Journal of Salutogenic Architecture

Original Scientific Paper 2022, Volume 1, Issue 1, pages 32–51; https://doi.org/10.38027/jsalutogenic_vol1no1_3

The Aesthetic Evaluation in Sustainable Architecture through Ethics to reach **Well-being:** Maslow's Hierarchy as a Tool

[1] Dr. **Maryam Iranfar**, [2] Dr. **Hourakhsh Ahmad Nia**
[1] Department of Sustainable Architecture, Bharati Vidyapeeth Deemed University, Pune-India.
Email: maryam.iranfar32@gmail.com
https://orcid.org/0000-0002-3568-0494
[2] Department of Architecture, Alanya HEP University, Turkey.
Email: hourakhsh_ahmadnia@yahoo.com
https://orcid.org/0000-0002-1083-280X

Abstract
Sustainability in contemporary buildings is one of the important orientations to bring well-being to the occupants in addition to protecting the environment. Beauty or aesthetic value in the design is one of the crucial factors to bring pleasure to the users of the buildings, which consequently positively influences their health. A comprehensive understanding of the aesthetic value in sustainable design is crucial for architects to implement a salutogenic or healthy design. Since ethics is dealing with the behavior of human beings in terms of bad or good. Therefore, ethics were involved in this study as an indicator to evaluate beauty and well-being in sustainable design. This study aims to examine the influence of ethical design on aesthetic assessment in sustainable architecture. This research hypothesizes that, if the building could achieve the ethical dimension in sustainable design, then it can reach aesthetic appraisal. This study suggests a conceptual model that shows the influence of ethics on aesthetic value in sustainable architecture. The methodology of the study has employed Maslow's hierarchy as a tool for assessing aesthetic value through the steps of human needs in the hierarchy of Maslow and the ethical parameters in sustainable design. The findings demonstrate the significant relationships between aesthetic appraisal and ethical parameters in sustainable design. The results of the study highlight useful facts to improve our knowledge about well-being and salutogenic design by estimating aesthetic appraisal using the ethical parameters in sustainable design.

Keywords: Ethics, Sustainable Building, Salutogenic design, Aesthetics, Maslow's Hierarchy.

Article History:

Received: 02-10-2022
Revised: 15-11-2022
Accepted: 27-11-2022
Available online: 01-12-2022

1. Introduction

The design of the buildings in which human beings spend significant time inside has a large impact on their health and well-being. Architects are responsible for achieving healthy buildings where occupants are living, where, people spend 90% of their time inside the buildings (Abdou and Lorsch, 1994). Sustainable design is going to invade building design sectors as a principle in future design (Akadiri et al., 2012). Diagnosing the aesthetic value of sustainable buildings will enhance the awareness of the aesthetic appraisal, which is one of the factors of well-being for the occupants and beholders. Sustainable design is an architect's ethical responsibility where the human being and his future are interrelated (Guy and Farmer, 2000). Many, architects still don't try to interrelate sustainable design and aesthetic value. Maslow's hierarchy is reflecting

How to Cite this Article:
Iranfar, M., and Ahmad Nia, H. (2022). The Aesthetic Evaluation in Sustainable Architecture through Ethics to reach Well-being: Maslow's Hierarchy as a Tool. *Journal of Salutogenic Architecture,1*(1), 32-54. https://doi.org/10.38027/jsalutogenic_vol1no1_3

human needs, and providing these needs to the human being is part of ethics. When a lower-level need is met, it stops acting as a drive, and people gradually move on to achieving higher-level requirements, such as safety and social needs, and subsequently prized objectives (Lee and Hanna, 2015). People eventually satiate their urge for self-actualization after satisfying their "lower" level demands. Food, housing, clothes, and employment are the necessities of people in underdeveloped nations, and sustainable development calls for addressing these needs before moving on to aspirations for a better life (Li, et al., 2021). Maslow's hierarchy was employed in this study since it is the cornerstone approach for categorizing needs.

The sustainable design approach is one of the biggest challenges in convincing any clients because of the high initial cost. This research tries to answer the following questions; What is the effect of the ethical parameter in sustainable design on the aesthetic value as an approach for well-being? How do we achieve aesthetic appraisal in the sustainable building based on ethics through the interrelation between Maslow's hierarchy and sustainable design parameters?

Consequently, this paper aims to explore the ethical design influence on aesthetic value in sustainable architecture. The hypothesis of the study is, if the building could achieve the ethical parameters in sustainable design, then it can approach aesthetic appraisal and consequently well-being of occupants. The paper tries to evaluate the effects of ethical factors in building design on aesthetic judgment. In this scope, the study has set out a pioneering path in adapting Maslow's hierarchy of needs as a framework for approaching aesthetics. The study has concluded with a theoretical model demonstrating the interrelation between the ethical dimension and Maslow's needs and has established a relationship between aesthetics and sustainability. Case study methodology has been approached to test the validity of the suggested formulated model from the theoretical part of the study. The model has been tested by applying it to several case study buildings which are listed as sustainable buildings.

2. Literature Review

2.1 Maslow's Hierarchy of Human Needs

Abraham Maslow for the first time argued that people have some needs and that people have to satisfy these needs. He believes that because people are social and psychological entities their needs are genetic and unchangeable. Those needs are the same in all cultures and they are both physiological and psychological. Maslow's hierarchy represents the life duration from a born baby to an adult person. Maslow's theory of 'Human Motivation' for the seven needs can be divided into two kinds. The first is basic needs including physiological needs and safety needs. The second is the growth needs, which include the need for love and esteem, needs for knowledge, aesthetics, and self-actualization (Azizi, 2008). It should be noted that the first and revealed version of Maslow's hierarchy (1943-1954), was contained five stages of human needs, while, five steps on needs extended to add cognitive and aesthetic needs (1970). Each individual should be satisfied from the lower level (basic needs) before the move to a higher level which is growth needs (McLeod, 2007).

The first stage is physiological or biological needs are the needs at the bottom of the pyramid and contain the basic needs of a human being such as air, water, food, and shelter. The second stage is Security (safety) needs: The next needs of humans in the Maslow hierarchy are safety needs which are activated after biological needs are met. They indicate the need for saving the environment from threats and harm. The healthy and normal adult is mainly satisfied with his safety needs. A peaceful and successful society makes its dwellers feel safe enough. The third stage of a human being's needs is social needs that involve Love and belonging are activated after safety needs: people keen to be loved, avoid loneliness and alienation feelings in their life. The fourth stage is Esteem needs: There are two parts to the esteem need. That presupposes self-respect and includes the need for confidence, competency, sufficient, and implementation. The second is the need to respect others which involves the need for acceptance, reputation, appreciation, and prestige. When the person is satiated from these needs, feels self-confident and valuable in the world. The fifth stage is Cognition needs: A human being needs to convince his curiosity, investigate, decipher, find solutions, and seek relationships.

The sixth stage is aesthetics needs: This is a need for beauty in around person. A person who has attained other needs can achieve a comfortable life. Freedom query and explanation have been discussed as a prerequisite for the satisfaction of basic needs. The next stage is self-actualization: the human being needs to do things to their fullest potential (Kaur, 2013). The last stage is Transcendence needs: this need is at the top of the pyramid and means help people to achieve self-actualization (McLeod, 2007). See Figure '1'.

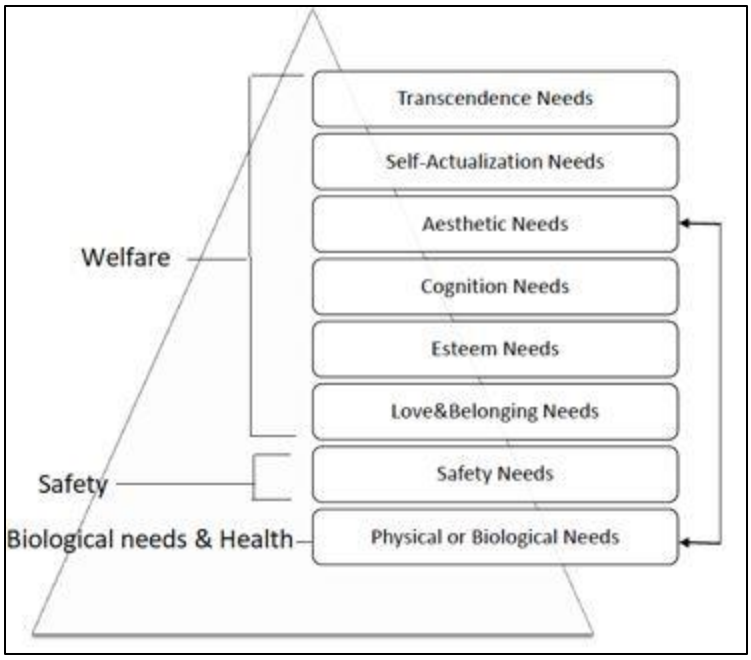


Figure 1. Maslow's hierarchy of Needs, from (McLeod, 2007).

Hence, based on the previous explanation, the hierarchy is divided into three main parts. Starts from the bottom with biological needs and health, then safety needs, and ends up with welfare.

