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THE ART AND CRAFT OF DESIGNING A LOGO

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Abstract: This article provides insight into the logo design process. The aim of the authors is to explore a generally applicable design process through literature research, and then to present the proposed design process with the help of case studies. The publication also covers how image-generating artificial intelligence can support designer thinking and designer work.

Keywords: *methodology, logo design, AI image generation, sustainability*

1. INTRODUCTION

According to the Wikipedia ‘logo (abbreviation of logotype; from Ancient Greek λόγος (lógos) 'word, speech', and τύπος (túpos) 'mark, imprint') is a graphic mark, emblem, or symbol used to aid and promote public identification and recognition. It may be of an abstract or figurative design or to include the text of the name that it represents as in a wordmark.’ So, the logo is a symbol, through which a company, or a product of a company can be easily identified (Dömötör, 2023). They include the corporate identity of the given brand, the usual and expected quality from the manufacturer, and they also promote the product itself and the manufacturer at the same time. All of this in such a way that the logo itself connects the product and the manufacturing company with an object or concept, both mentally and through the form with various tools of the arts.
Several types of classification for logos are possible. (Adîr, Adîr, & Pascu, 2014) distinguishes three types of logos:

- Iconic: graphical visualisation of a sign, symbol, or living creature,
- Logotype: letters, figures or words,

- Complex logo: words/letters/figures and symbols together.

Labels that can be placed on environmentally friendly products or on their packaging can be divided into four groups (Kamondi & Takács, 2014):

- Product labels certified by independent experts, based on tests,
- Signs created by the manufacturer (mostly for advertising purposes),
- Multi-aspect evaluation prepared by the manufacturer according to a uniform evaluation system,
- Other environmentally friendly product brands.

During the development of the case studies, it was a primary consideration that the logo should highlight the environmentally friendly character of a product. In other words, the goal was to design a sign created by the factory for advertising purposes.

2. THE PROCESS OF LOGO DESIGN

(Adîr, Adîr, & Pascu, 2nd World Conference on Design, Arts and Education DAE-2013, 2014) summarized the main characteristics of a good logo as follows:

- Simple - easy to be recognized, it means a simple and attractive design,
- Relevant - appropriate to identify the company,
- Distinctive - special design in front of other logos to be recognized from the competition,
- Memorable - easy to be remember,
- Adaptable - to be set on different supports,
- Reproducible - to be realized in different sizes (from small to huge) without loss of details,
- Legible - to be understood,
- Coherent - a very clear message.

The aspects listed here are of great importance when designing the logo, designer have to keep them in mind constantly, and have to return to these characteristics from time to time.

2.1. State-of-the-art

Sakici & Ayan, in their publication (Sakici & Ayan, 2012), use the method for corporate identity design recommended by Olins (Olins, 1990) as a basis when presenting the design process of the logo for the Forestry Faculty of the Kastamonu University. The basis of Olins' model is that the design is divided into two distinct phases: in the first phase, he focuses on getting to know the company by conducting external and internal interviews, and in the second phase, he prepares the proposed corporate identity based on the collected characteristics, which is evaluated and further they refine.

Based on this, Adîr and his colleagues propose planning levels for the implementation of logo design: they mention a research level and a graphic level. (Adîr, Adîr, & Pascu, 2012)

Many websites and blogs on the Internet deal with creative logo design, in connection with which they recommend following a process consisting of more or less points in order to create the perfect logo. In addition, many online design assistants are available (e.g. Canva.com, WIX.com, shopify.com, logomakr.com, ucraft.com, etc.). These pages offer the following options:

- Design assistant: offers built-in elements, which can be removed/added to create a unique logo with colour selection.
- Generator: based on the given company name, it generates countless logo suggestions, using the elements available in the website engine.
- AI Generator: Generates logo suggestions with the help of artificial intelligence.

Ser's suggested method (Ser, 2018) Five-I Logo Design Process consists of 5 steps (Figure 1):

- Identify: defining the problem, getting to know the company. This includes tasks belonging to the first phase of the corporate identity design model proposed by (Olins, 1990).
- Ideate: collecting ideas.
- Imagine: sketching the first logo designs.
- Improve: development.
- Implementation: clarifying the logo.

