

MINIMALISM IN ARCHITECTURE: A BASIS FOR RESOURCE CONSERVATION AND SUSTAINABLE DEVELOPMENT

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Mohammad Arif Kamal, Osama Nasir

Faculty of Engineering & Technology, Aligarh Muslim University, Aligarh, India

Abstract. *In a novel way, modern architecture has a great influence and impact on present-day contemporary architecture. Since the late 1980s, 'minimalism in architecture has been taken into consideration. Less is more is emphasized, which adheres to the philosophy of filling the space with the necessary items and clearing unneeded clutter to allow room for significant materials and objects. With simple shapes and clear lines, a neutral color scheme, and plain textures, minimalism exudes calm. Minimalism is about eliminating life's excesses. We can find freedom, contentment, and the ability to concentrate on what matters most. Whether it was during the sustainable era or in the twenty-first century, minimalism is adopting the conventional "less is more" way of life. In addition to displaying a wide range of hues, architecture is a form of art. Iranian architecture embodies historical grandeur and devotion, a commitment to religious education, and a rejection of materialism. It is a product of Islamic civilization. However, recycling well-known architectural features like minarets, courtyards, and mashrabiya frequently runs afoul of modern trends in architecture, which are not necessarily opposed to the fundamentals of Islamic architecture. Minimalism is regarded as a fundamental resource and an alternative to the present standard aesthetic. In order to draw designers with sustainable goals' attention to the relationships between minimalism and sustainability, the following questions are briefly addressed in this paper. How does minimalist design work? What does minimalist design entail? Is the minimalist style the best style for environmentally friendly architecture? This paper tries to attempt to examine a minimalist aesthetic for sustainable building and design. This paper discusses a comprehensive overview and analysis of minimalism and its guiding principles in architecture. It also continues by outlining the features and minimalistic foundations of Islamic architecture.*

Key words: *Minimalism, Minimalist Architecture, Simplicity, Sustainable Development, Environmental Sustainability, Resource Conservation*

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Corresponding author: Mohammad Arif Kamal, Faculty of Engineering and Technology, Aligarh Muslim University, Aligarh-202002, India

e-mail: architectarif@gmail.com

1. INTRODUCTION

The idea of minimalism is currently popular in nations with luxury and strong consumer cultures, such as Japan, the USA, and numerous post-socialist nations in Europe [1]. As minimalism has gained popularity, it has evolved in a few different ways. While some minimalists focus more on aesthetics, others combine the ideas of simplicity with sustainability and environmental concerns [2] [3]. Although the structures now under development may seem lovely, Sugimoto believes that true beauty is defined by "the power to transcend physical form" and "the depth of meaning generated from inspiration" [4]. A new aesthetic for a design that takes sustainability into account is necessary.

The responses, which were needed and based on a thorough review of the literature, were meant to clarify the interconnected relationships between the minimalist aesthetic, the core of Islamic architecture, sustainable design, and the possibility of their coexistence. The guiding principles of minimalism and sustainability are important to examine as the ultimate answer to the pressing humanitarian and environmental crises the world is facing today. Minimalism might provide sustainability, an emergent design trend, the appropriate aesthetics, a face, as well as a background and legacy. To increase the quality of life, the minimalist style shift begins with decluttering and resource reduction. Many people who practice voluntary simplicity believe that "it is the 'kind of possessions' that matters most and the 'attitude' toward them, 'not the number'" [5]; yet, for minimalists, the main aim is to have fewer goods and "get rid of anything that's unneeded" [6].

2. RESEARCH METHODOLOGY

In this paper, the qualitative research method has been used. The systematic literature review has been explored through the internet and secondary data from relevant published academic literature from journal articles and research papers. The research technique is focused on demonstrating unequal desires and distribution that can compete for a qualitative literature evaluation related to the primary issues, such as resource conservation, sustainability and environmental design. The data collected in the qualitative research is the data that comes from a number of researches that are described descriptively and qualitatively, which are supported by illustrations and photographs to reinforce the arguments put forward. The basic concepts and backgrounds are investigated through literature and on-line media; an observation to work for the qualitative analysis is conducted to document and explain the minimalist understandings of architecture, building construction and resource conservation. Finally the SWOT analysis is conducted for the application of Minimalism in Architecture with reference to environmental design.

3. MINIMALISM: THE STUDY CONTEXT

The reduction of a subject to its essential elements is referred to as minimalism [7]. Along with fashion, music, and decoration, minimalism is now a term used to describe the use of clean, simple lines, and the elimination of idiomatic features, and, in the case of architecture, the examination of the use of space and the potential for construction [8]. The attention to fundamental components like light and how it interacts with the masses and volumes that make up buildings to define space, design, and structure is what defines

minimalism in architecture. The pursuit of simplicity is seen as a path to personal freedom [9]. In terms of art history, the 1960s and 1970s sculpture movement is known as minimalism. In terms of aesthetics, functionalism and international style based on Mies Van der Rohe's maxim "less is more" are frequently linked to it in architecture [10]. The second meaning of minimalism is connected to Herbert Spencer's minimax theory from the 19th century [10]. The biological idea of trying to get the most out of the least amount of energy formed the foundation for this notion.

Three different versions of minimalism are applied at the Institute of Ecological and Experimental Architecture [10]. The first interpretation: minimalism in spatial differentiation presents the idea of a home with an open-plan living area that is flexible in its user's interpretation and is accompanied by reliable technological and sanitary services. The second method examines aesthetic minimalism, which is centered on using the fewest possible elements to have the greatest possible visual impact. The third strategy's fundamental tenet, that is to reduce the environmental impact, among other things by minimizing resources. The strategy that reflects minimalism and the associated idea of intentional simplicity is referred to as lean. The purpose of this investigation is to highlight architectural minimalism as the greatest method for implementing solar renewable energy and energy efficiency in our environment.

3.1. Minimalism: A Simple Design Philosophy

The idea of minimalism is to make things simpler by stripping them down to their simplest forms. The idea is to remove as little clutter as possible, to the point where no more elements, features, or joinery can be eliminated to improve the design-not that decoration should be entirely gone [7]. Moreover, a minimalistic design style is characterized by austerity, reductionism, simple forms, and a colour scheme in only one colour [11] [12].

