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An experimental work:
Aesthetic as emotional interaction in product design

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Abstract

The experimental work was made with students of industrial product design in collaboration with "Small and Medium-sized Enterprises" (SMEs). SMEs constitute 94.6% of Turkish industry, but they are not adequately familiar with product design. Therefore, collaboration with SMEs initially requires an explanation of what product design is. If SMEs are not given a thorough explanation and orientation, they take for granted that innovation is limited to products which look like those in the market or to products that are only a few steps ahead of those in the market. Accordingly, we started the experimental project with a different concept so that we made SMEs accept the project definition and give the designs a direction towards innovation from the onset. The project was titled "Emotional Interactional Approaches to Lighting Instruments". It provides a direct approach to design application. To create difference in design, a method which is already different is implemented. The sophisticated difference in the beginning could be lessened to equate the design to those exist in the market according to expectations by the SME. The project is evaluated throughout along with the concepts such as aesthetic function, aesthetical emotions, etc. which are doubtlessly indispensable for design. We tried to theorize the information obtained from the experimental work.

Selection and peer-review under responsibility of

1. Introduction

Human thought has two main foundations: reason and emotion: While reason is a system of thought that could establish rational and prudent relations, emotion is a system of thought that works with feelings, intuitions, and opinions; and completes reason. Reason fed with emotions makes associations, and becomes more successful in the function of thought. Emotions support imagination and vice versa. Imagination supported by emotions is the

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foundation of creativity in science, arts, and design. With all this chain thinking process, it is very meaningful to deal with "emotional interaction in design" and to accept is as the departure point in a project. Here, the dimensions of emotional interaction were developed according to students' skills to understand, comprehend, and express, as well as transform their accumulated knowledge into form by synthesizing it with abstract concepts that express emotions.

2. The Concept of Emotion

The concept of emotion is a significant feature of creativity. In his research on creativity, Preiser (1976:50-58) made use of studies by Guilford (1950-1966 researches), Correl (1965), and Ulman (1968) to define the features of creativity which included "fluidity, flexibility, originality, *problem sensitivity,* restructuring, realization, activating with all details". Here, *problem sensitivity* expressly puts forth the importance of the concept of emotion. Alder's (2004:70) researches on creativity, seriously considers sensitivity and adds to these the more developed concepts of indefiniteness, convergent thinking, divergent thinking, difference, discipline, perfection, and risk taking... Almost all research stresses the importance of emotion, sensitivity, and problem sensitivity. In order for a sudden thought to occur, which is actually the moment when A. Koestler's (1966:62) "M1 – External appreciation (field outside the research field) and M2- Internal appreciation (intermediate field which will be reevaluated) fields" superimpose (or collide), creative man should be an active and reactive perceiver with an ever vigilant sensitivity.

Emotion, which is defined as sensational content with a compound idea, is a complex internal condition related with excitement and intuition. Tunalı (1983:13-15), who studied Crocean aesthetics, explicates that the fulcrum of this aesthetics is intuition, and says:

> "...Over the world of nature, of inactivity, of perception and pure impressions, and *sensations*, stands the real field of action of spiritual knowledge. This basic act of knowledge is intuition... Intuition becomes objective only with expression. Intuition processes passive sensation to make it expression. Therefore, intuition and expression as its objectified are one and the same."

With these explanations, Tunalı claims that, as one of the building stones of Crocean system, intuition stands over the world of senses, that it is the first step of a knowing and acting spirit, and becomes an entire act of expression as soon as it is objectified.

Desmet (2003) took into consideration the emotions which are instrumentally related to each other and the differences between emotional reactions and developed a basic model. The concepts that make up this model are the following: "1. Appraisal, 2. Concern, 3. Product, 4 Emotion". The concept, appraisal, which lies in the centre of this schematic definition, may be either a positive or a negative value; it could emanate hope or fear. As exemplified by Desmet, an injection needle could both scare you during injection and provide hope since it will cure the disease. Similarly, an umbrella could provide a protective and positive condition against the inevitable concern of getting wet. Therefore, the second concept in this model is concern. Product and emotion are the basic elements that form the model. With excited emotions and taste of the customers, the idea of purchasing an object, such as a watch, a garment, and a food processor that they find fitting arises in the customer.

