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EMOTIONAL DESIGN AND QUALITY OF LIFE

Abstract: Lately, the concept of emotional design, which implies the concept of improving the quality of life, happiness and satisfaction of a man, has greatly attracted the attention of the academic community. Since this concept is multidimensional, one of the aspects, which the scientists are particularly focused on, is involvement of man's emotional needs in the process of product design. A successful development of a new product implies satisfaction of customers' requirements to the level of their individual wishes which include emotions as well. Therefore, the aim of this paper is to describe the emotional design, the present state of understanding the concept, its characteristics and aims. Some characteristic examples which illustrate the described concept, and whose design evokes positive emotions, are presented in the paper. The emphasis has been put on the importance of a specific aspect of an emotional approach to design through development of innovative, sustainable products with the aim to increase the quality of life.

Keywords: design, emotion, emotional design, quality of life

1. INTRODUCTION

At the beginning of design development it was considered that design development represents a process of practical realization of theoretic ideas. Since then, the role of design in people's life has become greater and more complex. Nowadays, design implies, at first place, art, than science and philosophy, whose main goal is to adjust the environment to a man in order for the environment to become more functional and beautiful. Also, philosophical knowledge enables implementation of conceptual tools useful for contemplating how to improve products and create a visual message for communication with a consumer.

Traditionally, it's considered that the primary intention of art is to aesthetics reality. Yet, design deals with the aesthetic aspect of the environment as well. In such process, the known objects change accordingly the laws of beauty, and also, new products are created.

Today, the main aim of design is to efficiently transform people's environment by shaping it artistically and aesthetically. Therefore, design can be defined as an intellectual, technical and creative process of designing and shaping objects, space, services

and visual communications in order to improve the quality of life. Design, besides improving the quality of life, in many aspects presents the quality of life now [1].

In academic literature, the authors from various fields of work report on a growing number of information on the quality of life studies [2]. One of the aspects, which the scientists are particularly focused on, is involvement of man's emotional needs in the process of product design, which besides functional and structural characteristics has to include physiological, social and ecological aspects. Thus such attention is paid to design nowadays; a target goal of every manufacturer in global market conditions is to satisfy customers' requirements, even to the level of their individual wishes.

Driven by that goal, many scientists have dedicated their studies to reactions of consumers to aesthetics of design and a product function, being the field where the concept of emotional design has become quite distinctive. Different theories and methodologies have been developed in order to question how emotions can change and improve design [3].

In order to facilitate studying of emotional reactions of consumers to products, Desmet established a basic model of product emotions

which define three key process parameters on which every emotion is based: concern, stimuli and appraisal [4, 5].

A concept of emotional design was deeply analyzed by an American scientist Donald Norman [6]. The results of his psychological study showed that an emotion is a requisite part of life, it affects how people feel, act and think [7].

In his paper [8], Spillers suggests that it is necessary to broaden designers' thinking that it is not just the purpose of the product which is important in design, but the emotional aspect as well. Thereby, emotional design is not a substitute for a good usability, instead, it supplements a good usability by adding another value to it.

Embedding of an emotional value into products has become an important strategy for increasing the competitive advantage of products on the market. Thus, it is important for the product manufacturers to understand how the products affect consumers' emotions.

2. THEORY OF EMOTIONAL DESIGN

The concept of emotional design is based on the idea of an emotional role of design when buying a product. The studies on this idea have confirmed that during so-called emotional buying, formally associative moments prevail over the criteria of functionality, reliability and usability. It means that a well designed, aesthetically attractive product, which creates a certain emotional connection with a potential consumer will not only be sold better, but it would have a longer working life.

The term of emotional design was defined by Aaron Walter in his book *Designing for Emotion* [9]. A description of this concept is based on Abraham Maslow's hierarchy of needs which explains a theory of human motivation. According to the original model of the hierarchy of needs, presented as a pyramid, people need health and safety for their existence, than love and self-esteem, before starting to think about higher-level needs, such as self-actualization, i.e., the need for reaching one owns potentials (Fig.1, a) [9].