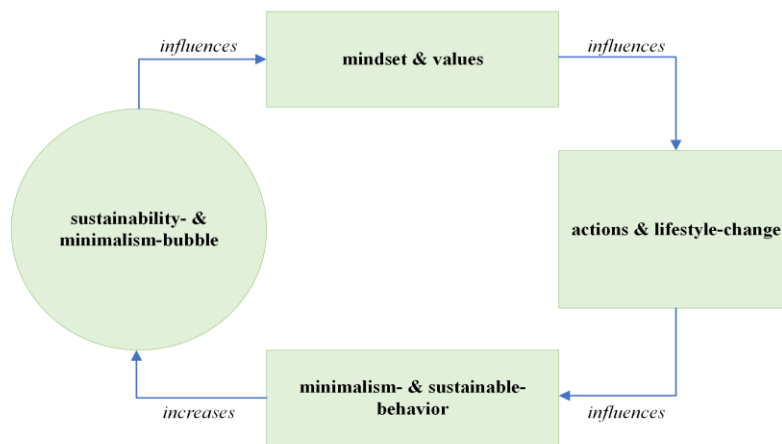


Fig. 1 Visualization of the ‘Minimalism Process’ (Source: <http://hj.diva-portal.org/smash/get/diva2:1674601/FULLTEXT01.pdf>)

To accomplish this, it is crucial to make use of vacant space. These materials typically have neutral colours that complement minimalist designs, which helps to keep the designs' core as simple as possible and eliminate any pointless decoration [7]. When the arts and crafts movement gained popularity in Britain in the late 19th century, people appreciated the attitude of "truth to materials" with attention to the profound and inherent characteristics of materials. Minimalist designers respectfully "listen to figure," recognizing the good aspects in basic and commonplace materials, in their pursuit of essence and simplicity [7].

3.2. Simplicity as a Historical Development of Minimalistic Design

Although the concept of minimalism feels fresh, its roots and guiding principles have a long history. Seneca said, "It is not the guy who has too little but the man who seeks more, that is poor," in 1st BCE, when the concept of simple living first appeared. Living simply and without greed is about fulfilling your own purpose, not that of others, according to Christianity. Islam discusses "Zuhd," which is asceticism. It encourages moderation and discourages excess or extremism in all facets of life. It encourages individuals to meet their fundamental requirements sparingly and without squandering any resources. Sanyasa, a Hindu concept, refers to a modest existence with few or no material things [13]. The social and creative conditions that arose in response to the Industrial Revolution are where the idea of minimalism first evolved in the West. People have come to the realization that they were overspending on goods. A movement known as "Minimalism" that was spurred on by a 1965 work by Richard Wollheim gave birth to the style [14]. Japanese Zen philosophy served as an inspiration for the minimalist movement. However, Japan is returning to its traditional minimalist ways in the twenty-first century [15]. The art world reflects the public's anxiety, reflection, and opposition to civilization and earlier trends in artistic thought. Minimalism looked to be a violation of the typical aesthetic attitude in this setting. The style got its origins as a response to Abstract Expressionism, which was known for using abstract color, markings, and gestures to express or evoke feelings from people's inner worlds [16]. The minimalist trend might perhaps be best described at the time as a different style of expression that engaged the mind more than the emotions. By "removing the appearance of composition," minimalism sought to "present the original shape of things to the spectator" [16].

Minimalism was first promoted and claimed in the disciplines of art, mainly painting and sculpture. At the time, minimalism aimed to make paintings simpler by reducing colors and figures while eschewing embellishments that would interfere with the main idea or effect [17]. In an effort to exclude any external meaning from his paintings, Frank Stella restricted his work to geometric forms, a style popularised by Donald Judd. The height of artistic minimalism was in the late 1960s and early 1970s. In the later 1980s, minimalism emerged as a widely popular and significant design trend. As a result, minimalism rapidly grew in popularity and encouraged designers to employ fewer materials, clean surfaces, and simple designs [17]. The ancient Greek school of philosophy known as Stoicism makes reference to minimalism. One of the basic tenets of the Stoics is learning to thoroughly appreciate and be grateful for the things we already have in order to lessen our need for more [18]. Peter Walker's use of minimalism in landscape design is unique and inventive, minimalist gardens may also be commemorative in addition to their use of materials, geometric shapes, and plant arrangement [19].

People began to understand the serious consequences of ignoring environmental and renewable energy challenges in the 1990s. Overuse of natural resources hindered human growth, which led to the awareness that Minimalism needed to exist and develop. Back to

basics, a catchphrase popular at the period, refers to people's desire to get back to the essentials and restore objects to their original state [17]. Today, minimalist design is used in many other fields, such as web design, industrial design, product design, even food design, among others. Different fields' minimalist designers use their own rules and standards to apply minimalism to their works. However, there is insufficient evidence to suggest that minimalism and ecological design are directly related. An original way of considering different methods of minimal design is to compare and combine a number of minimalism's tenets with those found in ecological design.

4. PRINCIPLES GOVERNING MINIMALISM

Diverse disciplines of application for minimalist design often have different guiding concepts, producing various created works. It is insufficient to employ only principles from one specific field to represent or explain minimalism in general, even when these differentiated ideas have their roots in the same historical background. Although there are many different notions of "reduction" in use, the following criteria consistently apply: "minimality of methods," "minimality of meaning," "minimality of structure," and "usage of patterns". When simplicity is established as a goal, "minimalism is not to be equated with simplicity," but rather with a collection of values that "go to extremes to generate a focus of the recipient, a participation of the user, and a way of looking at things - a minimal perspective [20]. "Rigid concentrating through the elimination of distraction" produces minimalist simplicity [21]. The idea of essence, or "what is left when there is nothing else that you can throw away," influences minimalism's final product. Because minimalism is an "open idea," it

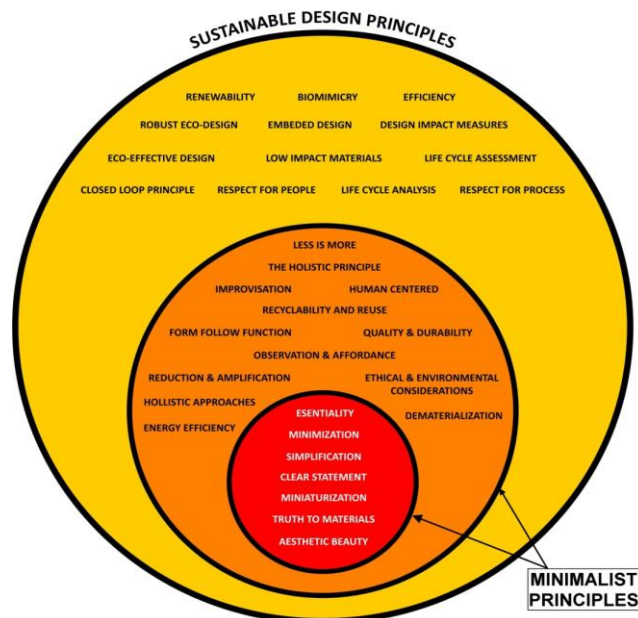


Fig. 2 The principles of minimalism and sustainability (Source: <https://actatechicanapocensis.com>)

is challenging to pin down its exact historical origins [22]. It is a phenomenon with historical roots [23]. The maxim "less is more" is regarded as the minimalist aesthetics' "working" concept [24]. It might be viewed as the core principle of minimalism.