2.2 Ethics and Salutogenic Design

Ethics is the field of knowledge that examines moral standards (Britannica, 2022). According to one definition, ethics is the study of human behavior from the viewpoints of good and bad, or of right and wrong morally (Dimmock and Fisher, 2017). The basic objective of ethics is to prioritize the human being and work toward his highest good. We must modify our moral standards as society does. Individual and collective rights must be balanced to respond to social demands for individual rights. The development of science and medicine and new technologies lead us to think about ethics continuously. The authority of caregivers in the face of life and death forced us to develop new ethics in society (Phaneuf, 2009). Salutogenic is a theory created by Aaron Antonovsky, a sociologist who intended to create a comprehensive theory with which to establish and administer a new hospital. According to Antonovsky's idea, three resources work together to generate a coherent sense, and a forward surge that defies the entropic forces of disease and infirmity (Golembiewski, 2015). See Figure '2'.

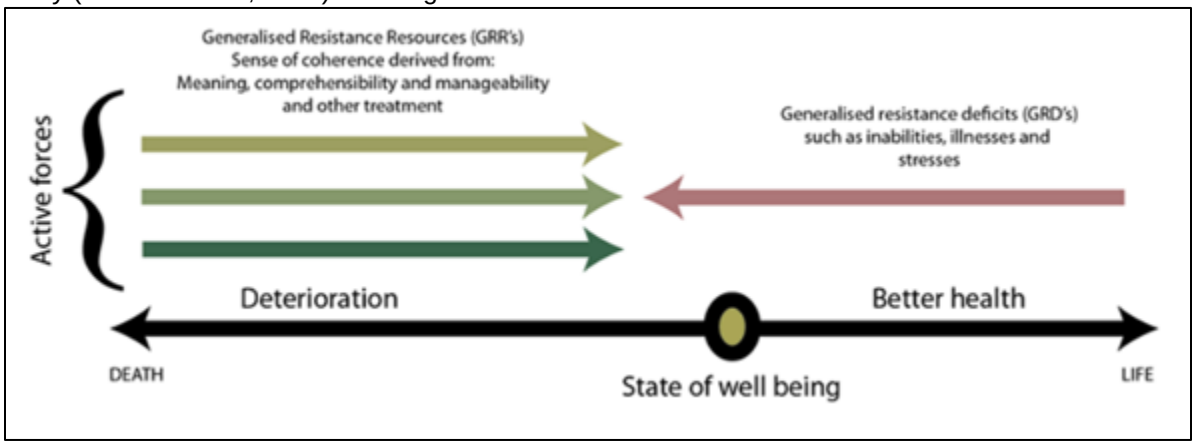


Figure 2. The effect of Salutogenic. (Golembiewski, 2010).

Resources that improve the feeling of coherence include:

1. manageability: the ability to keep homeostasis and physical function;
2. comprehensibility: the capability to understand situations and negotiate them for the greatest possible gain;

3. Sense of purpose: ambitions, causes, and worries are what initially motivate the human being to put up a fight against the disease.

Since salutogenic design concepts can be easily applied to any kind of structure and at any size, salutogenic is a useful tool for comprehending health and design. So, the relationship between ethics and salutogenic architecture might claim that architecture can alleviate persistent global health challenges, especially in the era of pandemics, which is an essential part of architects' professional ethics. However, on the other side, since Aristotle, ethics has had a strong philosophical foundation, but it wasn't until the formation of philosophical aesthetics at the end of the 18th century that the possibility of a dispute between aesthetics and ethics became a major concern for architectural thinkers (Marbaniang, 2012).

2.3 The Relation between Ethics and Aesthetics in Architecture

The Greek word for aesthetics is "something observable to the senses," which means that anything may have an aesthetic influence just by being experienced and recognized (Iranfar and Ahmad Nia, 2021). On the other side, it is the examination of taste and beauty. The definition of the idea of beauty is important to comprehend aesthetics. The phrase "beauty" is typically used to describe things that are pleasing to the eye, the feelings, the imagination, or the consciousness (Lavie and Tractinsky, 2004). According to ancient thinkers, the term can have meaning if it is aesthetic. According to Plato, beauty is comprised of three elements: proportion, harmony, and unity, and beauty are in the eye of the observer. Plato's teacher "Socrates" explained that an object's aesthetic attitude derives from its practical, usable worth. According to "Roger Scruton" from the architectural perspective, understanding "utility" is vital to comprehending any building's intrinsic value, and aesthetic perception is a composite experience of intellect and analysis (Douglass, 2008). Human perceptions and experiences of their surroundings are related to aesthetic values. We may also refer to it as the aesthetic response to an environment or specific elements of an environment. Human senses (seeing, touching, tasting, and hearing) are crucial instruments for acquainting people with their surroundings and providing them with experiences. Culture, information, or previous experience either influences sensory impressions and expectations (Johnston, 2013).

The crossings between ethics and architecture are many. The quality and efficiency of the building materials used in the construction, in addition to the design is an ethical responsibility on the shoulder of the architect. Also, the cost of the building is one of the ethical responsibilities of the architects (Daugelaite, and Vileniske, 2021). There are more linkages between ethics and architecture than there are with any other art form since architecture and ethical dilemmas collide so frequently. The duties we have in front of our clients are what drive our ethics in this situation (Carrol, 2015), in terms of their well-being, comfort, etc.Architect has ethical responsibilities to support the health, safety, and welfare of their clients. Health is belonging to the well-being of people in society for both individuals and groups, and paying attention to ethics will result in the growth of characteristic which increases the well-being of individuals and society (Fisher, 2012). In fact, achieving virtuous life can lead people to both physical and mental health. On the other hand, safety consists of physical security and freeness of danger (Yadav et al., 2014). Whereas architects can't save people from every danger, the codes of the building can protect people from most physical dangers. Architects should ethically seek the best good for the biggest number. The welfare responsibility of architects will share with governmental programs to help the prosperity of inhabitants. These three responsibilities of architects show the ethical obligations in a profession that clash with dilemmas in the design and construction of buildings (Fisher, 2012).

Health is related to the indoor environment, four main categories applied: indoor air quality, thermal comfort, Visual comfort, and acoustics comfort (Al horr et al., 2016). They are interdependent to demonstrate how occupant affects by buildings. For instance, lighting (natural or artificial) affects thermal conditions and energy usage; indoor air quality is affected by the thermal condition and its occupant cognition. In the acoustic view, the ventilation system creates noise which can be an annoyance or beneficial depending on the ventilation system and building fabric. Although, noise and low light conditions will result in hectic, discomfiture, health, and physiological effects. Also, excessive illumination or sounds can damage occupants physiologically. Whereas, very poor air quality which occupants may be able to detect can cause great physiological effects on human health and may in very rare conditions result in death (Levin, 2003, p. 1-18). Good air quality is the main part of a healthy indoor environment that includes the dissemination of sufficient air ventilation, and control of adequate temperature and humidity. Proper indoor air quality promotes occupant health, comfort, and workplace productivity. Polluted indoor air quality enhances health problems such as cough, eye irritation, headache, and allergic reactions, and, in some rare cases, results in life-threatening conditions. Good air quality preparation needs duteous building staff and occupants. (Building Air quality: A Guide for Building Owners and Facility Manages, 1991). The building should have

the ability to guard its occupant from harsh environmental conditions such as extremes of temperature and humidity, rain, and the wind. Taking into consideration the violent crime with terrorists enhanced in recent years, therefore the designers should find a solution to protect buildings (Yadav, et al., 2014). Also, Fire safety is a very notable point to protect the building and its occupant from fire danger. Fire protection in buildings is an essential goal that will result in living safely by using a fire protection system (Manual fire safety for existing RMG buildings, 2014).

Durability is another important point in buildings. Durability can be defined as the ability of a building or any of its components to perform its required functions over the intended period. Durability is not the essential property of a building element or material; it can be related to the specific use of the material in a specific environment. The durability of a building's material and the component can change in a different environment or different use in a similar environment (durability guidelines for building wall envelopes, 1997). There is a lot of scientific literature about durability; lifetime and sustainability participating in building and its material. Adding non-obligatory aspects is compulsory for many projects, their designs aimed to expand the durability to a larger scale than only a single human generation (Mora, 2007).

People's welfare affects by several factors in the buildings, such as accessibility to facilities and services, the appropriate size of the indoor spaces of the buildings, gathering people, proper color of indoor spaces of the buildings, sufficient green areas inside and outside buildings, adequate spaces in the building due to the number of occupants and their requirements (Dokoushkani, et al., 2014; Heerwagen, 2006).

The delicate selection of natural building materials is the best way for architects to start combining sustainable design principles in buildings. The life cycle analysis of building products, from collecting raw materials until their final disposal, shows a better perception of the lifecycle costs of the material (Humbert et al., 2007). These costs will be paid by the client, owner, occupants, and the environment. Also, energy efficiency is a crucial factor to make building materials environmentally sustainable. The final aim to apply energy-efficient material in the building product is to decrease the amount of produced energy that should bring to the building site (Muhy Al-din, et al., 2017). The long-term cost of energy to construct a building is related to the materials used in it. In general, natural material has less embodied energy and toxicity than chemical one. Many natural materials such as wood are renewable. However, the involvement of natural materials in building construction makes it more sustainable and lower impact on the environment and human health (Jin Kim, 1998). This factor can be considered as a welfare parameter in the building design because it affects building cost and lifecycle, hence improving human life.

