



**Title: Assessing the Aesthetic Components in Furniture Design Using Sustainability Approach**

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**Abstract**

*Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs.* Sustainable development encompasses four dimensions including environmental, economic, social and cultural. According to this categorization, the notion of aesthetics in furniture design can have a significant impact on social and cultural sustainability with an emotional design perspective. For this purpose, the present study sought to present sustainable design approaches used in the aesthetic structure of furniture design. This issue is reflected in two sections of aesthetic structure and sustainable design elements. This is a descriptive-analytical study, which aimed at achieving the aesthetic criteria of sustainable furniture by addressing the dominant views involved in this issue and the position of aestheticism concept in furniture design. Finally, this study introduced three fundamental principles for the design of sustainable aesthetics in furniture design.

**Keywords:** Furniture design, Sustainable design, Aesthetics

## چکیده

مفهوم پایداری، تامین نیازهای امروز را بدون به مخاطره انداختن نیاز آیندگان، مورد توجه قرار می دهد. توسعه پایدارمشمول بر چهار بعد زیست محیطی، اقتصادی، اجتماعی و فرهنگی است. در این دسته بندی مفهوم زیبایی شناسی در طراحی مبلمان با دیدگاه طراحی احساسی می تواند تاثیر بسزایی در پایداری اجتماعی و فرهنگی داشته باشد. به همین منظور در این مقاله تلاش شده است به معرفی رویکردهای طراحی پایدار استفاده شده در ساختار زیبایی شناسی طراحی مبلمان پرداخته شود. این موضوع در دو بخش ساختار زیبایی شناسی و عناصر طراحی پایدار ارایه می گردد. این مطالعه از نوع توصیفی- تحلیلی است و با هدف دستیابی به معیارهای زیبایی شناسانه مبلمان زیست پایدار، به بررسی دیدگاه های حاکم بر این حوزه و جایگاه مفهوم زیبایی شناسی پایدار در طراحی مبلمان پرداخته شده است. در پایان، این نوشتار سه اصل بنیادین را برای تدوین زیبایی شناسی پایدار در طراحی مبلمان معرفی می نماید.

کلمات کلیدی: طراحی مبلمان، طراحی پایداری، زیبایی شناسی.

## Introduction

The concept of sustainable development is an attempt to combine growing concerns about a range of environmental issues with socio-economic issues. World Commission on Environment and Development defines sustainable development as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs.

According to Abbaspoor (2008), sustainability is regarded as a kind of interactive relationship between human and the environment, which finally leads to the sustainability of both sides. With the development of psychology in the nineteenth century, aesthetic concepts have been evolved and aesthetic perception was associated to the individual perception. Since psychological and social factors have important impacts on



human perceptions, sense of beauty is no exception. *Nowadays many people believe that* the beauty is not visual and external; rather it is an integration of qualities that creates a sense of pleasure through influencing emotions, feelings and human intelligences (Hemmati, 2017). Too much attention has not been paid to the use of aesthetics in sustainable design; whereas the aesthetics *principles* are fundamental elements of *design* and cannot be considered apart from ecological aspects. Hence, in order to achieve a sustainable product, aesthetic requirements should receive special attention in addition to ecological principles (Hemmati, 2017). The analysis of aesthetic values is of great importance as one of the early stages in furniture design and *manufacturing*. The objective of the sustainable furniture design is to optimize the selection of materials, increase the shelf life of the product, decrease waste and release organic volatile compounds and the like, which result in the *manufacturing* of furniture with the minimal negative environmental impacts. Describing aesthetic values, providing a research methodology and determining the function of these values in furniture design were the main objectives of this research.

### **Sustainable Development**

*Sustainable development* can be *classified* as a *development* that commits to human developments, environmental protection and attention to the needs of future generations, removal of cultural and social constraints, and balanced and coordinated development suited with economic, social and cultural diversity (Farbood, 2015). It emphasizes three fundamental components to social, economic and environmental sustainability. For a more complete understanding of sustainable design and offering a definition for the term, it can be stated that "sustainability" can now be used for describing a world where humans are able to live for a long run. Sustainable design can contribute to further improvement of the products` lifecycle, efficiency, recycling as well as product reversibility. In a world where the most harmless and cleanest technologies as well as the most sophisticated research alone cannot lead the community into the long-term sustainable development, the application of environmental ethics could be the best solution. In general, environmental ethics refer to observing a set of behaviors in the production, consumption and other aspects of life, which can result into the less *minimal environmental* waste and impacts and cannot cause difficulties with life foundations. This approach focused on a planning and design in which the natural cycle of life was considered very important, and emphasized upon the use of the tools that nature has provided for all of man's need. Understanding the patterns of human – environment relationship in the past and paying special attention to producing garbage and waste that *are not* a major contributor to the environmental damages, shape the conceptual framework for sustainable development in the light of environmental ethics (Bahmani, 2014). As already mentioned, the current principles of sustainable development and social justice are based on three basic tenets of economic development and ecological unity. Experience has shown that the majority