The pursuit of "expressive" clarity has its roots in minimalism's "propensity towards literalness," according to Colpitt [21]. By "finding profound experience in ordinary experience," minimalism reorganizes values. Minimalist design "makes a clear message about the nature of reality" by shifting the focus to direct experience. In light of this research, the following summary of minimalist design concepts (Figure 2).

4.1. Simplicity: Eliminating Excessive Decoration

One of the main principles of minimalism is the removal of pointless decorative elements from designs. When there is too much substance and adornment, not only does the main theme or point become muddled, but there is also a waste of resources in terms of resources, space, and labor. Beyond aesthetics, simplicity includes a moral component that can be understood as reflecting an innate characteristic or the quest for philosophical or literary insight into the nature of harmony, reason, and truth. The well-known phrase "less is more," attributed to the German architect Ludwig Mies van der Rohe [7], effectively captures this idea. Using minimal elements to achieve maximized function is what this phrase might be interpreted to mean [17]. For instance, compile the fundamental components required for a structure to function and arrange them according to a straightforward architectural form. Although the architecture may appear straightforward, its functions are maintained—perhaps even more so than in a typical building—because its components are well-organized, perform a variety of tasks, or make use of cutting-edge technology. A floor's functionality is maximized and additional heating equipment can be saved if it is made to have electric heating capabilities beyond those of regular floors. Less is more does not only refer to these examples; rather, it reflects the idea that in minimalist design, only the aspects that are absolutely necessary are kept.

4.2. Miniaturization: Reducing the Size

Miniaturization, the minimalist project's guiding philosophy is minimalism, which "converges around the notion of decreasing" [21]. Functional significance of reduction The Braun television, the Atelier TV 3, which appears to be made entirely of the screen, and the Apple iMac all have reduced designs in black and white [25]. Equally significant is the idea of "amplification," which "generates a theoretical dilemma" in those minimalists" expect to accomplish an amplification of effect through a reduction of means" [21]. According to Leepa, "limiting the number of integers that make up a work of design permits a concentration on the remaining elements, investing them more strongly and immediately with the kinds of effects they intend to accomplish. The form is influenced by the technical characteristics of a product's components. Smaller components enabled the creation of new goods. The ability of the technology has been translated into form by the trend toward miniaturization. A drastic reduction in product size, for instance, was made feasible by the introduction of transistors in the 1950s and the microchip in the 1980s.

4.3. Dematerialization

The idea of "a product of service" relates to the presumption that products will be reconceived as "services" as opposed to being something that "consumers" "buy, possess, and dispose of" [26]. Design trends that dematerialize are influenced by a variety of things, including technological advancements, the new economy, environmental consciousness, social motivations, frustration with the abundance of goods and visual stimulation in our culture, and criticism of our overdesigned surroundings. Mart Guixé is a prime example of a functionally-focused designer in this regard: "I've been striving to erase the object's form and to build it as if it were pure function" [27]. Sasaki believes that Fukasawa frequently employs the phrase "creating the unconscious," which "summons up the idea of establishing a basic awareness" [28]. For instance, a frameless display called LED Watch (2001) for DMN + IDEO was created as a "white cube fashioned like a watch." I thought that the display's contents, not the windows that surrounded it, were what mattered. Electronic gadgets could only appear as electronic devices because of this display window [29]. Even if the end outcome is different, the instinctual knowledge of how to utilize something can be suggested in a design, most frequently through shape, but also through memory and experience of previous items that appeared or behaved similarly [30].

4.4. Materials: Truth to Materials

The use of the material has played a crucial role in minimalist design, particularly in the fields of architecture, industrial design, interior design, and other design disciplines. Geometry, the natural world, and real materials are all incorporated into Tadao Ando's architectural designs, whereas Takashi Sugimoto creates "a layered discontinuity that seems to evoke an ancient spirit" [4]. German architect Mies van der Rohe, who is credited with creating minimalist architecture [31], constructed the buildings using newly developed materials for his time (around 1950), such as steel and glass panels. Like Sullivan's maxim, the notion that form should respect the properties of the material from which it is derived has long been a cornerstone of Western design thought. Popularized with the phrase "truth to materials," which was paraphrased from John Ruskin's writings [32]. Texture, hardness, elasticity, and other properties vary depending on the substance. Some technical issues that cannot be solved or can only be solved partially without the right materials might be able to be solved with them. The use of materials is in keeping with the concepts of simplicity and purity since landscape minimalist designers tend to employ "contemporary materials with few decorative features" [19] such as stainless steel, glasses, wood, and rocks to express its core appearance. Despite the materials' lack of aesthetic details, designers were nonetheless able to create a variety of settings by rearranging and repeating them [33]. "Materials can express a feeling of history, a link to a person or place," according to Super Potato. Sugimoto views his designs as "a delicate network of information, delivered through varied materials" and believes that "materials provide information".

4.5. Empty: the Vital Element

In minimalist design, being empty does not mean nothing; in fact, it gives the design more options. This is the antithesis of excessive adornment. A particular quantity of white space emphasizes how distinct the main subject is in comparison to other aspects while discouraging focus or/and attention disruptions. Empty space is referred to as "freedom of movement" in

Japanese gardens, but it may also be seen as offering more conceptual options and greater functional flexibility for growth or movement [31]. A wall with fewer decorations and more empty space gives "visual breathing room," according to a frequently used concept in interior design [34]. A smaller amount of furniture in an apartment gives residents more freedom to select their own paths, activities, maintenance etc.

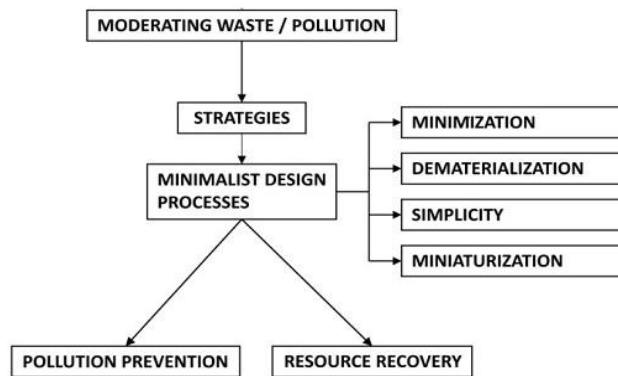


Fig. 3 Minimalist process considering sustainability (Source: <https://actatechicanapocensis.com>)

5. MATERIALISM: EMPIRICAL METHODS AND AN ANALYTICAL STRATEGY

Although there are many different definitions of materialism, they all share the idea that material goods are a fundamental part of materialists' lives and are seen as the main sources of happiness and success [35]. The empirical evidence included in this study has repeatedly demonstrated a bad correlation between materialism and life satisfaction as well as in certain areas of life, like standard of living, family, and leisure [36] [37] [38]. Given the possibility that minimalists would not value materialism, these findings have consequences for the ongoing study. The amount of consumerism in the American setting may be high [39] [40], but the minimalist message is becoming more popular worldwide, particularly in post-socialist economic and political environments [41]. The link between materialism and happiness has been the subject of several explanations [42].