Involvement of outdoor nature and gardens in building design will bring benefit to the health and well-being of its occupants (Barton and Pretty, 2010). For example, trees have a considerable effect on the social behavior of their residents. An environmentally good design supports the occupant to connect to nature, perceive community, friendship, and belonging, chance to have a regular exercise program, and also privacy when they need it. Gathering the people through design is considered a welfare parameter because enhances the quality of life for buildings occupants (Heerwagen,2006). Nowadays, architect supplies several services to achieve the client's requirement. Architects are learning ways of interpreting and developing clients' ideas and making them real (Carrol, 2015). A building project should be a process for steady monitoring of cost, quality, and time. A project will be succeeding through communication and cooperation between the architect, builder, and client. With good design, the architect can increase the building's value and make the building efficient to reduce the negative effects of the building on occupants and the environment. These are the duty of the architect in the design and construction of a building project (Abdul Baqi, 1995; Palmer, 2014). Client satisfaction is another factor considered as a welfare parameter because it means the architect makes the client's dream real (Alvesson, 2001).

Innovation and creativity are important factors in the design process (Csikszentmihalyi, 1997). Architects produce their ideas by drawing, oral expression, or writing. The methods applied for the presentation of architectural design contain mental imagery, sketching, creating a model, and computer technology (Csikszentmihalyi, 1997). Auto cad system caused changes to the innovative architecture. The use of the AutoCAD program increases the functionality in form achievement. Architects have taken many advantages of the AutoCAD system to create outstanding buildings in the entire world (Lawson, 2002). In the beginning, when the AutoCAD system was introduced, people considered it a complete program which able to control all aspects of building design. But after some time, it remains only as a medium drawing program because it was not able to fulfill all the aspects of the design process (Celani, 2002). Architecture always growing and new technologies and ideas are always welcome in the architecture field. Designers always look for the imagination to find out innovative ideas and use them in their design to create a good design to satisfy the aesthetical needs of the client, occupants, and also environment. The functional needs in design are more considerable than aesthetic needs (Babangida and Khaidzir, 2015). Thus, innovative design is

considered by welfare parameter because it helps architects to improve the quality of their design and client's life with implement new techniques and technologies. See Figure '3'.

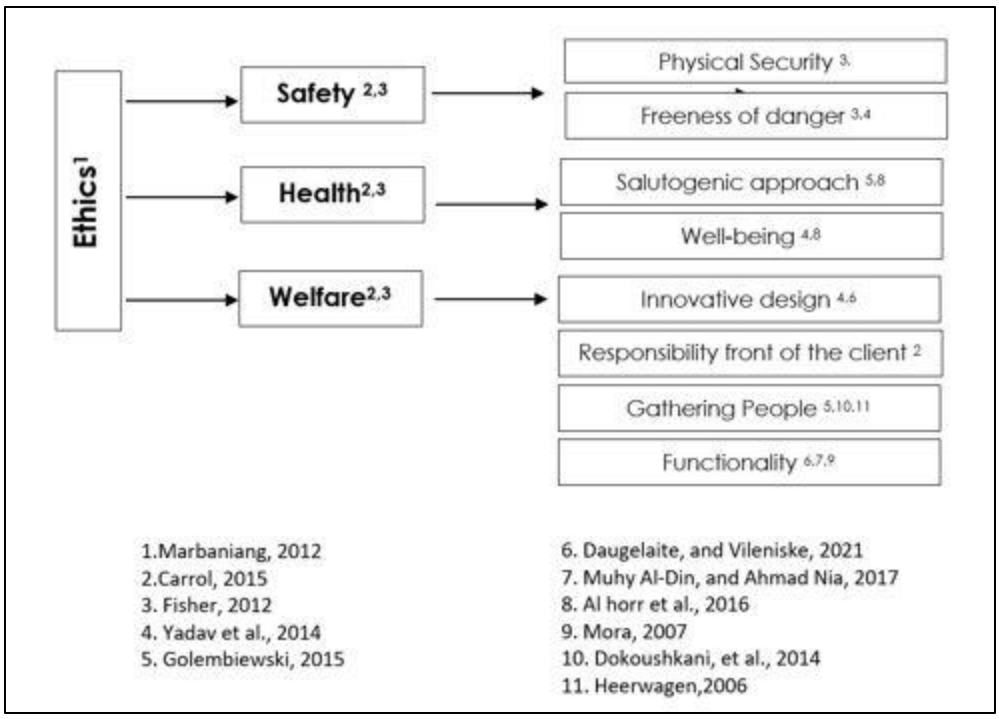


Figure 3. The principles of the ethical responsibilities of Architects, and the main factors of these principles.

There are three distinct elements of ethics and aesthetics. The first is the dialect of the moral or aesthetic faculty itself, the actual judgment and giving of praise, blame, and precept (Gaut, 2007). This is not belonging to science but to character, enthusiasm, the niceness of perception, and the fineness of emotion. The second method is the historical explanation of art conduction as a part of anthropology and wants to discover the conditions of various types of character, conceptions of justice, and criticism. The philosophy of art has often proved a more tempting subject than the psychology of taste (Mallo, 2019). The third method in ethics and aesthetics is psychology. (It deals with moral and aesthetic judgments as phenomena of mind and products of mental evolution. The problem here is to understand the origin and conditions of these feelings and their relation to the rest of our economy (Santayana, 2007). As architects or a part of a humanitarian society, we are obliged to do what we can to improve the life of people and the way of their live.

2.4 The Relationship Between Ethics and Aesthetics in Sustainable Architecture

Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." WCED, 1987). Some of the crucial ethical factors of sustainability in architecture are reducing energy consumption, controlling greenhouse gas, and saving natural resources from depletion (Cenek, 2013).

It is obvious that sustainable building design strategies provide better environmental indoor air quality and occupant comfort, improve health conditions and bring about occupant satisfaction with work performance related to a building designed with standards (Heerwagen, 2005). In many countries, buildings are the biggest part of energy usage and carbon dioxide emission. In developed and developing countries, emissions from the building sector have continuously increased. It is speculated that greenhouse gas emissions related to buildings will increase by about 15 billion carbon dioxides by 2030. However, mitigating the energy and greenhouse gasses in existing and new buildings provide an opportunity to cope with global warming. New technologies and materials in building construction are an aid to increase sustainable buildings to reduce the impact of the buildings on the environment (Muhy Al-Din et al., 2017). This goal can be achievable by using natural resources. Consequently, this will increase the health and well-being of occupants. Sustainable Building design should maximize the natural light in addition to the

environmental benefits of sustainable buildings in reducing air pollution and Co2 emissions (Smiciklas, 2012). Water management is a system to enhance water efficiency in buildings. Hence, it can apply by reducing the amount of water requirement for building activity. This strategy can be implemented in the buildings for water efficiency and reduce the need for water for irrigation and apply innovative wastewater management technologies. Water usage in the building sector can be divided into consumptive or non-consumptive. Consumptive use transforms water that cannot be reused. On the opposite, for non-consumption use, water can be harvested, recycle and reuse (Grant et al., 2012).

Sustainable architecture is presenting a financial benefit for its owners and occupants. Sustainable building's economic factors involve lower costs for energy, water, and maintenance (Shawkat et al., 2018). These low costs may not come in the payment of the initial cost, by conducting appropriate design and use of sustainable materials and equipment the first payment for sustainable building maybe the same as or higher than traditional building but the payback period cost will be less than the traditional one. Also, the sustainable building provides indirect financial benefits for owners and occupants. For example, they provide more comfortable, healthier spaces and enhance the productivity of building occupants (fisher, 2012), and consequently achieve a salutogenic design approach. Sustainable buildings bring benefits from increasing the lifetime of buildings; enhancing the ability to invite new employees, reducing services after the sale, lower time and costs for project permitting by society (The economic benefits of sustainable design, 2004).

Energy efficiency is another important factor in buildings. The most benefit to improving a building's energy efficiency is reducing energy costs. Other factors include energy usage reduction for heating, cooling, and water heating in the building (Givoni, 1969). Electricity usage for lighting also will be reduced. The maintenance needs will pull down. Increase the value of the building and improves comfort (Muhy Al-din et al., 2017). Providing smart techniques to achieve security and comfort for the building’s occupants is an important factor. Also, the social needs of the resident are part of sustainable communities. Space for living and gathering the residents is a crucial part of the building's functionality as well as getting aesthetic pleasure and living comfortably in the buildings (Tang, 2012). An eco-friendly building is related to a design which applied environmentally friendly and minimizes using of natural resources during all its lifetime. Eco–friendly buildings reduce harmful impacts on the environment and its occupants during their lifetime. (Das,2015). It is clear that good design can strongly mitigate energy consumption in buildings; for instance, the orientation and location of a building can affect the sun's path, the wind, daylighting, and shading in the buildings. Innovation in design and construction methods will play an important role to provide efficient and eco-friendly buildings (Smiciklas, 2012). Architectural aesthetics as a concept focuses on the idea of human comfort and interrelation with nature and is concise in Sustainable architecture presenting a financial benefit for its owners and occupants. Sustainable building's economic factors involve lower costs for energy, water, and maintenance (Shawkat et al., 2018). These low costs may not come in the payment of the initial cost, by conducting appropriate design and use of sustainable materials and equipment the first payment for sustainable building maybe the same as or higher than traditional building but the payback period cost will be less than the traditional one. Also, the sustainable building provides indirect financial benefits for owners and occupants. For example, they provide more comfortable, healthier spaces and enhance the productivity of building occupants (fisher, 2012), and consequently achieve a salutogenic design approach. Sustainable buildings bring benefits from increasing the lifetime of buildings; enhancing the ability to invite new employees, reducing services after the sale, lower time and costs for project permitting by society (The economic benefits of sustainable design, 2004).

