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Layered Semiotic Analysis of Al-Ghadir Mosque in Tehran

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ABSTRACT

In contemporary architectural discourse, semiotics has emerged as a critical method for interpreting the identity, symbolism, and communicative capacity of built environments. Architecture is increasingly understood not only as a physical structure but also as a layered system of signs that reflect cultural, historical, and metaphysical meanings. This study analyzes the Al-Ghadir Mosque in Tehran through the lens of layered semiotics, focusing on three key dimensions: physical structure, functional configuration, and symbolic representation. The mosque, constructed during the late Pahlavi era, is a unique example of postmodern religious architecture that integrates traditional Iranian-Islamic forms with modernist principles. Using a qualitative approach based on field observations, documentary research, and grounded theory, this research identifies multiple semiotic layers embedded in the mosque's spatial hierarchy, geometry, materials, and symbolic elements such as light, water, and ornamentation. The findings reveal that the architectural meaning of the mosque is not confined to a single visual or formal aspect but is distributed across interconnected layers that require interpretation. The design creates a spiritual and cultural narrative through the interplay of explicit forms and implicit meanings. This research contributes to the understanding of how architectural semiotics can decode the communicative power of sacred spaces and provides a conceptual framework that may inform future mosque design rooted in both tradition and contemporary interpretation.

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Introduction

In contemporary architecture, the concept of the sign has transitioned from an intrinsic structural component to a symbolic and communicative tool. Historically, architectural forms were deeply intertwined with cultural and metaphysical meanings. Each building embodied a coherent ideological system in which structural elements were inseparable from symbolic expression (Ghobadian, 2013; Grütter, 2009). The symbolic dimension was not decorative but essential, reflecting social values, religious beliefs, and cosmological order (Clark and Pause, 2009; White, 2017).

With the emergence of modernism and later postmodernism, this unity of form and meaning gradually weakened. Architecture became more abstract, distancing itself from metaphor and ambiguity, often favoring formal autonomy over cultural signification (Unwin, 2009; Panahi, 2009). However, in postmodern discourse, there has been a renewed interest in semiotics as a tool for understanding the communicative role of architecture (Sojoodi, 2016). Semiotics offers a framework for analyzing buildings not merely as spatial objects but as layered systems of signs that operate across physical, functional, and symbolic dimensions. In semiotic theory, signs possess both a manifest (denotative) and latent (connotative or symbolic) layer. The apparent features—such as form, color, and material—carry deeper cultural meanings shaped by context and intertextuality (Chandler, 2008; Eco, 1976). Layered semiotics, as developed by scholars like Sojoodi (2004) and Panahi (2018), emphasizes the multiplicity of meaning and the dynamic interaction of architectural codes at various levels. In the context of Iranian religious architecture, mosques serve not only as places of worship but also as symbols of collective identity, spiritual continuity, and socio-political expression (Mirhosseini et al., 2019; Behnoud, 2022). The Al-Ghadir Mosque, designed in the late Pahlavi era by architect Jahangir Mazlum, represents a hybrid architectural language that combines vernacular elements with modernist aesthetics. This mosque offers a rich case for semiotic interpretation due to its formal complexity and symbolic depth.

This research aims to investigate how architectural meaning is constructed in Al-Ghadir Mosque through a layered semiotic approach. It addresses the following question: How do physical form, spatial organization, and symbolic elements of the mosque interact to generate architectural meaning? The study contributes to current discourse by proposing a semiotic reading model that can reveal the implicit cultural and symbolic layers embedded in sacred architecture.

Theoretical Foundations and Research Background

Semiotics, as a field of study, investigates the structure, function, and interpretation of signs within systems of meaning. In architecture, semiotic analysis allows scholars and designers to explore how built forms convey cultural, symbolic, and experiential messages beyond their material or functional attributes (Chandler, 2008; Grütter, 2009).

Classical semiotic theory, especially that of Ferdinand de Saussure and Charles Peirce, laid the groundwork for understanding the relationship between signs, signifiers, and the signified. However, modern and postmodern perspectives—such as those by Eco (1976), Barthes (1972), and Hjelmslev—have emphasized the fluidity, context-dependence, and intertextual nature of meaning. Umberto Eco's concept of the "open work" highlights how meanings are not fixed but shaped by the interpreter's cultural background and prior knowledge. In this view, signs do not operate in isolation but within broader signifying systems and cultural codes (Eco, 1976; Sojoodi, 2016).

The layered semiotics approach, as developed by Iranian scholars like Sojoodi (2004, 2016) and Panahi (2018), views architectural meaning as emerging from multiple, overlapping levels: structural, environmental, spatial, and symbolic. Each layer carries its own set of codes and contributes to a richer, more holistic interpretation of the architectural "text." This view aligns with Hjelmslev's emphasis on form and content as interdependent and inseparable in the process of meaning-making (Hipkiss, 2014). In this framework, the sign is not a static object but a dynamic function realized through interaction between form, context, and reception.

