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Original Research Article

Architectural Transcendence in the Formation of Interior Vaulted Spaces of Iranian-Islamic Architecture*

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Abstract

Problem statement: Architecture, as a work of art, can evoke both concrete and abstract meanings for humans, thus establishing a profound connection with their emotions. "Transcendence[1]" is an emotional concept that has been discussed in the theories of Western architectural theorists, and some travelogue writers have also mentioned their perception of this meaning in historical buildings of Iran[2]. This concept is particularly evident in certain dome structures and the interior halls of traditional Iranian buildings, spanning a range of sacred buildings like mosques and tombs to everyday structures such as Timchehs and baths.

Research objective: The aim of this research is to explore how the meaning of "transcendence" manifests in some Iranian architectural buildings and to provide a framework that can be utilized by designers and students to understand the emergence of the meaning of transcendence.

Research method: This study is qualitative, employing a descriptive and analytical method based on logical reasoning and the analysis of selected samples through a formalist critique approach.

Conclusion: Architecture that embodies the meaning of transcendence creates a space for mental concentration and places individuals within that space. In this environment, the uplifting force, liberation from the emotional weight of matter, and connection to the infinite are mentally evoked, thus preparing the context for the experience of transcendence in humans.

Keywords: *Iranian Architecture, Interior Architecture, Evoking Feeling, Meaning of Transcendence, Space Order, Vaulted Ceiling.*

Introduction

The mission of architecture extends beyond mere functionality and aesthetics. An architectural work acquires value when it generates meaning. Architecture imbued with meaning becomes eternal in the soul and memory of its audience. Consequently, elucidating how architecture can evoke a specific meaning is of paramount importance. Within the architectural landscape of Iran, there exist halls and dome structures capable of evoking a feeling of transcendence in receptive viewers. This feeling of transcendence refers to an uplifting sensation associated with freedom and integration into the infinite. Several travelers, including Robert Byron (1982) and Henri Stierlin et al. (1998) have noted the presence of this quality in Iranian architecture in their travelogues. Among Western architectural theorists such as Pallasmaa (2015), Bermudez (2015), and Etlin (2012), attention to this meaning in architecture, in general,

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holds a significant position. In the architectural theories of Iran, there are also general references to the existence of this quality. In the theoretical foundations of Iran and the world, the way the form of architectural space embodies meaning has not been elucidated, therefore addressing this issue is necessary. The objective of this study is to investigate how the meaning of "transcendence" manifests in specific examples of Iranian architecture. To this end, studying the concept of transcendence and its meanings in philosophical and psychological literature, which provide relatively clear definitions, is essential for clarifying the boundaries and dimensions of this term. Furthermore, examining the theoretical foundations for analyzing the form of architectural space is necessary to establish criteria for analyzing these environments. Thus, the research questions are as follows: What dimensions does the concept of "transcendence" encompass in light of its semantic boundaries? What architectural equivalents do these semantic dimensions have in the interior space of architecture? What criteria are necessary for critiquing spaces that evoke a feeling of transcendence? How does the formal arrangement of the interior space of architecture stimulate the feeling of transcendence?

This study is divided into two sections. The first section addresses theoretical discussions aimed at clarifying the concept of transcendence and the criteria for the semantic analysis of architectural space. At the end of this section, a conceptual framework for transcendence, a theoretical framework for "transcendent architecture," and criteria for analyzing examples are presented. The second section, which constitutes the main argument of the study, reflects on instances of architecture that evoke a feeling of transcendence, seeking to uncover the spatial characteristics of these examples. This section elaborates on the most significant dimensions of spaces that evoke a feeling of transcendence through three discussions: the inner realm, the uplifting force, and the manifestation of infinity in the ceiling.

Research Background

The theories and investigations concerning a specific type of interior space[3] in architecture that possesses the capacity to evoke a feeling of transcendence in the observer can be categorized into two groups. The first category comprises writings and theories that report on the perception of this feeling in certain architectural structures, partially describing the experience and relating it to the formal arrangement of architecture, yet without seeking to elucidate this connection. The second category explicitly aims to find and explain the relationship between the formal arrangement of architecture and the evocation of this feeling (Fig. 1).

Finding the relationship between the formal order of architectural space and the evocation of the feeling of transcendence	Description of the experience of transcendence in architectural design
• Etlin • Bermudez • Pallasmaa • **Conclusion:** There is no comprehensive and complete explanation in this area.	• **Western architectural literature:** Schultz, Wolfflin, Etlin, Bermudez, Arnheim • **Iranian architectural literature:** Nasr, Burckhardt, Nadimi, Ardalan, Molla Salehi, Mahdizadeh, Shahcheraghi, and Majidi • **Travelers and travel writers:** Robert Byron, Henri Sterlin, Olba Fougé, Madame Dieulafoy • **Conclusion:** Many architects and travelers have noticed and described this quality in certain architectural works.

Fig.1. Topical categorization of research background. Source: Authors.

Rest of Table 3.

The first group of theories addresses the idea that architectural space can evoke feelings of transcendence and an uplifting force in the audience. For example, Christian Norberg Schulz describes the interior of the Reims Cathedral as follows: "Inside this cathedral, one feels a kind of physical relationship with the volumetric elements at the lower part of the space, while at the same time, the spirit is uplifted and liberated from restrictions by the abstract network of the upper windows and arches" (Norberg Schulz, 2015). In another instance, he considers the interior space of the Pantheon in Rome to possess a vertical axis that freely ascends towards the heavens through the oculus of the dome, uniting with the sacred vertical dimension (ibid.). He views early Christian churches as having a celestial interior space that serves as a manifestation of God's eternal city, stating that "the believer entering the building was meant to truly feel as if stepping into the heavens," suggesting a non-material space governed not by physical laws but by a realm of different quality (ibid.). According to Norberg Schulz, this spiritual quality arises through the creation of a sensation of weightlessness, boundlessness (blurring spatial boundaries), dematerialization, and a specific manifestation of light that evokes the divine, contributing to the brilliance of surface shells. The strong presence of the vertical axis in such a spiritual space fosters a feeling of upliftment (ibid.). Wölfflin characterizes Gothic architecture as representative of a vertical uplifting force that elevates the spirit and emotions (Woelfflin, 2016). In his article "Architecture and the Sublime[4]" Etlin (2012) discusses the feeling of being uplifted and integrated into the infinite, which can be perceived in some architectural works, including Étienne-Louis Boullée's projects such as the Metropolitan Cathedral and the cenotaph for Sir Isaac Newton. He identifies and describes examples in historic European architecture across styles such as Early Christian, Byzantine, Romanesque, Gothic, Renaissance, Baroque, and Neoclassicism. Notable works include the Pantheon, Hagia Sophia, The Domus Aurea (the Golden House), and the Diocletian's Palace (The Mausoleum of Diocletian). Etlin considers these buildings as mediums for experiencing an aesthetic upliftment, perceived through the senses of the body. In his article "Aesthetics and the Spatial Sense of Self" Etlin (1998) attempts to establish a psychological foundation based on the theories of empathy by Theodor Lipps and August Schmarsow, which can explain how the body perceives this feeling. In the realm of Iranian architectural literature, scholars such as Nasr (1971), Burckhardt (1991), Nadimi (1999), Ardalan, (2020), Mulla Salehi (1996) have discussed the capacity of religious buildings in Iran to evoke sacred meanings. They have framed this quality of architectural space using the concepts of beauty (jamal) and grandeur (jalal), describing it as a characteristic that can instill a feeling of transcendence in the observer. The manifestations of grandeur break the limitations and insignificance of spaces, overwhelming the feelings and thoughts of viewers with their magnificence, thereby connecting restricted material spaces with endless eternity (Khoshkalam & Hamzeh Nezhad, 2012). The notions of infinity, multitude, and boundlessness - key aspects of grandeur - are rooted in a sacred origin, which humans may experience in the magnificence of a wave or the vastness of the sky (Mulla Salehi, 1998, 17). Architecture that expresses grandeur contains forms that facilitate the imagination of the limitless and instill the concept of infinity in the observer (Shaw, 2006). Regarding the experience of transcendence in Iranian architectural works, architects, travelers, and travel writers such as Robert Byron, Vogt-Göknil et al. (1975), Madame Dieulafoy, and Louis Kahn have documented their insights. Henri Stierlin describes the iwan of the Jameh Mosque of Isfahan and its courtyard as a portal to the celestial realm, elevating the human spirit through a vertical axis. He states, "In this courtyard, we find ourselves in a limited yet boundless space, at the center of the infinity of creation, and through the water pool, we journey to the beyond" (Stierlin & Corbin, 1998). Robert Byron characterizes his experience in the Tajol-Molk dome

