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IMPORTANCE AND INFLUENCE OF FORM LANGUAGE IN DESIGN

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ABSTRACT

During history all product design has been based on function without any thought on aesthetics. The radial nature of a wheel is the result of a desired function. The form of an object needs to be its language. In order to perceive the product and its function at first glance, the real success is when the object expresses itself easily leading to an enhanced communication between the user and the product. Another aspect of the product that carries the utmost importance oriented on communication is the material as well as color allowing the product to express itself and convey message in order to trigger an emotion.

As implied in 'form follows function', the ergonomic form of cutlery or a glass filled with liquids all have a similar approach design wise. The language of the object can't be stated only by form, material and color as they also have a strong influence on the final object and its perception. An object in contact with heat of fire can't be produced from plastic or wood. From the prespective of product language, a white milk container, brown chocolate sauce, colors of mustard and mayonaise all imply the importance of color of products. This study focuses on the importance of form language of products and objects centered on providing elaborated descriptions regarding the terms presented.

Key words: Product Language, Form Language, Industrial Design, Function, Cognition.

INTRODUCTION

Design has a nature related to necessity. The wheel, which is of great importance for the history of humanity, discovered consciously or unconsciously, has been an invention that makes elevated labor and effort possible. The presence of fire through the path shown by nature is the phenomenon that led to the advancement of civilizations. It has been completely necessary to develop methods that can be considered as a product of thought, to make fire and to use the tools that should be used in these methods. In addition to this, it can be considered as design to create the necessary tools by using materials such as stone, metal and glass belonging to that period to see the various aspects used in daily life. It can be said that with the advancement of civilization, the most basic life impulse is to design items such as plates, forks, spoons and knives, cups and pitchers for drinking water, as solutions brought by the necessity of eating and drinking water. With the developing technology, the same products have been continuously and repeatedly redesigned in search of the ultimate developed form.

The development of agriculture, printing house, radio, television, computer and internet all depended to the above-mentioned developments on design. Innovation, creativity, development and sustainability are always the pioneers in a design process. These concepts are elements that increase the value of the design and add personality, as well as connecting with the requirements of the age. A design without any innovation cannot be differentiated from the pack and is considered still born as an ordinary product of thought. The same approachapplies to non-creative designs. The idea, which cannot go any further than it is, is

infertile, locked and doomed to end when the time comes. The form of the created product forms the language of the product and therefore gives the product a stronger meaning in the axis of causality. If a language arising from the need is not formed, it is inevitable to experience problems during the usage phase. The product, which is not formed with the correct form language, is worthless for its user. Therefore, plain designs that do not contain unnecessary details become designs that express themselves best. The products, which protect resources and environmental balances are taken into consideration to be evaluated as a sustainable design.

1. INDUSTRIAL DESIGN & TECHNOLOGY

The designed products need to be conveyed into mass production within the industry in order to be delivered to a wider user range to benefit. At this stage, the name of the approach becomes Industrial Design. Although the aim of Industrial Design initially is to create and produce the objects that people need to make their lives easier, it is a fact that recently, it includes creating new requirements, conceptual designs and moreover designing systems. Industrial Design prospering through the industrial revolution establishes the relationship of technology with the user. The harmony of the technological solutions of a number of functions is correctly correlated with ergonomic, psychological and anthropometric data focusing on the users. From this point of view, the duty of the Industrial Designer is to make this compatible possible. Technology and Design are intertwined concepts. A design process has to be structured for the technology to be realized. For example, when the design of a refrigerator, a technological tool is considered, it is first necessary to design its size, function, color, texture, shape and other features. The questions that need to be answered during the design process are; What are the user requirements of a vacuum cleaner, where all engineering solutions are carried out? What factors are required for a person to use? The vacuum cleaner should have a shape that contains the correct measurement values according to the functioning function and is synch with the user experience. It is essential that the dimensions of this tool used in standing position that the part of the pipe connected to the adjustable mouth-contact mouth apparatus and the flexible hose that forms the connection of this pipe with the vacuum cleaner, are compatible with ergonomic and anthropometric values. Standing elements should be positioned at the correct angles that can respond to the hand and arm movements required during the use of vacuum cleaners. It should be emphasized that besides all these functions and measurement values, the materials used also contains another knowledge and values. The material used on the initial designs were metal-based and plastic-based productions to be followed by the developing polymer technology. It is observed that the polymer material can take the desired shape, lightness, durability and easy to produce as well as adding many different values to the design, especially financial ones. The fact that the form designed due to the material has the possibility of responding to the requirements has affected the user relationship more accurately and also has created awareness in terms of user experiences. The vacuum cleaner mechanism for pulling dust and similar dirt also has a certain shape that enables both user psychology and provides ease of use. The cable system required to connect to the energy source should not be considered different from the whole and should adapt to the total product. If a successful application has emerged and then there is no complaint by the user implying that the technology has adapted to the user. It is the Industrial Designer that creates this experience related to the usage of a product.

