

# Investigating the Influence of Interstitial Spaces on the Architectural Identity of the Safavid Era

<sup>1</sup>Mehrdad Mahi Khamaneh, <sup>2\*</sup>Hossein Moradi Nasab, <sup>3</sup>Hamed Sheikh Taheri

<sup>1</sup> Department of Architecture, Semnan Branch, Islamic Azad University, Semnan, Iran.

<sup>2\*</sup> Department of Architecture, Semnan Branch, Islamic Azad University, Semnan, Iran.

<sup>3</sup> Department of Architecture, Semnan Branch, Islamic Azad University, Semnan, Iran.

Received 11.05.2025; Accepted 01.11.2025

**ABSTRACT:** Safavid Isfahan (1501–1736) has long been celebrated for its monumental mosques, palaces, and gardens, yet scholarship has often privileged domes, façades, and ornament while neglecting the interstitial spaces that mediate between them. This study addresses that gap by examining the formative role of thresholds, corridors, galleries, gardens, and terraces in structuring experience and constructing architectural identity. A qualitative methodology was adopted, combining a systematic literature review, semi-structured interviews with eight leading scholars of Iranian and Islamic architecture, and detailed case analyses of the Imam Mosque, 'Alī Qāpū Palace, and the Chahār-Bāgh School. Thematic coding of expert testimonies, triangulated with architectural evidence, revealed six interdependent domains of interstitial design: geometric order, spatial hierarchy, environmental intelligence, socio-cultural practice, sensory–spiritual orchestration, and political–aesthetic representation. The findings demonstrate that in Safavid architecture, interstitial spaces were not residual connectors but polyvalent instruments that simultaneously organized movement, moderated climate, encoded hierarchy, and materialized cosmological and ideological meanings. These results reframe Safavid design as a grammar of thresholds in which form, function, and symbolism are fused. Beyond historical insight, the study underscores the continuing relevance of interstitial design as a model for integrating climate, community, and cosmology in contemporary architectural practice.

**Keywords:** *Interstitial Spaces, Spatial Organization, Architectural Identity, Safavid Architecture.*

## INTRODUCTION

The Safavid era (1501-1736) stands as one of the most brilliant periods in Iranian history, recognized for its remarkable achievements in art, culture, and especially architecture (Eskandari, 2019). During this time, we observe a significant transformation in the urban landscape and the emergence of a unique architectural style that continues to influence Iranian architectural aesthetics today (Saleh, 2020, 143). The distinctiveness of Safavid architecture is not limited to the grandeur and majesty of its structures; careful attention to interstitial spaces also holds special importance (Rasoulpour, 2021). These spaces, which create connections between buildings and their surroundings, play a key role in establishing harmony and visual beauty within structures (Esmaeili & Piri, 2019, 81). Interstitial spaces, such as courtyards, corridors, gardens, and terraces, played a central role in shaping the spatial experience of Safavid architecture (Mousavi Haji et al., 2014, 154). Not only did these spaces facilitate movement and strengthen social interactions, but

they also created a harmonious connection between the interior and exterior spaces of buildings (Karimi et al., 2019). Despite the importance of these interstitial spaces, previous studies and research have primarily focused on the more prominent elements of Safavid architecture, such as elaborate facades and intricate decorations; the subtle yet profound impact of interstitial spaces on the architectural identity of this period has not received sufficient attention. Understanding the role of these spaces is essential for a comprehensive understanding of Safavid architectural principles. These spaces are not merely fillers but are dynamic structural components embodying cultural values, religious beliefs, and social customs (Belilan Asl et al., 2011). In essence, these spaces reflect the deep understanding of Safavid architects regarding spatial dynamics and their ability to create environments that are both functional and symbolically rich. This article analyzes the role of interstitial spaces in shaping Safavid architectural identity through three emblematic building-scale cases in Isfahan: the Imam Mosque, Ali Qapu Palace, and the Chahar-Bagh School

\*Corresponding Author Email: [moradinasab1399@gmail.com](mailto:moradinasab1399@gmail.com)

ORCID: 0000-0002-4421-5848

(Madrasa-ye Chahar-Bagh). These cases were selected because they (1) belong to the core Safavid ensemble of Shah 'Abbas I, ensuring temporal and urban coherence; (2) collectively cover sacred, palatial-ceremonial, and educational typologies; and (3) offer rich interstitial repertoires (courtyards, riwaqs-iwans, porticoes, talar-balcony, galleries, thresholds) sufficient for comparative analysis across environmental, socio-spatial, and symbolic dimensions. For clarity, Naqsh-e Jahan Square and Sheikh Lotfollah Mosque are referenced as contextual exemplars in the literature and background discussions, but they are not part of the analytic case set reported here. The square operates primarily at an urban scale (beyond this study's building-scale coding protocol), and Sheikh Lotfollah (an introverted, single-dome, non-courtyard mosque) does not provide the breadth of interstitial sequences required for our comparative framework; its salient corridor and luminous shell are acknowledged in context, but it is excluded from formal coding to avoid typological duplication with the Imam Mosque and to preserve a balanced triad across function and form.<sup>1</sup>

The primary research questions are:

1. How were interstitial spaces organized in Safavid architecture, and what experiential, environmental, and symbolic functions did they perform?
2. In what ways did these spaces contribute to the articulation of Safavid architectural identity?

## Literature Review

The architectural identity of the Safavid period (1501–1736) has been the subject of considerable scholarly attention, most frequently through analyses of monumental forms, ornamental vocabularies, and urban restructuring under Shah 'Abbās I. Blair (1998) and Babaie (2008), for instance, emphasize the stylistic consolidation and aesthetic achievements of Safavid architecture, while Hillenbrand (1994) situates it within broader trajectories of Islamic form and function. Yet this emphasis on façades, domes, and decorative surfaces has tended to obscure the quieter but equally constitutive role of interstitial spaces (courtyards, gardens, terraces, corridors, and porticos) in shaping both the built fabric and the cultural imagination of the period. What emerges from a critical reading of the literature is not the absence of discussion but rather its fragmentation: functional, social, symbolic, and aesthetic dimensions have been explored in isolation, rarely integrated into a coherent framework of architectural identity. Early interpretive studies, such as Ardalan and Bakhtiar's *Sense of Unity* (1973), recognized transitional zones as mediators between metaphysical concepts and spatial order, establishing the ground for later work on geometry and symbolism. Building on this, Babayan (2002) and Babaie (2008) illuminated the social and political dimensions of Safavid squares and palaces, situating interstitial domains such as the Naqsh-e Jahān Maidan within the architecture of conviviality and statecraft. Their work suggests that these spaces were not marginal fillers but

deliberate arenas for the performance of communal life and the staging of imperial ideology. Diba (2001), in contrast, turned attention inward, showing how introverted courtyards in residential settings enacted cultural codes of privacy and gender segregation. Together, these strands point to a dual orientation of interstitial space: outward toward civic spectacle and inward toward domestic regulation.