chamber of the Jameh Mosque of Isfahan as a unique moment of encountering the very small with the very large, facilitated by the high dome, which purifies the elements of the building from mass and corporeality, creating balance and proportions (Byron, 1982). Louis Kahn speaks of the presence of light in the northern portico of the Jameh Mosque of Isfahan as a representation of transcendence that uplifts human emotions (Ardalan, 2020) Collectively, these travel accounts describe architectural spaces that evoke a feeling of transcendence as places that center the individual, providing tranquility and elevating the mind from earth to sky, extending perception beyond the confined world, and creating a pleasurable experience of connection to eternity. In summary, the first category of theories reveals that architects and theorists recognize the existence of this non-material spatial quality in certain sacred buildings, attributing it to a series of architectural strategies in space design that can evoke a spiritual atmosphere where individuals feel their spirits lightened and uplifted. Although these writers and theorists have not explicitly sought to clarify the connection between this feeling and the formal arrangement of architectural space, their insights allow for the extraction of several architectural variables. For instance, from the theories of Norberg Schulz and Wölfflin, one can conclude that the feeling of spiritual upliftment arises from the dominance of a vertical axis. Similarly, in the descriptions provided by foreign travelers regarding Iranian architectural works, one can identify variables that contribute to the sensation of transcendence. It can be inferred from these writings that the importance of interior space, enclosure, moments of stillness, order, manifestation, and the coherence of materials and elements are deemed significant in creating tranquility for the observer. The elevation of the mind towards the heavens is facilitated by the hypothetical vertical axis extending from the ground to the sky. The perception of liberation and transcendence beyond spatial boundaries arises from the feeling of boundlessness, despite enclosure, and from the dematerialization or purification of architectural components from mass, volume, and weight. The connection to eternity is also evoked through the blending of reality and metaphor, grandness, and a distinct quality of light. Another category of studies specifically seeks to elucidate the relationship between the formal arrangement of architectural space and the evocation of transcendence. The number of these studies is quite limited, and they are still in their infancy, lacking comprehensive and complete explanations. Instead, they present various insights in fragmented sections. Richard Etlin, in his article "Architecture and the Sublime," identifies several variables in the architectural design of Hagia Sophia that contribute to the evocation of transcendence, including scale, height, the apex of the dome, the sensation of the dome floating above the walls due to the presence of clerestory windows, the abundant natural light illuminating the dome, and the polished surfaces of the columns covered in marble (Etlin, 2012). Furthermore, his description of the Pantheon dome notes that its specific design gives the impression of space expanding outward (ibid.).

Bermudez in the book "Architecture that evokes excellence" (Ott, 2015) tried to examine the characteristics and principles that help to evoke the feeling of excellence in the mind of the audience in the design of the architectural space. In his opinion, these spaces benefit from a special combination of light and shadow, silence, proportions and scale, natural materials, simplicity, geometry and dynamics (Bermudez, 2015).

Bermudez conducted a study involving a survey of ten architects regarding ten architectural works that possess the capacity to evoke transcendence. However, the specifics of how these variables function were not elucidated (Bermudez, 2008). In the context of Iranian architectural literature, certain criteria such as the contrast of opposing elements, the dominance of one part over another, and clarity and prominence have been effectively realized in architectural practice (Sistani et al., 2020). The predominance of meaning over form, the incorporation of bodily shapes, grandness and majesty, dynamism, and

scale-breaking are among the qualities of grandeur in architecture that instill in the observer feelings of stability, upliftment, awe accompanied by respect, a love for permanence and eternity, and a desire for infinity (Khoshkalam & Hamzenejad, 2012). The manifestation of the grandeur of the divine in the architecture of prominent and enduring religious buildings has been recognized as significant. From the existing literature on spaces that evoke a feeling of transcendence, several important architectural parameters that contribute to this feeling in the observer's mind can be inferred. However, a comprehensive, case-based framework is lacking in both Western architecture and Iranian-Islamic architecture. This paper aims to build upon the results of previous theories and research, while also conducting a formalist critique of Iranian cases that embody this quality. It seeks to propose a more complete explanatory structure that can help identify and measure the presence of such qualities in interior spaces of architecture.

Research Method

This study was qualitatively conducted through an exploratory approach, comprising four stages: analysis, structuring and synthesis, functional modeling, and validation. The phenomenon under study was"the evocation of a feeling of transcendence within architectural space," with the context being "the dome chambers of historical Iranian architecture." The aim was to uncover the relationship between this phenomenon and its context, ultimately presenting a model for its explanation. In the first stage, the analysis phase, thematic analysis[5] was employed to analyze qualitative data. This phase consists of two parts. In the first part, written architectural sources, including environmental psychology literature, travelogues, and theories related to the perception of transcendence within architectural space, were examined to identify common themes, topics, ideas, and recurring semantic patterns. In the second part, an exploration of the meaning of transcendence was conducted across three domains: etymology, psychology, and philosophy, extracting thematic codes pertaining to this meaning from sources within these fields. The data collection technique in this section involved library studies and surveys of architects. In qualitative studies, the aim is to understand or interpret a phenomenon based on the meanings attributed to it by people (Groat & Wang, 2013). In the present study, architects and architectural theorists were selected as the research population because they possess a deep understanding of spatial meaning and can articulate more precisely and accurately through their internal analyses of which factors of the environmental form contribute to the creation of such feelings. This population included written architectural sources and theories from architects, as well as interviews with architecture professors[6]. Using the theories of architects, the initial hypothesis of the research - that architecture can evoke a feeling of transcendence in the observer's mind - was confirmed. In the synthesis phase, the themes and thematic codes derived from the theories, sources, and architectural texts were intersected and compared with the thematic codes obtained from the analysis of the meaning of transcendence. The relationship and alignment between these elements were examined, resulting in the proposal of a theoretical framework for architecture that evokes the meaning of transcendence, consisting of four main factors. These four factors form a foundation that supports the analysis of architectural space and aids the study in interpreting its results and providing broader generalizations. In the functional modeling phase, this primary framework was used to revisit environmental psychology sources to develop a more comprehensive functional model that includes explanatory components to illustrate how spaces evoke the meaning of transcendence.