2. COMPEXITY of INDUSTRIAL DESIGN

The act of designing is a process of reasoning in which perceptions and logic are effective, but the efforts of the designer to understand his mental activities have not been explored in order to reveal these activities, resulting in the creation of a meaningful product (Turan, 2011). Design deals with both precise and ambiguous ideas, systematic and chaotic ways of thinking,

imagination, and mechanical calculations, related to disciplines such as architecture, interior architecture, industrial product design, urban planning, landscape design, achieves both an aesthetic and functional result. The disciplines that influence the act of design form a spectrum leading to a hybrid design (Lawson, 2006). Based on this, Industrial Design is a very complex task, but it also can be said that it is very simple. The determining factor is the designer's approach to design. The designer, who is trying to make a difference and wants to create a unique product, will either be very successful or cause some incomprehensibility. Industrial product design is in close relationship with many different disciplines. For this reason, the designer must have 'sociology, psychology knowledge and a wide range of art and science education as well as problem solving skills, shaping, technical skills, design theory and history, art history, production and fabrication techniques' (McCoy, 1990). The designer, who should have a wide perspective, will navigate in the light of this indispensable equipment range. The designer, who wants to design a product in line with his own knowledge, can achieve a forward-looking success if he wants to move on to different untested user experiences. However, this application may contradict current requirements and the average user base. If more than one function is assigned to a design, a usage manual that describes these functions is also required. Usually users below the average will have difficulty in solving these designs, since these explanatory guides respond to average users (conscious consumers) of a certain educational level. The common belief is that mechanisms that carry many functions are not sufficiently interesting for the users due to their unsolved nature, directing the users focus on the function they need. Multifunctional washing machines and dishwashers or smart phones can be provided as examples on product complexity centered on functionality. Such products arising from the desire to make a difference in design emerge as applications that users have difficulty on usage and comprehension. A good design is an understandable design. Lifetime experience forces the user to use some objects without question. Users know from their life experience that the door can be opened by pressing the door handle down or the door lock can be locked by turning it in the direction of the door frame. Everyone knows which side of the cap of a water bottle to be opened by twisting it including children. With the sole purpose of bringing an innovative product, designs poorly thought contradict these movements may not be adapt for users. However, in some cases, it is a strong assumption that although such adverse applications force the user, they will also reveal a new use in the long term. The economic success of a product that has not been market surveyed, user experiences ignored may be non-existent in the near future. The producer will want to produce a product that is likely to be sold and will not tolerate the production of a product that he cannot sell economically.

2.1 COGNITIVE TIPS

In order to understand the product or service provided, people need to be directed regarding the capabilities of a product or a service. As users look for visuals queson use, some mixed-use products provide guides as manuals. Apart from manual support, in interactive objects the user interface presents a wide range of services. In design, the accuracy of the function is the relationship between the object and the user just as a glass is tangible or a chair is seatable. If the function does not serve the purpose, there is a problem with the product. 2 type of congitive tips on how to use a design bring ease individual use of the product are presented below.

1. Unscheduled tips: This kind of tips can be explained by the use of examples. The information given by the clouds in the sky about the weather, the traces left by those who passed through the forest in order to determine which path to follow in a forest or the clues that are not planned to give information about the migratory season passes.
2. Scheduled tips: This kind of tips can be elaborated as explained by the examples provided such as; the stop or move command shown by the red or green light or the

regulative male or female pictograms on toilet doors. Especially in product design, these clues emerge in form language. This implies to the reflection of the function on the form.

In a scenario of a liquid bottle, the tap at the top provides the essential clue regarding the usage of a product. The user convinced that the opening and closing apparatus of the conventional classical taps function by turning left and right in a circular motion, is a clue for the use of the product, although a surprise circuit is produced when the open-close taps working with more or less linear motion are produced. Additionally, it is clear from the form language of the product where to hold an iron and how to iron. In addition, the shape of the on-off buttons on the machines marked with colors are also planned tips. The study focuses on the planned tips presented with the use of examples.