Figure 1. *Five-I Logo Design Process (Ser, 2018)*

2.2. Five-I Logo Design Process

Among the many advantages of the Ser method, the most significant is that it details the tasks to be performed in each proposed step. However, Ser does not address the fact that in many cases there is no sharp line between these steps. The search for ideas actually begins during the definition of the problem, considering that the search for motifs actually begins during getting acquainted with the company: we try to recognize the most important characteristics, to find the trend where the company is

heading. We observe what colours characterize the company and its products. Then, in the idea search phase, we determine the motives that best define the company or the product. The designer then begins to outline his or her own designs. The ideas emerging from the sketches are displayed with digital graphics. Ser divides this phase into further steps:

- Production and development of concepts.
- Analysis of the concepts.
- Implementation of the design.
- Refinement and finalization of the design.

This is the phase of logo design where creativity is in focus: it is possible to vary the fonts and colour combinations here.

In the fourth step of the design process, solutions are presented to the customers. The steps of this process were defined by Ser as follows:

- Design solutions must be explained to the client.
- The proposed design must be adapted into the environment of the future use.
- Let's identify the errors of the prototypes.
- Modification of the prototype and finalization of the design based on the feedback.

There may be cases where the customer cannot participate in the evaluation. Then the designer must evaluate the concepts in a self-reflective manner. It can also be a solution if the design is discussed with other designers.

In the last stage, the following tasks must be completed:

- Before the end of the project, the final design must be evaluated to assure the client of the effectiveness of the logo.
- The final review of the solutions must be performed.
- The final documentation must be prepared.
- The design must be finalized, and the project should be completed.

3. CASE STUDIES

In this chapter, two logo design studies are presented, which aim to emphasize the environmentally friendly nature of a product. The design process was based on the method explained above, however, due to the nature of the task, the evaluation of the concepts was carried out by the designers. In this paper the solutions they found to be the best are described.

The chapter describes the search for ideas, the main motifs, and the effects that left a deep impression on the designers. During the idea search phase, the designers examined the application possibilities of Artificial Intelligence as a new design assistant. One study is an eco-friendly logo for a medicine vending machine, while the other highlights the environmentally friendly nature of a wall-groove milling device.

3.1. Motifs

Both case studies were great challenge from the point of view of environmentally friendly logo design, as both the medicine vending machine and the wall-groove milling device have significant environmental effects. While in case of the medicine vending machine, the packaging of the medicine appears as a large amount of waste after use, in case of the wall-groove milling device, a large amount of dust, noise and vibration is generated during use, which represents a direct danger to the user and environmental impact (Takács, 2019). For this reason, the designers continued their search for motifs along these two main lines.

In case of the medicine vending machine, the search for motifs began by examining the websites of medicine manufacturers, where the goal was to explore the typical colour combinations used by the manufacturers. In addition, it was found that almost all medicines have a paper package, apart from the inner packaging, which provides simple information about the name of the medicinal product, its active ingredient, the amount of the active ingredient, and the number of tablets of the medicine contained in it. Inner packaging can be divided into four groups:

- Blister: the most commonly used packaging, a plastic sheet is laminated with foil using heat and pressure, its separation is not the best and therefore difficult to recycle.
- Glass: tinctures and some tablet medicines are also packaged this way, it can be easily recycled after disposal.
- Plastic: eye drops and remedies that do not contain acidifying or alkalizing effects are available in plastic jars, which can be collected selectively after cleaning.
- Laminated paper: a common packaging method for powders, paper on the outside, foil on the inside. It protects the dust from moisture and dissolution, its recycling is difficult.

In addition to their size, the manufacturers provide the packaging with different colours, even within a product family, so that it can be easily recognized when it is served in the pharmacy or when it is used.