In the validation phase, examples of spaces that evoke a feeling of transcendence within the architectural landscape of Iran underwent formalist critique[7] (evaluating the effect through the work itself) to explore the framework and the architectural codes of transcendence derived from earlier sections in

selected case studies. The presence and manifestation of these codes in the architecture of these examples were examined. Ultimately, this study aims to discover and present a model for the grammar of architecture in the context of spaces that evoke a feeling of transcendence in Iran.

Theoretical Foundations

• Meaning in architecture

The distinction between architecture and mere building lies in its capacity to convey meaning. Architecture, like humanity, possesses a communicative power (Zevi, 1974), and it begins when humans ascribe meaning to a structure (Allsopp, 1993). In this way, architecture transforms into an art form. According to Hershberger's theory, architecture can express two general categories of meaning: representational meanings and responsive meanings. Some responsive meanings are affective ones and can be shared among culturally similar groups. These affective meanings can influence individuals and evoke specific feelings (Hershberger, 1970). The meaning of transcendence is an affective responsive meaning that certain architectural spaces can evoke.Architecture can symbolically express specific meanings such as boredom, joy, grandeur, and more through form. For instance, heightening and enlarging scales can evoke a feeling of grandeur, while various colors in architecture can stimulate feelings like joy, vitality, and fear (Bolouri, 2019). Alain de Botton asserts that architectural space has the power to affect the emotions of individuals present in that space, and when it evokes a feeling, it generates interest in them (De Botton, 2019). Formalist critique operates on the premise that different individuals will have similar perceptions when encountering architectural works, seeking meanings and connections between the building and the meanings in the human mind (Qayoumi Bidhandi & Bolouri Bazzaz, 2024). It aims to elucidate the meanings that form evokes. For example, in Jense16n's critique of the Basilica of Saint-Denis, meanings such as "divine light" or "inner revelation" are mentioned (Jensen, 1989), and Gerald Allen's critique of the U.S. Treasury Building identifies meanings such as "explicit, powerful, awe-inspiring, bold, secure, and grand" Moore & Allen (1976). In the critique of the Humana Building, its façade evokes meanings of "individualism and humanism," while the rooftop space suggests the meaning of a "paradise garden" (Jencks & Chaitkin, 1982). Thus, using formalist critique, one can analyze and elucidate how the form of architectural space evokes the meaning of transcendence.

• Criteria for explaining the meaning of form in architecture

In a general sense, form refers to what is perceived externally in a visual work. However, this limited view reduces form to mere shape. In its broader context, form encompasses everything visible and can be perceived by our five senses. Our primary perceptions of architecture are visual[8]; thus, the form in architecture is shaped by elements such as color, texture, depth, light, and shadow. The form can be organized in a way that evokes specific meanings. Theorists such as Norberg Schulz (2015; 2017), Arnheim (1954), Meiss (2007), Zevi (2018), Jencks & Chaitkin (1982) have addressed this. Notably, Norberg Schulz's books "Meaning in Western Architecture" and "The Roots of Modern Architecture" attempt to explain the meaning of a space through the grammar of architectural elements. Theodor Lipps and Wölfflin describe the process of meaning-making in architectural form based on the theory of empathy (Boyd Whyte, 2014). Arnheim (2009), in his books "The Dynamics of Architectural Forms" and "Art and Visual Perception," elaborates on how meaning is expressed through form in architecture, introducing fundamental concepts such as vertical and horizontal, solid and void, depth, volume, movement, order, openness, and proportions relevant to form analysis. Von Meis, in his book "Architectural Elements from Form to Place," suggests concepts like visual error, balance, connection, light and shadow, boundaries, and thresholds for form analysis. According to Bruno

Zevi, the analysis of architectural form pertains to laws related to the appearance of the work, based on principles such as unity, contrast, emphasis, symmetry, balance, proportion, scale, center, style, and others (Khoei, 2000). From a deep analysis of these theories, one can extract architectural principles and foundational concepts necessary for analyzing examples of architecture that evoke feelings of transcendence. These include enclosure, passage-viewing-pause, symmetry, order, centrality, verticality, axis of movement - axis of attention, light, contrast, roof form, the emotional weight of mass, emotional weight of materials, and emotional weight of color. Utilizing these foundational concepts and the formalist critiques of the mentioned theorists, this study seeks to explain how the form of architectural space evokes the meaning of transcendence in selected examples.

- **Formal spatial arrangement**

The formal arrangement of architectural space, while encompassing order[9], extends beyond it. This phrase refers to the structural grammar of a specific architectural form that can influence the perception and feelings of individuals present within the space.

Architectural space consists of material elements, including floors, walls, columns, ceilings, and their components, such as doors, windows, and decorations which are basic elements of architecture Unwin (1997). These basic elements have qualities such as color, form, texture, design and decoration that affect the perception of the audience. Also, in architecture, there are modifying factors such as light, shadow, temperature, air flow, sound and smell which can change the perceptual quality of the space Unwin (1997). This study examines how these basic and modifying elements and their quality, their arrangements, as well as their form and the relationships between them, contribute to the evocation of transcendence feeling in architectural spaces.

This study examines how these elements and their arrangements, as well as the relationships between them, contribute to the evocation of transcendence in architectural spaces.

- **Aspects and boundaries of the meaning of transcendence**

The concept of transcendence can possess mystical, religious, and spiritual meanings. However, the understanding of transcendence in this study focuses on a subjective, emotional meaning associated with an uplifting elevation. This meaning has also been a subject of interest in other fields of knowledge, such as philosophy and psychology. From the study of scholars in these areas such as Burke (1958), Doran (2015), Frankl (1966), Moreiras (1986), Jung (1991), Kant (1998), Mandell (1978), Maslow (1970), Moran (2015), Mojtahedi (2014), Murphy (1997), Reed (1991), Shusterman (2008) three aspects of the experience of the feeling of transcendence can be extracted: elevation, liberation from boundaries, and merging into the infinite (Fig. 2). These three aspects, which are also reflected in the views of architects discussed in the literature review, can serve as key criteria for analyzing architectural examples that evoke this feeling, allowing for an exploration of how they are realized within architectural spaces. Thus, the transcendence discussed in this study represents an affective responsive meaning (Lang, 1987). This meaning is perceived by an audience that possesses the capability and readiness to perceive it. According to Jung's personality theory, sensory, emotional, and intuitive individuals have the potential to perceive affective meanings, while logical individuals may struggle to connect with these meanings (Jung, 1923). The readiness to perceive this meaning depends on the extent to which an individual's mind is free when encountering a structure. The less an individual is engaged in thought or daily concerns, the greater their readiness for this perception becomes. In this regard, architecture can play a significant role by creating conditions that allow the audience's mind to be liberated from distractions, thereby directing their full attention to the architectural space. This factor can also be considered a key criterion in the analysis of examples.

Conceptual framework of the affective meaning of transcendence		
Imagination of uplifting	Imagination of going beyond boundaries	Imagination of integration into the infinite

Fig. 2. Conceptual framework of the meaning of transcendence. Source: Authors.