This study was created using a descriptive-analytical methodology based on the most recent literature on current concerns in architecture and design. Studying the idea and goals of sustainable architecture as well as the rules and requirements for eco-friendly, minimalist interior design the maintenance of the four resources-human, environmental, social, and economic is referred to as sustainability.

- The growth of human abilities and capacity to support and develop societies is what is meant by human sustainability.
- The term "social sustainability" refers to sustaining and enhancing the social quality of relationships between people as well as protecting resources for future generations.
- In terms of economic sustainability, it seeks to raise living standards and promote social equality.
- Environmental sustainability is increasing personal well-being as a result by protecting natural resources without endangering their ability to meet present-day requirements [43].

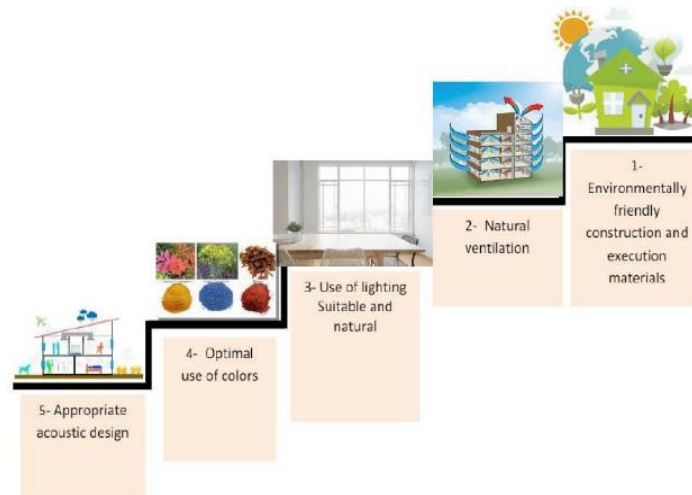


Fig. 4 Specification of green buildings (Source: <https://gercj.com>)

Sustainable design, it aims to create environments that are healthier and more nourishing for people while also taking into account how well nature can provide for the rest of the animals and future generations [44]. Since nature is a source of health and nutrition, sustainable development is based on environmental awareness. Building spaces responsibly for the environment involves reducing emissions that harm the environment, moving toward the use of recyclable materials that are good for the environment, switching to renewable energy sources, cutting down on energy waste, and operating spaces with environmental controls that make the environment more comfortable while reducing damage (Figure 4). On both users and the environment, as well as on the effectiveness of water use [45]. Sustainable architecture is the design and construction of green structures in accordance with the principles of sustainable development, such as limiting the use of ecologically damaging materials to lower construction and operating costs, improve user health, and boost productivity [46].

Given the aforementioned materialism findings and the somewhat scant research on low-consumption lifestyles, it is crucial to examine the experiences, traits, attitudes, and behaviours of people who identify as minimalists in order to start understanding the mechanisms by which a minimalist lifestyle may improve well-being.

6. MINIMALISM IN ARCHITECTURE: THE ABILITY TO CHOOSE LESS

In the 20th century, notable architects like Walter Gropius, Philip Johnson, and Le Corbusier consistently pushed the limits of architecture. Minimalism was transforming architecture in a fresh way. The best adage, however, is "Less is More," which was coined by German-American architect Ludwig Mies Van Der Rohe. A philosophy known as "less is more" promotes the placement of only what is necessary in a space and the removal of clutter to allow room for significant items and substance [47]. The goal of minimalist architecture is to construct beautiful structures out of only what is required. The relaxing ambiance that minimalism creates is facilitated by clear lines and shapes, a

controlled colour palette, and straightforward materials. The reduction of a subject to its essential elements is referred to as minimalism in design and architecture. The primary objectives of minimalist architects are the connection between two immaculate surfaces, tasteful lighting, and the empty spaces created by the removal of three-dimensional objects [48].

Architects adopted the term "minimalist architectural style" to characterise the aesthetics. The essential components of a building were designed to provide the impression of extreme simplicity by utilising every feature and detail for both aesthetically pleasing and utilitarian purposes [49]. Designer Buckminster Fuller (1895-1983) adopted the engineer's maxim of "Doing more with less," but his concerns were more centred on technology and engineering than on aesthetics. In minimalist architecture, concepts like reduction, simplification, and unity are also demonstrated [7]. Minimalists consider these elements to be the "essence" of building.



Fig. 5 Minimalist architecture (Source: <https://www.archidaily.com>)

6.1. Minimalist Architects and Notable Work

Kazuyo Sejima, a well-known Japanese minimalist architect, teams up with Ryue Nishizawa as SANAA to produce distinctive Japanese Minimalist structures. Works include House Surrounded by Plum Trees (2003) in Tokyo, and New Museum (2010) in New York City [7]. Another Japanese minimalist architect, Tadao Ando, uses his designs to convey both his own interpretation of nature and the spirit of old Japan. His creative ideas are inspired by geometry, natural materials, and the world around us. He usually combines concrete or natural wood and a minimal structural form to create austerity and rays of light in space. Ando's works and the translation of Japanese aesthetic ideas have had a significant impact on Japanese architecture [49].

Le Corbusier is still a hotly debated topic. His approaches to urban planning have come under fire for disregarding equality, societal expression, and pre-existing cultural sites. The Ronchamp Notre-Dame-du-Haut chapel and the Sainte Marie de La Tourette convent are two of his most well-known creations. Le Corbusier's design for Chandigarh City was one of his largest and most complex projects. Spirit, light, and order are the

guiding ideas of British minimalist architect John Pawson's designs. Mies was one of the first designers to apply the adage "less is more" to their work. The architect known as Mies, worked to achieve simplicity and clarity in his designs throughout World War I. He and others used structures, furnishings, and instruction as means to strip architecture of its ornament. Among his famous U.S. projects are the Seagram Building in New York, the Farnsworth House, as well as the Chicago Federal Center complex. His following works were based on these timeless classics. Another renowned architect Laurie Baker born in England in 1917, relocated to India in 1945 and kept on his architectural career there. Baker, a minimalist in style, focused on producing structures that were economical and energy-efficient while using straightforward, locally available materials to produce excellent designs [50].