As demonstrated by many researchers and as a result of appraisal and "classification of product emotions" by Desmet (2003), the appraisal of aesthetical emotion, which is a kind of emotion and which forms the subject matter of this article, brings about a personal intrinsic pleasantness with a sole concern on attitude.
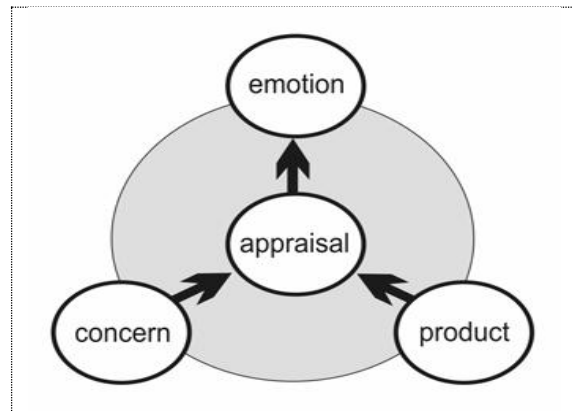
Fig. 1. "Basic model of product emotions" (Desmet, 2003: 5).

Following the basic model of product emotions, Norman (2004: 63-98) explains the levels of design and defines these levels as those that depend on emotions (viscerals), those which are related to behaviors or manners (behaviorals), and those related to thought (reflectives). In fact, we cannot make a precise separation among these three. They may be noticed at varying weights in the entity of a designed object, on the requirements of the designer, and expectations of the customer. As we see in Norman's example, Jaguar E-type automobile, which was produced in 1961 and displayed today at New York Museum of Modern Art, is described as viscerally exciting.

3. The Concept of Aesthetics

Aesthetics as a major field of study in Philosophy, environmental beauties, bodily beauty, beauty of geometrical figures, even the objective forms that define beauty, etc. need not be talked about in context. It is, even, a concept that was refused by Croce. According to Croce, "what is aesthetical is something internal, a vision, an illumination, an intuition, an intrinsic expression. The formation of a stimulating agent called physical-beauty falls within the scope of practical activity" (Tunalı, 1983:14).

In order to better understand the practical activity in the context of product design, it is necessary to resort to thoughts of some other philosophers.

According to Lukacs (1985:157),

"While dealing with the mutual relationship between people's senses and objects of these senses Marx does not fail to point at this: senses, which are qualitatively different among themselves, have to be qualitatively different (and therefore in reciprocal relation) in terms of their relations with the world of objects. Marx says, «An object comes different to the eye than it does to the ear, and the object of the eye is different from that of the ear (Marx: Ökonomisch-philosophische Manuskripte, MEGA I. 3, 3, p:119;MEW EBI, 541)»".

Accordingly, no one can deny the phenomenon itself. Yet when it is necessary to make conclusions, we acknowledge the necessity that the points of birth and origins of art have to be dissimilar. For Lukacs (1985: 157, 158), here, philosophical idealism turns all contexts of aesthetics upside down, and he resorts to Engel's thought:

"<original>(priori) aesthetical principle will be arranged conceptually as a system of arts and systemized; in reality, different artistic activities, concrete things, sensitivities, etc. stem from qualitatively different relationships. These relationships are based on both an objective reality which is integral in itself, and on qualitatively different organs of sensitivity and their social-historical development... Engels claims that

this basic principle of dialectical materialism is true: «The general conclusions related to our study of the world come about at the end of such study; which means these are *principles,* not points of departure but *conclusions* (Engels: Anti-Dühring. p:394; MEW 20, 575).»

For the condition Lukacs dwells on, the principle is more densely valid. For in this quotation Engels ponders especially on the general problems of natural sciences. However Lukacs (1985:160) thinks like this: "...the principles the human conscious would discover were already present and active long before thought achieved the level where it could reflect on, interpret, and systemize the contexts and integralities, etc. of these principles. In the option we consider, the subsequence of the principle is current not only in terms of its existence for us but also in terms of its being-in-itself. The integrality of the principle could eventually be realized socially-historically; in other words, it could attain the attributes of a principle only subsequently and according to the various phases of integrality."

Making use of Marx and Engel's thought system, and in the scope of thoughts set forth by Lukacs, when we inspect the relationship between the senses of the designer and the customer and the relationship between the objects of their senses, it is seen that senses are qualitatively different from each other (the scope, content, depth, etc. of the senses and sensory organs) and their mutual relations with the world of objects (anything they see, hear, smell, etc. in natural and manmade world) have to be qualitatively different. In this context, as a result of the project work we assigned our students with the description "emotional interactive approaches to lighting instruments", it was seen that each student displayed different sensory relations. For they had to empathize with different customers, the senses they developed according to social interaction throughout their life were different from each other and their processes of perception, remembering, and appraisal of sensory objects, which they recorded to their memory and daily recalled with their five senses, were different.