In Islamic architecture, especially mosque design, symbolic and spatial hierarchies play a central role. Elements such as domes, courtyards, minarets, water features, and light are not only functional but deeply symbolic. These components guide spiritual movement from the profane to the sacred and reflect cosmological and metaphysical structures (Mirhosseini et al., 2019; Soltanzadeh and Mirshahzadeh, 2024). Behnoud (2022) further connects architectural symbolism to Jungian archetypes, suggesting that certain spatial forms carry collective unconscious meanings.

The architectural semiotics of the Al-Ghadir Mosque has received limited scholarly attention, despite its rich symbolic layering and hybrid formal language. Built during the late Pahlavi era, the mosque integrates pre-Islamic forms (e.g., ziggurat geometry), Islamic spatial typologies, and postmodern metaphors. Its analysis through a layered semiotic model provides insight into how Iranian religious architecture continues to negotiate between tradition and modernity. Previous studies have examined architectural semiotics in both general and Islamic contexts (Panahi and Rahimi, 2015; Panahi, 2009), but few have proposed an applied, multilayered model specific to case studies. This research builds on these theoretical frameworks by applying them directly to a contemporary mosque in Tehran, contributing to both architectural theory and practice. (ibid., pp. 198-200).

Thus, in layered semiotics, the text is a physical phenomenon but not definite. It is a physical phenomenon in the sense that it is received through the senses of sight, hearing, touch, and even smell or taste, and it is not definite in the sense that other layers may continuously and potentially be involved in it and gain importance in its interpretation. Undoubtedly, depending on the text, some layers or even sometimes one layer are considered more primary than others and have a more

constant presence in different textual manifestations (and of course not a more constant interpretation and reception) and other layers are variable (ibid., p. 210).

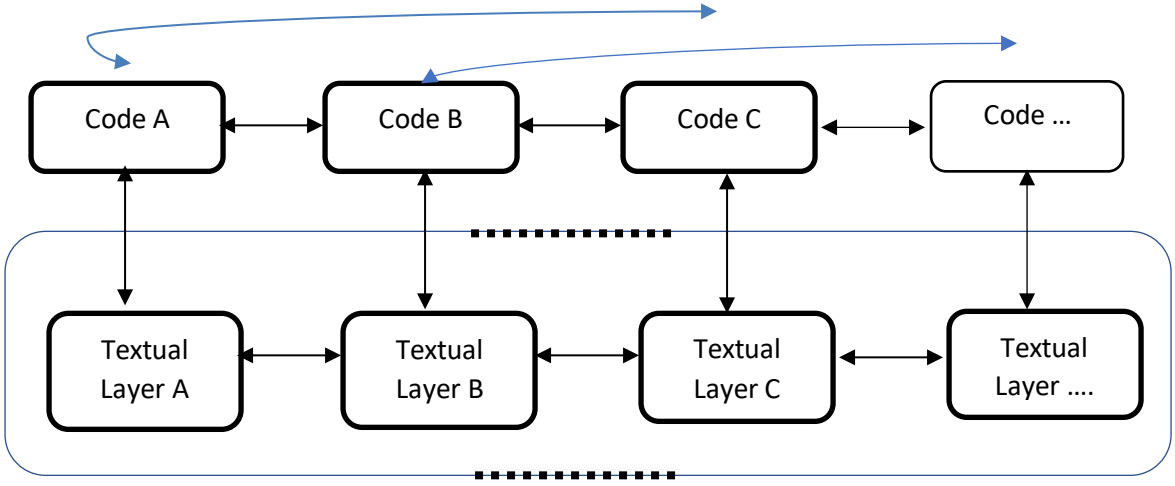

Diagram 1. The relationship between layers and codes in different texts. The dotted line in the rectangle named text indicates the openness of this phenomenon (Sojoodi, 2016).

The relationship between text and context is also one of the issues addressed in layered semiotics. This approach does not accept the primacy of text over context and that context only exists to provide the conditions for receiving the text. In this type of semiotics, context itself is a semiotic reality and, based on code systems, intervenes in reception, is produced and interpreted, and also intervenes in how the text is received and read. Thus, the text is realized in the context, and the context continuously creates the text, and the image that this definition of text provides is the same open-layered structure, layers that are themselves the result of different codes. Therefore, "text is a repetitive concept in which each textual layer is itself a text that, in interaction with other textual layers, expands its textuality, and this process is open and endless" (Namvar Motlagh, 2012, 166). As shown in Mirhosseini et al. (2019), spatial hierarchy in mosque architecture plays a crucial role in guiding users from public to sacred spaces. This notion supports the idea of layered meaning embedded within structural and spatial configurations. The study by Mirhashemi Routeh, Soltanzadeh, and Mirshahzadeh (2024) offers a valuable reflection on Gülru Necipoğlu's theories, emphasizing the symbolic function of geometry and ornamentation in Islamic architecture. This aligns with the current study's focus on the semantic function of form and detail in Al-Ghadir Mosque. Behnoud (2022) highlights the relevance of Jungian archetypes in architectural design, suggesting that spatial configurations and symbols can evoke subconscious cultural and spiritual responses. This perspective is especially relevant when interpreting the symbolic structure of sacred spaces such as mosques. According to Sojoodi (2004), since the early developments initiated by Saussure and Peirce, semiotics has undergone numerous theoretical transformations. Schools of