6.2. Present and Future of Minimalism

The rise of minimalism is a reaction to overconsumption. The "Social movement striving to enhance the rights and power of consumers about sellers" is known as consumerism [51]. Many people who have adopted a minimalist lifestyle in a culture that is frequently associated with extravagant extravagance have done so while still maintaining the core of their respective traditions.

Nowadays, minimalists all around the world are choosing a zero-waste way of living. Whether designers are building homes or businesses, people are consciously choosing to build sustainable constructions. Modern minimalism in architecture frequently uses cosier, more rustic wood. While the minimalist idea is still present, it is clear from the return to natural materials and the addition of stone accents that the design now has a cosier, more recognisable appearance that was lacking in the sterile glossy renditions.

"Doing more and better with less" is the goal of sustainable consumption and production. Its goal is to improve net welfare gains from economic activity by lowering resource use, degrading environmental conditions, and polluting the environment while improving quality of life. The goal is to satisfy consumer demands without going beyond ecological bounds. The need for measures that maximise the value of output and fully utilise resources is demanded, and as a result, dependency on the already overburdened infrastructure and urban areas is anticipated to considerably increase [52].

Although it has flaws, minimalism is not a new idea. In the twenty-first century, minimalism has taken the form of a cornerstone infiltrating the worlds of cuisine, fitness, fashion, architecture, and digital media, and remaking the modern way of life along the lines of traditional and ecological practices. On one hand, a minimalist lifestyle is the most practical way to live [53]. It can, however, be challenging to fully adjust. As a result, minimalism's future is likely to be subjective, believable, and critical.

7. MINIMALISM AND ISLAMIC ARCHITECTURE

"And do not waste; indeed Allah does not like those who are wasteful" [55]

The main ultimate realization and substance of nature, as well as natural occurrences that are unified by industry and human invention, must be provided by humans, according to Islamic thinking. Additionally, to impart the perfection that those things possess in relation to their nature to the manifestations and gifts that are available to him [56]. The spaces that have been created by humans must offer a means of drafting the natural

environment and the progression toward perfection. Like other arts, architecture serves to enhance productivity in the natural and human environments [57]. To balance what the advantages of the ideal state are [58]. Accordingly, the ultimate aim of architecture was not only the construction of a shelter but also the perfection of the human being and, outside of him, the environment and the natural world that the architecture took place in.

According to Norman El Kons, the goal of sacred architecture is to "clearly define the boundary between the material and the mind, body, and spirit." Regarding religious structures, Priest Robert Shoulder stated that in order for people to be mentally well, they must be in their natural environment, which is a garden. Despite linguistic and cultural differences, sacred Islamic architecture has a uniform identity throughout the world. Naturally, after conversions to Islam, the construction of Islamic places of worship became necessary for religious purposes. The mosques served as the city's primary focal point [59].

The two notions' analysis could be used to interpret minimalism in Islamic philosophy; Zuhud (asceticism, renunciation) and Taammul (contemplation, meditation), which both discovered sufism to find their practice. For the sake of spiritual transcendence, the first notion calls for a separation from the physical world and a minimal lifestyle [60]. It is thought that the physical surroundings, daily routine, and surroundings frequently prevent the mind from attaining greater levels of abstraction. As a component of the physical world, architecture should be given the bare minimum of Muslim thought. Maximizing pleasure, consumerism, and comfort runs counter to this idea [61]. The Prophet's house, his mosque in Medina, and the shape of the Ka'ba [62] may also reflect minimalism in Muslim ideology; this was seen by Creswell to indicate a "desire" for building. For example, it is advised against including any decorations or aesthetics inside the mosque since these elements would interfere with the essence of prayer, that is 'contemplation and reverence' which is Khushuu' [63]. Fully ornamented mosques were thought to be a reflection of a degraded faith and a devotion to futility. The nomadic lifestyle in the early Islamic culture appears to have been characterized by simplicity and minimalism. Before most early towns, including Kufa, Basra, and Fustat, the tent served as the bare minimum of shelter [64]. Typically, ornamentation solely refers to features of architecture and building materials. Rooms are versatile areas with little, lightweight furnishings. Prior to the arrival of modernity and industrialization, which brought heavy and fixed furniture; this was the custom in the majority of homes in the Islamic world.

In this context, openness to the sky would also be regarded as a minimalist style that encourages reflection. Every structure, including homes and mosques, has a courtyard in the middle to provide people access to some of the sky. Most frequently, these courtyards served as a landscape feature that brought together various natural components including light, water, vegetation, and soil. Such a typology and spatial layout will undoubtedly encourage reflection more than high-rise structures that provide a horizontal perspective of the street and nearby properties.

The main principles of minimalism include internal and external syndication, using simple geometric shapes, eliminating any luxuries, avoidance of restriction and absolute governance and following the scientific method (Figure 7). The picture makes it obvious that the most crucial guidelines involve simplicity (the elimination of any ostentatious items and non-Islamic components), avoiding constraints, employing basic geometric shapes, according to scientific principles, and connecting the inside and outdoors. The diagram below shows the fundamentals and characteristics of Islamic architecture that have been noticed all over the world, not because of any particular nation or geographic location, but rather because of the religion and mentality of Islamic civilization. The

seven mentioned principles of Islamic architecture, as shown in the chart, encompass the characteristics that are thought to be important for Islamic buildings. Islamic schools of minimalism and Islamic architectural elements have been compared in order to determine whether Islamic architecture adheres to its ideas. Islamic architecture completely adheres to minimalist principles and covers them, as seen in the diagram (Figure 7).