Energy efficiency is another important factor in buildings. The most benefit to improving a building's energy efficiency is reducing energy costs. Other factors include energy usage reduction for heating, cooling, and water heating in the building (Givoni, 1969). Electricity usage for lighting also will be reduced. The maintenance needs will pull down. Increase the value of the building and improves comfort (Muhy Al-din et al., 2017). Providing smart techniques to achieve security and comfort for the building’s occupants is an important factor. Also, the social needs of the resident are part of sustainable communities. Space for living and gathering the residents is a crucial part of the building's functionality as well as getting aesthetic pleasure and living comfortably in the buildings (Tang, 2012). An eco-friendly building is related to a design which applied environmentally friendly and minimizes using of natural resources during all its lifetime. Eco–friendly buildings reduce harmful impacts on the environment and its occupants during their lifetime. (Das,2015). It is clear that good design can strongly mitigate energy consumption in buildings; for instance, the orientation and location of a building can affect the sun's path, the wind, daylighting, and shading in the buildings. Innovation in design and construction methods will play an important role to provide efficient and eco-friendly buildings (Smiciklas, 2012). Architectural aesthetics as a concept focuses on the idea of human

comfort and interrelation with nature and is concise in two complementary concepts: sustainability and durability. Being sustainable means that the conditions needed to drive the process can be met, extending the continuity into the future. Durability refers to the condition of an object to be stable and continue. It is the way an object is made that allows it to function for the duration of the purpose without deficiency. Any architectural aesthetic must be a practical philosophy, a philosophy related to the practice and process of architecture. While an assessment of beauty and personal experience is a necessary aspect of aesthetic philosophy, these are the results of aesthetic products. Establishing sustainability as the aesthetic motivation behind the architectural design will be the basis of a new paradigm for the practice of architecture. Sustainability represents the next logical step in the historical continuum, representing a response to the moral and social challenges of climate change. Architecture is responsible for the prevention of the crisis of global climate change, and a sustainable architectural aesthetic philosophy can be the solution (Douglass, 2008). More recent sustainable architecture has focused on the aesthetic economy, than focusing on changing people's ways of living. It is now claimed that all architecture should be technologically sustainable rather than focus on developing technological strategies to keep unsustainable ways of living for the lowest resource and energy cost (Lee, 2011). Obviously, it is unethical to follow development patterns for the built environment that are polluting the environment, depleting natural resources, unhealthy habitats, estranging communities, and threatening the life of species.

Since, the ethical factors are to provide health, safety, and welfare, and in the same context Maslow's hierarchy is about three main parts which are biological needs and health, safety, and welfare, then the relationship can be established. On another side, sustainable ethical factors and parameters can be formulated from the main ethical factors according to the theoretical part and the analysis of the literature, as shown in Figure '4'.

concepts: sustainability and durability. Being sustainable means that the conditions needed to drive the process can be met, extending the continuity into the future. Durability refers to the condition of an object to be stable and continue. It is the way an object is made that allows it to function for the duration of the purpose without deficiency. Any architectural aesthetic must be a practical philosophy, a philosophy related to the practice and process of architecture. While an assessment of beauty and personal experience is a necessary aspect of aesthetic philosophy, these are the results of aesthetic products. Establishing sustainability as the aesthetic motivation behind the architectural design will be the basis of a new paradigm for the practice of architecture. Sustainability represents the next logical step in the historical continuum, representing a response to the moral and social challenges of climate change. Architecture is responsible for the prevention of the crisis of global climate change, and a sustainable architectural aesthetic philosophy can be the solution (Douglass, 2008). More recent sustainable architecture has focused on the aesthetic economy, than focusing on changing people's ways of living. It is now claimed that all architecture should be technologically sustainable rather than focus on developing technological strategies to keep unsustainable ways of living for the lowest resource and energy cost (Lee, 2011). Obviously, it is unethical to follow development patterns for the built environment that are polluting the environment, depleting natural resources, unhealthy for habitats, estranging communities, and threatening the life of species.

Since, the ethical factors are to provide health, safety, and welfare, and in the same context Maslow's hierarchy is about three main parts which are biological needs and health, safety, and welfare, then the relationship can be established. On another side, sustainable ethical factors and parameters can be formulated from the main ethical factors according to the theoretical part and the analysis of the literature, as shown in Figure '4'.

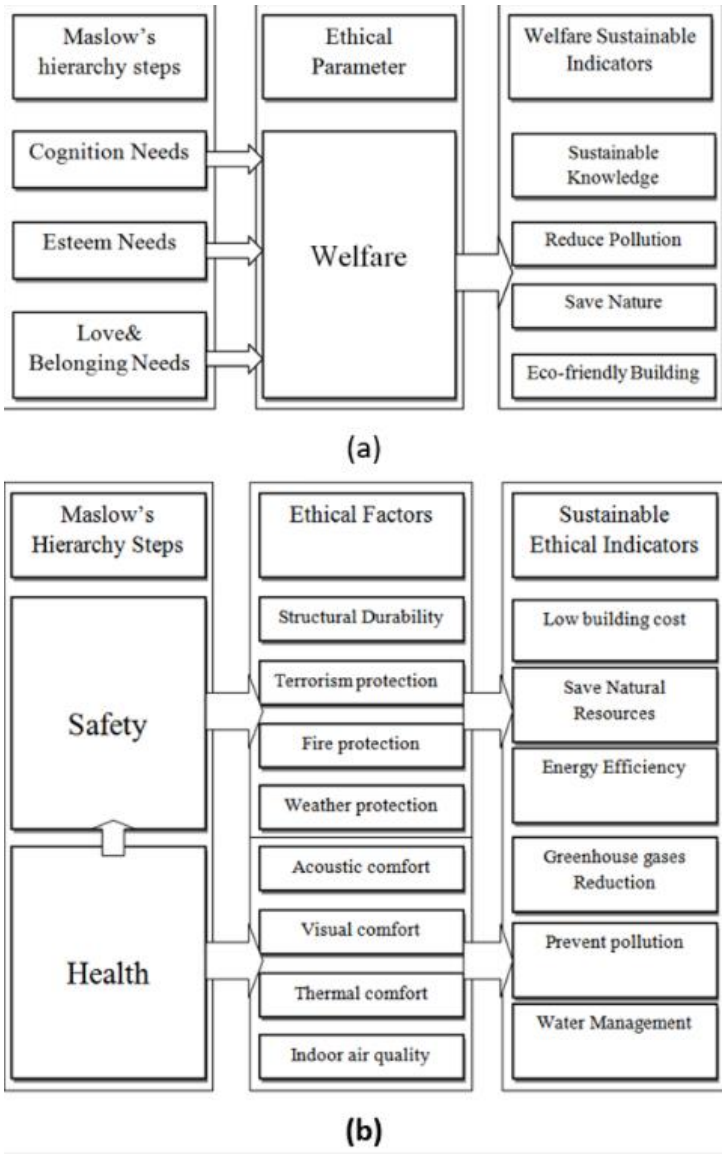


Figure 4. (a) The relation between Maslow's hierarchy steps and Welfare Sustainable indicators. (b) The relation between Maslow's hierarchy steps with Health & Safety Ethical factors and Sustainable indicators in building design.

3. Methodology

By reviewing the literature, the researchers attempted to identify key information that could help in the identification of aesthetic value in sustainable architecture by assessing ethics, taking Maslow's hierarchy as a tool. The study came out with a theoretical model to interpretate the relationship between ethics and aesthetics in sustainable architecture. The model utilized the ethical factors to implement the goals to reach the aesthetic value in Sustainable buildings, as one of the essential factors in the well-being and achievement of the Salutogenic architectural approach. Then, the case study methodology has been approached, and several rated sustainable buildings in the United States have been selected from different regions to test the model. The model has been tested objectively through the theoretical analysis of the buildings based on the available information (plans, reports, pictures, etc.). In the same context, the validity of the results in an objective way has been tested subjectively, through the opinions of the professionals, and the comparison between the results from both ways has been extrapolated.