thought such as French structuralism, post-structuralism, and academic traditions from Paris, Copenhagen, Prague, Moscow, and Tartu, have critically expanded the field. These developments gradually moved semiotics beyond linguistics into broader domains such as literature, visual arts, media, and architecture, laying the foundation for its interdisciplinary role in the humanities (Sojoodi, 2004). Panahi (2018) offers a comprehensive framework for applying semiotics in both architecture and cinema. His concept of layered semiotics is accompanied by a visual diagram and a conceptual model that demonstrates how different levels of meaning interact in spatial and visual narratives (Panahi, 2018). Jakobson (2004), along with other structuralist and post-structuralist theorists such as Saussure, Shklovsky, Genette, and Derrida, contributed foundational perspectives on language, form, and meaning. These theoretical developments laid the groundwork for later applications of semiotics in art, literature, and architecture (Jakobson, 2004). Panahi and Rahimi (2015) apply an intertextual lens to Bernard Tschumi's architecture, highlighting how spatial ambiguities and intermediate spaces can act as semantic mediators. This notion of spatial intertextuality parallels the metaphorical reading of transitional spaces in Al-Ghadir Mosque (Panahi and Rahimi, 2015).

Umberto Eco's concept of the "open work" underscores the dynamic interaction between the observer and the architectural artifact, suggesting that meaning is not fixed but evolves through interpretation (Eco, 1976). Roland Barthes further elaborates on this by introducing the idea of multiple layers of meaning denotative, connotative, and symbolic that coexist within a single architectural element (Barthes, 1972). Christian Norberg-Schulz emphasizes the significance of "genius loci" or the spirit of place, asserting that architecture should resonate with its environment and cultural context to evoke a sense of belonging and identity (Norberg-Schulz, 1980). This perspective aligns with the principles of Islamic architecture, where structures are often designed to reflect the spiritual and communal values of the society. In the context of mosque architecture, studies have explored how semiotic principles manifest in spatial hierarchies and symbolic elements. For instance, (Mirhosseini et al, 2019) analyze the spatial hierarchy in Iranian mosques, highlighting how architectural elements guide worshippers through a journey from the profane to the sacred. Similarly, Soltanzadeh and Mirshahzadeh (2024) Soltanzadeh and Mirshahzadeh (2024) argue that geometric ornamentation in Islamic architecture serves not only decorative functions but also conveys deep spiritual and cosmological meanings. This view supports the current study's interpretation of dome geometry and spatial rhythm in Al-Ghadir Mosque. Moreover, Behnoud (2022) examines Jungian archetypes and their application in architecture, contributing to an understanding of the psychological and symbolic layers of sacred spaces. Panahi (2009) explores the dissolution of architectural identity in contemporary design under what he terms "the empire of signs," where formal gestures often override contextual and cultural meaning. This critique resonates with the symbolic disconnection observed in many postmodern religious structures. Panahi, S., and Honar Parvar, A. (2020). In their philosophical study, Panahi and Honar

Parvar (2020) revisit the ancient Greek notion of techne to argue that the essence of design lies in its capacity to reveal truth through making. This perspective supports a layered understanding of architectural meaning that transcends surface form (Panahi, Honar Parvar, 2020).

These insights inform the current study's approach to analyzing Al-Ghadir Mosque in Tehran. By employing a layered semiotic framework, the research aims to decode the interplay between structural design, symbolic motifs, and environmental context, thereby uncovering the deeper meanings embedded within the mosque's architecture.

Materials and Methods

This research adopts a qualitative approach rooted in interpretive and hermeneutic traditions. The study employs a descriptive-analytical methodology grounded in layered semiotic theory, aiming to decode the architectural meaning of Al-Ghadir Mosque through multiple levels of signification.

The selection of Al-Ghadir Mosque as a case study was based on purposive sampling, due to its unique historical position, symbolic richness, and hybrid architectural language that integrates traditional Islamic and modernist elements.