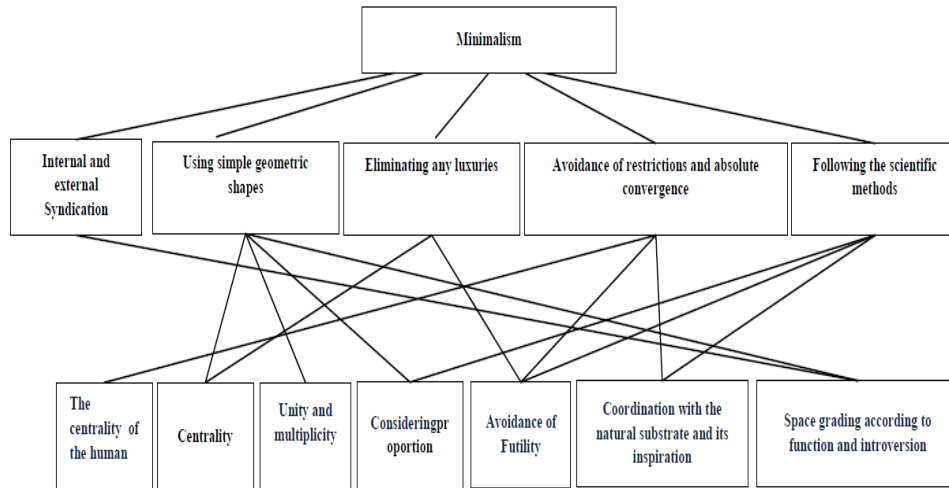


Fig. 7 Characteristics of Islamic architecture with school of minimalism (Source: <https://www.bretj.com>)

8. SUSTAINABILITY: A WAY TO CONTEMPLATION

Although it is built on the idea of regionalism, sustainable architecture urges us to use technology wisely and to design for the long term rather than urging us to go back to the ways of the past out of nostalgia [65]. “Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [66]. The ecological component, which describes the state of the earth, is the first and most crucial of the three pillars of sustainability [67]. People work to raise awareness that something needs to be done to stop global warming and the natural disasters it causes since scientists from all around the world have discovered that humans are responsible for climate change [68]. Additionally, the alteration of ecosystems or biological variety may affect human systems as well [68]. The social and economic aspects of the other dimensions may also be impacted by this. The nested model emphasizes how dependent the economy and society are on the environment and that both are a subset of the environment, in contrast to the three-ring sector perspective of sustainability, which equates to environmental, social, and economic sustainability [67] (Figure 8). The idea of sustainable development and sustainable design is based on following appropriate steps from conception to the production of ecologically sound items. Thusly created products are durable, dependable, adaptable, upgradeable, suited for a variety of uses, and flexible [69].

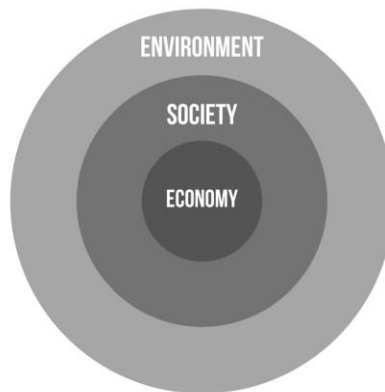


Fig. 8 The nested model of sustainability (Source: <https://doi.org/10.1002/sd.199>)

In the past, including ecological concepts in planning was a quite pricey procedure. Design choices were made solely based on economic and technological considerations. The effects on the environment of this strategy ran counter to the reasoning of the used design principles. The objective of a novel concept in product development is to decrease significant amounts of waste while preserving non-renewable resources.

8.1. Ecological Labels and Standard

Industrial and production firms have a significant impact on environmental degradation. Numerous industrialised nations have developed national and municipal strategies and begun enacting environmental laws in an effort to reduce the effects of air, soil, and water pollution. Without sacrificing the quality of the finished product, there is a trend to lessen the negative influence on the environment. The use of eco-labels and green insignia helps to market ecologically friendly goods. They carry consumer-facing information that reveals a product's environmental quality.

According to statistics, people in cities spend 80% of their time indoors. As a result, it is crucial that their living and working environments reflect their needs. Green structures are regarded as safe, high-level environmental protection facilities. They are anticipated to be highly comfortable, energy-efficient, and predominately reliant on renewable energy sources. As a result, they have a substantially lower environmental impact than typical buildings [70]. Adopting the idea of sustainable planning and design at a young age is crucial for future generations of engineers, managers, and designers. It is a good practice applicable in many engineering and decision-making areas. Significant financial savings, increased material and energy efficiency, and a healthier environment for the general public will all result from it.

9. RESOURCES CONSERVATION: THE 3R'S (REDUCE, REUSE, AND RECYCLE)

In the past, including ecological concepts in planning was a quite pricey procedure. Design choices were made solely based on economic and technological considerations. The effects on the environment of this strategy ran counter to the reasoning of the used design principles. The objective of a new idea for product development is to protect non-

renewable resources and lessen massive amounts of waste (Figure 9). By extending the product's useful life, reusing it (for the same or a different purpose), and recycling a portion or the entire product, the product becomes environmentally benign and ecologically acceptable. Production is concentrated on developing waste-free methods that would enhance output with minimizing the adverse effects on the environment [71]. From the extraction of raw materials to transportation, processing, and production, the environmental impact of resources and products must be monitored. Finally, after use, their remains are handled (disposal, reuse, recycling). The components that are prone to wear, such as floors, should be given special consideration in order to extend the product's useful life.



Fig. 9 Conservation of resources (Source: www.znrfak.ni.ac.rs/SE-Journal/index.html)

The development of alternative materials, the range and accessibility of organic items on the market, and the wide availability of new technology make the ecological design practical and applicable. It ought to be made a prerequisite strategy and a guiding principle in planning and design [72]. The materials used must if at all feasible, be sustainable, environmentally friendly, and safe for human health and the environment. A replacement should be offered for any materials that are unreliable or harmful to use. One of the top considerations in interior design is creating a healthy environment. Only non-toxic, recyclable, and energy-efficient products with low environmental impact should be taken into consideration.

10. MINIMALISM AND SUSTAINABILITY

Minimalism includes conscious and critical consumption [73] [74] [75] [76]. Given that sustainable consumption can take several forms, it is possible to tie it to this reduction strategy. It either entails using fewer resources, using greener products, or doing both [75]. Most research on minimalism and related consumption habits has focused on individuals and their individual lifestyle preferences. As fewer resources are consumed and depleted, reduced consumption and production are generally more environmentally friendly than excessive consumerism [74] [76] [77].

Researchers have looked into the connection between sustainability and these minimalist living philosophies. They discovered that minimalism traits frequently align with sustainability ideals [73] [74] [75] [76] [77] [78]. People who identify as minimalists frequently also

have a keen sense of justice and the environment. Natural science researchers also looked at how minimalism can help people choose sustainable lifestyles and become more aware of sustainability. Their "first hypothesis" is that "reaching sustainability in the long run in all domains of human activity requires knowing, accepting, and enacting simplicity in our daily lives" [78]. They demonstrate that, under scientific circumstances, voluntary simplicity (VS) has a stronger connection to sustainability than minimalism, although they still detect a high correlation between minimalism and environmental behaviour. More effort and investigation are invested in decision-making when there is a decline in consumption and a skeptical attitude toward making new purchases [74]. The potential of minimalism as a way of life and its high standards are pushing manufacturers toward more environmentally friendly production methods. Conversely, research suggests a link between materialism and a lack of interest in environmental issues [76] [77]. The majority of cited research link minimalism to particular characteristics, advantages, or values. Critical consumer analysis and a general understanding of the environment were cited in relation to sustainability, particularly a sense of ethics [75] [78]. In this way, a link between simplicity and sustainability is demonstrated.