3.1 Integration of the Model

A. The first stage is biological and physical needs which refer to the basic needs of humans. (See Figure1). The author connects these needs with ethical parameters in achieving building design. The first ethical parameter in the building is to support human health. The factors related to occupant health parameters

are divided into four factors; 1) Indoor air quality; where proper indoor air quality promotes occupant health, comfort, and productivity. 2) Thermal comfort; where a thermal sensation in a human being is highly related to the thermal equilibrium of the body. In this factor controlling thermal comfort in the body depends on some conditions such as physical condition (activity and clothes) and the physiological condition, surrounding environment, and climate. 3) Visual comfort; a human can affect physically and psychologically by various types of lighting. Daylighting has greatly affected occupants' moods, promoted physiological attitudes, and decreased stress. Another important benefit of daylighting enhances the psychological need to have a connection with the environment. With proper daylighting, artificial lighting can be used only in overcast days and night time (Edwards, Torcellini, 2002). 4) Acoustic comfort; noise created by HAVC system, outdoor environment, or other sources in the buildings can cause negative effects such as discomfort and health problem for its occupant. In addition to these factors, sustainable buildings should prevent pollution. It means reducing outdoor space pollution and preventing pollution from entering the indoor space of the building. Water management is another indicator that should be applied in sustainable building design (Grant et al., 2012). Reducing potable water requirements and promoting the distribution of the water system efficiently. Collect rainwater and gray water and reuse them for irrigation. Mitigating the energy and greenhouse gasses in existing and new buildings provide an opportunity to coping with global warming. (See Figure 4-b).

B. The second stage is the safety needs of human. The author linked the needs with the ethical safety parameters of buildings. The safety needs of occupants related to the building design are also divided into four Factors. 1) Weather protection; protection from weather means avoiding harsh environmental conditions such as extreme temperature and humidity, rain, and wind. 2) Fire protection; Fire safety is an important point to protect the building and occupants from fire danger by using a fire protection system. 3) Protection against terrorism; the violence of terrorists enhanced in recent years; hence it became one of the factors for occupant safety (Yadav, 2014). 4) Structural fitness refers to the use of stable and efficient materials in construction as well as safety technology for building stiffness. The extra safety indicators which should be added to the design of the building to implement sustainability are low building cost. Sustainable buildings' economic indicators involve lower costs for energy, water, and maintenance. Energy efficiency is another important indicator in buildings. The most advantage to improving a building's energy efficiency is reducing energy costs. Save natural resources is another indicator that involves saving the lands, avoiding deforestation, and saving non-conventional sources to don't compromise the next generation's rights (See Figure 4-b).

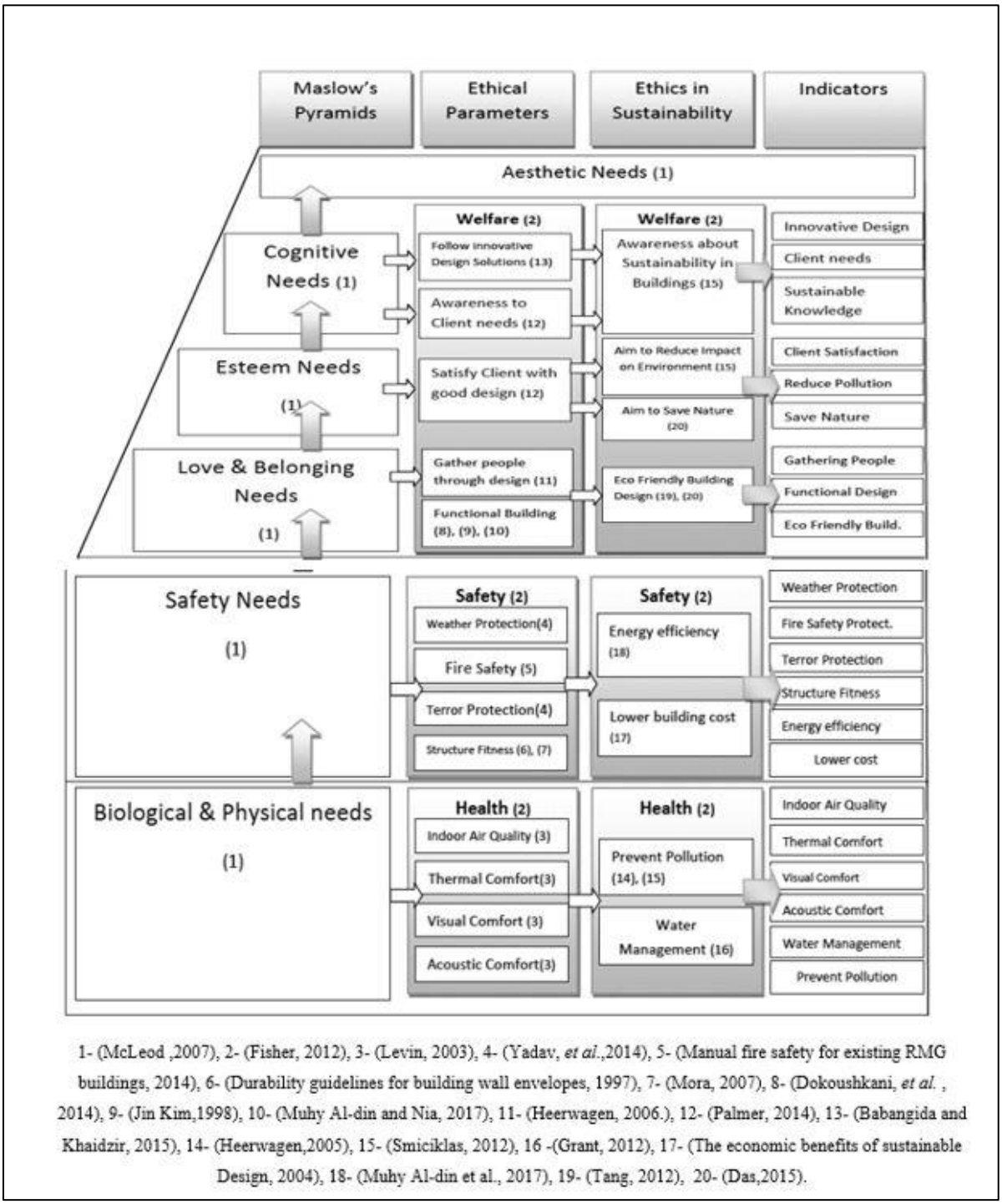
C. The third stage is love and belonging needs. This step is belonging to welfare parameters. The author connects the belonging needs with the building's function. The factors for functional building are includes; 1) accessibility to facilities and services, 2) the appropriate size of the indoor spaces of the buildings, 3) proper color of indoor spaces of the buildings, 4) sufficient green areas inside and outside buildings,5) adequate spaces in the building due to the number of occupants and their requirements.

Another factor is defined as the ability of a building to gather its occupant through outdoor nature and gardens to affect social behavior and cause stronger social ties which make occupant loves their building (Heerwagen,2006). (See Figure 3). A sustainable indicator related to this stage is Eco-friendly building design which applied environmentally friendly and minimizes using of natural resources during all its lifetime. Eco–friendly buildings reduce harmful impacts on the environment and its occupants during their lifetime (See Figure 4-a).

D. The fourth stage is esteem needs. Architects should develop their client's ideas and make them real. They should also care for cost, quality, and time in the building design and construction process. Through good design, architects can reduce the negative effects of building on occupants and the environment and save nature (Palmer, 2014). Hence, the architect gets the respect of the clients and occupants. This step also belongs to the welfare parameter and is connected with the satisfaction of clients through good design (See Figure 3). Sustainability is determined with two indicators in this stage, Save Nature & Reduce pollution: saving nature and Reducing pollution increase the responsibility that architect shows in front of nature and human being which holds a global massage. hence, become appoint to get respect from others. (See Figure 4).

E. The last stage before aesthetics is cognitive needs, (See Figure 1), this is the last stage of welfare before aesthetics and divide into two parts, 1) awareness of client needs which means the Architects always should care about their client's ideas and try to make them real with good design, 2) following innovative design solution: Architecture always growing and new technologies and ideas always welcome to architecture field. Designers always look for the imagination to find out innovative ideas and use them in their design to create a good design to satisfy the aesthetical needs of the client, occupants, and also the environment (See

Figure 3).in addition to sustainable viewing another factor is awareness about sustainability in buildings. New technologies and materials in building construction are an aid to increase sustainable buildings to reduce the impact of the buildings on the environment (See Figure 4). Based on the methodology framework, when the building meets all the ethical requirements to achieve human needs based on Maslow's Hierarchy, then, the aesthetic in the building will be complemented. Figure '5' shows the theoretical model based on the integration of the concepts of ethics, aesthetics, and Maslow's hierarchy of human needs.



1- (McLeod ,2007), 2- (Fisher, 2012), 3- (Levin, 2003), 4- (Yadav, *et al.*,2014), 5- (Manual fire safety for existing RMG buildings, 2014), 6- (Durability guidelines for building wall envelopes, 1997), 7- (Mora, 2007), 8- (Dokoushkani, *et al.* , 2014), 9- (Jin Kim,1998), 10- (Muhy Al-din and Nia, 2017), 11- (Heerwagen, 2006.), 12- (Palmer, 2014), 13- (Babangida and Khaidzir, 2015), 14- (Heerwagen,2005), 15- (Smiciklas, 2012), 16 -(Grant, 2012), 17- (The economic benefits of sustainable Design, 2004), 18- (Muhy Al-din et al., 2017), 19- (Tang, 2012), 20- (Das,2015).