• **The meaningful grammar of the concept of transcendence in architecture**

Based on the discussions around the meaning of transcendence, the architectural mission to evoke this meaning involves simultaneously achieving four key processes: Focusing the Audience's, Attention on Architectural Space, Eliciting a Mental Uplifting Force, Instilling a Feeling of Lightness and Liberation from Material Constraints and Artistically Representing the Infinite, Non-Material World. Consequently, architecture that evokes transcendence embodies these four processes, which form the theoretical framework of the study and will be investigated in the analysis of architectural examples to assess both the extent and manner of their realization (Fig. 3).

1- Creating a concentration Space
2- Uplifting Force in Space
3- Lightening of Mass
4- Manifestation of the Infinite in the Ceiling

In this study, the concepts of concentration space, uplifting force, and the manifestation of the infinite in the ceiling will be briefly explained in the discussion about analyzing the cases, along with an examination of the qualities that generate them.

Discussion

This study aims to achieve a detailed understanding of how the form and structure of architecture evoke transcendence. A selection of works has been chosen as exemplars of this meaning, focusing particularly on those that emphasize ceiling architecture. The primary examples analyzed include the dome chamber of Sheikh Abd al-Samad's tomb in Natanz, the Khāgī dome chamber of Jameh Mosque in Isfahan, the dome chamber of Jameh Mosque in Saveh, the dome chamber of Ganj Ali Khan Mosque in Kerman, the entrance structure of the Safavid Garden complex in Qazvin, the Grand Timcheh (Caravanserai) in Qom, Amin al-Dawlah Timcheh in Kashan, and the Ganj Ali Khan Bathhouse in Kerman, as well as the Sultan Mir Ahmad Bathhouse in Kashan. These works have been analyzed through formalist critique, supplemented by interviews with experts, to understand how the meaning of transcendence is manifested in these buildings and what architectural techniques have been employed to achieve this.

• **Creating concentration space**

In these structures, the first step is to establish a space that immerses the audience and concentrates their attention, effectively severing their connection to the external environment. The principal qualities that contribute to the creation of this concentration space include enclosure, pause, and emphasis on the significance of the space (Fig. 4).

- Enclosure of space

The creation of internal states begins with enclosure, which separates the space from the outside environment through walls and ceilings. In these examples, we encounter spaces conforming to Aristotle's definition of space as an enclosed area with defined boundaries (Gröter, 1996).

Degree of enclosure: In these spaces, the walls are generally complete at lower heights, with no openings other than entryways. Consequently, when we are

Theoretical framework of architecture evoking transcendence feeling			
Concentration space	Uplifting force	Lightening of mass	Manifestation of infinity in the ceiling

Fig. 3. Theoretical framework of architecture evoking transcendence. Source: Authors.

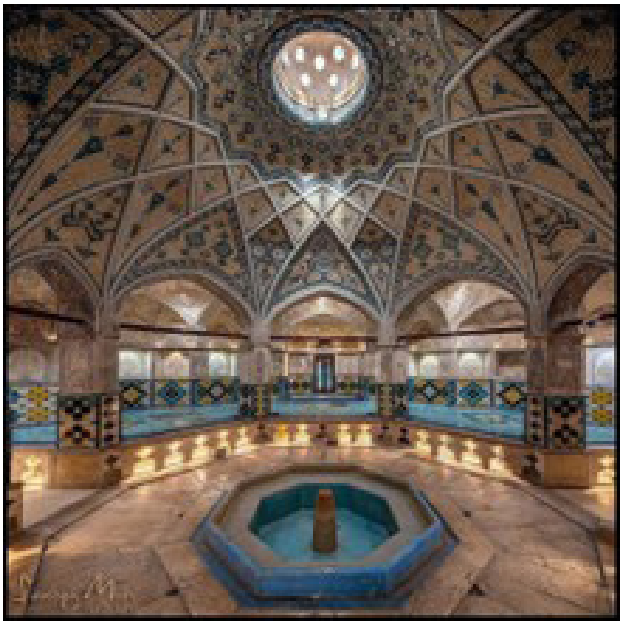

Fig. 4. The entrance of the Sultan Mir Ahmad Bathhouse in Kashan. An internal world created by the architect and presented to the audience. Source: https://www.kojaro.com/attraction/7733-حمام-سلطان-امیر-احمد/

inside, we remain unaware of the outside world. However, we do not feel imprisoned, as all examples feature openings and windows positioned high in the space. While the lower area is enclosed, the upper part opens outward, creating a feeling of expansiveness and connection to the sky.

- Pause space

The architecture that evokes transcendence is characterized by a space designed for pause, where individuals feel inclined to stop and remain within. The variables that contribute to this pause space are as follows:

Static plan: The layout of these spaces is close to being square or regularly octagonal, meaning that the horizontal axes of the plan are equal. As a result, the space does not suggest horizontal movement; there is no intention to move toward a specific direction.

Independent space: Most walls of these spaces are closed, with minimal visual connection to adjacent areas. We perceive this space as an independent hall.

Final space: This space typically represents the last spatial unit in the structure. The space beyond it is either nonexistent or lacks significant pull.

Inner viewing space: What keeps us within this area is its visual appeal, enhanced by wall decorations and opportunities for observation.

- Significance of space

Due to the following qualities, this space is perceived as more significant than the preceding areas:

Distinction: This space features a marked contrast in height, decoration, color, light, and geometry compared to others. It is typically the most elevated and richly decorated section of the structure (e.g., the dome chamber of Taj al-Mulk and the entrance of the Safavid Garden complex in Qazvin). The geometry and scale of the space, particularly its ceiling, differ from earlier spaces, offering a distinctive light quality not seen in previous areas (e.g., Sheikh Abd al-Samad's tomb in Natanz), along with unique designs and motifs on the ceilings and walls (e.g., Sultan Mir Ahmad Bathhouse, Sheikh Lutfullah Mosque in Isfahan), a special and distinct spatial carving (e.g. the tomb of Sheikh Abd al-Samad, the dome chamber of Taj al-Mulk), as well as a notably different overall color scheme (e.g., dome chamber of Ganj Ali Khan Mosque in Kerman).

Spatial order: The perceived order within these spaces significantly enhances their importance. This order arises from symmetry and the importance of the center, which are foundational principles in traditional architectural language.

Symmetry: All selected examples exhibit complete or relative symmetry, possessing at least two axes of symmetry. In some instances, two axes are identical, resulting in central symmetry (e.g., Ganj Ali Khan Bathhouse and Qajar Bathhouse in Qazvin), while in others, axial symmetry is evident, with both sides of the space mirroring each other (e.g., Amin al-Dawlah Timcheh and the Grand Timcheh in Qom).

Importance of the center: The plan form is centered, with all walls oriented inward. The walls recede, framing and arching toward the center, directing focus toward it.

• Uplifting force in interior spaces of architecture

Thus far, the study has discussed a space that presents an orderly, distinct, and visually striking inner world - a space that invites pause and stands out in significance. However, there exists an additional quality in these spaces that evokes the essence of transcendence: the sensation of an uplifting force. This internal space not only emphasizes horizontal dimensions but also possesses a prominent vertical direction, suggesting a vertical ascent. The qualities contributing to this process in these spaces include:

- Dominance of the vertical axis

In these spaces, the vertical axis plays a dominant role. This dominance is enhanced by tall heights, emphasis on elevation, and vertical elongation of the space.