The colours most often used on the viewed products are:

- White: usually the basic colour of the boxes, it shows purity and simplicity.
- Green: symbolizes health and nature and has a calming effect.
- Red: symbol of strength and explosive energy, invigorating, can cause hunger.
- Blue: symbol of reliability, trust, conservative colour, suggests security.
- Yellow: the colour of optimism, energy, stimulates and energizes the nervous system.

Figure 2. *Box of medicine with the corporate identity of Gedeon Richter*
Forrás: https://www.gedeonrichter.com/-/media/sites/hq/images/our-products-images/zilola.jpg

The wall-groove milling device, as a technical creation, differs from the medicine vending machine quite much. While the wall-groove milling device is used in the construction industry, where dust, wear, and strength are unavoidable, in the pharmaceutical industry cleanliness, from the point of view of the machine-user weakness can be key features. In case of the wall-groove milling device, avoiding the inhalation of dust was one of the basic design considerations during the design of the device. For this reason, the logo designed for the device must highlight this character. In connection with this, the designer carefully studied and compared the different types of wall-groove milling device. During the investigation, he/she paid particular attention to the importance of colours, as they have not only an aesthetic, but also a psychological effect. As a result of the analysis, it became clear that the colours green, red, grey, and blue not only suggest reliability and strength, but also show less signs of wear, which preserves the aesthetic appearance of the devices in the long term.
During the search for motifs, the discovery of patterns related to dust was also an important task. In this connection, human figures wearing masks also came to the fore.

The face mask was the main inspiration for the design of the logo and for a deeper understanding of the meaning of the masks. During the research, other relevant motifs emerged as well, for example different worker figures.

Figure 3. *Typical wall-groove milling devices that are available to buy*

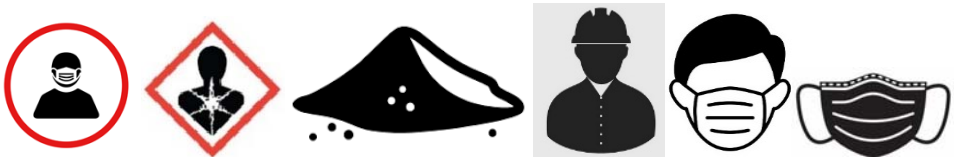


Figure 4. *Inspiring patterns*

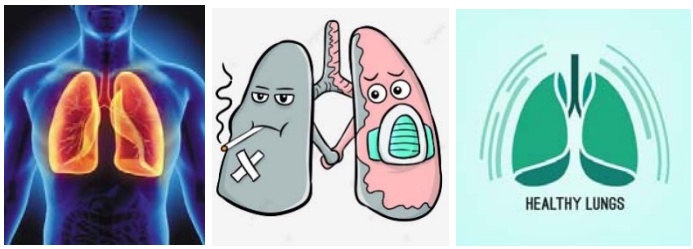


Figure 5. *Lounge symbols*

Another important aspect of health protection was the analysis of the symbols of the lungs. The lungs are the most affected part of the human body due to the harmful effects of dust. The green colour was often included in lung drawings as a symbol of health. The depictions of healthy and damaged lungs vividly demonstrated the importance of maintaining health.

3.2. Ideas

Nowadays, Artificial Intelligence (AI) conquers more and more space. The application of AI in scientific life has many ethical questions. However, the technology has enormous potential, which it would be a mistake to ignore. Precisely for this reason, examine how and for what AI can be applied within an ethical framework is one of the important tasks of design methodology.

Create a logo that shows environmentally friendly feature of a medicine vending machine. Use colours green, white, black.

(Create a logo that shows environmentally friendly feature of a wall casher. Use colours green, white, black.)