The functional and environmental aspects of these spaces have been more systematically addressed in architectural-climatic studies. Memarian and Brown (2003) demonstrated how courtyards and gardens in arid Iran generated microclimates that enhanced thermal comfort, while Grabar (1987) and Heidari (2010) underscored the role of semi-open terraces and water features in creating conditions of adaptive comfort. These works, although grounded in empirical observation, often stop short of linking environmental intelligence to questions of identity, thereby treating climate responsiveness as a pragmatic achievement rather than a cultural statement. The omission is significant, for as the Safavid case shows, the capacity to moderate climate was inseparable from the symbolic language of paradise gardens and the theological aesthetics of light and shade. The literature on symbolism and geometry has perhaps been the most conceptually ambitious. Bonner (2017) meticulous study of geometric proportions, together with Moynihan's (1980) interpretation of the Persian garden as a microcosm of paradise, articulate a metaphysical reading in which interstitial zones embodied cosmological order. Alemi (2010) and Sattarzadeh and Mohammadi (2013) further illustrate how the manipulation of light, shadow, and sensory perception transformed transitional domains into experiential thresholds between the material and the spiritual. These perspectives enrich our understanding of interstitial spaces as not merely connectors but instruments of transcendence, orchestrating the gradual elevation of the user from worldly environment to sacred presence. Urban studies of Safavid Isfahan add yet another layer. Mitchell (2004; 2007) highlights how Shah 'Abbās I reorganized the city by embedding boulevards, parks, and squares into a spatial system that deliberately fused circulation with imperial figurery. In this reading, interstitial domains operate as urban armatures, binding monumental nodes into a coherent symbolic order. Blake (1999) similarly underscores the social life of these spaces, characterizing Isfahan as half the world precisely because its squares and bazaars facilitated diverse forms of interaction while reinforcing hierarchy and governance. Recent scholarship has begun to draw these strands together. Gholami and Rezaei (2018) examine how decorative elements in interstitial domains, from lattices to muqarnas, created layered sensory atmospheres, while Mahboobi et al. (2018) and Momeni (2018) describe the dynamic sequencing of spaces that choreographed movement and anticipation. Studies of domestic architecture (Hakim, 1990; Tavakoli Arian et al., 2022) emphasize the socio-cultural hierarchies encoded

in transitional zones dividing *andarūnī* from *bīrūnī*, while research on mosques (Aghadavoudi, 2019; Ahmadi et al., 2020) identifies the gradual passage through courtyards and terraces as an intentional spiritual pedagogy. What remains underdeveloped, however, is an integrated account that treats these environmental, social, symbolic, and urban dimensions not as parallel functions but as interwoven logics that collectively articulate architectural identity. The literature makes clear that interstitial spaces were central to the Safavid architectural imagination. They mediated climate, structured social practice, enacted religious symbolism, and projected political authority. Yet the existing studies remain compartmentalized, either privileging environmental pragmatics, cultural codes, or symbolic readings in isolation. The present study builds on this body of work by synthesizing these perspectives into a comprehensive framework, demonstrating that the identity of Safavid architecture resided as much in its in-between spaces as in its monumental façades. It is precisely in these thresholds (between inside and outside, private and public, worldly and spiritual) that the Safavid genius for uniting function, form, and meaning becomes most legible. The scattered strands of scholarship outlined above (spanning environmental pragmatics, social practice, symbolic cosmology, aesthetic effect, and political projection) can be synthesized into a more integrated conceptual framework. As distilled from the literature, the multiple dimensions of interstitial spaces may be grouped into six overlapping but analytically distinct roles: functional, social and cultural, symbolic and spiritual, aesthetic and sensory, technological and artistic, and environmental-political. This typology, represented in Figure 1, highlights the polyvalence of transitional domains in Safavid architecture. Courtyards, gardens, terraces, corridors, halls, and porticos functioned not merely as climatic regulators or circulation devices, but simultaneously as arenas for social interaction, vehicles of cultural values, and thresholds of metaphysical

ascent. Equally, these spaces embodied aesthetic strategies of light, shadow, and sequence; they showcased technological virtuosity through constructional and decorative refinement; and they were mobilized as instruments of imperial ideology in squares, boulevards, and monumental gates. The literature thus suggests that the in-between was in fact the locus where Safavid architecture articulated its most profound synthesis of form, function, and meaning. What the scholarship has not fully achieved, however, is to treat these roles as interdependent logics rather than parallel attributes — a gap that the present study addresses by deploying this conceptual model as both an interpretive lens and a comparative coding framework. The scattered strands of scholarship outlined above—spanning environmental pragmatics, social practice, symbolic cosmology, aesthetic effect, and political projection—can be synthesized into a more integrated conceptual framework. As distilled from the literature, the multiple dimensions of interstitial spaces may be grouped into six overlapping but analytically distinct roles: functional, social and cultural, symbolic and spiritual, aesthetic and sensory, technological and artistic, and environmental-political. This typology (Figure 1) highlights the polyvalence of transitional domains in Safavid architecture. Courtyards, gardens, terraces, corridors, halls, and porticos functioned not merely as climatic regulators or circulation devices, but simultaneously as arenas for social interaction, vehicles of cultural values, and thresholds of metaphysical ascent. Equally, these spaces embodied aesthetic strategies of light, shadow, and sequence; they showcased technological virtuosity through constructional and decorative refinement; and they were mobilized as instruments of imperial ideology in squares, boulevards, and monumental gates. Far from ancillary, interstitial spaces emerge in this framework as the very crucibles of Safavid architectural identity, where environmental intelligence, social practice, symbolic meaning, and political power were fused into a coherent spatial language.

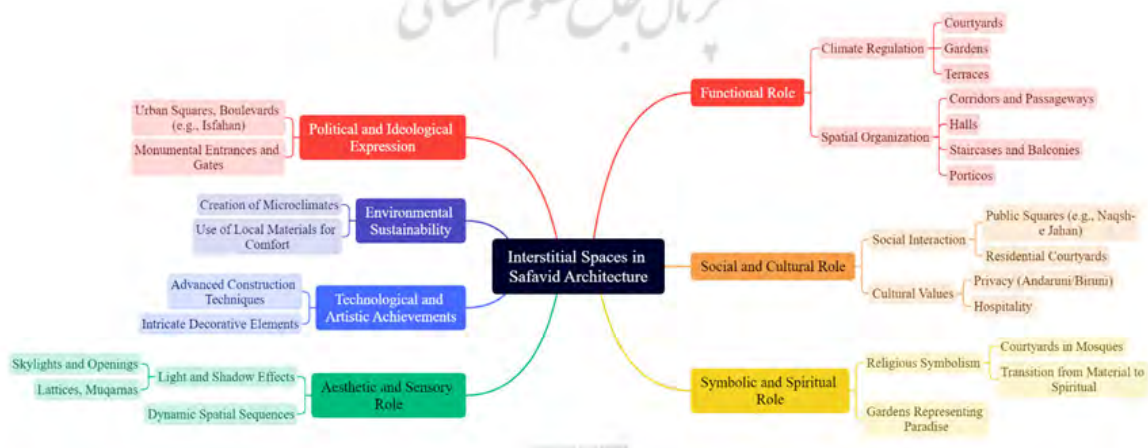


Fig. 1: Conceptual model of the roles of interstitial spaces in Safavid architecture.



