is necessary to take into account objectively existing (or subject to rebranding) corporate style constants, features of a plastic solution, corporate colors, etc.

The possession of various competencies, undoubtedly, contributes to increasing the reputation of the designer, and therefore, his competitiveness in the services market [22]. In other words, for J.
Dewey, creativity is the quick wit of the mind, which is confronted with the stiff necessity of solving a certain problem and getting out of a dangerous situation. N.A. Berdyaev, on the other hand, considered the two sides of the creative act as inspiration and as a process: ‘ The creative act is directed toward the infinite, while the form of creative search is always finite’ [23, 24]. Each of these theories presents various means of enhancing the creative process. We choose the synthesis of these tools as a tool for working on a design project.

Thus, the connection of the artistic-figurative and functional component, the creative and cognitive spheres, are inseparable in the process of developing a real object or a virtual (electronic) product.

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