IETI Transactions on Ergonomics and Safety

http://ieti.net/TES

2020, Volume 4, Issue 2, 26-28, DOI: 10.6722/TES.202012_4(2).0004

OUR NEUROAESTHETIC APPROACH ON ERGONOMICS, DESIGN AND PRODUCT SELECTION

Panagiotis V. Tsaklis[1,2,3 a]

[1]Department of Physical Education and Sport Science, ErgoMech-Lab, University of Thessaly, Trikala, Hellas

[2]Department MMK Karolinska Institute, Solna, Sweden

[3]Center of Orthopaedics and Regenerative Medicine (C.O.RE.) / (C.I.R.I.) - Aristotle University Thessaloniki, Hellas

[a]tsaklis@uth.gr

SHORT COMMUNICATION

Abstract Many times in our daily life, we buy a product while being impressed by its appearance, believing that it will cover our need, without however further evaluation of its functionality, its safety or its usability. While "experimental aesthetics" is using a scientific approach via observation and skepticism, in order to study the way we perceive art or the aesthetics of an object, Neuroaesthetics relies on neuroscience for the explanation and understanding of this experience in a neurological level, following certain steps, involving an aesthetic-kinetic, emotional-evaluative and conceptual-cognitive, brain based circuit. Finally, only an experienced and well informed customer will choose between a well designed but less ergonomic product and a well designed and ergonomic one, independently from its price and brand.

What do we call aesthetics in art or in any general creation? Probably there are as many definitions as there are artists, art critics or product designers. Of course, art is an expression of our aesthetic reaction to beauty. A reaction that can vary among the different cultures or temperaments. The fact however that in people who live in distance from each other, art can have the same appeal, regardless of geographical location or culture, reinforces the point of view that art is a human communication system, with neurobiological bases.

Based on a biological approach, whenever art is being created or a product is being designed, the qualitative genetic characteristics of the creator are expressed, like talent, dexterity, creativity and cognitive perception. So, it is up to the brain of the spectator or the buyer for the aesthetic reaction to be realized.

While "experimental aesthetics" is using a scientific approach via observation and skepticism, in order to study the way we perceive art or the aesthetics of an object, Neuroaesthetics relies on neuroscience for the explanation and understanding of this experience in a neurological level. The experiences that are related with aesthetics are coming to effect through the interaction of a triad of

2020, Volume 4, Issue 2, 26-28, DOI: 10.6722/TES.202012_4(2).0004

neural systems that include the aesthetic- kinetic, emotional-evaluative and conceptual-cognitive circuit.

Many times in our daily life, we buy a product while being impressed by its appearance, believing that it will cover our need, without however further evaluation of its functionality, its safety or its usability. In the marketing game, we most usually meet the branding of many products as ‘‘ergonomic’’ or ‘’of ergonomic design’’. Ergonomics is the scientific field that studies the interaction between humans and technologies (human factors) and created products that are suitable for safe and productive use, that match the physical and mental characteristics of the user. Safety greatly determines the ergonomic level of a product, followed by its adjustability, its usability, its comfort, the satisfaction it provides and its ability for its functions to be easily understood.

When we want to select an office chair, for example, many questions arise, such as: is it ergonomically designed? Can someone sit comfortably in the duration of his work? A key question concerns the choice of criteria and possible mistakes between a truly ergonomic product that will reduce the risk of strain on the user and a product with high aesthetic design that will be called "ergonomic", but in the long run will prove to be the opposite.

Evolutionary Psychology argues that we prefer primarily aesthetic characteristics, which are beneficial for the development of the functioning of our senses and our survival in general [1]. So we need to see how the aesthetic experience is related to the experience of the product and to what extent the saying “the form follows the functionality” can be achieved.

For the final choice of a product based on its aesthetic and functional perfection, we need to:

- Devote time to observe the product (shape, structure).
- Compare it (at least in thought) with other products of the same kind that we have seen or used.
- Classify it empirically by quality
- Reach a conclusion based on our aesthetic preferences (ugly/ beautiful)
- Try it out (Physical experience)
- Reach a conclusion based on its feeling (Pleasant/ Annoying)

Following this procedure, during the first two (or three) stages, our perception will be based on the design of the product and on the level that each of us can comprehend its structure and innovation. Thus, these stages mainly concern our aesthetic satisfaction (or dissatisfaction), while in the final stages, the experience is completed by our cognitive, physical and emotional experience from this product. The perfect match occurs when the quality of all materials is in synch.

Most of us that don’t have any specific experience or specialty, usually select the less ergonomic, but more aesthetically pleasing product, following the first two stages of the aforementioned model, with a perceptual (through image) analysis of the product and maybe by comparing with previous products, but without further procedures.