## MATERIALS AND METHODS

This study adopts a qualitative research design, selected for its capacity to capture the layered meanings and symbolic dimensions of Safavid interstitial spaces that cannot be reduced to purely quantitative measures. The methodological strategy rests on three interrelated components: systematic review of the literature, expert interviews, and architectural case study analysis. Together these provide the triangulation necessary to interrogate both the theoretical discourse and the built evidence of the period.

The first phase involved extensive bibliographic research. Sources were collected from both domestic and international databases, including Magiran, Noormags, SID, JStOR, Scopus, and Google Scholar, using targeted keywords related to Safavid architecture, interstitial spaces, and Iranian urban history. From this corpus, studies most directly addressing transitional domains (courtyards, gardens, iwans, porticos, and passageways) were prioritized. These texts established the historiographical background and revealed both the extent and the fragmentation of existing scholarship, thereby informing the analytic framework of the present study. The second phase consisted of semi-structured interviews with eight scholars recognized for their contributions to the study of Iranian and Islamic architecture. Selection followed purposive and snowball sampling strategies, ensuring that participants combined scholarly authority with direct experience in analyzing Safavid monuments. Semi-structured interviews allowed for a consistent orientation toward the research questions while granting flexibility for respondents to elaborate on dimensions often underrepresented in published work. The interviews were transcribed in full and subjected to thematic coding by two independent coders; discrepancies were resolved through consultation with the supervisory team. Themes emerging from this process (symmetry and geometry, spatial hierarchy, cultural symbolism, environmental sustainability, and political expression) were subsequently compared against findings from the literature review to generate a consolidated framework. To enhance validity, three of the interviewed experts reviewed the thematic analysis and offered additional commentary on the case studies. The third phase applied this framework to an in-depth analysis of three major Safavid buildings in Isfahan: the Imam Mosque (Masjed-e Shah/Masjed-e Emam), the Ali Qapu Palace, and the Chaharbagh School. These buildings were selected on the basis of three criteria. First, they exhibit a rich repertoire of interstitial spaces that could be comparatively analyzed across sacred, palatial, and educational typologies. Second, they hold acknowledged historical and cultural significance, representing the height of Safavid architectural achievement. Third, they are extensively documented in both scholarship and archival material, providing a robust evidentiary base for qualitative interpretation. For clarity, Naqsh-e Jahan Square and the Sheikh Lotfollah Mosque were consulted as contextual references but were excluded from the analytic corpus, as explained earlier,

in order to maintain methodological coherence and typological balance. By integrating textual sources, expert interpretation, and architectural evidence, this methodology establishes a rigorous platform for examining how interstitial spaces in Safavid architecture functioned simultaneously as climatic regulators, socio-cultural arenas, and symbolic instruments of identity. It thereby ensures that the analysis remains grounded in both historical evidence and critical scholarship, while offering new interpretive insights into the architectural logic of the Safavid period.

## RESULTS AND DISCUSSION

### Expert Interviews

The semi-structured interviews conducted with eight senior scholars of Iranian and Islamic architecture yielded a rich and multilayered account of interstitial spaces in the Safavid period. When synthesized with the literature, the testimonies reveal not a random collection of attributes, but a coherent system of spatial logics through which Safavid architects articulated identity, authority, and cosmology. What emerges is a pattern of convergences around six thematic axes: geometric order, spatial hierarchy, environmental intelligence, socio-cultural practice, sensory orchestration, and political symbolism. These axes, far from being discrete, are interdependent strands that together constructed the in-between as the generative locus of Safavid architecture.

The experts repeatedly stressed that symmetry and proportional geometry were not ornamental veneers but structural determinants of spatial practice. Courtyards, iwans, and porticos were proportioned to embody balance, ensuring that circulation and vision were simultaneously intuitive and ordered. This testimony accords with [Bonner's \(2017\)](#) and [Hillenbrand's \(1994\)](#) observations, but goes further in insisting on geometry as a cultural logic rather than merely a design tool. Closely linked was the principle of spatial hierarchy: interstitial domains were deliberately sequenced to mediate between public and private, sacred and profane, urban and domestic. In both palatial and residential contexts, movement through semi-public courtyards or transitional galleries symbolically enacted shifts in status and privilege, a theme reinforced by [Blake's \(1999\)](#) reading of Isfahan's social architecture. Environmental consciousness emerged as another recurrent theme. Experts emphasized that Safavid architects exploited interstitial forms to create microclimates in an arid environment: shaded arcades, ventilated corridors, and water gardens were simultaneously practical devices and symbolic gestures. The interpretation resonates with [Memarian and Brown's \(2003\)](#) climatic analyses but extends them by integrating sustainability with cultural cosmology, precisely the kind of synthesis the literature had left fragmented. Experts also identified the centrality of social practice: interstitial domains (public courtyards, bazaars, madrasa gardens) functioned as theaters of interaction, where kinship, hospitality, and commercial

Table 1: Thematic Synthesis of Expert Interviews on Interstitial Spaces in Safavid Architecture

Thematic Axis	Core Attributes	Representative Expert Insights	Integration with Literature
Geometric Order	Symmetry, proportionality, modular coordination of courtyards, iwans, porticos	Geometry was the grammar of Safavid space; every courtyard and portico was proportioned as if to mirror cosmic balance	Confirms Necipoğlu (1995), Hillenbrand (1994)
Spatial Hierarchy	Sequencing of public–semi-public–private; andaruni/biruni divisions; ceremonial thresholds	Movement through transitional zones was a social code: each passage reinforced rank, privilege, and privacy	Extends Blake (1999), Babaie (2008)
Environmental Intelligence	Microclimatic regulation via shade, ventilation, evaporative cooling; integration of water and vegetation	The courtyard was simultaneously a garden of paradise and a natural cooling device	Resonates with Memarian & Brown (2003), Moynihan (1980)
Socio-Cultural Practice	Courtyards and bazaars as arenas of hospitality, kinship, and commerce; madrasa gardens as didactic forums	Public courtyards were theaters of exchange, where architecture choreographed daily sociability	Supports Diba (2001), Babaie (2008)
Sensory Orchestration	Light–shadow play, sound of fountains, fragrance of vegetation, tactile materials	Architecture addressed all senses: light was filtered, water was heard, air was scented—an immersion into meaning	Extends Alemi (2010), Sattarzadeh & Moham-madi (2013)
Political Symbolism	Monumental squares, ceremonial gates, elevated balconies (Ali Qapu talar) as stages of imperial display	The square was the Safavid theater: power was not hidden inside palaces, it was enacted in the open	Reinforces Blake (1999), Mitchell (2007)