of the proposed designs mainly focus on ecological aspects of sustainability and the aesthetic dimension has not been the prominent feature of these projects. These designs generally draw on some aesthetic superficial aspects, so that aesthetics has sometimes been recognized as a common and insignificant tool for dealing with environmental hazards, which threaten the human realms (Hemmati, 2017). In this regard, it is believed that such environmental problems can be explained through the prioritization made based on the *Maslow's hierarchy of human needs* (Wu / 2013). Through comparing the services provided by ecosystem to meet human needs, he built a categorization model in which aesthetics has been ranked at a higher level than the basic needs, such as the need to provide security and physiological requirements (Hemmati, 2017). The current study mainly focused on the use of aesthetic principles for designing sustainable furnitures.

## Aesthetics

Aesthetics is a branch of philosophy that is defined as the theory of appreciation in aesthetic judgments and the creation of the beauty and its relation to perception (Hollingdale, 2015). The *aesthetic experience* is often *experienced* as a *pleasurable and desirable experience*, an *experience* which gives life worth and meaning. This experience is based on a concentration originating in the organism causing it to perceive its environment with a heightened or more vivid perception. It is an experience in which the attention is firmly fixed upon some aspects of man`s inner environment ( Hemmati, 2017). Aesthetics is something beyond an enjoyable and *pleasurable* picture; it is a sensory experience of the physical sphere, which leads to understanding of the rhythms and life cycles of a biomass. This sustainability attitude attempts to exploit aesthetic sensory experience as an expression for sustainable design. This approach has existed before; however, its potentials have not been analyzed separately as an effective factor for sustainability. In a study entitled as “Sustaining aesthetics: The performance of appearance as a manifesto”, Meyer .K Elizabeth firstly discussed the need to explain new criteria of aesthetics that led to sustainability and described primary pillars to achieve it. Then, Daniel .C Terry modified a classification and represented ecological aesthetics principles based on the three general categories of visible biological cycle, land-space change and *bio-social context*. In the categorization offered by Daniel, it seems that the principles have become too general and have been distanced from practical measures (Hemmati, 2017).

## Furniture design

As an applied art, furniture is related to the perceptual perception of the audience which serves as an instrument for responding to the physical needs of the user (Rahmanpoor, 2015). In human life, furniture has been evolved along with the transition from nomadism to *sedentism* and human civilizations. Regardless of its technical and practical results, the emergence of furniture seems to be a social manifestation and its evolution is correlated to the thoughts and objectives of the people in a certain period of time. It cannot be considered and evaluated apart from other social phenomena such as art, literature, painting, theater, law, and religion. Its different stages of evolution have been developed from different periods of human civilization (Weiss et al., 2008). Furniture industry is considered to be the oldest sector in the world of wood industry, because early *humans are likely to have used* the wood as seats. In fact, the furniture became a part of the cultural necessities of human lives. There are many different styles, materials, and manufacturing techniques used in the furniture making, which the consumer needs to obtain a series of useful information to make a good choice and decision (Maleki Golandooz, 1). There are major factors for judging the aesthetic function of the interactions between the primary and secondary forms. However, there are some factors such as color, material, and surfaces, which lead to the *consumers' satisfaction*. The designer attempts to create the products or designs that capture the viewer or user's attention and meet their satisfaction or delight, because they set the grounds for buying the product.

### **Furniture design criteria using sustainability approach**

The above mentioned concept states that rather than designing furniture and then defining sustainability factors for it, it is better to design a product based on sustainability indicators and implement it in the production process. This concept involves many interconnected issues such as optimizing material selection, increasing product shelf life, reducing waste and releasing organic volatile compounds, and others, which result in the manufacturing furniture with the minimal negative environmental effects. In addition, wooden furniture can lead to the generation of large amount of unused waste due to relatively large and cumbersome size at the end of its useful life. Discharging these waste into the environment not only causes many environmental problems, but also it incurs a lot of cost. Due to the use of a variety of metal fittings and different adhesives in the manufacture of furniture, it is usually difficult to recycle the furniture *at the end of its useful life*. *In order to facilitate the operation of furniture recycling at the end of useful life, it is necessary to consider the following principles in the design and production process of furniture. These principles can have many advantages for the production process.*

A. Avoiding the use of a lot of adhesives and metal fittings in the *production* process and using a variety of caps and tabs fittings.