Although the field of industrial products could not be deemed entirely as one of the plastic arts, an original work cannot come about without the artistic sensitivity of the designer. Differently from the plastic artist, the designer compulsorily puts himself in the place of others with the same sensitivity. The designer should think like others, establish the relationships of their senses and the different objects of such senses; the designer learns to do so during his training.

On the other hand, Löbach's theory of design includes a schematic definition which comes closer to industrial product design:
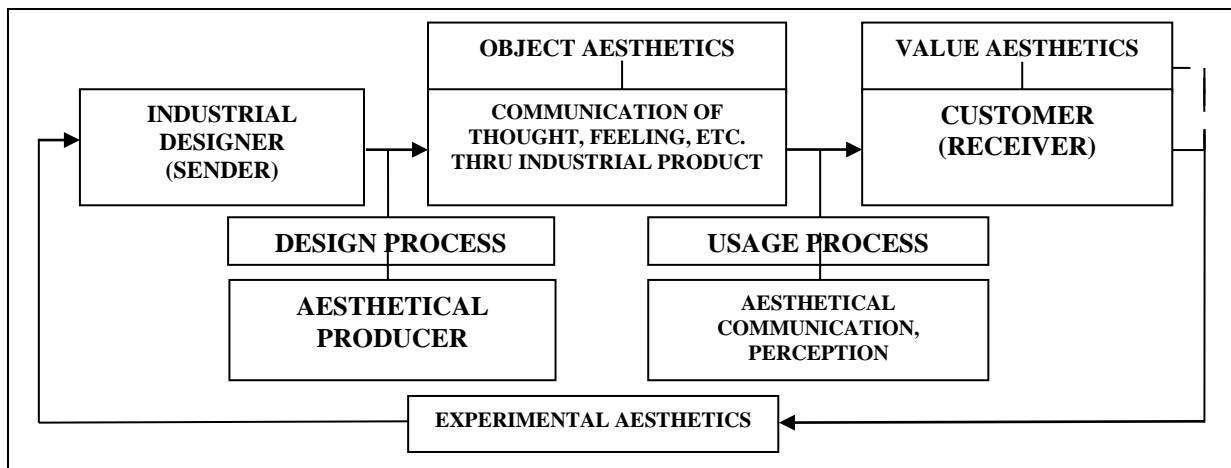

Fig. 2. Industrial Design Aesthetics (Löbach,1976.154).

At the beginning of the designing process and after determining an emotional concept and definition, students who major in design were advised to act like a professional designer; they were advised not to ignore, but give priority to the aesthetical and symbolical, if possible, functions of the products while they transformed their conceptions to form. For these aesthetical and symbolic functions would meet psychological needs of the customers and address to their emotions. Thus the designers-to-be made their designs as sending individuals who would like to establish communication with the thoughts, feelings, perceptions, and aesthetical tastes of their potential customers. The most aesthetical of industrial design developed in this scope in its barest form.

4. The Relationship of Emotional Interaction with Aesthetics

Emotion is an inseparable part of aesthetics. Aesthetical emotion lies in the foundation of art. In the recent decades, design, which differs from art with its concept of use, has considered emotional behaviors together with the notions of aesthetical emotion and aesthetical function. Taking into consideration the psychological and emotional characteristics of customers which lead to a multitude of behaviors, the scientific bases of their aesthetical emotions could be reflected in the object as data. Accordingly, from a philosophical viewpoint, design is a phenomenological fact.

At the end of the 19th century and in the 20th century, philosophy and in this scope, aesthetics was immensely influenced by the breezes of psychology; this effect made emotional phenomenon the chief subject of aesthetics. Represented by the German aesthetician Theodor Lipps (Aethetik, Hamburg, 1906), this is a science pertaining to the "beauty";

> "...If an object could kindle a feeling in us, that is, a feeling we call the "feeling of beauty", then that object is beautiful ... Aesthetics should indicate us what conditions should be met by an object so that the object could make such an influence, and establish laws that regulate these conditions. Such a task is a psychological one. Accordingly, aesthetics is a psychological discipline... Emotion is an activity and what makes it active is pleasure and grief... For instance, according to Johannes Volkelt «all aesthetical objects are made up of perceptions of form and perceptions of color; or perceptions of hearing; or a mixture of both»;...«At the same time, although hearing and sight could make various compounds out of perceptions, other senses lack this possibility»" (Tunalı,1983:30-33).