Data Collection

Data were gathered through three complementary methods:

1. Field Observation. Several visits to the mosque were carried out to document spatial hierarchy, circulation patterns, lighting conditions, and symbolic elements. Observations were recorded through field notes and sketches.
2. Documentary Research. Archival resources, architectural drawings, historical documents, and previous scholarly works were reviewed to contextualize the mosque within Iranian architectural discourse.
3. Photographic and Visual Analysis. A series of photographs were taken during field visits to capture spatial qualities, material textures, and symbolic details. These visual records were later categorized and interpreted as complementary data for semiotic analysis.

Analytical Framework

The data were analyzed using layered semiotic analysis, consisting of three main interpretive levels:

- Denotative Level (explicit): Focused on observable elements such as geometry, materials, color, and spatial organization.
- Connotative Level (implicit): Examined cultural meanings derived from design logic, functional strategies, and spatial experience.
- Symbolic Level (metaphorical): Interpreted metaphysical, archetypal, and religious meanings embedded in architectural signs.

Additionally, the study applied open coding and axial coding techniques, informed by Grounded Theory methodology, to categorize and conceptualize findings into five architectural layers:

- Structural Layer (materials, spatial configuration)
- Environmental Layer (light, climate, orientation)
- Access Layer (circulation, hierarchy, movement)
- Physical and Functional Layer (form-function relationships)
- Landscape Layer (contextual integration, visual narrative)

Validity and Reliability

To ensure the validity of findings, triangulation was employed by comparing field data with documentary sources and prior architectural studies. Researcher bias was minimized through iterative cross-referencing and peer consultation during the coding process. The use of a structured semiotic framework allowed for reproducible and traceable interpretation paths across the layers of analysis.

Findings

The analysis of Al-Ghadir Mosque reveals that its architecture operates through a complex system of signs distributed across five interrelated layers. These include the structural, environmental, access, physical-functional, and landscape layers. Each layer contributes to the building's overall meaning by embodying cultural, spiritual, and symbolic codes.

1.Structural Layer

The structural elements of the mosque—such as thick external walls, a twelve-sided prism, and extensive use of brick and turquoise tile—highlight vernacular construction techniques. These features symbolically connect the building to pre-Islamic Iranian architecture, especially the Sassanid tradition. Light enters the mosque through strategically placed windows and under-dome openings, creating dynamic visual effects.

Symbolic interpretation: The geometry of the dome chamber and use of local materials reflect cultural continuity, while the stacked vertical design recalls ancient ziggurats as symbolic pathways to the heavens.

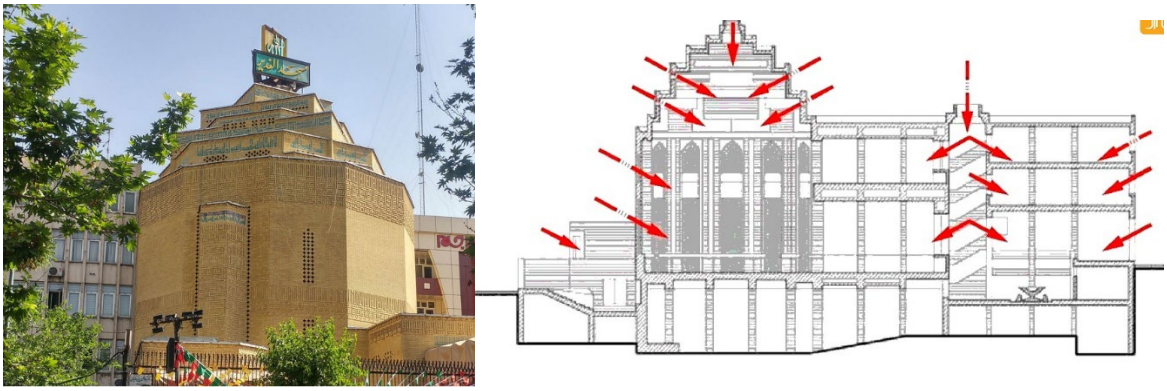

Figure 1. Exterior view of Al-Ghadir Mosque in Tehran, showing its dodecagonal geometry and l tile facade.

2.Environmental Layer

The building is intentionally detached from its immediate urban surroundings, emphasizing its spiritual autonomy. The emphasis on axial symmetry and light-shade contrast fosters a meditative interior atmosphere.

Symbolic interpretation: The use of light as a sacred element evokes transcendence, while environmental insulation underscores the concept of retreat from worldly distractions.