Figure 5. Classification of ethical dimension in Maslow's hierarchy to achieve aesthetic.

3.2 Research Design (Design A Method to Apply in the Context

A specific category of buildings had been selected as a case study in this study; residential buildings with a sustainable rating system. The quantitative methods were applied to the selected samples of the buildings as Case Studies. The quantitative method permits statistical analysis. Analysis was applied to reach the aesthetic value in the residential buildings based on their ethical parameters measured by Maslow's hierarchy of human needs to reach aesthetic achievement. Confidential data collected through the 'American Institute of Architects (AIA)' were gathered on related issues. The priority is to focus on the ethical parameters in the design of the building within the sustainable doctrine. To demonstrate the performance of the ethical indicators for each step in Maslow's hierarchy based on the sustainable dimension. The collected data are analyzed by employing AHP (Analytic Hierarchy Process) approach, in order to distinguish the most important indicators from the less important ones. AHP is a technique that may be applied to both qualitative and quantitative research to address challenging decision-making. In the quantitative method, AHP compares an indication in a hierarchical fashion to other indicators to decide which is the most crucial (Wong and Li, 2006).

The questionnaire will be done to get the assessment of the building's aesthetic value based on the opinion of professional people by analyzing the indicators of ethical parameters in sustainable building. The comparison between the theoretical and questionnaire results will be demonstrated and reach the conclusion of whether or not the study achieved the hypothesis of the study which is if the building could achieve the ethical dimension in sustainable design, then can approach aesthetic appraisal.

3.3 Questionnaire

Closed-ended question method was used to design the questionnaire for the five residential buildings with their indicators which are used to analyze the ethical factors in the design for each one of the case studies. The questions prepared about the achievement of ethical value in those buildings are based on Maslow's hierarchy of human needs, which leads to achieving aesthetics in the building. Because of the limits of the professionals in the field, the form of questions was submitted to sixteen professional teachers in Architectural departments at three universities in Northern Cyprus.

3.3.1. Data analysis:

Each one of the participants should analyze the case studies regarding the ethical parameters in the buildings based on the theoretical data about each case study and evaluate the buildings aesthetically on their cognition with five grades, (highly valuable, valuable, Neutral, low valuable, and not-valuable).

3.3.2. case studies:

Figure '6' and Table '1', show the location and description of five sustainable residential buildings as case studies from the United State of America. United State had been chosen because of two reasons: 1-climatic differentiation between states because it has a miscellaneous climate which gives the designers different ways and solutions to solving comfort problems in the buildings. 2- Scientific and trustful documentation regarding analyzing the buildings. The information had been collected from the American Institute of Architects to analyze each factor of the buildings.

Figure 6: Map of United State of America to show location of case studies.

Table 1. The details of the case studies

No.	Case study	Name	Information
1		Step on 5th	**Project Owner** / **Location** / **Architect** / **Completion Date** Step Up / 1548 5th Street Santa Monica California 90401 United States / BROOKS + SCARPA / April, 2009 **Project Category** / **Project Site Context** / **Project Gross Floor Area** / **Total project cost** Residential – Multi-Family 5 or more units / urban Previously developed Land / 31,600 square feet / $11,400,000.00
2		Twelve West	**Project Owner** / **Location** / **Architect** / **Completion Date** Gerding Edlen Development, Downtown Development, ZGF Architects / 1223 SW Washington Street Portland Oregon 97 205 United States / ZGF Architects / July, 2009 Project Category / Project Site Context / Project Gross Floor Area / Total project cost Residential – Multi-Family 5 or more units / urban Previously developed Land / 552,000 square feet / $138,000,000.00
3		Os House	**Project Owner** / **Location** / **Architect** / **Completion Date** Robert Osborne and Vera Scekic / 1761 South Main Street Racine Washington 53403 United States / Johnsen Schmaling Architects / March, 2010 **Project Category** / **Project Site Context** / **Project Gross Floor Area** / **Total project cost** Residential – Single-Family attached / urban Previously undeveloped Land / 1,940 square feet / -
4		A New Norris House	**Project Owner** / **Location** / **Architect** / **Completion Date** The University of Tennessee College of Architecture & Design / 143 Oak Road Norris Tennessee 37828 United States / Tricia Stuth, Robert C. French / August, 2011 **Project Category** / **Project Site Context** / **Project Gross Floor Area** / **Total project cost** Residential – Single-Family attached / Suburban Previously Developed Land / 1,008 square feet / $180,000.00
5		Merritt Crossing Senior Apts.	**Project Owner** / **Location** / **Architect** / **Completion Date** Satellite Affordable Housing Associates / 609 Oak Street Oakland California United States / Leddy Maytum Stacy Architects / July, 2012 **Project Category** / **Project Site Context** / **Project Gross Floor Area** / **Total project cost** Residential – Multi-Family 5 or more units / Urban Brownfield Site / 50,000 square feet / $18,000,000.00

4. Analyses and Findings

4.1 Analytical (Objective) Findings

The five case studies have been analyzed theoretically, through their ethical indicators in sustainable design based on Maslow's hierarchy needs of human. The theoretical analysis of the case studies achieved basis on the data collection through (the American Institute of Architects, 2011). After the analysis of the indicators, the indicators demonstrates that they have same value regarding the ethical dimension of sustainable design. Thereby, the indicators have been given the same weight in the analytical process, and basis on that, the results came out as shown below:

4.1.1. Step up of 5th

Table 2. Case Study no.1- the evaluation table for aesthetic appraisal through an ethical dimension in sustainable design based on Maslow's hierarchy.

	Step up of 5th			
	Maslow's Hierarchy	**Ethical Parameters**	**Ethical Indicators based on sustainable design**	**Assessment**
Case Study No. 1	Biological needs	Health	Indoor Air Quality	●
			Thermal Comfort	●
			Visual Comfort	●
			Acoustic Comfort	●
			Water Management	●
			Prevent inside pollution	●
	Safety Need	Safety	Weather Protection	●
			Fire Safety	●
			Terror protection	X
			structural durability	●
			Energy Efficiency	●
			Affordability	●
	love Needs	Walefare	Gathering people	●
			functionality	●
			eco-friendly	●
	Esteem needs		nature saving	●
			reduce Environmental pollution	●
			Client Satisifaction	X
	Cognition needs		Sustainable knowledge	●
			enhence Clients needs	●
			Innovative Design	●
	Aesthetic Needs	Aesthetic Judgement	Pecentage of Appreciatted Value	90%

4.1.2. Twelve West

Table 3. Case Study no.2- the evaluation table for aesthetic appraisal through an ethical dimension in sustainable design based on Maslow's hierarchy.

	Twelve West			
Case Study No. 2	Maslow's Hierarchy	Ethical Parameters	Ethical Indicators based on sustainable design	Assessment
	Biological needs	Health	Indoor Air Quality	●
			Thermal Comfort	●
			Visual Comfort	●
			Acoustic Comfort	●
			Water Management	●
			Prevent inside pollution	●
	Safety Need	Safety	Weather Protection	●
			Fire Safety	●
			Terror protection	X
			structural durability	●
			Energy Efficiency	●
			Affordability	X
	love Needs	Walefare	Gathering people	●
			functionality	●
			eco-friendly	●
	Esteem needs		nature saving	●
			reduce Environmental pollution	●
			Client Satisifaction	X
	Cognition needs		Sustainable knowledge	●
			enhence Clients needs	●
			Innovative Design	●
	Aesthetic Needs	Aesthetic Judgement	Pecentage of Appreciatted Value	85%

4.1.3. Os House

Table 4. Case Study no.3- the evaluation table for aesthetic appraisal through an ethical dimension in sustainable design based on Maslow's hierarchy.

	Os House			
Case Study No. 3	Maslow's Hierarchy	Ethical Parameters	Ethical Indicators based on sustainable design	Assessment
	Biological needs	Health	Indoor Air Quality	●
			Thermal Comfort	●
			Visual Comfort	●
			Acoustic Comfort	X
			Water Management	●
			Prevent inside pollution	●
	Safety Need	Safety	Weather Protection	●
			Fire Safety	●
			Terror protection	X
			structural durability	●
			Energy Efficiency	●
			Affordability	●
	love Needs	Walefare	Gathering people	●
			functionality	●
			eco-friendly	●
	Esteem needs		nature saving	●
			reduce Environmental pollution	●
			Client Satisifaction	●
	Cognition needs		Sustainable knowledge	●
			enhence Clients needs	●
			Innovative Design	●
	Aesthetic Needs	Aesthetic Judgement	Pecentage of Appreciatted Value	90%

4.1.4. A New Norris House

Table 5. Case Study no.4- the evaluation table for aesthetic appraisal through an ethical dimension in sustainable design based on Maslow's hierarchy.