B. Reducing the number of individual pieces in furniture making

C. Minimizing the use of various types of raw materials in the production process (Winerall Furniture Site)

Furniture and fixtures that are incompatible with nature and contain high amounts of chemical and industrial materials might be the source of many air pollutions. Since we often spend a lot of time indoors, this may lead to a variety of diseases, including allergies, due to the exposure of pollutions emitted from the furniture. It should be noted that furniture pollutions affect the human body mainly through inhaling in outdoors rather than indoors. Therefore the use of furniture with a sustainable approach can at least guarantee the respiratory health of people who work in the furniture manufacturing profession. The first step to experience the green interior design is to remove the two pieces of furniture made of synthetic materials and oil. Products made of PVC or polyurethane foam are flammable and often combine with flame retardant chemicals to reduce flammability. These materials are toxic in nature and can cause health problems in people, including infertility, common development problems in children and low IQ. Natural wood is the best element in making furniture. Walnuts, beech and oak are among the most common hardwoods used in *furniture* manufacture. Natural wood furniture needs smaller quantities of chemical adhesives and glues. Hence, they are much healthier than the types of synthetic wood. Industrial wood like medium-density fiberboard (MDF) are not a good choice for indoor furniture due to the *use* of petroleum-based *resins* (Safdarian, 2019, Chidaneh Web site).

### **Managing Energy Resources in Sustainable Design**

1. Management of non-renewable resources: Since the use of non-renewable resources such as fossil fuels is increasing nowadays, human will face a shortage of energy thus the use of these resources becomes essential. This is because these natural resources will be run out in the near future and therefore, some serious efforts should be made to access new alternative resources.
2. Renewable resource management: The best sources of energy for sustainable design are the use of resources with natural cycle ability and renewability property. Here, the designer attempts to establish equilibrium between the designed work and the surrounding natural environment so that these two elements can be joined to each other during the recursive cycle. This type of design is cost effective due to the use of accessible and natural resources such as sun, wind and rain. *Wood* is known to be *one of the most* naturally *renewable* energy sources that can contribute to the beauty of the interior spaces (Davarpanah, 2016, Chidaneh Web site)

## Furniture design criteria using sustainability approach

In the industrial design process, the aesthetic perspective is discussed at various levels including the following:

**General aesthetic:** It refers to all public, educating information and individual creativities that designers apply for the design of a new product. It is also referred as aesthetic messages, which are created based on the designer's general knowledge and experiences (Hojjatie Madarie, 2003).

**Experimental aesthetic:** This category takes advantages of basic goals of the experimental aesthetic for understanding the object and its evaluation in relation to the user. It can also provide an instruction for designing of a new artifact (Hojjatie Madarie, 2003).

**Value aesthetic:** This category is considered as a part of aesthetic perception system for product users and can be described as aesthetics associated with the value (cultural) concepts of the group (Hojjatie Madarie, 2003).

Since modern furniture today captured the attention of customers, the present study attempted to have a particular focus on this issue. *Functionalism is one of the important styles of the modernist architecture, which includes the following aesthetic values:*

*Elimination of prehistoric and pre-industrialization decoration*

*-Removing inappropriate decorations*

*- Use of functionalism style*

*-Use of symmetric geometric forms*

*-Use of color values instead of pure colors*

*-Minimal color variation*

*-Harmonious and orderly building*



*-The priority of mass production constraints*

*Mathematical and geometric proportions (Hojjatie Madarie, 2003)*

### *Conclusion*

*The sustainability science, based on the three ecological, social and economic principles, presents some patterns for production designs. This study attempted to introduce three fundamental principles for the design of sustainable aesthetics for the furniture design.*

*-Use of natural materials can lead to the interaction between the humans and nature.*

*Meta -ecological functions: In product design, while ecological principles are essential, social capabilities must also be utilized to achieve sustainability.*

*-Enhanced sensory experiences applies forms that trigger the audience's senses and emotions. Sensory experiences minimize the distance between the individual and the product, thus affecting the individual's aesthetic judgment. These principles would result in a more sustainability of the furniture by taking into consideration the aesthetic properties if they are used as strategic patterns.*

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