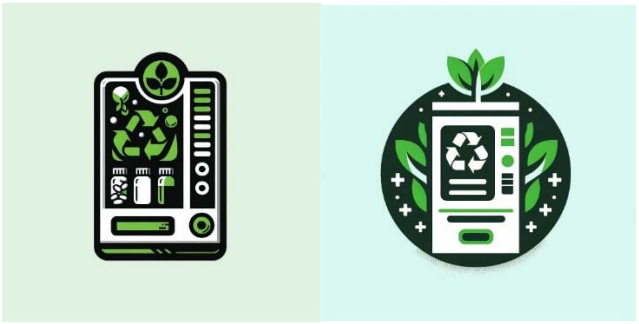
Figure 6. *Logo ideas by Microsoft Designer*

For several reasons, design methodology recommends analysing on-the-market existing solutions and patented solutions (Takacs & Kamondi, 2011):

- Analysis of previous solutions, collection of ideas.
- Rediscovering long-forgotten solutions.
- Avoiding patent infringement.

The above mentioned have great importance for any design engineer in case of any design task, even if the given designer already has considerable experience in the field of design. In our globalized world, information spreads faster and faster, so even an idea for a technical solution travels around the world quickly. Processing this stream of information presents a great challenge to the engineers of our time, so it might happen that the application of AI guided by the designer can help the well-aimed selection of information.

The generation of the logo highlighting the environmental character of the two devices was carried out on several Internet AI interfaces, of which Bing Co-pilot and Microsoft Designer suggested samples based on the search descriptions, some elements of which could lead to an imaginative solution, helping the designer's further work. Selecting from these generated AI logos, solutions according to Figure 2 and Figure 3 seemed to be the most promising.



(Create a logo that shows environmentally friendly feature of a medicine vending machine. Use colours green, white, black.)

Figure 7. *Logo ideas by Bing Copilot*

3.3. Sketches

In case of the eco-friendly logo designed for the medicine vending machine, sketches are based on the triangular shape, as similarly shaped emblems are attention-grabbing

and regular. Both the on-top and flat-on layout seemed like a good idea, as the eye notices peaked shapes more easily.
Regarding the first concept, among the natural forms discovered during the search for motifs, leaves came into focus, since the leaf is a frequently recurring motif on the packaging of medicinal products. The on-top layout contains 5 leaves.

Figure 8. *Logo concepts*

In case of the second concept, next to the leaves, the motif of a human hand appears on a triangular base. It expresses the connection to nature and the active pursuit of good.
The third concept differs from the triangle, it is a simplified version of the second concept, the leaves are replaced by tendrils. The connection with nature appears in this version as well, however, from the point of view of environment, this solution may be more beneficial due to fewer printing operations.

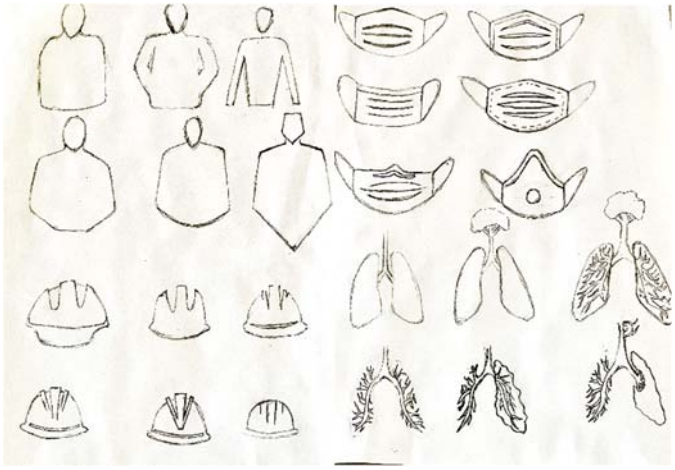


Figure 9. *Pattern evolution*

Sketches play an extremely important role in the design process. These sketches help to quickly visualize creative ideas, even before the designer goes into the details of the design. These allow the designer's ideas to appear on paper in quick succession, allowing the designer to make further experiments with different shapes, lines and elements. In this way, new and unique ideas become tangible, which can later serve as inspiration during the creation of logos on the computer.
During the design of the environmentally friendly logo of the wall-groove milling device, sketches mainly helped the refinement and evolution of the individual motifs. Through the analysis of the samples to be used for the later logo, the designer created evolution sketches according to Figure 9. By breaking down the motifs into elements, it is possible to better understand how the individual elements can be connected during the design of the final logo, and how to create an emblem that effectively communicates the environmentally friendly message of the product.
The use of sketches also gives the opportunity to the designer to spontaneously draw inspiration from his immediate environment, nature or human activities. This makes the design process more flexible, and it is easier to find the elements that best express the message of sustainability and environmental awareness.