Written or drawn explanations on using many design products can sometimes be sufficient or sometimes insufficient. If these tips are sufficient, all is well but if they are not, the user will try to solve the problem visually. This type of behavior arises from the accumulation of individual gains from the past and is called experience. The low or high number of users' experiences is effective in solving the problem and either it may be possible to solve the problem quickly and easily or with difficulty. People's imagination is a strong, creative and prudent ability. There exists a valuable quantity of know-how with years of experience. One of the duties of the designer is to ensure that the design created can be understood by the users. The user, who interprets the designs in accordance with his own experience, lifestyle and tastes, can choose such products because they give him a sense of differentiation, provide status, or have a descriptive perspective (Özçam & Uzunarslan, 2013). An understandable design will always be preferred over a confusing one. On the other hand, making an understandable design is a proof of success. The designer due to own profession and knowledge is a different thinker than the average group of people who are users of the products. This state of being differentiates itself to differences and generates a thought above the understanding of the society it serves. Problems mostly arise from misunderstanding. A successful designer will lead the society and establish domination by adapting to the wishes and understanding of the society. The industrial designer establishes a bridge between the users and engineers putting forth regulations due to the constraints required by the technology. As design is not just art, the designer has to accommodate the necessities and requirements of users. Industrial designer has to design useful products fulfilling their missions of the user group.

3. FINANCIAL IMPORTANCE of DESIGN

The industrial designer's input on the economy is perhaps the most prominent effect. In a competitive market environment, many similar products fight fiercely. One of the criteria that increases the sales in such an environment is user psychology. There are many questions that provide answers regarding this approach. What are the product selection parameters if the functions on the products are the same? What should be considered? What should be the reasons for the user to choose? Although it is a bit out of the subject, it will be useful to say a provide explanations on this subject as it is strongly related to the form language. Consumers in times of purchase evaluate design features on functionality, hygiene and ease of use being the top priority in the design expectations (Erdinler, 2015). In case that the above-mentioned expectations are met, secondary preference criteria such as security will come into effect. At this stage, the user will look at the producer of the product and its price. It is very important which manufacturer the product is produced by. User experiences overlapping with past knowledge comes into play. If the benefit and usability story obtained from a product used before is positive, then the user may desire to contact the same company again. The most important indicator of choice is quality and perception of the brand. Another important issue

is its price. Even if the product intended to be bought is sold at a higher price by a company trusted, experienced and believed in, it will not be easy to deal with this situation. However, if another cheaper and similar quality product that is experienced by other users is recommended, buyer may give up on the high-priced product and turn to the more affordable product. If there is another product with the same functionality, same quality that responds to requests, nobody will want to buy a higher priced product. Another criterion is liking, which happens when the person establishes an emotional connection with the product to be used. At this point, the price remains as a secondary factor. The desire to use a product that is compatible with the aesthetic understanding is the most natural expression of the user and at this point the price of the product falls to the secondary parameter. Concepts such as form, color and material are the main actors of this emotionality. This is the stage where the designer is most effective. Designs that appeal to human taste have always found buyers. Such aesthetic approaches can be called a kind of sales magic. Therefore, the form language is the material that must be learned for the designer first. It is indispensable for the form to be compatible with the user and to provide convenience to the user.

4. WHAT IS FORM

Aristotle stated that matter could only come true through form, taking shape and becoming a certainty and came into existence. In contrast, he argued that form could only fulfill itself in matter, and that form would never reveal itself without the matter. Thus, defined the relationship between matter and form as a relationship of interdependence. Matter would remain in a chaotic state if it did not have any form or shape that made it perceptible to us, that would be in a state of absence. Because, according to Aristotle, a substance that has not been formed, and which the form has not yet realized, cannot be deemed to have become an entity (Sahakian, 1997).

4.1 Forms

Form can be described in various ways based on perception, geometry and cognitive abilities. The form is a physical formation that takes up space. They are geometric formations that can change from one-dimensional state to three-dimensional state, except for organic forms in nature. Forms can be classified as major forms and derivatives. Square, circle and triangle are the main forms. The square is a static form that is possible to turn it into a dynamic form by manipulating the angles of stance. The circle is a semi-stationary, semi-dynamic form which cannot be changed due to its non-directional state. Therefore, it cannot be put into a different state by changing its angles like in the square. Both have a dynamic and a stationary nature. The triangle is a dynamic form the presents the possiblity to increase the mobility with its different stance. All forms are derived from the main geometric shapes. The three-dimensional version of the square emerges in the form of a cube, a square-based prism and a square pyramid. The square-derived rectangle is three-dimensional as a rectangular prism and a rectangular-based pyramid. It consists of a cylinder, cone and sphere from the circle. Apart from these main forms, many forms such as polygon, trapezoid, and rhombus also form three-dimensional entities. The form is a communication tool in itself. Many expressions in life cannot be explained verbally, so they are expressed in forms. Especially in graphic design, examples of such implementations are seen often in forms of pictograms, logos, emblems, icons and emojis. Conveying a very long message with a simple visual item can be extremely explanatory. Communication, which is a part of social life, also shows itself in industrial products. Every design product has a meaning and a message it conveys. Products perform the communication function through their forms. For example a piece of furniture, which always has a symbolic place in life and a cultural promise can be considered as a communication object in addition to its practical use function since the first day it was used.