So, for example, someone who buys a bicycle for his free time and exercise, without however having any special knowledge on bicycles, usually selects the bike as a “Holon” (whole), without paying attention to its sub-parts (saddle, pedals, etc) and his choice is mainly based on the aesthetics, and

IETI Transactions on Ergonomics and Safety

http://ieti.net/TES

2020, Volume 4, Issue 2, 26-28, DOI: 10.6722/TES.202012_4(2).0004

certainly its price. On the other hand, a cyclist who is active and knowledgeable, for either entertainment of competitive cycling, would buy a bicycle as a "Total" of sub-parts, where each one of them has its own characteristics and functions [2]. This way, he mostly aims for efficiency and safety as well as success and pleasure.

The basic parameters that influence the final judgment of the consumer is his experience on the particular area of products and his ability to gain access to supporting information concerning the subject (characteristics, user manual) and the relevant market. We shall also add the participation and experience of the salesman, who can provide all the useful and relevant information for each product, while at the same time he will be able to combine his offers based on the "aesthetics – safety – ergonomics - price" model [figure 1]. There is no other way to buy the most suitable chair or mattress, unless you have the ability to try many different items and reach a conclusion by also combining your physical experience. In other words, only an experienced and well informed customer will differ and choose between a well designed but less ergonomic product and a well designed and ergonomic one, independently from its price and brand.

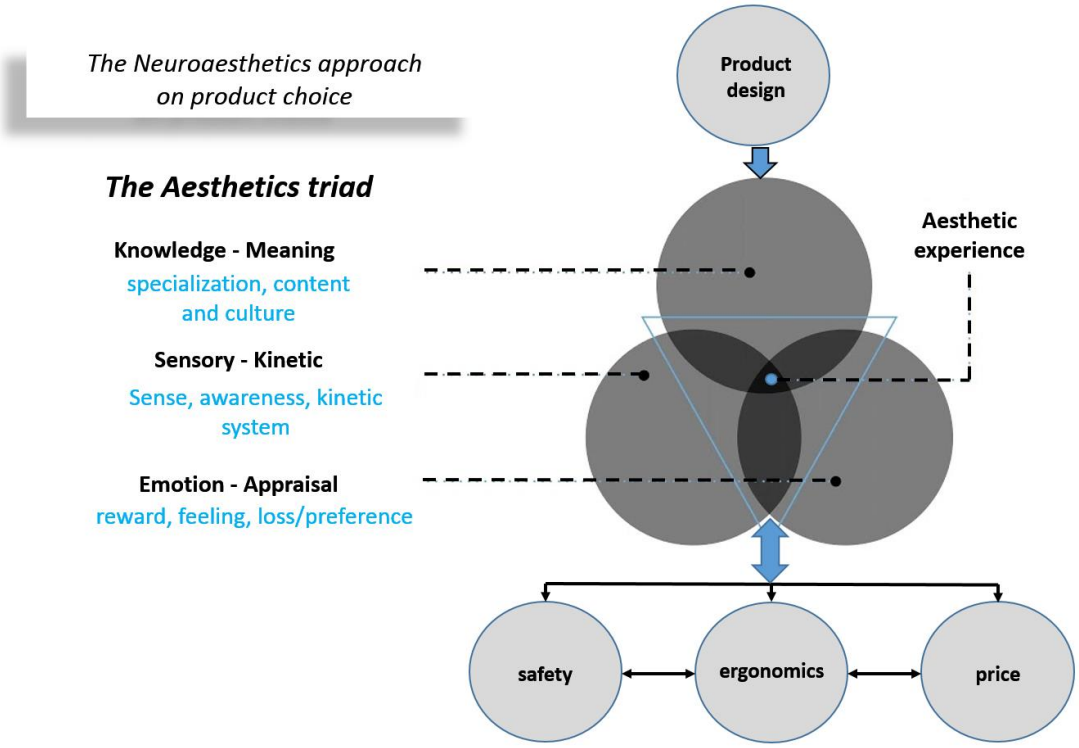

Figure 1. The Neuroaesthetic approach on product choice in combination with the safety-ergonomics-price, triad.

References

[1] Edmund T., and Rolls E.T, 2017, Neurobiological foundations of aesthetics and art, *New Ideas in Psychology 47*, pp. 121-135.

[2] Zunjic A, Tsaklis P, and Yue X,G, 2017, The Relationship between Ergonomics, Safety and Aesthetics in the Design of Consumer Products and Systems, In: Zunjic A (Ed.), *Ergonomic Design and Assessment of Products and Systems*, Nova Science Publishers, New York.