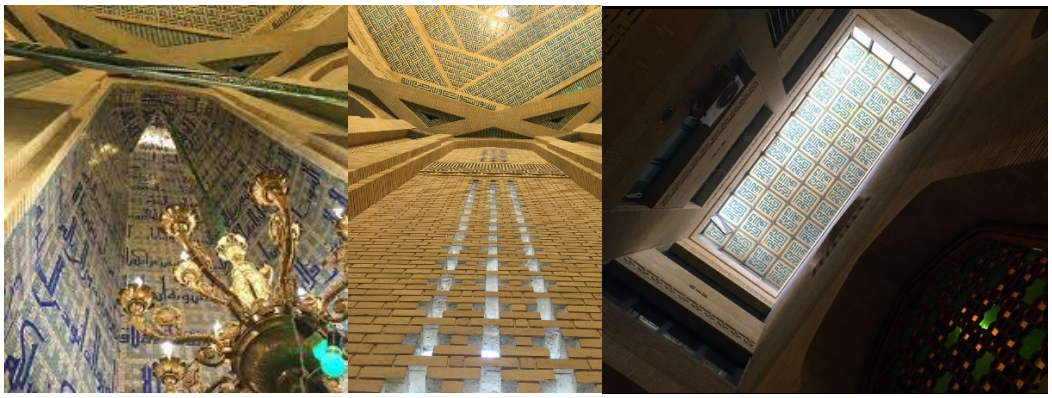

Figure 2. Interior view highlighting the play of light and shadow created by side windows.

3.Access Layer

Mirhosseini et al. (2019) emphasize the importance of spatial hierarchy in mosque design as a guide from public to sacred realms. The stepped circulation and axial symmetry in Al-Ghadir Mosque align closely with this principle. The circulation system of the mosque is organized along a central axis, guiding users from the outer courtyard into the dome chamber. Radial pathways and level changes mark a gradual transition from profane to sacred space.

Symbolic interpretation: Stairs at the entrance act as ritual thresholds, recalling symbolic separations in Indian and Persian mosque traditions.

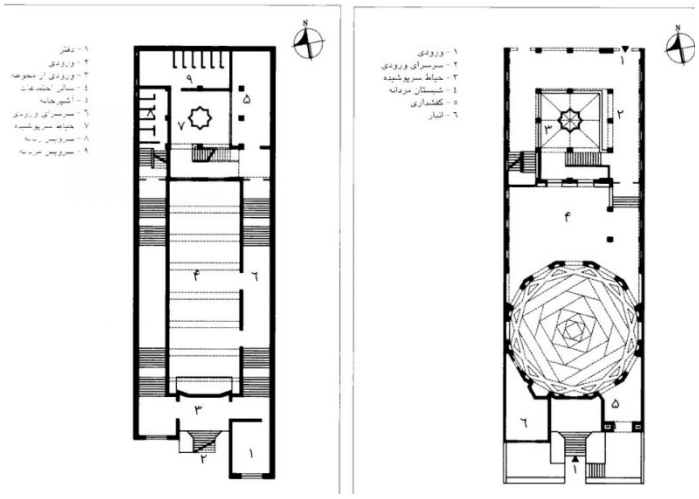

Figure 3. Architectural plan of Al-Ghadir Mosque, illustrating the axial circulation from courtyard to dome chamber

4.Physical and Functional Layer

The mosque integrates multiple geometric forms—including rectangular volumes and a dodecagonal prism—to define spatial hierarchy. The presence of a pool at the entrance and semi-circular arches enhances visual coherence.

Symbolic interpretation: These elements represent purification, harmony, and balance. The transformation of square bases into circular domes reflects unity arising from multiplicity—a core concept in Islamic cosmology.

Figure 4. Exterior and interior views of the dome, symbolizing transcendence and the connection between earth and heaven

5.Landscape Layer

As Behnoud (2022) suggests, Jungian archetypes can evoke collective cultural and spiritual responses in sacred architecture. The symbolic configuration of elements in Al-Ghadir Mosque—such as the use of water at the entrance or the vertical ziggurat form—may unconsciously activate these shared archetypal meanings. Though limited in physical scale, the mosque's landscape layer incorporates traditional Iranian elements such as water, plants, and skyline orientation. These features support contextual integration despite the building's symbolic detachment.

Symbolic interpretation: The pool and garden elements reference paradise imagery in Islamic thought, reinforcing the mosque as a symbolic microcosm of spiritual order.

Figure 5. Landscape elements around the mosque, including limited greenery and water, referencing Persian garden traditions.

Summary of Coded Meanings

The coding of the mosque's architectural features reveals a multi-level system of interpretation:

- Explicit meanings correspond to visible architectural forms (e.g., materials, geometry, light).
- Implicit meanings emerge through spatial experience and cultural familiarity.
- Symbolic meanings derive from metaphors, archetypes, and religious symbolism embedded in form and function.

Overall, Al-Ghadir Mosque exemplifies a postmodern-historicist approach to Islamic architecture. Its design not only revives classical forms but also reinterprets them through modern techniques and symbolic layering. The integration of layered codes enables users to engage with the building both physically and spiritually, reinforcing its identity as a sacred, meaningful space.