Height perception: The height of these spaces is clearly perceptible and contributes to the uplifting force, allowing our gaze to soar. Additionally, the color of the ceiling affects the perception of height; a light-colored ceiling creates an optical illusion that makes the space appear taller.

Emphasis on height: Before entering these spaces, one passes through a corridor or an entrance with a lower height. Consequently, upon entering the main, lofty space, the observer perceives a change in elevation. This contrast highlights the significant height of the main area.

Vertical elongation: The form of architectural space can be horizontally or vertically elongated, or neither. In these examples, the vertical axis is markedly taller than the horizontal axis, creating a sense of vertical elongation (Fig. 5). This vertical elongation instills a standing behavior in the observer (Janson & Tigges, 2014).

- Guiding the Gaze upward

The architectural elements in these spaces are organized in a manner that directs the observer's gaze upward.

Wall carving: The walls are not left plain; rather, they are articulated through columns, pilasters, framing, and arches, resembling intricately carved gems. These elements possess tall, elongated proportions, emphasizing the height of the space and indicating an upward direction (Fig. 6).

Decorations and patterns: The wall decorations also have vertical proportions, with their motifs suggesting upward movement. These decorations, whether

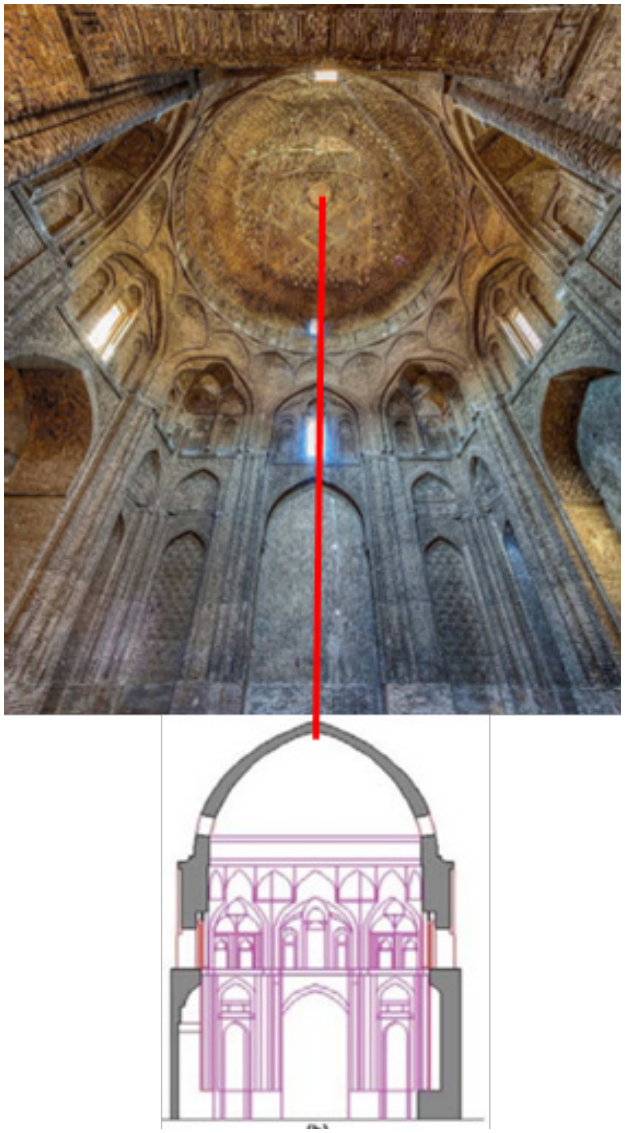

Fig. 5. Dome chamber of the Khagi Mosque in Isfahan (Interior height 18.5 meters - Diameter 9.5 meters) Elongated vertical elements such as half-columns, frames, and arches emphasize the uplifting force. Source: https://www.visitiran.com/مسجد-جامع-عتیق-اصفهان ; Ashkan & Ahmad, 2009.

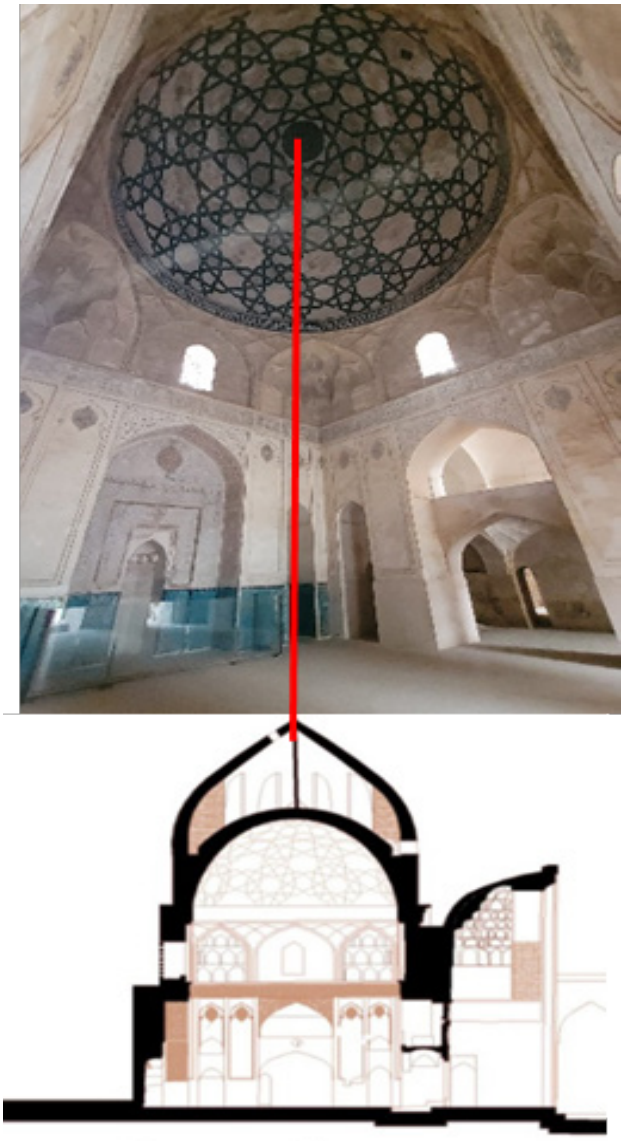

Fig. 6. Dome chamber of the Jameh Mosque of Saveh (Interior height 16.7 meters - Diameter 14 meters) The vertical elongation of the space and the dominance of the vertical axis evoke a feeling of uplifting force. Source: Authors; Moazzen, 2017.

using tiles (e.g., Sheikh Lutfullah Mosque), plaster (e.g.,SheikhAbdal-Samad'stomb),brick(e.g.,KhāgīDome), or paint (e.g., Ganj Ali Khan Mosque in Kerman), evoke a feeling of ascent.

Lighting: In these examples, light enters solely through windows at the ceilings, making the ceiling the brightest part of the space, while the lower areas are dimmer. The surfaces, decorations, and details of the ceiling are clearly visible, drawing the gaze toward the ceiling, which is the most luminous part of the space.