Croce's (1983:203) coming into terms with the aesthetical emotion happens when he gives a superior meaning to form and content in the activity called aesthetic creation. To Croce, "beauty is not a physical phenomenon and enters not into objects, but into man's activity, spiritual energy." Accordingly, both in the senses of the designer and of the customer, objects and physical phenomena are only auxiliary with their intermediations and associations. In his book titled "Aesthetics", Croce (1983:203) uses the terms "content and form" with a sophisticated meaning, and says:

> "Some call expression or inner feeling (for us this inner phenomenon is form) as «content» and call marble, rhythm and sounds (for us these are not form any more) as «form» , and in this manner see the physical phenomenon as form regardless of whether merged with content or not. Further, physical beauty serves to put forward a more comprehensive opinion about what is aesthetically named as «ugly»".

It is not strange in terms of the close ties between creativity and design that Croce defines form as expression and inner feeling. For the concepts that emerge as instantaneous ideas during the search for form are generally the forms that are products of imagination. What others call as marble, color, rhythm, and sound are auxiliaries used in the constitution of form. Some of these auxiliaries are material objects whereas some are physical phenomena of sight or hearing. And rhythm, as a concrete or abstract phenomenon, is one of the aesthetical criteria that puts the art in order. All this information bears value for design.

5. The Experience of Emotional Interactive Aesthetics in the Design of Lighting Instrument

From 2000 onwards, the field of design has witnessed the concept "emotion" taking place in many design sectors. From this viewpoint, as lighting instruments find life with light and since light is a very important and indispensable part of animate life, it has many ties with the subject in question. Light could manifoldly explicate the concept "emotional interactional approaches".

All people are in interaction with their surroundings and the material world. Needs abstract or concrete set this into action. The Sun as the natural resource of light and the filling of spirit with daylight give peace and calm. Lighting instruments as artificial resources of light address to an important need in the evenings at homes, and offices when a different atmosphere or sight support is needed.

The students were advised that they could look for a design approach with an emotional interaction for the lit up atmosphere they would create in the space with lighting instruments. They could develop designs for all age groups and all users and spaces. The students directed their designs towards the SME's and their viewpoint that gained the most prominence as a result of their emotional interactions. Thus, students' associations varied according to SMEs and their fields of interest. At the beginning of the subject:

- Students researched all subtopics related with the subject.

- They tried to find an answer to the question "What is an emotional interactive approach?"

- They discussed, made analyses, and found solutions related to the characteristics they could append to their designs in the context of entire human lives and behaviors.

- They shared their sketches with the SMEs they collaborated. They inspected the SME's strategies, competitive media, market shares, and production methods.

The 'emotional interactive concepts' the students chose and decided upon, and their product designs are as below. Not all but only some of the projects will be presented here:

Fig. 4. **Ilke Kahyaoğlu**, Establishing bonds with feelings, Night reading lamp.

SME: Dr. Light - Student: İlke Kahyaoğlu

Emotional interaction: Re-Ani: recalling, establishing bonds with feelings. Night reading lamp: Evaluated the concept of establishing bonds with feelings for different uses. The bond that was intended to be established in this project was made remarkably visible. A bedside or night reading lamp that could be coiled up around the bobbin, and could be retractable and extendable managed to establish bonds: Adjustable cable makes it possible for the light-rays to establish bonds and interact with the user. Bobbin shaped body supports this bond.
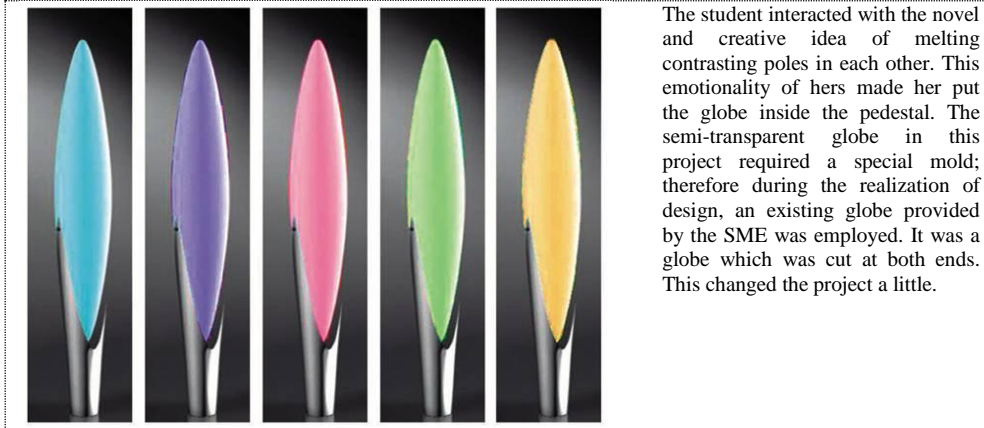