exchange were materially staged. Here, [Diba's \(2001\)](#) account of domestic privacy and [Babaie's \(2008\)](#) reading of conviviality are confirmed and expanded through first-hand scholarly reflection. Equally important was the sensory and affective dimension. Experts described Safavid manipulation of light, shadow, water sound, and vegetal fragrance as a deliberate orchestration of perception, designed to move the visitor from worldly distraction to spiritual awareness. The Chaharbagh's quadripartite geometry and the Imam Mosque's courtyard–iwan–sanctuary sequence was repeatedly cited as spaces that choreographed not just movement but consciousness. This multi-sensory intentionality positions interstitial architecture as pedagogy: preparing the body and mind for transcendence. Finally, the political-symbolic role of urban interstitial spaces was underscored. Squares such as Naqsh-e Jahan and monumental gates like Qeysarieh were read as stages for imperial spectacle, projecting Safavid power through spatial scale and ceremonial dramaturgy. To crystallize these findings, [Table 1](#) presents the six thematic axes, their core attributes, and representative expert insights. This table is not a simple summary; it condenses the interviews into an interpretive matrix that clarifies how interstitial spaces simultaneously mediated environment, society, symbol, and ideology. The interdependence of these dimensions demonstrates that Safavid interstitials cannot be reduced to utilitarian connectors: they were the architectural language through which the Safavid order made itself legible and legitimate.

the integration of expert testimony with existing scholarship reveals that interstitial spaces in Safavid architecture were polyvalent instruments through which geometry, hierarchy, environment, sociability, sensory perception, and political spectacle converged. This convergence underscores the

originality of Safavid spatial practice: the interstitial domain was not residual but generative, the very site where form, function, and meaning were woven into a coherent architectural identity. The findings thus reposition interstitial architecture as the central grammar of Safavid design, a grammar whose resonance continues to inform Iranian architectural imagination today.

#### Thematic Coding Framework for Analysis

To transform the dispersed insights of expert testimony into a systematic analytic structure, a thematic coding framework was constructed ([Figure 2](#)). This framework condenses the interview material into six interdependent domains that collectively define the polyvalent roles of interstitial spaces in Safavid architecture. Far from being residual voids, these domains emerge as architectural instruments through which geometry, environment, sociability, symbolism, and ideology were woven into a coherent grammar of space. The coding process revealed that the most frequently recurring terms (symmetry, geometry, spatial hierarchy, courtyards, terraces, and sensory orchestration) clustered around two organizing logics: structural-functional (geometry, hierarchy, environmental intelligence) and cultural-symbolic (sociability, spirituality, politics). This bifurcation demonstrates that interstitial spaces cannot be reduced to utilitarian connectors; they operated simultaneously as technologies of climate control, mechanisms of social regulation, and carriers of metaphysical meaning. [Figure 2](#) visualizes this clustering as a word cloud, where the prominence of terms such as symmetry, geometry, and interstitial spaces reflects their density across interviews, and their adjacency to terms like spiritual transition and political ideology signals conceptual co-occurrence.

Table 2: Multi-Level Thematic Coding Framework Derived from Expert Interviews

Overarching Domain	Second-Level Categories	Representative Codes (from transcripts)	Interpretive Insight (synthesized)
Geometric Order	Symmetry; proportionality; modular planning	Balanced courtyards; iwan ratios; axial order	Geometry functioned as an ontological principle, materializing cosmic balance in built form.
Spatial Hierarchy	Public–semi-public–private gradation; ceremonial thresholds	Andaruni/biruni; transition gates; terrace filters	Hierarchical sequencing inscribed social stratification and ritual progression into spatial experience.
Environmental Intelligence	Climate responsiveness; micro-climate creation; sustainable materiality	Evaporative cooling; shaded riwaqs; local brick	Interstitial forms fused environmental pragmatism with symbolic evocations of paradise.
Socio-Cultural Practice	Hospitality; kinship; communal exchange	Courtyard gatherings; bazaar sociability	Architecture materially staged cultural norms of interaction, reinforcing cohesion and collective identity.
Sensory-Spiritual Orchestration	Multisensory design; light-shadow dramaturgy; spiritual ascent	Latticed light; water sound; garden fragrance	Transitional sequences functioned as pedagogies of perception, cultivating reverence and metaphysical awareness.
Political-Aesthetic Representation	Urban squares; monumental gates; balconies as stages of power	Naqsh-e Jahan spectacle; Qeysarieh portal; Ali Qapu balcony	Interstitial architecture operated as political theater, projecting legitimacy and imperial authority into urban life.

Thus, the Figure serves as a preliminary map of the semantic field, which is subsequently refined into the coding structure presented in Table 2.

Table 2 demonstrates the progression from raw interview codes to higher-order categories and finally to overarching interpretive domains. It shows that the expert testimonies do not simply reiterate existing scholarship but reveal the interlocking nature of Safavid interstitial design: geometry ordered hierarchy, hierarchy structured ritual, environmental design anchored symbolism, and sensory strategies elevated political theater into metaphysical spectacle. This systemic interdependence is precisely what earlier literature had left fragmented, and its reconstruction here constitutes the study's central contribution. Word-cloud visualization of the thematic coding framework derived from expert interviews on interstitial spaces in Safavid architecture. The prominence of terms such as symmetry, geometry, spatial hierarchy, and interstitial spaces indicates their high frequency and centrality within expert testimonies. The co-occurrence of environmental terms (thermal comfort, natural ventilation) with symbolic concepts (paradise, spiritual transition, political ideology) illustrates the fusion of pragmatic and metaphysical dimensions. This Figure thus represents the lexical density of the expert discourse, which is analytically structured into the six overarching domains summarized in Table 2. The thematic coding derived from expert interviews produced a dense field of recurrent concepts whose interrelations clarify the polyvalence of Safavid interstitial space. Terms such as symmetry, geometry, spatial hierarchy and interstitial spaces occur with the highest frequency, while environmental notions like thermal comfort and natural ventilation cluster alongside symbolic ideas such as paradise, spiritual transition and political ideology, showing

how pragmatic and metaphysical dimensions are fused in expert discourse. This lexical landscape (Figure 2) underpins the six overarching domains summarized in Table 2.