- Impressive ceiling

More significant than the carving and orientation of the wall patterns is the presence of a striking ceiling that elevates the gaze. This architecture is more about the upper space than the lower one, with the ceiling serving as the focal point and drawing attention upward. In these examples, the ceiling is perceived as the most powerful element of the space, far more significant than the walls, columns, floors, and other architectural components (Fig. 7).

Height of the ceiling: Typically, a ceiling is perceived as a horizontal or sloped plane. However, in these examples, the ceiling possesses height, multiple elements, and capabilities that exceed those of a flat ceiling. In some instances, such as the dome chamber of Sheikh Lutfullah, the ceiling height matches that of the dome. In others, like Sheikh Abd al-Samad's tomb, the dome's base is elevated, adding to the ceiling's height. Although the structural ceiling maintains the same height as the dome, the visual ceiling appears lower.

In some cases, the ceiling encompasses the entire space. In the Sultan Mir Ahmad Bathhouse, the ceiling descends to the bases of the arches, and the bases reside within the ceiling. Here, it seems as if the entire space is a ceiling. In Amin al-Dawlah Timcheh, the ceiling shell extends down to the second floor, making it appear much higher than the lower part of the space. Consequently, the main volume of the space in these examples is associated with the ceiling section. This lofty and void space within the ceiling allows the gaze to soar (Fig. 8).

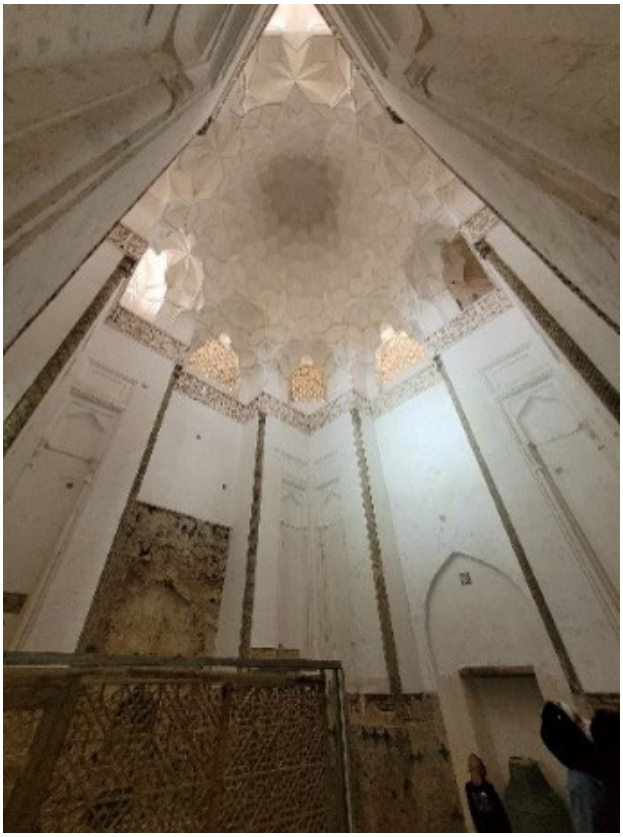

Fig. 7. Dome chamber of Sheikh Abd al-Samad Tomb, the ceiling is the most remarkable part of the space. Source: Authors archive.

Fig. 8. The Amin al-Dowleh Timcheh in Kashan, the height of the ceiling of the second floor is also included. Source: https://www.instagram.com/p/BziuKNpF7PY/?igsh=N29qbmkzMDA0YW4z

Contrasting qualities above and below: The importance of the ceiling is magnified by the contrast of formal qualities above and below. In these examples, the overall shape of the space below is cubic, while above it transforms into a hemisphere. The wall decorations below are simple, while those above are intricate. The upper part is brightly lit, and the lower part is dimmer, often exhibiting contrasts in color and saturation between the upper and lower sections.

The components below are clear, distinct, and separate, whereas above, all details are intricately woven together in a manner that is not easily comprehensible. Thus, the lower space appears more compound and defined, while the upper space is more ambiguous and expansive. Below, one can easily distinguish between columns, frames, and walls, but above, it is challenging to separate the elements. The upper space appears as a unified entity, while the lower space comprises discrete components arranged together. The degree of surface carving also contrasts between the upper and lower sections; in most examples, the lower part is simpler and less carved, while the upper part is intricate and richly detailed (Fig. 9).

This contrast of qualities strengthens the distinction between the upper and lower sections. In these examples, we can describe the lower and upper parts as unitary and multifaceted, richly adorned and simple, less carved and richly carved, dim and bright, colorful and colorless. This differentiation enhances the significance of the ceiling, emphasizing its uplifting vertical pull.

- **Manifestation of the infinite in the ceiling**

The ceiling of the space that evokes transcendence is striking, yet it transcends mere aesthetics. This ceiling is not just a beautifully crafted, novel, and orderly painting; rather, it establishes a connection with the human spirit, possessing a unique characteristic that evokes infinity. A beautiful pattern on the ceiling may capture the observer's attention momentarily, but when observing this ceiling, they feel a connection to the infinite. In these examples, the curved form of the ceiling contributes to this feeling of connection, while the qualities of infinite design and light pounds enhance the manifestation of infinity.

- Ceiling form

In these examples, the ceiling exhibits an inviting form. The curved or vaulted shape has an internal void that allows our gaze to enter and soar within it. In contrast, a flat ceiling does not evoke such a feeling; it lacks an inner dimension that invites our gaze inward. Thus, the curved form can hold our attention for an extended period and is inherently welcoming. When this form suggests the concept of infinity, it creates a sensation of acceptance into the boundless.

Fig. 9. Dome chamber of the Jameh Mosque of Kerman, Contradiction of qualities such as color, carving, and complexity at the top and bottom. Source: https://fa.wikipedia.org/wiki/مسجد_گنجعلی_خان

- Infinite design

Each of these ceilings features a specific design that narrates infinity (Fig. 10). In traditional Iranian architecture, various techniques such as "rasmi bandi", "Yazdi bandi", "kase sazi", and painting are utilized for ceiling decoration. However, what distinguishes the ceilings in these examples from others is that their designs evoke infinity through three key characteristics:

Multiplicity and order of elements: The designs contain numerous components, with their abundance exceeding human sensory perception. All these elements come together in a unifying, centric order.

Graduality and variation in sizes: The scale of the design elements gradually transitions from larger to smaller, allowing all components to be perceived as a cohesive whole rather than as distinct entities. Typically, intricate motifs exist in the central area of the design, which eludes our visual comprehension.

Dynamic patterns: These designs exhibit dynamism. The positioning of the design elements relative to one another creates a feeling of movement and fluidity when we observe the pattern.