In design hierarchy of needs, for a consumer to be satisfied, a product has to be functional at first place, reliable and simple for usage (Fig.1, b). Level of satisfaction which

can be reached at the level higher than the mentioned levels is expressed through emotional design. Thus, at the top of the design pyramid are proficiency (professionalism) and creativity which are necessary to generate innovative solutions [10].

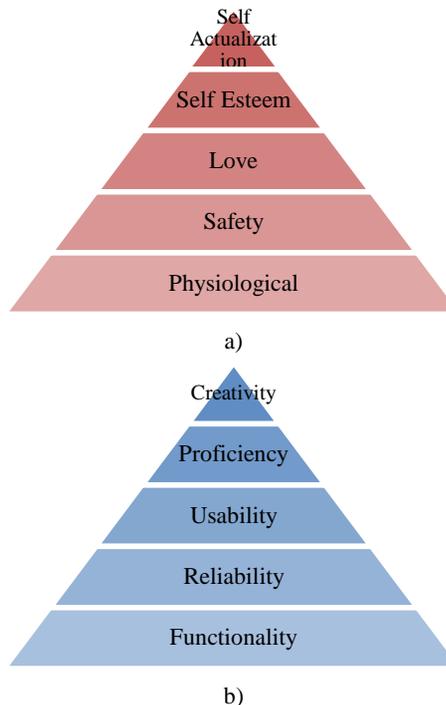


Figure 1 - a) Maslow's hierarchy of needs b) Design hierarchy of needs

According to this theory, functionality is the basic condition, while the pyramid is formed based on the increase of values in the design hierarchy of needs by adding new values. Design which provides only one function has a very little value. Reliability implies stable functional characteristics in a certain period of product usage. Design which is just functional and reliable has a little value. Usability refers to an ease of design usage, and as such it has a moderate value. Proficiency encourages consumers to perform their tasks better than before, whereby design reaches high value. Creativity is achieved when design meets all the basic needs, and enables consumers to communicate in innovative ways, to explore fields/areas which expand the existing frontiers of design and consumer's capabilities. Such products have the largest value [10].

Although Maslow's hierarchy of needs has certain flaws, it provides a useful frame for designers to think about how to add value to their products.

As per Donald Norman's study, design affects human perception of a specific product, and this process takes place at three different levels of information processing in the brain. Those are visceral, behavioral and cognitive level [7]. These three cognitive levels help people to be creative and emotional. Emotions are inseparable and necessary part of cognition, and everything that people do and think is intertwined with emotions. Emotions can change the way of thinking and they guide human behavior.

Visceral level is the main level of information processing in the brain which functions instinctively. At visceral level, people automatically process the emotional signals without any conscious effort, thinking, concluding and comparing different situations. It relates to the things that people love (symmetrical objects, smiling faces,...) or do not love (horrible sounds, great heights,...) by nature. In design, that is the first reaction to the product which is formed instinctively. Mostly, people cannot explain the character of certain feelings when they see something for the first time. That is why it's important that the product design attracts a consumer at first visual contact. A good visceral design often disregards some product flaws since the consumer gets something he/she would love.

Behavioral level is the following level of information processing in the brain. It is also unconscious level and it is responsible for everyday actions performed without thinking. In visual design, behavioral level relates to the product functioning and sensation of consumers when using the product. At that level, the product's functionality, simplicity and usability are more important than the look of the product. Good behavioral design does not evoke negative emotions and diminishes potential confusion of consumers.

Cognitive level is the highest level of visual design and cognitive processes of thinking. At cognitive level, people are aware, they can think about their emotions and be effective in making decisions. When deciding what to buy people use logical thinking stating the reasons for the product necessity. Cognitive design relates to the overall impression created

about the product after thoughtful analysis and consideration. At this level, a product has to be physically attractive to a consumer, it has to evoke positive emotions, it has to be functional and usable. A positive experience with using such product is important as well.