Case Study No. 4	A New Norris House			
	Maslow's Hierarchy	Ethical Parameters	Ethical Indicators based on sustainable design	Assessment
	Biological needs	Health	Indoor Air Quality	●
			Thermal Comfort	●
			Visual Comfort	●
			Acoustic Comfort	●
			Water Management	●
			Prevent inside pollution	●
	Safety Need	Safety	Weather Protection	●
			Fire Safety	●
			Terror protection	X
			structural durability	●
			Energy Efficiency	●
			Affordability	●
	love Needs	Walefare	Gathering people	●
			functionality	●
			eco-friendly	●
	Esteem needs		nature saving	●
			reduce Environmental pollution	●
			Client Satisifaction	●
	Cognition needs		Sustainable knowledge	●
			enhence Clients needs	●
			Innovative Design	●
	Aesthetic Needs	Aesthetic Judgement	Pecentage of Appreciatted Value	95%

4.1.5. Merritt Crossing Senior Apt

Table 6. Case Study no.5- the evaluation table for aesthetic appraisal through an ethical dimension in sustainable design based on Maslow's hierarchy.

Case Study No. 5	Merritt Crossing Senior Apt			
	Maslow's Hierarchy	Ethical Parameters	Ethical Indicators based on sustainable design	Assessment
	Biological needs	Health	Indoor Air Quality	●
			Thermal Comfort	●
			Visual Comfort	●
			Acoustic Comfort	●
			Water Management	●
			Prevent inside pollution	●
	Safety Need	Safety	Weather Protection	●
			Fire Safety	●
			Terror protection	X
			structural durability	●
			Energy Efficiency	●
			Affordability	●
	love Needs	Walefare	Gathering people	●
			Functionality	●
			Eco-friendly	●
	Esteem needs		Nature saving	●
			Reduce Environmental pollution	●
			Client Satisifaction	X
	Cognition needs		Sustainable knowledge	●
			Enhence Clients needs	●
			Innovative Design	●
	Aesthetic Needs	Aesthetic Judgement	Pecentage of Appreciatted Value	90%

According to the results of the case studies that the author got based on the theoretical analysis found that the highest score was in case study number four which scored 95% aesthetic appraisal. It has only imperfection in achieving terror protection. In case study number one, three, and five, the evaluation scored 90%. Case study number one demonstrates imperfection in terror protection and client satisfaction due to the size of the flats which are studio-size residential. Case study number three demonstrates the acoustic comfort deficiency as well as imperfection in terror protection. In time the author found that case study number five has an imperfection in terror protection plus client satisfaction because of the small size of the flats. The less score was in case study number two which scored 85% because it demonstrates the

imperfection in the indicators, which are terror protection, and client satisfaction due to difficulties to access the residential flats(relatively), which starts above the 5th floors. The third imperfection is the cost of the building which reached 138 million US dollars, which shows the high cost and non-affordable residency. Thereby, the case studies didn't achieve 100% because of the imperfection in several indicators, which led to the rate the imperfect indicators as 'null'. The stages of Maslow's hierarchy have been complemented based on the ethical parameters in sustainable design; therefore, the theoretical critics for the five studies demonstrate that the building achieved aesthetic value highly.

4.2. Questionnaire (subjective) Findings

After the evaluation of questionnaires, results base on the opinion of sixteen professional teachers from Girne American University. The results came out as shown in Table 7.

Table 7. evaluation of the case studies based on theoretical analysis.

Case Study No.	Highly valuable	Valuable	Neutral	Low Valuable	Non-valuable
1	●				
2		●			
3	●				
4	●				
5	●				

The questionnaires show that the opinion of the professional people based on the theoretical data given to them came with the same results that were obtained based on the theoretical assessment. The analysis of the results shows that the aesthetic value or aesthetic appraisal is increased as much as the sustainable ethical design parameters contribute to the design. The achievement of Maslow's hierarchy stages through sustainable ethical parameters in the design of the building is one of the successful methods to approach aesthetic evaluation. Hence the buildings are classified aesthetically highly valuable, and that approves the hypothesis of the study which is if the building achieves the ethical dimension in sustainable design, then aesthetic appraisal will be achieved.

5. Conclusion

Sustainable design of buildings became a necessity and it is time to remove any ambiguity that hinders a taste of the obvious aesthetic merit of sustainable buildings. Since the sustainable design of the building is one of the big challenges in convincing any clients through sustainable design. This research tried to evaluate the effects of the ethical parameters for building the design on aesthetic judgment. The interrelation between ethical dimensions and Maslow's human needs has been found, in order to establish a relationship between aesthetics and sustainability. In order to search for that, the paper assigned two questions; i) How to approach aesthetics in sustainable building design through the basic needs of a human being based on Maslow's hierarchy, ii) How much Ethical value affects the aesthetic appraisal in sustainable design? To assess the aesthetic appraisal in the sustainable building based on ethical design parameters, the paper sets out a pioneering path in adapting Maslow's hierarchy of needs as a framework for approaching the aesthetic approach by analyzing the interrelated indicators between ethical parameters and each stage of Maslow's Hierarchy. The main finding from the study is that applying sustainable ethical design parameter increase the aesthetic appraisal of the building. Thus, the research approved the hypothesis of the paper, which hypothesized that if the building implemented the ethical dimension in sustainable design, then it can reach aesthetic appraisal. The study demonstrates that Maslow's hierarchy can be considered as an approach to aesthetic value if the sustainable ethical design parameters implement the requirement based on that hierarchy. The paper opens the doors to environmental dimension in sustainable design to fortify the ethical dimension to approach aesthetic appraisal.

Acknowledgements

The author wishes to acknowledge the editor and reviewers in the Journal of Salutogenic Architecture for their constructive feedback during the review process.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest

The Author(s) declares(s) that there is no conflict of interest.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Reference

Abdou, O.A., and Lorsch, H.G. (1994). *The impact of the building indoor environment on occupant productivity*. Part 3. Effects of indoor air quality, ASHRAE Trans. 1, 100 (2), 902-913.

Abdul Baqi, A. (1995, December, 19-21). *The educational process and practice in architecture.* Paper presented at 'The Second International Conference on Engineering Research', Kuala Lumpur: Malaysia.

Al horr, Y., Arif, M., Katafygiotou, M., Mazroei, A., Kaushik, A., & Elsarrag, E. (2016). Impact of indoor environmental quality on occupant well-being and comfort: A review of the literature. *International Journal of Sustainable Built Environment, 5*(1), 1–11. https://doi.org/10.1016/j.ijsbe.2016.03.006

Alvesson, M. (2000). Social Identity and The Problem of Loyalty in Knowledge-Intensive Companies. *Journal of Management Studies, 37*(8), 1101–1124. https://doi.org/10.1111/1467-6486.00218

Akadiri, P. O., Chinyio, E. A., & Olomolaiye, P. O. (2012). Design of A Sustainable Building: A Conceptual Framework for Implementing Sustainability in the Building Sector. *Buildings, 2*(2), 126–152. https://doi.org/10.3390/buildings2020126

Aesthetics and pleasure, art and beauty. Retrieved from http://cw.routledge.com/textbooks/9780415498760/pdf/Part4/4%20Aesthetics.pdf 2

Azizi, H. (2008). Abraham Maslow: *The Needs Hierarchy*. Retrieved from http://eprints.utm.my/6091/1/aziziyahbrahamMaslow.pdf

Britannica. (2022). *Ethics philosophy*. Retrieved from, https://www.britannica.com/topic/ethics-philosophy

Building Air quality: *A Guide for Building Owners and Facility Manages*. (1991). Washington Dc,United State of America: National institute for occupational safety and health.

Idi, D. (2015). Concept of Creativity and Innovation in Architectural Design Process. *International Journal of Innovation, Management and Technology, 6*(1). https://doi.org/10.7763/ijimt.2015.v6.566

Barton, J., & Pretty, J. (2010). What is the Best Dose of Nature and Green Exercise for Improving Mental Health? A Multi-Study Analysis. *Environmental Science & Technology, 44*(10), 3947–3955. https://doi.org/10.1021/es903183r

Carrol, N. (2015). *Architecture and ethics: autonomy, Architecture, art.* Retrieved from http://isparchitecture.com/wp-content/uploads/2016/01/6098-11122-1-PB.pdf

Celani G. (2002). *Beyond Analysis and representation in CAD: a new computational approach to design education*. Massachusetts Institute of Technology and consello National de pesquisa e Desenvolvement Technologico.

Cenek, M. (2013). *Architecture: Concept, Form and Aesthetics from the Perspective of Sustainability*. Czech Republic: CVUT.

Csikszentmihalyi, M. (1997). Creativity: Flow and the psychology of discovery and invention. HarperCollins Publishers.

Daugelaite, A., Vileniske, I.G. (2021). The Relationship between Ethics and Aesthetics in Sustainable Architecture of the Baltic Sea Region. *Sustainability, 13*(4), 2259.https://doi.org/10.3390/su13042259

Dimmock, M., & Fisher, A. (2017). *Ethics for A-Level*. https://doi.org/10.11647/obp.0125

Douglass, D.B. (2008). *Defining a sustainable aesthetic: a new paradigm for architecture*. Master thesis, University of Southern California, California, USA. https://doi.org/10.1057/9781137500496_2

Dokoushkani, F., Moradi, B., Mehrad, A., Razali, A., Ostadagha, M. (2014). the relationship between environmental aspects of housing welfare and residential satisfaction. *International Journal of Technical Research and Applications,2*(3), 36-40.