10.1. Holistic Approach

The primary characteristics of the design approach are to consider the structure as a whole and to keep things as straightforward and sustainable as feasible. In this way, Sir Patrick Geddes (1854–1922), a Scottish biologist, sociologist, and urban planner, who popularised the phrase "think locally, act globally," served as an inspiration for Liddell. Geddes believed that the health of the world needed to be taken into account as a whole and that individuals needed to take action in their own neighbourhoods and cities in order to attain it. He believed that because society, the economy, and the environment are inextricably linked, any truly sustainable growth must have a positive impact on all three. The notion of the "three-legged economic stool" was developed by Howard Liddell using this idea as the basis. The legs of this stool are the Folk-Place-Work, which are the three pillars of sustainable development. The entire structure will collapse if one leg fails, according to "does not work" [79].

In addition to reducing emissions and energy use, healthier indoor and outdoor environments free of VOCs and other contaminants are also created. The health of the occupants and their productivity is promoted by reducing the toxicity of enclosed spaces [81]. Since it fosters a healthier environment and lowers the cost of medication, this has an impact on both the economy and society of the town. Thermal mass, adequate insulation and airtightness, and natural ventilation reduce the environmental effect while lowering building, operating, and maintenance expenses. A new project or development should therefore have as little of an impact on the environment as feasible.

10.2. How Minimalism Encourages Sustainable Living

The prerequisites for the development are in three phases, as was previously mentioned:

- Keeping the environment safe
- A harm-free economic system and
- Activities that help everyone fulfill their fundamental needs and rights. Living in safe and healthy neighbourhoods. Thus, non-discrimination and equality for all.

One of the pillars of sustainable environmental development is to minimize the number of consumed items and attempt to limit the consumption of natural resources since minimalism is

the practice of living a minimal life, which is a way of decreasing the consumption of luxury goods and waste. Here, we can see how sustainable development and financial performance are related. Every person should be able to see themselves and their family in the face, which is one of the objectives of the sustainable economic pillar. Here, the minimalist aims to put more emphasis on the important things than on the money. Money is spent on things that are required and important, so this strategy eliminates waste. The minimalist approach, on the other hand, emphasizes morals and human values in society and is a link to sustainable development, which aims to create healthy and secure societies. The connection between sustainable development and the minimalist approach is a sensible method for putting one of the concepts of sustainable development into practice, and if we use it, it will also result in a significant shift [82].

11. LOW CONSUMPTION STYLE: WELL-BEING AND ECONOMICAL INFLUENCE

People who lead low-consumption lifestyles and engage in pro-environmental, thrifty, and voluntary simplicity tend to refrain from excessive consumption and the acquisition of material goods. The health of the building's occupants is another crucial factor that may be inferred from the eco-minimalist approach, in addition to minimizing the environmental impact and financial expenditures. Less than 3% of the materials used in buildings have undergone testing for their ability to cause cancer or have any other negative effects on the human body. While VOCs like formaldehyde can worsen asthma, especially in children, and induce headaches, nausea, and dizziness, air pollution can also cause allergies and a generally unpleasant environment [83]. To prevent decomposition, otherwise healthy and natural materials are frequently chemically treated with hazardous preservers, which transform them into poisonous materials that can harm human health and are impossible to dispose of without contaminating.

Lighting is another element that affects a user's well-being. An "important contribution to peoples' experiences of buildings" is "daylight" [81]. In order to produce a high-quality area, any conditions that cause glare or overheating should be removed during the design process [82]. Studies frequently suggest a connection between intentional simplicity and increased well-being, although there are not much concrete data to back this up [85] [86]. The relationship between thrift and well-being has also been described as "a lifestyle of strategic under-consumption." It should be mentioned that not everyone can lead a simple lifestyle in the way that is presented. Because they do not have the means to afford many items, those who are not financially stable cannot have the issue of overconsumption [73]. Minimalism has economic benefits as well because it encourages the thoughtful consumption of only the things one needs [87] [88]. Because of the opportunity to save and pursue long-term goals, the financial stability contributes to greater well-being [89].

12. THE SWOT ANALYSIS

The SWOT analysis is a strategic planning and strategic management technique used to help a system or organization identify Strengths, Weaknesses, Opportunities, and Threats related to decision-making and project planning. It is sometimes called situational assessment or situational analysis. This technique is designed for use in the preliminary stages of decision-making processes and can be used as a tool for the evaluation of the

strategic position of organizations of many kinds. The users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. Following is the SWOT analysis for the application of Minimalism in Architecture has been summarized in Table 1.

Table 1 SWOT Analysis for the application of Minimalism in Architecture

Strength	Weakness	Opportunity	Threat
Many well-being advantages, according to minimalists, include happiness, life satisfaction, meaning, and strengthening interpersonal ties.	The biggest problem with the minimalist movement is that there is not much information out there. As a result, information is spread and the overall idea is frequently misunderstood.	People today favour sustainable choices that take into account various environmental issues. More people are upcycling and thrifting, which opens up more chances for business aficionados.	The practice of minimalism is not without possible drawbacks. Minimalism is frequently dismissed as just aesthetic, a luxury only available to those with more financial means.
One may be able to develop a more effective strategy to manage their feelings and health if they can learn to reduce stress by cleaning their environment.	In the past, people have abused minimalism by raising the prices at which they sell worn goods. Such instances erode the movement's strength and lead people away from minimalism.	All nearby internet retailers have switched to eco-friendly packaging.	A minimalist lifestyle, according to some critics, promotes and facilitates new types of consumption, and minimalism is only a "cure-all for a certain feeling of capitalist overindulgence" [54].
Consumption at a high rate results in more waste. Because of this, many minimalists adopt "zero waste" practises, which go beyond simply lowering consumption [54].	Because they perceive minimalism as being overused, people are reluctant to give it a try. Even more people experience shame.	Through books, blogs, articles, and videos, individuals today are attempting to learn more about living a minimal lifestyle. As a result, there is a rise in the demand for writers who promote sustainability.	These new consumption patterns may take the shape of a desire to buy products that serve are sustainable or conserve energy, or one may modify home to conform to the minimal space requirements [54].
Another advantage of living a simple life is that one leaves less of a carbon impact.	The benefits of minimalism and what it truly is are not well known by the general public.	Writing with a minimal vocabulary aims to convey as much information as feasible while using the fewest number of words possible. It is the marriage of simplicity and clarity [18].	Some people find decluttering to be onerous because they become fixated on what to get rid of and how many things they "should" own.