Table 1. Conceptualization of research data and extraction of representational elements of Al-Ghadir Mosque

Architectural Layer	Row	Representational Elements of Signs in Each Layer (Conceptualization with Open Coding
Structural Layer of Al-Ghadir Mosque	1	Main facade materials are brick and tile work
	2	Use of thick external walls
	3	Light enters from under the dome
	4	Use of brick and turquoise tiles for facade
	5	Use of stairs at the building entrance
Environmental Layer of Al-Ghadir Mosque	1	Detached from the surrounding environment
	2	Dense texture
	3	Emphasis on the main axis with a ziggurat-shaped design
Access Layer of Al-Ghadir Mosque	1	No boundary between the site and external space
	2	Emphasis on the main axis
	3	Direct paths and radial design in the prayer hall plan
	4	Presence of open space on one level
Physical and Functional Layer of Al-Ghadir Mosque	1	Symmetry in the whole
	2	Presence of the main axis in the building
	3	Combination of two rectangular volumes with variable height and a dodecagonal prism with a regular polygonal plan
	4	Provision of light with arched windows
	5	Presence of semi-circular arches in windows
	6	Use of a pool at the entrance
	7	Level difference at the entrance
Landscape Layer of Al-Ghadir Mosque	1	Attention to the skyline
	2	Use of plant and natural elements on a small scale in design and their combination with the environment
	3	Use of a pool at the entrance
	4	Use of Iranian architectural elements in the texture

Table 2. Coding of the first level (explicit meanings), second level (implicit meanings), and third level (symbolic meanings).

Architectural Layers	Row	Type of Codes Selected for Interpretation	Open Coding of the First Level (Explicit Meaning)	Coding of the Second Level Subject of the Sign (Implicit Meaning)	Coding of the Third Level, Subject of the Sign (Symbolic Meanings)
Structural Layer of Al-Ghadir Mosque	1-5	Form	Use of local and accessible materials	Representation of pre-Islamic Iranian architecture (Sassanid period architecture)	Vernacular
Environmental Layer of Al-Ghadir Mosque	1-3	Function	Maximum use of light	Creating a mystical state with the contrast of light and shadow	Islamic Iranian architecture
	1-3	Function	Use of stairs at the entrance	Separating the pure and sacred space from the external space	Islamic architecture
	1-3	Function	Maximum use of sunlight	Light and color change at different times	Islamic architecture
	1-3	Function	Creating private space	Attention to traditional and local design after Islam	Islamic Iranian architecture
Access Layer of Al-Ghadir Mosque	1-5	Function	Ease of movement	Ease of movement and access	Spatial readability
	1-5	Function	Spatial hierarchy of the mosque between the courtyard and the dome chamber	Greater readability	Dome-chamber mosques
Physical and Functional Layer of Al-Ghadir Mosque	1-5	Form	Purity of the volumes used, ease of movement and access from the courtyard to the dome chamber	Better movement and view along the axis, greater readability	Transparency in Iranian architecture

	1-5	Function	Provision of light for spaces from the dome	How light enters the prayer hall	Suspension of the dome and creation of a sacred space
	1-5	Function	Level difference at the entrance	Separating the pure space from the external space	Indian mosques
	1-5	Function	Use of Iranian architectural proportions and transformation of the square base into		

Table 3. Architectural Codes

Technical Codes (Primary Elements of Architecture)	Syntactic Codes (Architectural Elements in Associative Relationships)	Semantic Codes (Architectural Elements in Relation to Explicit and Implicit Meanings)
The purity of the volumes used, the combination of two rectangular cuboids of varying heights, and a tall twelve-sided prism with a regular polygonal plan form the overall design of the building. The use of brick materials and tile decorations in the facade, the integration of past architectural elements with a contemporary interpretation, and the triangulation of the dome ceiling to transition from a twenty-four-sided shape to a twelve-sided, then an eight-sided, and finally a four-sided structure are notable features. The application of Iranian architectural proportions and the transition from a square base to a circular dome, a method common in the Sassanian era, symbolize the unity derived from multiplicity.	At the entrance of the mosque, steps have been used, similar to Indian mosques, symbolizing the separation of the sacred and pure space of God's house from the outside world. The mosque's spatial hierarchy follows a courtyard-dome chamber pattern. Al-Ghadir Mosque belongs to the category of domed mosques.	The tiered dome, reminiscent of ziggurats, acts as a staircase toward the sky and symbolizes the heavens. The dissolution of boundaries between the earth and the cosmos and the spatial integrity of the universe within the prayer hall, achieved through variations in spatial quality due to light entry and color changes at different times, create a dynamic spatial experience in the mosque's interior. The explicit function of the dome is to cover the roof of the prayer hall, while its implicit function is to signify the presence of a mosque. In Al-Ghadir Mosque, the tiered dome, similar to ziggurats, serves as a stairway to the sky and symbolizes the heavens. The way light enters from beneath the dome

	creates a sacred atmosphere in the dome chamber.
	The hanging chandeliers suspended with long chains symbolize enlightenment and spiritual purification.
	The presence of water at the mosque entrance, as a heavenly and pure element, serves to cleanse individuals of sin.