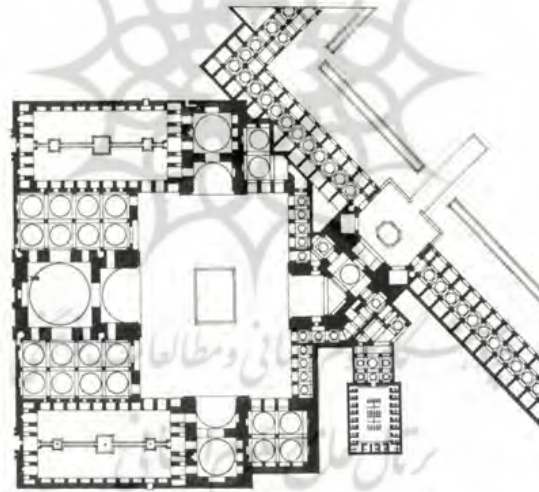
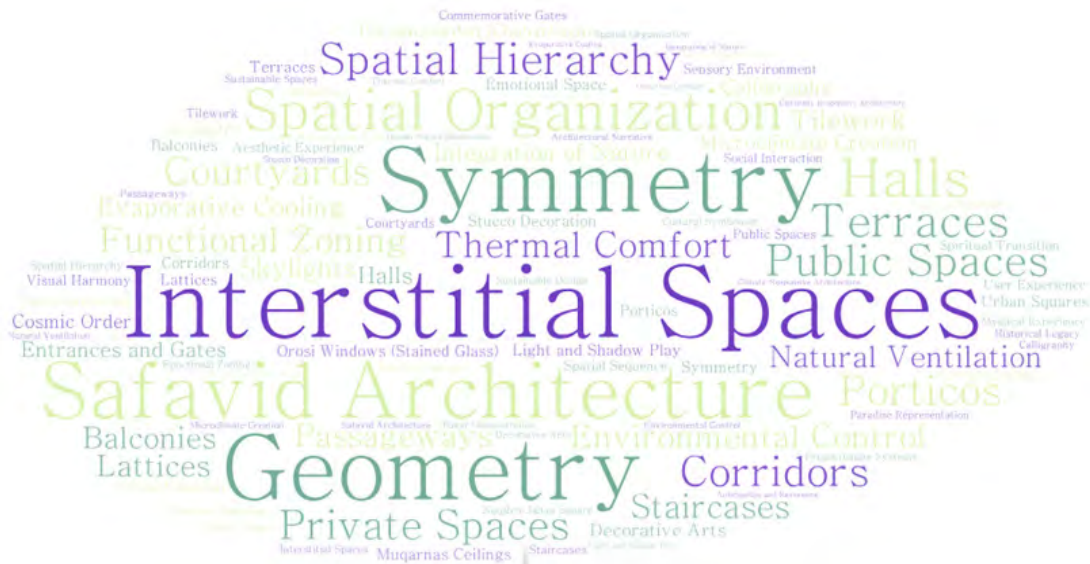
### Case Study

#### Imam (Shah) Mosque—Interstitial Ordering, Experiential Sequencing, and Identity Production

This case is limited to the Imam (Shah) Mosque in Isfahan and does not conflate the monument with the Friday (Jāme‘) Mosque. The analysis addresses the article's two research questions by reading the mosque's interstitial system directly from the plan and axonometric views (Figures 3 and 4) and by relating those readings to functional, environmental, symbolic, and experiential logics.

The mosque's urban interface is a paradigmatic exercise in interstitial mediation. From the Maidan façade one enters through the monumental pishtāq into a hashti (vestibule) and a pair of angled dalān (bent corridors) before emerging into the four-iwan courtyard. The kinked passage reorients the visitor from the Maidan's orthogonal grid to the qibla alignment of the mosque, converting a civic axis into a liturgical one without rupturing spatial continuity. In Figure 3 this rotation is legible in the oblique connector between the square and the courtyard; in Figure 4 the same sequence reads as a calibrated choreography of compression and expansion, darkness and light, noise and calm. These transitional volumes (vestibule, turns, and galleries) are not residual leftovers of alignment; they are the architectural devices that translate political frontage to sacred orientation and thus inscribe identity at the threshold. Within the precinct, the courtyard operates as the central condenser of interstitial life. Figure 3 uncovers the courtyard's modular riwāq system, binding the four iwans into a symmetric





yet differentiated frame. The riwāqs are not mere cloisters; they regulate circulation, stage congregational overflow, and modulate the passage toward flanking spaces (winter prayer halls, madrasas, and service courts) visible as peripheral cellular rings. The plan's tight alternation of solids and voids signals a deliberate hierarchy of thresholds; the ambulatory is a filter that edits movement and view, while the iwans act as perspectival amplifiers, each pulling the body toward a distinct programmatic pole. In Figure 4, the volumetric reading makes clear how the iwan profiles, gallery depths, and balcony layers accumulate as a continuous interstitial envelope around the

court. Climatic intelligence is embedded in these in-between elements. The riwāqs provide deep shade, the courtyard basin sponsors evaporative cooling, and the through-draft between opposing iwans supports summer ventilation. The angled entry sequence doubles as an acoustic and thermal buffer between the noisy, sun-struck Maidan and the shaded court. These are not isolated devices; read together they constitute a microclimatic system whose effectiveness depends precisely on the sequencing and porosity of interstitial layers. The experiential and symbolic dramaturgy is equally inseparable from the interstitial grammar. The route from square to sanctuary is

a didactic progression: the compressed, penumbral hashti resets bodily tempo; the oblique dalān suspends direct vision to the sacred axis; the sudden expansion into the luminous court produces cognitive and affective release; the great qibla iwan then focuses movement toward the domed sanctuary. In Figure 4 this vertical and longitudinal focusing is apparent in the stepped rise of portals and vaults culminating in the dome. Light is filtered along the way (first controlled, then multiplied) so that the spatial pedagogy of the in-between culminates in the sanctum without theatrical discontinuity. The architecture thus converts circulation into ritual and way-finding into spiritual orientation. In identity terms, the mosque demonstrates how Safavid architecture materializes its values in the spaces between: geometry and symmetry organize interstitial frames; hierarchy is enacted as a sequence of thresholds; environment is tempered through shaded galleries and water; sociality is made possible by the capacious court and continuous ambulatory; and symbolic ascent is scripted by the alignment shift and the deepening of spatial focus. Figures 3 and 4 allow this reading to be grounded in evidence rather than general description: the plan registers the logic of modules, edges, and filters; the axonometric clarifies how those logics become volumetric and experiential. Together they confirm that in the Imam Mosque the in-between is the generator of architectural order, not its by-product.

#### Ali Qapu Palace

Set on the western edge of the Maidan, 'Alī Qāpū is not simply a palace; it is the gate-house to the royal precinct, the architectural hinge that converts urban spectacle into courtly

privacy. Read through its sections and elevations (Figure 5) and through the plan-elevation pair (Figure 6), the building discloses a deliberately layered system of interstitial spaces (vestibules, stair shafts, galleries, landings, loggias, and the great tālār) that regulate movement, climate, and vision while scripting the political dramaturgy of rule. In terms of the article's questions, the case demonstrates with unusual clarity how interstitial organization produces experience: the public advances from the arcaded base aligned with the Maidan into a sequence of controlled thresholds that progressively restrict access and intensify focus, while selected viewers are drawn upward to positions of command and display.