- Light pound

In some of these examples, the ceiling is designed to manifest a pound of light within it (e.g., the dome chamber of Sheikh Abd al-Samad, the Grand Timcheh in Qom) (Fig. 11). This special effect, which falls under the realm of architectural form, arises from a specific way natural light enters the dome's basin. As previously mentioned under "enclosure," in these architectural examples that evoke transcendence, there are no windows at lower heights; instead, the windows are positioned high, allowing natural light to illuminate the ceiling. In these examples, two different types of windows exist within the ceiling. The first type is a central window in the dome, referred to as the "Shamsa window," while the second type consists of windows located along the dome's base, known as "Gariv windows". Although these windows vary in location, number, and degree of opening, they all create a specific luminous quality, resulting in the emergence of a light pound in the ceiling. While this pound of light may not be visually delineated, its brightness compared to the lower space is perceptible. In examples with a shamsa window, such as the Grand Timcheh in Qom, the entire shamsa and the interior of the dome basin are illuminated with natural light, creating a light pound within the ceiling. In examples featuring gariv windows, light enters through these openings, forming a luminous area in the upper part of the space. The roundness of the shamsa window and the dome's form diffuse light in all directions. Therefore, when we are beneath this ceiling, we cannot discern the direction of sunlight or the time of day. The gariv windows remain bright and illuminated at all times, appearing as luminous

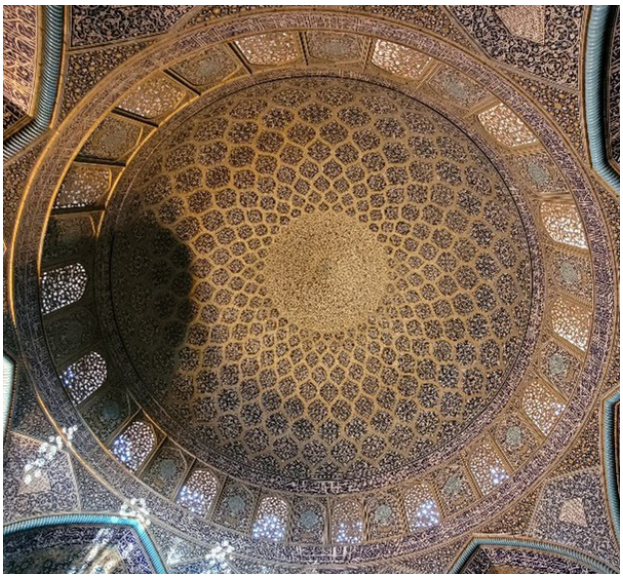

Fig. 10. The Dome chamber of Sheikh Lutfullah Mosque in Isfahan, Design evoking infinity in the ceiling. Source: Authors archive.

Fig. 11. The Grand Timcheh of Qom, Formation of a light pound in the ceiling with a shamsa window. Source: https://www.yjc.ir/fa/news/بازار-تیمچه-قم-بزرگترین-سقف-ضربی-ایران

planes, and from a distance, they all seem to possess the same level of brightness. Thus, when we gaze at the ceiling, it feels as though light emanates from all directions. In the material world, light has a specific direction; however, here, light radiates from every direction. Consequently, the space we experience within these domed chambers is unlike ordinary material spaces.

Conclusion

This study posits that certain examples of Iranian-Islamic architecture possess the ability to evoke a feeling of transcendence in a receptive audience. The study aimed to uncover the formal organization of such spaces. It is important to note that the findings of this study are based on an inductive analysis of several examples with similar formal conditions, and the results are limited to these specific instances. Many simple and unadorned structures, such as those from early Islamic architecture, offer pure and unblemished spiritual spaces. Spirituality can be found in elements like a pool of water in a mosque, the play of light on a mosque wall, or in various corners of architecture. Thus, spirituality in architecture is not confined to this specific formal system; this study identifies and analyzes only one typology of spiritual space that has the potential to evoke a feeling of transcendence. To achieve this aim, architectural theories related to the topic were explored to validate the research hypothesis and extract architectural factors that influence the creation of this feeling. A study of the meaning of transcendence in etymology, philosophical, and psychological theories revealed three essential aspects of this feeling: a feeling of elevation, liberation, and integration into the infinite (Fig. 2). Further examination of architectural theories yielded the architectural equivalents of these three aspects: uplifting force, openness and lightness of architectural mass, and a ceiling that manifests infinity. Recognizing that the perception of this feeling in architecture requires the audience's readiness when encountering the space, it was determined that greater mental concentration enhances the possibility of experiencing this feeling. Thus, creating a space for concentration was considered a prerequisite (Fig. 3). Therefore, architecture that embodies a feeling of transcendence creates an environment conducive to mental concentration, placing individuals within that space. In this environment, the uplifting force, liberation from the emotional weight of the material, and connection to the boundless are suggested through architectural means, facilitating the experience of transcendence. Then, with this main framework in hand, the theories of environmental psychology and architectural design were examined and explored to derive the processes that create each of these four main criteria in architectural interior space. The result of this section is a theoretical framework that introduces the main processes responsible for each of the four primary qualities. This theoretical framework was then tested and validated in selected building examples, and the samples were analyzed to identify the effective techniques used in creating each of the qualities and the processes that evoke the feeling of transcendence. Ultimately, a framework resulting from this analysis was obtained, which is presented in Fig. 12. This study focused on the interior spaces of architecture. The interior, due to the enclosure of surrounding walls, retains the observer's concentration within the space. When windows are not at eye level, the observer's attention is not drawn to the external surroundings but is entirely directed toward the interior space. This space is characterized by a sense of pause, where movement halts, and individuals are encouraged to stop and engage with the environment. The detailing and decoration of the space are striking, enhancing its significance and increasing the observer's desire to stand, watch, and concentrate. The space that evokes a feeling of transcendence exhibits vertical elongation, with dominant vertical axes. The carving of walls, the pattern of decorations, and the proportions of the space emphasize the vertical