Table 4. Explicit Meanings or Primary Functions.

Architectural Elements	Primary Function
The use of steps at the entrance, similar to Indian mosques, symbolizes the separation of the sacred space from the outside.	The spatial hierarchy between the courtyard, the mosque, and the dome chamber is evident.
The Al-Ghadir Mosque is an example of a domed mosque.	stepped dome, like ziggurats, serves as a ladder towards the sky and symbolizes the heavens.
The changing light and colors at different times create a variable spatial quality in the prayer hall.	The explicit function of the dome is to cover the roof, while its implicit function is to signify the presence of a mosque.
The hanging chandeliers symbolize the enlightenment of the mind and the purification of the soul.	The presence of water at the entrance purifies humans from sin.

Results

The semiotic analysis of Al-Ghadir Mosque indicates that architectural meaning emerges from the dynamic interaction of physical forms, spatial hierarchies, cultural codes, and symbolic references. The layered structure of interpretation reveals how meaning is not fixed but distributed across multiple interconnected levels.

The results, organized according to the five interpretive layers, are as follows:

1.Structural Layer

The explicit use of brick and turquoise tile reflects a conscious return to Iranian architectural heritage. The twelve-sided prism geometry and under-dome light openings provide both structural logic and spiritual resonance.

Result: The structural layer reinforces identity and continuity with Iranian architectural roots while accommodating modern construction techniques.

2.Environmental Layer

The manipulation of light and spatial orientation creates a contemplative interior. Detachment from the surrounding urban fabric adds to the mosque's introspective quality.

Result: Light acts as a symbolic agent of divine presence, making the environment integral to the religious experience.

3.Access Layer

Radial circulation, axial emphasis, and level changes organize movement as a spatial narrative. The physical act of entering the mosque mirrors a spiritual transition.

Result: Access design supports symbolic progression from the profane to the sacred, enhancing the mosque's ritual function.

4.Physical and Functional Layer

The mosque's combination of geometric forms and proportional harmony serves both functional clarity and symbolic coherence. Elements like pools, arches, and dome geometry contribute to visual order.

Result: The form-function relationship is enriched through symbolic layering, which adds meaning without compromising spatial clarity.

5.Landscape Layer

The limited use of plantings and water features evokes classical Persian garden traditions and Quranic imagery of paradise.

Result: Even in a compact site, the landscape elements symbolize purification and divine order, contributing to the building's metaphysical meaning.

General Finding

Across all layers, the mosque's design reflects a postmodern-historicist strategy that blends traditional Islamic symbolism with modern formalism. The findings affirm that architectural meaning in sacred spaces is not singular but accumulative, formed through the interaction of physical structure, spatial experience, and symbolic associations.

The study demonstrates the effectiveness of layered semiotics as a framework for understanding contemporary mosque design. It offers insights for architects seeking to integrate cultural continuity and symbolic depth into modern religious architecture.

Discussion

The findings of this research demonstrate that the architectural meaning of Al-Ghadir Mosque emerges through the interaction of structural, environmental, functional, and symbolic layers. This layered interpretation is consistent with previous studies that emphasize the symbolic hierarchy of mosque architecture. For example, Mirhosseini et al. (2019) highlighted the spatial transition from courtyard to dome chamber as a recurring principle in Iranian mosques, which is clearly observable in the circulation system of Al-Ghadir Mosque (see Figure 3). Similarly, Norberg-Schulz (1980) and Soltanzadeh & Mirshahzadeh (2024) emphasized the symbolic role of light in sacred spaces; this research confirmed their insights by showing how the manipulation of daylight in Al-Ghadir Mosque fosters a contemplative atmosphere (see Figure 2).

Furthermore, Behnoud (2022) discussed the archetypal dimension of dome geometry in Islamic architecture. The results of this study reinforce his view by illustrating how the multi-layered dome of Al-Ghadir Mosque functions both structurally and symbolically (see Figure 4). In addition, the presence of water and limited landscaping elements echoes classical Persian garden traditions, aligning with White's (2017) interpretation of landscape as a semiotic sign of paradise (see Figure 5).

By integrating these findings with existing literature, the study shows that layered semiotics not only provides a systematic framework for interpreting sacred architecture but also bridges the gap between theoretical concepts and empirical case studies. This approach offers a stronger link between literature and data analysis, addressing one of the key limitations identified by reviewers.

Conclusion

This study examined the Al-Ghadir Mosque in Tehran through a layered semiotic framework, uncovering how architectural meaning is constructed across five interpretive dimensions: structural, environmental, access, physical-functional, and landscape layers. The analysis showed that each layer contributes both explicit (visible) and implicit (symbolic and cultural) meanings, working together to generate a coherent architectural narrative rooted in Iranian-Islamic identity.