Figure 5 makes the vertical stratification explicit. Low, thickened zones at the base accommodate the Maidan-facing iwan and service corridors; above them, stacked reception suites are cut by narrow, steep staircases with tightly spaced landings. These stair shafts (visible as dense vertical bands in the sections) are not neutral circulation: they are filters that meter the ascent, sort bodies by privilege, and choreograph the ceremonial tempo. Landings and mezzanines operate as pause-points where processions can be held, admitted, or redirected, so that the climb itself becomes a social instrument. The sequence culminates in the deep, timber-roofed tālār: an elevated, open-sided hall whose colossal columns sustain a shaded platform projecting toward the square. As an interstitial void suspended between interior and city, the tālār fuses climatic performance with political gaze; it is simultaneously a wind-cooled loggia and a stage from which sovereignty is made visible. Figure 6 clarifies the lateral logic. The plan shows multiple small courts and service pockets embedded within the block, each tied to

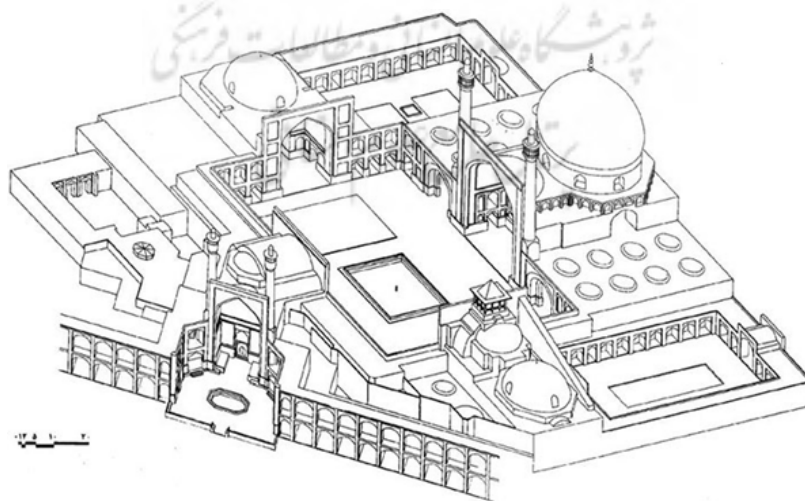


Fig. 4: Imam (Shah) Mosque, axonometric: volumetric reading of interstitial layers



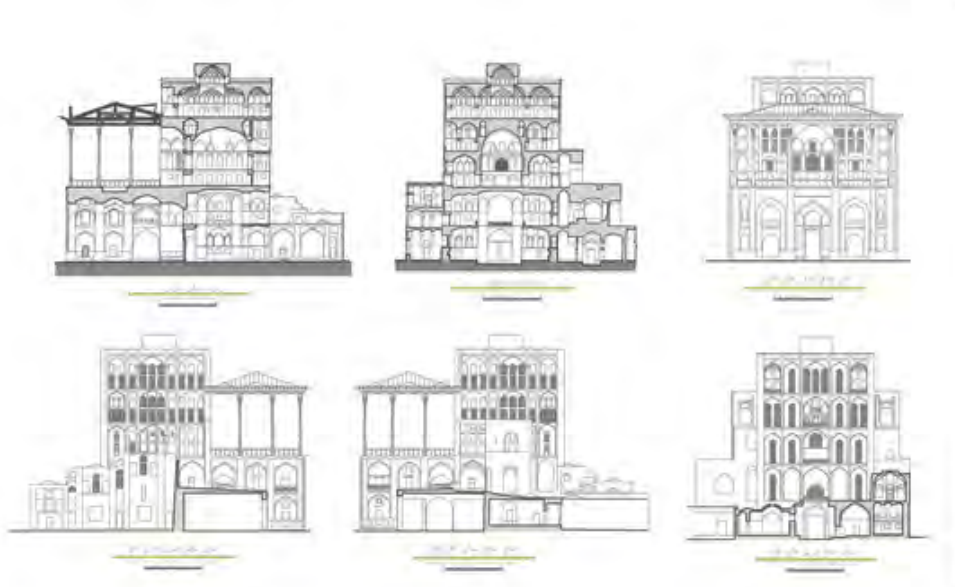


Fig. 5: Composite sections and elevations demonstrating vertical stratification, with stair shafts, mezzanines, and the timber-roofed tālār operating as interstitial filters between interior suites and the Maidan.



Fig. 6: Plan-elevation pair revealing the internal network of courts, corridors, and loggias that sustain controlled circulation and microclimatic moderation while projecting a disciplined public façade toward the square.

corridors that slip behind the principal rooms. These minor voids and passageways form an internal capillary system that allows attendants and guards to circulate without crossing ceremonial axes, while preserving the integrity of processional routes. The façade elevation paired with the plan reveals how the external order (the rhythmic arcades and stacked arches) masks this intricate network of in-between spaces. In effect, the palace reads as a thickened threshold: toward the Maidan

it presents a public face; toward the rear it opens into the royal precinct and gardens; in the middle it is all interstice devices for selection, delay, surveillance, and controlled encounter. Environmental intelligence is inseparable from this interstitial grammar. The deep eaves of the tālār, the porosity of the loggias, and the cross-ventilated galleries generate a stable microclimate at the upper levels, while the masonry mass and enclosed passages below temper diurnal heat swings. The stair

towers, by virtue of their height and small-section shafts, act as thermal chimneys that draw air through adjacent spaces. Thus climate control is not appended to the architecture; it is produced by the very sequence of in-between volumes that also govern access and ceremony. Experientially, the ascent from the Maidan arcades to the tālār recasts movement as ritual. The visitor is withdrawn from the square's horizontal field into a vertical narrative of compression and release (dark stair, light gallery, shaded loggia) each transition recalibrating perception and status. At the summit, the gaze reverses: the court looks out over the city, and the city looks back, the interstitial balcony mediating the exchange. This reciprocity is the architectural articulation of Safavid authority; the palace performs power not behind walls but across thresholds. In identity terms, 'Alī Qāpū demonstrates how Safavid architecture embeds its values in the spaces between. Geometry is legible in the proportional stacking of bays and the measured spacing of columns; hierarchy is enacted in the graded climb and the selective apertures that admit view or withhold it; environmental adaptation is achieved through shaded, ventilated interstices; social and political meaning is staged on the very platforms and galleries that bind interior to city. Figures 5 and 6 ground this reading in evidence: the sections expose the vertical filters; the plan and elevation show how those filters are packed into a compact urban façade to produce a building that is, in essence, an interstitial machine converting public space into sovereign theater.