In accordance with the said, a good design has properly balanced characteristics important for every of the three levels of information processing.

Emotional design shall provide strong connections between consumers and products which overcome the shape and function, contributing to the sustainable behavior of consumers due to the increased level of satisfaction and pleasant experience provided by products. The consumers consider a product to be valuable as long as they are emotionally connected to it. The stronger the connection, the more a consumer is encouraged to rationally use the product, in which way the product's life is prolonged [3].

Emotional connection can appear at several levels, such as: sentimental significance, reliability, timelessness and usability. Also, an emotional approach to design is particularly important in the field of national branding which is based on the idea of the emotional aspect of buying when consumers feel connected to the general natural interest.

Implementation of emotional design can be realized in many ways. Some of the efficient strategies of emotional design are as follows: implementation of „surprise factor“ through application of new and unexpected elements, witty approach of designers using funny shapes or messages, encouragement of the feeling of distinctiveness in exclusive groups of consumers, etc.

3. EXAMPLES OF EMOTIONAL DESIGN

Figures 2 to 7 show examples which illustrate the described concept of emotional design and whose design evoke positive emotions.

Figure 2 shows a table lamp whose design is a result of a Russian architect and designer *Андрей Докучаев's* idea to create a dynamically shaped product which can be transformed, and which has an emotional and philosophical significance [11].

When closed, the lamp resembles a lollipop, but regardless of the funny association, it did not lose its functionality. The lamp is turned on by simply lifting of the upper part of the lamp, and turned off by lowering of it.



Figure 2 - Bon-Bon Lamp [11]

The example from Figure 3 illustrates Vestalife's Firefly iPod/iPhone Speaker Dock, whose design was inspired by a ladybug [12]. None of the product details is chosen randomly; they were carefully designed to provide emotional connection to a consumer. Hidden hinges help the speakers to be opened to the carefully calibrated angle, moving them aside and a bit forward in a certain gesture of welcoming.



Figure 3 - Vestalife's Firefly iPod/iPhone Speaker Dock

This product is a result of implementation of a design methodology named psycho-aesthetic which was developed in RKS Design Center in California. It illustrates philosophy of emotional connection of consumers to brands through design.

Figure 4 shows models of amplifier which fit in the philosophy of life and reflect the uniqueness of an owner [13]. Their design evoke a certain emotion and aesthetic satisfaction. The author is a Ukrainian designer Виталий Потоцкий.

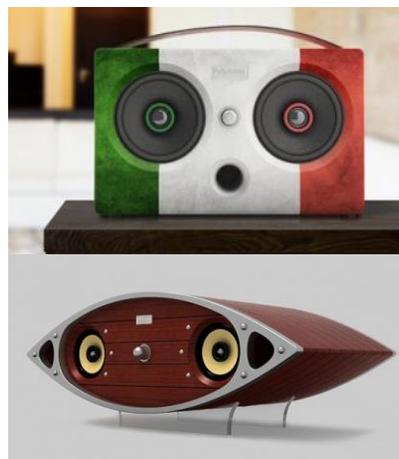


Figure 4 - Characteristic solutions of the emotional design of an amplifier

The example illustrated in Figure 5 is an emotional product of a designer Rochus Jacob [14]. It is an unconventional radiator which resembles a campfire sculpture.



Figure 5 - Rethinking the radiator

This analogy was adopted due to the social aspect of fire and the essence which heating once had in our culture-warmth as an emotional value. Implementation of modern technology enabled usage of lighter and efficient materials in the process of shaping small-dimension radiators. The idea of moving a heating body around the room had the aim to intensify the interaction with a consumer and to point out the potential reduction of energy consumption by simply pulling a green button. Usage of this radiator saves 40% of energy.

Sustainable product is the Murakami's rocking chair which gives a consumer an experience of simultaneous production and consumption of electrical power (figure 6) [14].