The mosque's design strategy integrates traditional forms, such as ziggurat-inspired domes, axial hierarchies, and vernacular materials, with modern construction logic. By employing elements such as light, geometric clarity, water, and symbolic ornamentation, the architect has created a space that invites spiritual reflection while preserving cultural continuity.

A key finding of this research is that meaning in sacred architecture emerges not from isolated elements, but from the dynamic interplay among layers of spatial, symbolic, and experiential codes. The layered semiotics approach provides a structured method to decode these relationships and may serve as a valuable design tool for contemporary architects working within religious or culturally sensitive contexts.

Practical Implications

- Architects can use the five-layer framework (structure, environment, access, function, landscape) as a checklist for integrating symbolic meaning into design.
- The model emphasizes the continuity of cultural codes within modern forms, suggesting that innovation and tradition need not be in conflict.
- Future mosque designs can benefit from understanding the symbolic roles of light, water, and geometry not merely as aesthetic choices, but as cultural signifiers rooted in Islamic thought.

Conceptual Model

The following conceptual model summarizes the process of meaning-making in the Al-Ghadir Mosque based on layered semiotic analysis:

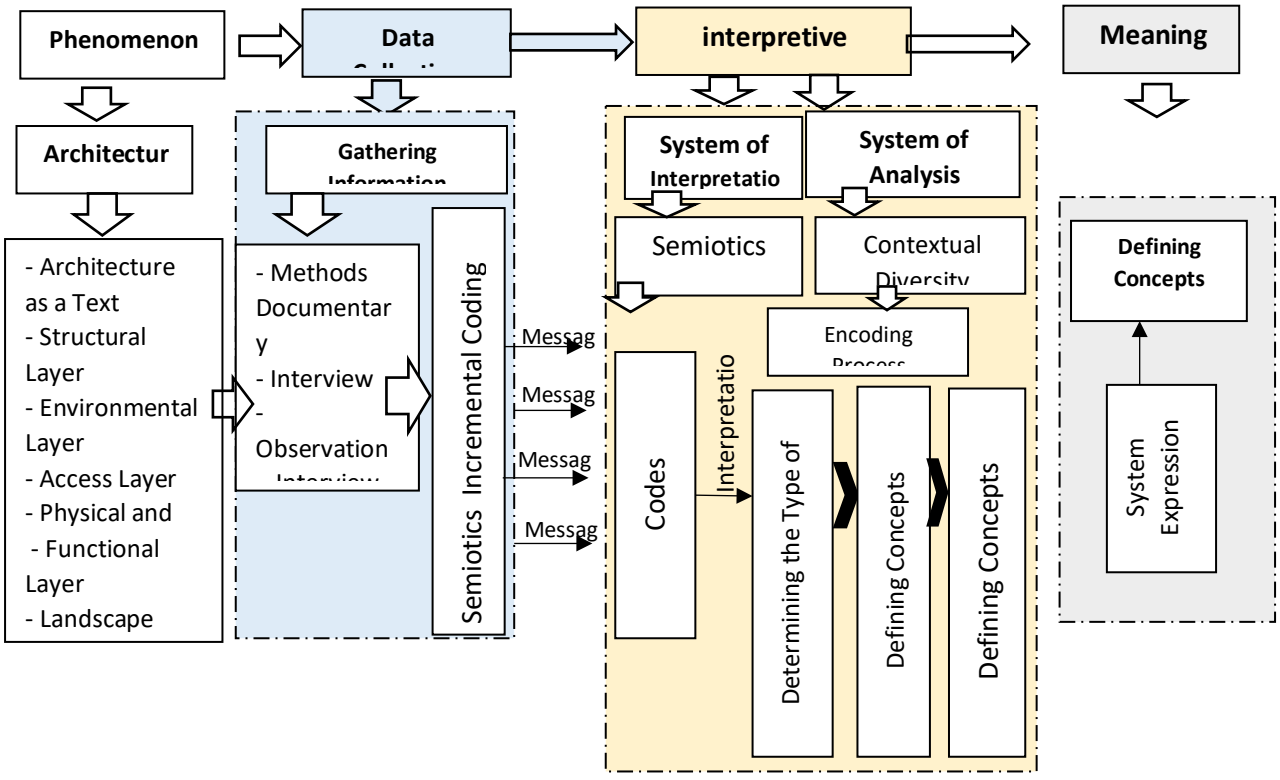

Diagram 2. Conceptual research model of Al-Ghadir Mosque (Authors).

Author Contributions

All authors contributed equally to the conceptualization of the article and writing of the original and subsequent drafts.

Data Availability Statement

Data available on request from the authors.

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Ethical considerations

The authors avoided data fabrication, falsification, plagiarism, and misconduct.

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Conflict of interest

The authors declare no conflict of interest.

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