Durability guidelines for building wall envelopes. (1997) Canada: pwgsc, rps, technology & environment.

Das,O., Bera,P.,Moulick,S. (2015). Water conservation aspects of green buildings. *International Journal of Research in Engineering and Technology*. eISSN: 2319-1163 | pISSN: 2321-7308.

Edwards, L., Torcellini, P. (2002). Literature Review of the Effects of Natural Light on Building Occupants. https://doi.org/10.2172/15000841

Fisher, T. (2012). *Ethics for Architects*. Retrieved from, http://ethicsforarchitects.blogspot.com.cy/

Gaut, B. (2007). Aesthetics and Ethics: Basic Concepts. In, *Art, Emotion and Ethics*. Oxford Academic. Https://doi.org/10.1093/acprof:oso/9780199263219.003.0002

Givoni, B. (1969). *Man, Climate and Architecture*. London, England: Elsevier Publishing Company Limited.

Golembiewski, J. (2015). Salutogenic architecture in health care settings. In, *Handbook of Salutogenics: past, present and future*. G. Bauer and M. Mittelmark. New York, Springer Nature: 267 276. https://doi.org/10.1007/978-3-319-04600-6_26

Golembiewski, J. (2010). Start making sense; Applying a salutogenic model to architectural design for psychiatric care. Facilities 28(3), (100-117). https://doi.org/10.1108/02632771011023096

Grant, S., Saphores, J.-D., Feldman, D. L., Hamilton, A. J., Fletcher, T. D., Cook, P. L. M., Stewardson, M., Sanders, B. F., … Marusic, I. (2012). Taking the "Waste" Out of "Wastewater" for Human Water Security and Ecosystem Sustainability. *Science, 337*(6095), 681–686. https://doi.org/10.1126/science.1216852

Guy, S., and Farmer, G. (2000). *The competing logics of green buildings and ethics*. In W., Fox (Ed.). Ethics and Built Environment. London, UK: Routledge.

Heerwagen, J. L. (2005). *The human factors of sustainable building design: post occupancy evaluation of the Phiip Merrill*. California, USA: CBE.

Heerwagen, J. L. (2006). *Investing in People: The Social Benefits of Sustainable Design.USA*. Retrieved from, https://www.semanticscholar.org/paper/Investing-In-People-%3A-The-Social-Benefits-of-Design-Heerwagen/4b487f37b80b2ba6793975737489544627ab91ed

Humbert, S., Abeck, H., Bali, N., and Horvath, A. (2007). Leadership in energy and environmental design (LEED): A critical evaluation by LCA and recommendations for improvement. *International. Journal of Life Cycle Assessment, 12* (1), 46-57. Retrieved from, https://escholarship.org/uc/item/01n0q8bx

Indoor Air Quality in Commercial and Institutional Buildings. (2011). United State of America: OSHA 3430-04.

Iranfar, M., and Ahmad Nia, H. (2021, May,20-21). *The Synthesis of Ethics and Aesthetics in Modern Movement of Architecture: 'Truth' Theory as an Assessment Tool*. Presented at 4th Conference of Contemporary Affairs in Architecture and Urbanism. Alanya, Turkey. https://doi.org/10.38027/ICCAUA2021235N17

Johnston, C., Smith, A., Dyke, J. (2013). *Defining the aesthetic values of the Great Barrier Reef*. Retrieved [8-05-2016] from https://www.environment.gov.au/system/files/resources/7524507e-37a6-4cff-9195-cb5fe19d8f52/files/gbr-aesthetic-values.pdf

Kaur, A. (2013). *Maslow's Need Hierarchy Theory:Applications and Criticisms*. ISSN 2248-9878 , 1061-1062.

Kumar, M., Garg, N. (2010). Aesthetic principles and cognitive emotion appraisals: How much of the beauty lies in the eye of the beholder? *Journal of Consumer Psychology 20*(4), 485-494. https://doi.org/10.1016/j.jcps.2010.06.015

Kim,J. Rigdon, B. Graves,J. (1998). *Sustainable Architecture Module: Qualities, Use, and Examples of Sustainable Building Materials*. Michigan, United State of America: National Pollution Prevention Center for Higher Education.

Lavie, T., & Tractinsky, N. (2004). Assessing dimensions of perceived visual aesthetics of web sites. *International Journal of Human-Computer Studies, 60*(3), 269–298. https://doi:10.1016/j.ijhcs.2003.09.002

Lawson, B. (2002). CAD and Creativity: Does the Computer Really Help? *Leonardo, 35*(3), 327–331. https://doi:10.1162/002409402760105361

Leder, H., Belke, B., Oeberst, A., and Augustin, D. (2004). A model of aesthetic appreciation and aesthetic judgments. *British Journal of Psychology, 95*(4), 489-508. https://doi.org/10.1348/0007126042369811

Lee, J.M., Hanna, S.D. (2015). Savings Goals and Saving Behavior from a Perspective of Maslow's Hierarchy of Needs. *Journal of Financial Counseling and Planning, 26(*2). 129-147. https://doi.org/10.1891/1052-3073.26.2.129

Lee, S. (Ed.). (2011). *Aesthetics of Sustainable Architecture*. Rotterdam: Netherlands. Rotterdam. Retrieved from, https://www.academia.edu/197171/Aesthetics_of_Sustainable_Architecture

Levin, H. (2003). DESIGNING FOR PEOPLE: *Healthy Buildings 2003*. Singapore. Retrieved from http://www.seedengr.com/What%20do%20building%20occupants%20really%20want.pdf

Li, R. Y. M., Li, Y. L., Crabbe, M. J. C., Manta, O., & Shoaib, M. (2021). The Impact of Sustainability Awareness and Moral Values on Environmental Laws. Sustainability, 13(11), 5882. https://doi:10.3390/su13115882

Mallo, E.A. (2019). Ethics as Aesthetics: Foucault's Critique of Moralization of Ethics. International Journal of Scientific & Engineering Research, 10(9), (1273-1289). https://doi.org/10.14299/ijser.2019.09.04

Marbaniang, D. (2012). Introduction to Philosophical Ethics: A Christian Perspective. Morrisville, North Carolina, USA: LuLu Publishing. Retrieved from, https://www.researchgate.net/publication/330958741_Philosophical_Ethics_A_Short_Introduction

Peris Mora, E. (2007). Life cycle, sustainability and the transcendent quality of building materials. *Building and Environment, 42*(3), 1329–1334. https://doi.org/10.1016/j.buildenv.2005.11.004

Muhy Al-Din, S. S., and Ahmadnia, H. (2017). "Beauty" Based on the Functionality of Smart Skin in Buildings. *Open House International, 42*(4), 60-69. https://doi.org/10.1108/OHI-04-2017-B0008

Muhy Al-Din, S. S. M., Iranfar, M., & Surchi, Z. N. S. (2017). Building Thermal Comfort Based on Envelope Development: Criteria for selecting right case study in Kyrenia- North Cyprus. Energy Procedia, 115, 80-91. https://doi:10.1016/j.egypro.2017.05.009

Palmer, K. (2014). You and your architect. Sydney: RAIA Practice Services. Retrieved from, http://www.portphillip.vic.gov.au/default/StrategicPlanningDocuments/You_and_Your_Architect.pdf

Phaneuf, N., Choudhury, N., Al-Habib, A.R. et al. Assessing performance in brain tumor resection using a novel virtual reality simulator. *International Journal of Computer Assisted Radiology and Surgery, 9*(2), 1–9 (2014). https://doi.org/10.1007/s11548-013-0905-8

Shawkat, L.W., Muhy Al-Din, S.S., Kuzovic, D. (2018). Opportunities for practicing sustainable building construction in Kurdistan Region, Iraq. *International Journal of Contemporary Urban Affairs, 2* (1), (69-101). https://doi.org/10.25034/ijcua.2018.3665

Smiciklas, J. (2012). *Sustainable buildings. GO GREEN*. Retrieved from, https://www.itu.int/dms_pub/itu-t/oth/4B/04/T4B0400000B0012PDFE.pdf

Santayana, G. (2007). *The sense of beauty*. The United States of America: Charles Scribner's sons.

The Economic Benefits of Sustainable Design. (2004). Retrieved from, https://www1.eere.energy.gov/femp/pdfs/buscase_section2.pdf

Tang, T. (2012). Sustainable buildings: smart, green and people-friendly. The College of State Management. Retrieved from, https://www.irbnet.de/daten/iconda/CIB_DC28021.pdf

The American Institute of Architects. (2011). Retrieved from http://www.aia.org/index.htm

WCED (World Commission on Environment and Development). (1987). *Our common future*. Oxford: Oxford University Press.

Wong, J. K. W., & Li, H. (2008). Application of the analytic hierarchy process (AHP) in multi-criteria analysis of the selection of intelligent building systems. Building and Environment, 43(1), 108–125. https://doi:10.1016/j.buildenv.2006.11.0

Yadav, R., Sarkar, J., Jadhav, K.P. (2014). *Innovative façade design strategies*. Pune, Maharashtra, India.