Figure 6 - Murakami-chair

Owing to the advanced technology, a nano generator was built into the chair, while a new generation lightning diode *OLED (Organic Light Emitting Diode)* serves as a source of light, which enables generation of energy by natural rocking of the chair. During the day, the energy is stored in the batteries, and during the night, the lampshade lamp emits the light instead of the traditional light bulb.

Figure 7 shows the packaging whose design visually expresses emotions which should be felt while drinking different kinds of tea [15].



Figure 7 - Tea bags packaging T-Cup

The packaging evokes a positive emotion by its logo and a stylized smiling happy face. A unique and funny packaging with contrasting colors, combines a form of a letter „T“ and a classic mug with a handle, and visually communicates the message through symbolics of a stylized face expression and name on the packaging.

4. EVALUATION OF EMOTIONAL DESIGN

Even though the emotions are the fundamental dimension of consumers' satisfaction, the emotions are greatly pushed aside in the process of product development, at first place because of the lack of quantitative and objective tools for emotional reaction evaluation which leads to an objective selection of product design characteristics [16, 17].

The most successful products directly result from understanding of consumers' emotions [18, 19]. Some of the research methods for systematic evaluation, description and quantification of emotional reactions to product usage are Kansei Engineering, SENSES and Product Design Engineering [17].

Kansei Engineering (or emotional engineering) was developed in Japan as an expert system which translates human images or feelings in relation to products into product design. Kansei Engineering approach in emotional design is based on a research aiming to identify and quantify a relation between product design characteristics and emotional responses of consumers of products [3].

When consumers establish relation with a product, their emotions are triggered by senses. Emotional reaction is based on a rational evaluation of the product, previous experience and a system of values of an individual, although, many things can be unconscious and poorly controlled by mind.

Sensory Emotional Synergy (SENSES) is an expert system using different research techniques for determining the product characteristics which can evoke special emotions of consumers. This method is used in research for the optimization of a product in order to evoke emotions and meet consumers' expectations. It is used in order to identify crucial emotions which can raise consumers' satisfaction. The SENSES technique links

sensory and functional input of products with emotional response of consumers.

Product Design Engineering (PDE) tends to integrate traditional engineering and design thinking in a product development. The goal is to have a product with creative design which will raise consumers' satisfaction. It requires understanding of relations between product design factors and combination of sensory, emotional and rational responses to product usage. A product shape, price, image, etc. shall be taken into account, and it is necessary to understand the integrated system as whole in order to get a product which will become distinctive in a variety of similar products and satisfy the target market [17].

When evaluating product design, it is necessary to apply effective techniques of organization of design to reach an objective decision when selecting the best design based on the results of emotional researches [20]. This means that evaluation of the offered solutions for a new or innovated product, in terms of design, should include the methods used for studying emotional side of consumers' characters apart from the known evaluation methods.

5. CONCLUSION

Design is an important characteristic of every product, and its main goal is adequately and optimum defining of a product, not only from the aspect of technical conditions for application and installation, but from the look

of the product itself. Every successful product is the result of the research in the process of product development which requires a special methodological approach. A modern approach to product design which is quality life improvement oriented, is emotional design. Such approach identifies and analyzes emotional responses of consumers in order to create an innovative product and solve the problem of the effective usage of the product. In such way, emotional design can be helpful to many companies in implementation of creative strategies and integration of concepts directed to emotions and satisfaction of consumers.

It is particularly important today, when the economic pressure, global crisis, and environmental issues have created the need for innovative solutions, and design is inevitably linked to the terms innovation and invention which are requirement for every company to appear on the global market. The aim of this paper is to address the importance of product design in the process of product development, factors that affect design, with the emphasis on introduction of new values through emotional design, and to present good examples of such approach to product design. Also, one of the aims is to divert the attention of the scientific community in the field of product design in mechanical engineering industry in the Republic of Serbia and its surroundings to the current trends and the need for creation of wider picture of design, especially in the field of product branding.

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