#### Chaharbagh School in Isfahan

The Chahār-Bāgh School in Isfahan (Madrasa-ye Chahār-Bāgh, early 18th century) represents the culmination of Safavid experimentation with educational architecture, where the identity of the institution is articulated less by the monumentality of halls than by the calibrated depth and density

of its interstitial zones. Unlike the mosque, where thresholds frame a movement from civic square to sacred axis, or the palace, where vertical filters regulate ceremony and gaze, the school materializes its purpose (pedagogy, devotion, and civic integration) through a horizontal web of courtyards, galleries, and gardens that bind urban commerce, scholarly practice, and cosmological symbolism into a single architectural language. Figure 7 discloses the ensemble's urban interface. Here, the madrasa is not an isolated institution but is sutured to caravanserai, bazaar, and ancillary services. This adjacency is not incidental; it operationalizes the waqf endowment by making the very threshold of the school a fiscal and social filter. The bazaar galleries and forecourts absorb the city's flux, slow the rhythm of movement, and recalibrate sensory registers (noise, shadow, and pace) before releasing the visitor into the central court. In contrast to the Imam Mosque's dramatic realignment, the power of this transition lies in the modulation of thresholds: vestibule, passage, and riwāq are tightened and loosened with measured cadence, ensuring that entry into the scholastic precinct is neither abrupt nor anonymous. The interstitial fabric here is pedagogical: it rehearses composure before instruction begins. At the core, the courtyard-garden becomes the principal condenser of interstitial life. Figure 8 illustrates the logic of the chahār-bāgh typology: a cruciform system of walkways and water channels divides quadrants of planting; a central basin anchors the geometry; and a ring of riwāqs distributes access to hujrah (cells), lecture halls, and the mosque. These riwāqs, far from being residual corridors, are shaded seminar spaces where informal teaching, recitation, and disputation occur. The four axial iwans intensify this didactic sequence by providing spatial stages that balance orientation with enclosure. In climatic terms, the interstices are the architecture's environmental intelligence: arcades temper insolation, water surfaces drive evaporative cooling, and

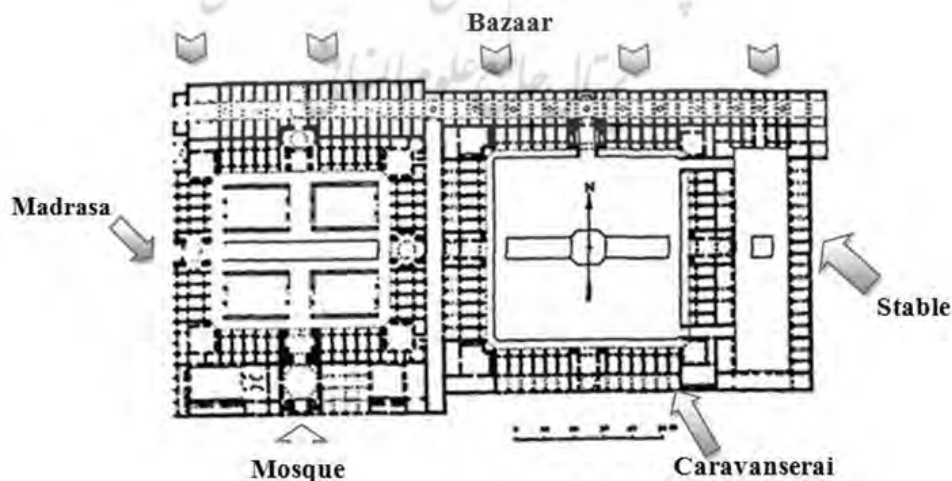


Fig. 7: Plan of the Chahār-Bāgh ensemble showing madrasa, caravanserai, bazaar, mosque, and stables

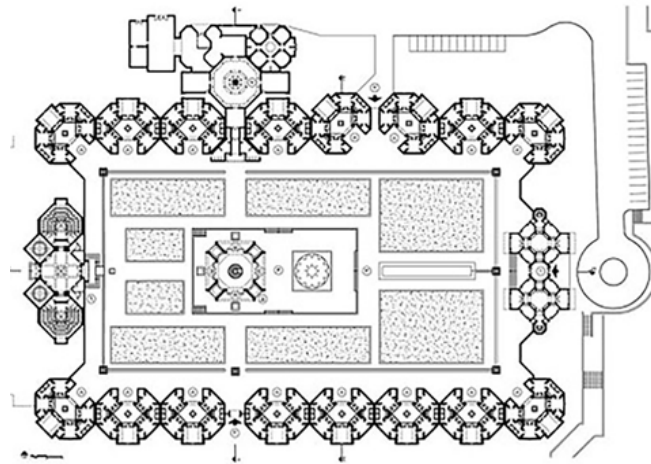


Fig. 8: Analytical plan of the chahār-bāgh courtyard system.

cross-drafts through opposing galleries ventilate the precinct. Crucially, these climatic functions are inseparable from symbolic meaning; the garden is simultaneously a device of thermal comfort and a re-enactment of paradise. The hierarchy of access is inscribed in these thresholds. From bazaar to vestibule, from gallery to cell, permeability diminishes and privacy increases. What in the domestic house was articulated as *andarūnī/bīrūnī* here becomes a scholastic zoning: public exchange in bazaar and court, semi-public study in *riwāq*, private reflection in *hujrah*. The cells themselves, with their attached micro-iwans, function as personal interstices where learning spills into the shaded collective walk. Thus the architecture spatializes the oscillation between communal pedagogy and individual contemplation. The small mosque, deliberately displaced from the center, signals that sacred devotion and intellectual pursuit are to be experienced in alternation rather than in fusion: the student's daily trajectory weaves seamlessly between mosque, court, and cell without monumental rupture. Economically and politically, the Chahār-Bāgh complex occupies a critical interstice within the urban organism of Isfahan. Its bazaar frontage and caravanserai do not dilute its scholastic mission; they fund and secure it, embedding the madrasa within circuits of trade and patronage while projecting Safavid authority. The monumental gate is thus both filter and emblem: it calibrates porosity, admitting the city in a regulated manner while declaring the institution's prestige to the urban body. The architectural identity of the Chahār-Bāgh School is therefore forged not in monumental isolation but in controlled porosity. The interstitial spaces (*riwāqs*, vestibules, corridors, and gardens) are not connective tissue but active pedagogical, climatic, and symbolic instruments. They instruct as much through shade, cadence, and sequence as through lectures in halls. In this sense, the madrasa exemplifies the Safavid genius for translating cosmology into architectural pedagogy: paradise and curriculum are rendered not as abstract ideals but as lived,

spatially choreographed experience.