13. DISCUSSIONS

In order to gain a clearer knowledge of the advantages of minimalism for wellness, the aim of this study was to investigate what it is like to live a minimalist lifestyle.

13.1. Social and Sustainable Paradigm Change

It is widely acknowledged that our planet urgently needs to adopt more sustainable purchasing habits. Sustainability in a comprehensive sense has only recently attracted the attention of social academics, having previously been relegated to primarily being an environmental issue [90]. Sustainability cannot be attained simply by avoiding unsustainability; rather, a cultural paradigm shift is necessary, as is explored in the book "Flourishing." While fair trade and eco-efficient production are not inherently wrong, they do not represent true sustainability as flourishing. Long-term prosperity can only result from the formation of a society that rejects materialism and slows the market. According to research, adopting true honesty is crucial to making the transition from a culture of possession to one of spirituality and transcendence. The idea of caring must take the place of the Cartesian model's dominance in economics. They contend that despite economists' continued predictions of a future characterized by a hedonistic consumerism, "homo ludens" nevertheless yearns to escape the inhumane confines of the consumerist treadmill of synthetically produced desires. Hoskins states her belief that the current capitalist model cannot be changed in 2014. She makes the point that, rather than changing the approach, the purpose must change in order to improve the condition of the planet.

13.2. Designing a Sustainable Future

The use of daylight, separate operating zones for artificial lighting, and control by daylight sensors, natural forces like air pressure and wind for ventilation, control of airflow, heat recovery, and low-emitting building materials, geothermal heat, and alternative building materials, such as transparencies, are some of the energy efficiency and conservation strategies. There appears to be widespread agreement in modern architectural discourse and practice regarding the urgent need to support environmental innovation in building design. We are discovering that a straightforward, compact building shape is essential for achieving extremely low energy use. Things should be as simple as possible, but not simpler, according to Einstein. The obvious solution is a simple box, and architects like Peter Zumthor have shown that even the simplest of boxes can look sophisticated and elegant [91].

14. CONCLUSIONS

Design minimalism's potential is continually being explored. People may find the minimalist trend fascinating, but it also carries a heavy burden of responsibility. The following aspects are related to aesthetic attributes that help products be more sustainable: features that last a long time, aesthetic aging (flexibility), timeless design (anti-fashion), market policy (slow changes of aesthetic values in the market), long life, and style. Choosing to live a minimalist lifestyle involves letting up material belongings that do not enrich our lives. Sustainable designs should overtake conventional ones that are not sustainable. Making anything may seem easy and straightforward, but when a designer has had a glass of minimalism, they will realize the nuances of making items with little assets. This is a serious issue for architects as well. The aesthetic values of nature that are ingrained in cultures and traditions are highlighted by aesthetic sustainability. The incorporation of traditional aspects is encouraged by designers. The foundation of a sustainable design approach is a method

of revisiting and improving archetypes. Although there are numerous benefits to minimalism, there are some negatives as well. Designers cannot hide errors, and many people find the absence of adornment and the neutral colour scheme unappealing.

Islamic architecture differs from other styles in a variety of ways, although having many traits in common with minimal-style basic structures. Islamization of architecture is based on principles that apply to many other fields of study and come from the core of Islamic philosophy. The abundance of human knowledge that contemporary architecture(s) offer should also be subjected to Islamization, a crucial process of filtering and re-theorizing that depends on these systems. Many movements, like participatory and environmental trends, for example, might be fully adopted, while others, like deconstruction and minimalism, could be redesigned in accordance with Islamic norms. Through the concepts of symbolic loading and image creation, the minimalist aesthetic can influence the socio-cultural and economic aspects of sustainability. The aesthetic values of nature that are ingrained in cultures and traditions are highlighted by aesthetic sustainability. The incorporation of traditional aspects is encouraged by designers. A technique for revisiting and upgrading archetypes forms the basis of a sustainable design strategy. Eco-attributes must not result in decreased product performance or rising unit costs. In order to compete in marketplaces where the survival of the economic fittest is the norm, sustainable products must maintain the level of fundamental characteristics and cost structure that make them competitive.

Many people would opt for Mies van der Rohe's succinct adage, "less is more," if we had to sum up minimalism in a sentence or two. At the time, minimalism permeates both our daily lives and architecture. Perhaps for this reason, minimalism has come to stand for something.

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MINIMALIZAM U ARHITEKTURI: OSNOVA ZA OČUVANJE RESURSA I ODRŽIVI RAZVOJ

Na nov način, moderna arhitektura ima veliki uticaj na današnju savremenu arhitekturu. Od kasnih 1980-ih, „minimalizam u arhitekturi se uzima u obzir. Naglašeno je manje je više, što se pridržava filozofije ispunjavanja prostora potrebnim stvarima i uklanjanja nepotrebno nereda kako bi se ostavio prostor za značajne materijale i predmete. Sa jednostavnim oblicima i jasnim linijama, neutralnom

shemom boja i jednostavnim teksturama, minimalizam odiše smirenošću. Minimalizam znači odbacivanje preteranog u životu. Možemo pronaći slobodu, zadovoljstvo i sposobnost da se koncentrišemo na ono što je najvažnije. Bez obzira na to da li se dogodio u eri održivosti ili u dvadeset prvom veku, minimalizam usvaja konvencionalni način života „manje je više“. Osim što prikazuje širok spektar nijansi, arhitektura je oblik umetnosti. Iranska arhitektura utelovljuje istorijsku veličinu i predanost, posvećenost verskom obrazovanju i odbacivanje materijalizma. To je proizvod islamske civilizacije. Međutim, recikliranje dobro poznatih arhitektonskih obeležja poput minareta, dvorišta i mašrabije često se kosi sa modernim trendovima u arhitekturi, koji nisu nužno suprotni osnovama islamske arhitekture. Minimalizam se smatra osnovnim resursom i alternativom sadašnjoj standardnoj estetici. Kako bi skrenuli pažnju projekatanata sa održivim ciljevima na odnose između minimalizma i održivosti, sledeća pitanja su ukratko obrađena u ovom radu: Kako funkcioniše minimalistički dizajn? Šta podrazumeva minimalistički dizajn? Da li je minimalistički stil najbolji stil za ekološki prihvatljivu arhitekturu? Ovaj rad pokušava da ispita minimalističku estetiku održive gradnje i dizajn. Ovaj rad razmatra sveobuhvatan pregled i analizu minimalizma i njegovih vodećih principa u arhitekturi. Također se nastavlja iscrtavanjem karakteristika i minimalističkih osnova islamske arhitekture.

Ključne reči: *Minimalizam, Minimalistička Arhitektura, Jednostavnost, Održivi Razvoj, Ekološka Održivost, Očuvanje resursa*