3.4. Digitalisation

From the point of view of digitisation, it is not important to adopt the entire form, displaying the characteristic lines is enough to move forward. The computer graphic design of the logo advertising the environmental awareness of the automatic medicine vending machine was carried out by Inkscape, a vector graphics program. This image format ensures that the quality of the image does not deteriorate when scaled. The outlines can be easily copied from the scanned image of the sketch. Small adjustments are essential on the copied pattern.
The digital design of the logo for the wall-groove milling device was realized mainly with the help of the following software: GIMP 2.10.18 and Paint. The programs mainly used the functions of drawing lines and curves, cutting, copying and colouring, which all contributed to the efficiency of the design process. During the design, it is important that there are no rigid limits, as this is how individual creativity can best emerge and work.

3.5. Final logos

When it comes to colouring, designers avoided the use of a variety of colours for both studies, because this also reduces the selection and colour neutralization during recycling and preserves the quality of the paper.

Figure 10. *Environmentally friendly product emblem of a medicine vending machine*

In relation to the design of the medicine vending machine, the third sketch concept seemed to be the most unique and therefore worthy of further development. The original sketch was supplemented with a thick outline during the final works, which makes the logo more prominent as an independent element.

Figure 11. *Environmentally friendly product emblem of a wall-groove milling device*

During the design of the eco-friendly product logo of the wall-groove milling device, the main guideline was that the set of samples used should reflect environmental awareness, health protection and professional affiliation at the same time. At the beginning of the design process, basic colours such as green, black and white were chosen. These primary colours were chosen deliberately: green as the colour of nature, and black and white for contrast and visual appeal.
The green colour was given a particularly prominent role in the design, as it not only appears frequently in nature, but also has a positive meaning as a symbol of health,

renewal and harmony. That is why this colour was given a central role in the logo, imbuing the entire emblem with a fresh, healthy and close-to-nature feeling.
The logo was based on the outline of a human figure wearing a worker helmet. This figure not only symbolizes the connection with the industrial sector, but also refers to the importance of the health and safety of workers. The green mask visible on the head serves as an additional layer of protection, preventing the inhalation of harmful substances. Meanwhile, a healthy lung can be found, symbolizing the dust-free operation of the wall-groove milling device. On the other hand, the lack of masks and lungs indicates that attention must be paid to prevention and the creation of a healthy work environment.
The outline design of the logo is not only aesthetically attractive, but also reflects an environmentally conscious approach. The simpler silhouette, made with less ink, not only meets the guidelines of environmentally friendly design, but also indicates a commitment to sustainability.
Finally, for the logo be even more consistent with the environment and the needs of the target audience, the main figure is enclosed in a square frame that represents the walls of a house or apartment, thus referring to the place of application of the wall-groove milling device. This frame further reinforces the professional nature of the logo and conveys the message that is needed and plays an important role in creating a sustainable future.
During the planning process, therefore, not only aesthetic values and functionality came to the fore, but also the protection of human health. The result was a logo that is not only beautiful and well thought out, but also consciously reminds us of the importance of maintaining healthy working conditions.

4. CONCLUSION

The introduction of the paper describes the main characteristics and types of logos, the tools of logo design, and the design process. The second part of the study illustrates the process of logo design through the example of two case studies, in accordance with the framework of the method described in the introduction, drawing from the latest technological innovations. The work proved that AI can be usefully used in the idea-finding phase of design, as in case of the environmentally friendly product emblem of the medicine vending machine, the bunch of leaves appearing on the versions generated by AI inspired the sketches of the designer. A similar experience can be found in relation to the logo of the environmentally friendly product emblem of the wall-groove milling device. For this study, AI recommends displaying the house as a motif. During the preparation of the final logo, the designer refines this into a square standing on its vertex.

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