4.2 Color

Color is a light effect captured by the eye. Each of the sensations occurring in our eyes from the reflected rays when light strikes the retina is called "color". Color implies that the light is transferred through the eyes to the the brain. Color has a triple effect on perception as explained below.

1) Color in the psychological system: It is a state that awakens the brain as in percepting the color blue.
2) Color in the physiological system: It is a physiological event created by the nerves on the eye retina of various light types. Appearance phenomenon of light is physiological. Color is with us, it is a feeling always present in the nervous systems of living beings.
3) Color in the physical system (with light spectrum): It is an event that is broadly specified by dimensions and numbers. It is essentially which wavelength the light contains and in what proportion. In terms of physics, the color type consists of light waves in vibration.

Color behaves on different waves lenghts, red being the shortest and purple the longest. There are various questions that need to be asked. What is color? How is it formed? (Bilgiustam, 2019). Just as forms have a language, colors have a language. A form can make its expression differentiate from other objects with the color it carries. Red, blue, egg yellow, lemon yellow, orange and phosphorous colors always create a dynamic effect. In contrast, pastel colors and light colors such as pink, pale blue, pale yellow, gray and dark colors such as brown, burgundy, navy create a static effect. Black and white colors which are not actually colors can give both effects depending on where they are used and the amount used.

5. DISCUSSION: FORM LANGUAGE

Throughout history, it is seen that the tools that are invented in line with individual needs took shape according to various uses. These tools are function-oriented tools that are shaped according to the intended job, within the framework of the capabilities of purely human physics, without aesthetics and more refined forms. It is doubtless that these functional loads affect the shapes of the resulting tools. The expression created by the forms is a map of how the tools are used. As shown in Figure 1, the fact that the tail part of an airplane is curved upward prevents the tail part from rubbing on the ground during the take off of the airplane.

As shown in Figure 2, the minaret of a mosque is built at a certain height in order to ensure that the prayer announced from the minaret is heard by everyone, with the assumption that the sound reaches more effectively from high than low.

The reason that the bottom part of the cup, plate, pottery that touches the table surface is inside is to prevent it from becoming unstable as shown in Figure 3.

The thin waist of a tea glass will prevent the tea from cooling quickly. Due to the difficulty of holding the hot tea glass from the thin waist, the required angle is given to the cup allowing the cup to be held without slipping (Figure 4).

The fact that the handle of a mug is thickened at the attachment points to the mug in order to increase the lifting power providing a safer use (Figure 5).

A a radiator valve that has a recessed projection is easy to hold and has a shiny surface intended to be easy to clean in Figure 6.

Whether a button should be pushed or dialed is easily determined by its form in Figure 7.

The recessed projections on the plastic water bottle to provide structural stability (Figure 8).

Hook formed for the little finger on the handle of the barber scissors for faster hand movements and ease of opening and closing (Figure 9).

Ergonomic shoelaces ease the placing of the foot inside the shoe.

The ends of skis on the front side prevent unwanted sliding as well as the ends of the ski sticks prevent the skier to sink in the snow (Figure 11)

No form was created without a necessity. In line with the function, usage requirements created and refined the forms of tools and objects. Unfortunately forms that do not function properly cannot go beyond being mere decorative elements. Some of the examples where the forms relate to functions can be explained as follows.

6. CONCLUSION

In the light of all the information provided and findings compiled above, what is desired to be revealed is that the language of a product expressing itself depends on the material, production method, usage, form and response criteria given to the requirement. A design that complies with these criteria creates the language of form. When acting with the knowledge that design is out of necessity, it can be said that the functionality aspect is the first step in expressing the product itself. The presence of unnecessary details on the product is also sure to mislead the user of the product. Lean and easy-to-use products are always the most preferred products. The user profile that has an average level of consciousness, may have difficulty in using the product with complex functions. Nevertheless it is often determined by various studies that users do not prefer to use functions other than the basic functions of complicated products. It can be deduced from this that users mostly prefer easy-to-use products. In addition to form undertaking functionality features of a product, the usage of the right material is also important in terms of the form language. The wrong choice of material unable to meet the criteria for using the product, also creates a contradiction regarding the engagement rules on economy and ethics. The wrong material selection affects the life span of the product in a negative manner. If we think that this attitude will affect the sales chart, it is possible to say that economic inputs also plays an important role in forming the form language. Apart from all these data, it is crucial to mention the concept of taste. It is necessary to admit that the concept of color is an indispensable element in terms of user values, as the material and production method are considered important when creating the form language of the product. Since the form language is a whole, commissioning the color selection will illuminate the path of the designer during the design process. The choice of material according to function and the color selection according to material selection material proves to be the correct behavior of the designer and the manufacturer. In the future studies focusing on cognitive messages conveyed by main stream products of prominent brands in relation to goals on the determination of design approaches used may be a subject worth investigating.

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