The student interacted with the novel and creative idea of melting contrasting poles in each other. This emotionality of hers made her put the globe inside the pedestal. The semi-transparent globe in this project required a special mold; therefore during the realization of design, an existing globe provided by the SME was employed. It was a globe which was cut at both ends. This changed the project a little.

Fig. 6. **Pelin Karakoç**: movement, interlocking; pedestal lamp.

SME: Neo Luca - Student: Pelin Karakoç:

Emotional interaction: Movement, interlocking, contrasts, Pedestal lamp: Lighting instrument with surprising pedestal and globe. The student interacted with the novel and creative idea of melting contrasting poles in each other. This emotionality of hers made her put the globe inside the pedestal.

SME: Neo Luca - Student: Esra Öcal:

Emotional interaction: Go to sleep forgetting the tiring day! Two-sided wall fixture: White and colorful light, dual-purpose lighting. The student obtained bare lighting with quarter sphere. When it is turned down it gives white light, when it is turned up it gives colorful light, providing a romantic atmosphere.

Fig. 8. **İlyas Erişmiş**; light effect according to season, movement, vigor; Pedestal lamp.

SME: Özcan Aydınlatma – Student: Ilyas Erişmiş:
Emotional interaction: Light effect according to the season, sincerity, movement, vigor,
A pedestal lamp that bears nature's contrasts, resembles day and night, opens and closes itself like a flower. It could be adjusted manually or electronically. It was originally conceived with features resembling those of the calyx and petals of a flower, but some features remained lacking.

SME: Tekfen – Student: Nihan Yılmaz:
Emotional interaction: Light keeping coffee hot, people alert. Desktop lamp that keeps your coffee hot: Working with a coffee treat. A desktop lamp for eyes weary of computer, provides near daylight quality light and keeps your coffee mug hot.

SME: Veksan – Student: Tekmila Semra Şahin:
Emotional interaction: Wholeness that touches eternity on the wall, difference in perception, art and eternal (immortal-endless), light coming from the corner. All-purpose corner lighting fixture: prevalent light like sunlight.

SME: Emfa – Student: İrem Çobanoğlu,
Emotional interaction: Curiosity, excitement, energy, happiness. Fluid tube urban lighting: light games of particles in the fluid tube.

6. Conclusion and Discussion

This design research <u>did not</u> aim primarily to determine customer's needs, and related feelings, wants, expectations, and behaviors and thus design accordingly. The primary aim was to ensure that students are more creative, and to receive support for the concept, 'emotional interaction' against the excessive limitations of the SMEs they would work with. With such support, it was aimed to introduce SMEs with the processes of a product design project that has strategic character. But, even if the project started strategically with the topic 'emotional interaction', any project that included SMEs would generally emphasize use. Save for the student who searched for his inner world, the projects catered to use as well. In this context, the results obtained are below:

1. Here aesthetic concepts are symbolic expressions that guide the language of the form. For instance, as indicated by the simple design by the student who would like to establish bonds with feelings, it is possible to establish a perceptible interaction between the object and the user.

2. Throughout design process, the students generated aesthetics as individuals who transformed emotional interactions into form. As seen in Löbach's schematic description of "industrial design aesthetics", the students provided SMEs' customers with a means of aesthetic perception.

3. The function in product design is considered multi-dimensionally. The notion of aesthetic function here is beyond pure beauty, it is an aesthetic function which eradicated all worries of the emotions and most satisfyingly transformed into form.

4. Starting from the viewpoint that aesthetics is at the same time a psychological discipline, the aesthetic emotions which reflect the designer's or the user's feelings and moods are also their inner features. Especially for the designer, aesthetic emotions are, as Croce puts it, 'a vision, an illumination, an intuition, an inner expression'. The making of the stimulus called physical beauty means the transformation of the aesthetic into a practical activity. Such a transformation could be more successful with a customized task description.

We think that this project which excited and motivated students and SMEs alike throughout the process has met its objectives.

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