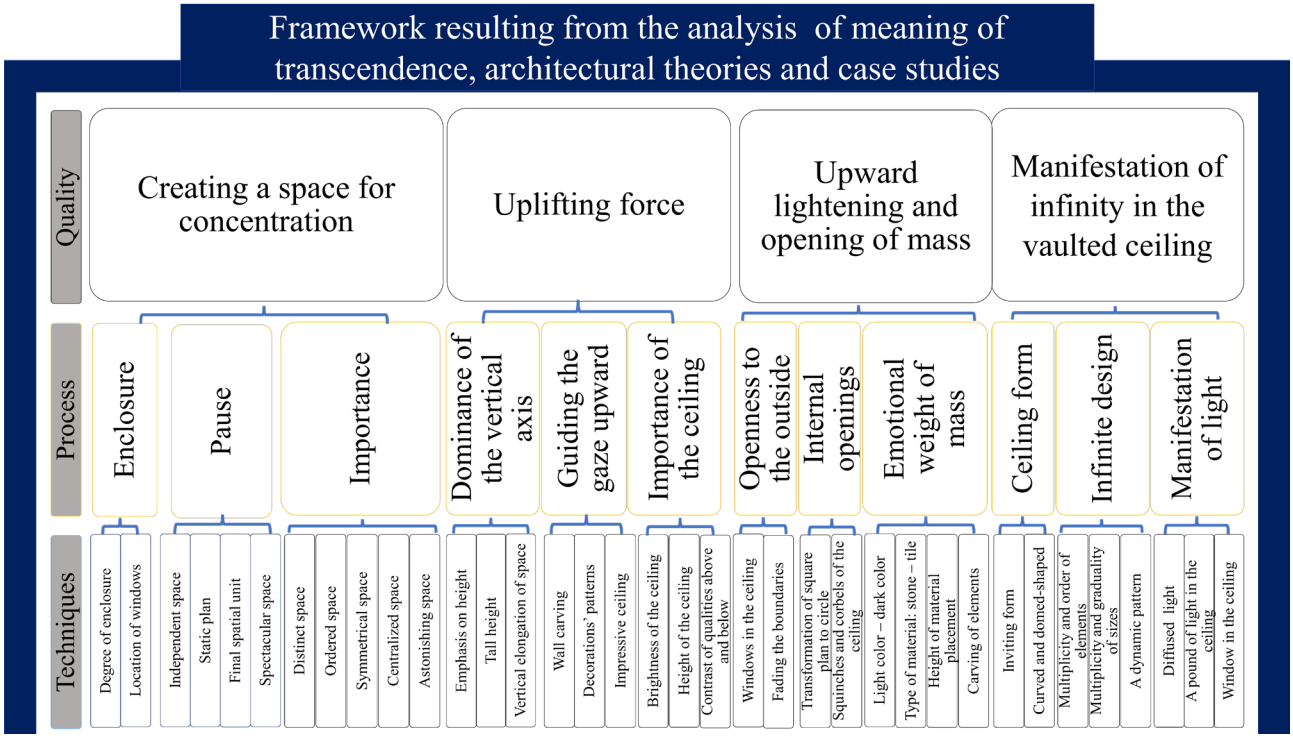

Fig. 12. Framework of the analysis of architectural space evoking the meaning of transcendence. Qualities, processes, and techniques of architecture evoking transcendence. Source: Authors.

direction, guiding the observer's gaze upward toward the ceiling. The unique design of the ceiling draws attention upward, making it the most important and luminous part of the space. This space is elevated, and its specific design, luminosity, and contrast with the lower areas enhance its prominence. In these examples, we can describe the lower and upper parts as unified and multifaceted, richly adorned and simple, less carved and intricately detailed, dim and bright, colorful and colorless. This differentiation between above and below highlights the ceiling's significance, amplifying its vertical uplifting force. In this space, the observer experiences a sensation of lightness and a feeling of flight. This feeling arises from the emotional lightness of the architectural mass as it transitions from bottom to top, the opening of forms in the vertical direction, and the presence of openings and windows in the ceiling. The ceiling in this space evokes the infinite through architectural techniques. The first technique involves a design that narrates infinity, characterized by three key features: a multitude of components arranged in a unifying and centric order, graduality and variation in sizes, and a dynamic pattern. Techniques such as "Kase Sazi", "Rasmi Bandi", tile work, and painting have been employed to create innovative designs with these characteristics in the ceilings of these examples. The second technique is the entry of mist-like light into the dome's basin through the gariv windows or the shamsa window, which manifests a timeless pound of light in the ceiling. Finally, the curved form of the ceiling seems to embrace the observer within this infinity, as the dome shape possesses an internal void that allows the gaze to enter and soar. Through these architectural techniques, a space distinct from everyday environments is created, where the human spirit feels lightened and elevated, experiencing liberation, upliftment, and integration into the embrace of the infinite. This study aimed to identify the shared principles and factors that effectively convey the meaning of transcendence in these evocative interior spaces. To this end, a theoretical framework has been developed to elucidate the architectural form of these examples, based on the

language of traditional Iranian architecture. This theoretical framework can guide the design of contemporary architectural works, particularly in sacred and memorial spaces. Additionally, these principles can be applied in the design of lobbies in high-rise buildings, residential or educational complexes, and recreational centers where lighting is primarily sourced from the ceiling. This study has been conducted within the scope of traditional Iranian architecture. Future studies could explore this topic in the context of contemporary examples in Iran and around the world, aiming to develop a more comprehensive theoretical framework by integrating the findings of this study with those from further investigations. The potential to express this meaning in open and semi-open spaces could also be examined. The examples analyzed in this study include mosques, tombs, Timchehs, and bathhouses. It may also be possible to find the power to evoke such meanings in other types of traditional Iranian architecture, such as palaces and houses. One crucial factor influencing the perception of this meaning is the observer's ability to grasp emotional meanings, or their innate capacity for understanding. While architecture can prepare the conditions for receptive audiences to perceive these meanings, this factor lies beyond the architect's control. Another intervening factor is how the observer engages with the architectural work. Whether the visitor approaches the structure with a curious mindset, full of prior knowledge about its history, geography, style, and decorations, or whether they are drawn to focus on such information by the tour guide, significantly influences their perception and understanding of the space. Allowing the observer's mind to remain free, enabling them to explore and interact directly with the structure without preconceived notions or questions, greatly impacts their experience and comprehension of the building's meaning. Furthermore, events within the space, such as prayer ceremonies, can also profoundly affect the observer's perception.

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Conflict of Interest

The authors declare that there are no conflicts of interest in conducting this study.

Endnotes

1. Transcendence, defined as a feeling of elevation and upliftment (as noted by Dehkhoda), represents a state akin to spiritual ascension, which can be achieved through a spark of poetry, music, or art. In the experience of transcendence, there is a simultaneous perception of surpassing material limits and an awareness of the infinite.
2. Robert Byron, Henri Stierlin, Ulya Vogt-Goknil,Louis Kahn.
3. A significant aspect often referenced as an inspiring space for experiencing transcendence is the interior of sacred places. Therefore, this study of examples of Iranian architecture focuses on the spatial structure and formal characteristics of these interiors.
4. The sublime is an unseen and unspeakable phenomenon, closely related to the sacred, embodying the attributes of absolute greatness and divine power. Encountering the sublime induces feelings of transcendence in individuals. Certain unique aspects of nature, poetry, literature, art, and painting can evoke experiences similar to confronting the sublime.
5. Thematic analysis is a qualitative data analysis method typically used for sets of texts, such as interviews or transcripts. Researchers carefully examine the data to identify recurring themes, ideas, and semantic patterns. This method was initially developed by Virginia Braun and Victoria Clarke for psychological research but is flexible enough to be adapted to various types of studies.
6. In this section, questionnaires were distributed to 15 architecture professors at Shahid Beheshti University, followed by in-person interviews.
7. Among the various valid methods for critiquing architectural works, formalist criticism is currently recognized as a credible approach. Critics such as Wayne Attoe (1979), Bruno Zevi, and Colin Rowe have introduced this method as a common architectural critique approach. Architects like Norberg Schulz, Charles Moore, Gerald Allen, Rudolf Arnheim, and Charles Jencks have employed this technique in their architectural critiques. The foundation of formalist criticism is that critics should engage directly with the work itself and strive to penetrate its essence through its form. This involves analyzing and deconstructing the work's shape and form, uncovering the composite or generative relationships between its elements, thereby revealing some of the meanings of the work. This approach is based on Norberg Schulz's assertion in the introduction to Roots of Modern Architecture, where he states, "Architecture must be understood through architecture" (Khoei, 2000, 118).
8. Architecture can also provide perceptual information for our other senses. Factors such as the softness or roughness of surfaces, silence or sound, scents (like earth or humidity), and even the taste of air can enhance the architectural form, collectively creating a sense of space in our minds. However, this study will focus solely on the visual aspects of architectural form.
9. Using fundamental principles of order such as symmetry, repetition, similarity, proximity, homogeneity, alignment, hierarchy, common enclosure, semantic unity, and integrity, various states of order can be established among the elements of architectural space. These include symmetrical order (horizontal, vertical, or radial), axial order, network order, modular order, hierarchical order, repetitive order, and diverse order.

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