### Discussion

This study examined how interstitial spaces were organized in Safavid architecture and how they contributed to the articulation of architectural identity. Synthesizing the thematic coding from expert interviews with evidence from the three case studies, the findings demonstrate that Safavid architects consistently mobilized transitional domains not as architectural residues but as deliberate instruments of order, environment, ritual, and ideology. In Safavid practice, the in-between emerges as the generative locus of design where geometry, social codes, and cosmological symbolism converge. Across all cases, the first principle of organization was geometric order, expressed through proportional modularity and symmetry. Experts emphasized that these were not merely decorative but ontological frameworks an observation that substantiates Bonner's (2017) detailed analysis of proportional canons. Similarly, Hillenbrand (1994) described Safavid form as governed by geometric pragmatics, though his account treated them largely as compositional devices. The present findings extend this perspective: geometry did not simply order façades but structured bodily movement, perceptual focus, and circulation. In the Imam Mosque, the off-axis entry sequence realigns civic orientation with the qibla, demonstrating how geometry can transform spatial misfit into ritual pedagogy. At 'Alī Qāpū, geometry operates vertically: stair towers and landings regulate bodily ascent, converting circulation into ceremony. At Chahār-Bāgh, geometry is expressed through the chahār-bāgh garden: an orthogonal cruciform grid that simultaneously organizes pedagogy, climate, and symbolic order.

A second recurrent theme was the role of interstices as climatic regulators. Memarian and Brown (2003) demonstrated that Iranian courtyards created microclimates through shade,



ventilation, and water surfaces. The case analyses corroborate and extend their conclusions. At the Imam Mosque, *riwāqs* and basin pool temper the harsh Isfahan summer, while angled *dalān* act as thermal buffers. At 'Alī Qāpū, the porous *tālār* doubles as a loggia open to prevailing breezes, while stair shafts function as thermal chimneys. At Chahār-Bāgh, deep galleries, planted quadrants, and water channels provide a sustainable microclimate for scholars. Unlike earlier studies that treated climate responsiveness as utilitarian, the present analysis shows that environmental and symbolic roles were fused: the same garden that cooled the body also signified paradise (Moynihan, 1980).

Interstitial spaces also mediated social practice. Diba (2001) emphasized the domestic courtyard as a code of privacy and segregation, while Babaie (2008) examined conviviality and political sociability in Safavid urbanism. Both perspectives find confirmation in the present study but with nuance. In the Imam Mosque, the courtyard provided a civic forum for communal prayer as much as a spiritual threshold. In 'Alī Qāpū, staircases and galleries orchestrated ceremony and controlled visibility, enacting hierarchy spatially. At Chahār-Bāgh, *riwāqs* served as semi-public pedagogical stages where students recited, debated, and interacted spaces of collective learning rather than isolation. Thus, interstices are shown not as neutral passages but as active instruments of social regulation and cultural inscription. Earlier studies highlighted the symbolic richness of Safavid interstices, Necipoğlu (1995) on geometry as cosmology, Alemi (2010) on light and shadow, and Sattarzadeh and Mohammadi (2013) on perceptual experience. The present findings corroborate these but also demonstrate how sensory orchestration was sequential and didactic. In the Imam Mosque, movement from vestibule through court to iwan was calibrated as a pedagogy of orientation compression, expansion, and luminous climax guiding worshippers toward transcendence. At 'Alī Qāpū, dark stairwells released into bright loggias, staging shifts in perception that mirrored social privilege. At Chahār-Bāgh, the oscillation between shaded *riwāqs* and sunlit garden plots cultivated a rhythm of attention between intellectual and spiritual tasks. These sequences confirm that Safavid architects used interstitial design to train the body and senses in alignment with cosmological and moral order. Scholars such as Blake (1999) and Mitchell (2007) emphasized the political theater of Safavid urbanism. The present study demonstrates that interstitial spaces were the principal instruments of this theater. At 'Alī Qāpū, the elevated *tālār* overlooking Naqsh-e Jahān Square materialized sovereignty in architectural form: a suspended void mediating ruler and people. At the Imam Mosque, the monumental qibla iwan framed communal identity as religious order under Safavid patronage. At Chahār-Bāgh, the monumental gate and bazaar linkage tied pedagogy directly to commerce and endowment, projecting the dynasty's commitment to knowledge and piety. In each case, political

legitimacy was performed across thresholds (balconies, iwans, gates) rather than concealed in inner chambers.

A central contribution of this study is to integrate strands that scholarship has kept separate. Environmental analyses (Memarian & Brown, 2003; Heidari, 2010) have often been divorced from symbolic accounts (Necipoğlu, 1995; Moynihan, 1980) and from socio-political readings (Babaie, 2008; Mitchell, 2007). The six-domain thematic framework developed here demonstrates that these are not parallel but interdependent logics. Geometry orders hierarchy; hierarchy choreographs ritual; ritual intensifies sensory awareness; sensory awareness is coupled to climatic comfort; and all are mobilized as political theater. Safavid interstices thus functioned as compound technologies environmental, social, symbolic, and ideological at once. Comparative reading sharpens how this shared grammar was inflected across building types. The mosque privileges axial realignment and spiritual pedagogy; the palace privileges vertical filtration and ceremonial gaze; the madrasa privileges horizontal porosity and pedagogical composure. Yet all three deploy interstices to mediate between urban flux and institutional interior, to regulate environment, and to encode values. This convergence suggests that the architectural identity of Safavid Isfahan is lodged not in isolated monuments but in the systemic logic of its interstitial fabric. The implications extend beyond Safavid historiography. First, analyses that isolate domes, façades, or ornament without attending to transitional sequences misread the Safavid project. The true subject is the sequence not the object. Second, the six-domain framework offers a comparative model for other Islamic and Persianate traditions (Timurid antecedents, Mughal parallels, Qajar continuities) and for contemporary design challenges where climate, sociability, and symbolism must be reintegrated. Third, methodologically, the triangulation of literature, expert interviews, and case studies has allowed us to recover interstices as active, polyvalent devices, rather than as mere circulation or background. The discussion demonstrates that interstitial spaces were the crucibles where Safavid architects materialized their synthesis of geometry, environment, society, and cosmology. It is precisely in the calibrated passage between thresholds (vestibule, *riwāq*, iwan, *tālār*, garden) that the identity of Safavid architecture is most powerfully inscribed.

## CONCLUSION

The analysis undertaken in this study demonstrates that the architectural distinctiveness of Safavid Isfahan is not reducible to its monumental domes or lavish ornamentation, but is instead inscribed in the interstitial fabric that mediates between the monumental and the everyday. By examining the Imam Mosque, 'Alī Qāpū Palace, and the Chahār-Bāgh School, it has been shown that Safavid architects mobilized thresholds, corridors, galleries, gardens, and terraces as polyvalent

instruments that structured movement, moderated climate, enacted hierarchy, and materialized cosmological and political order. The conclusion to be drawn is not a restatement of findings but a reframing: interstitial design must be understood as the operative grammar of Safavid architecture. This grammar fused domains that scholarship has often treated in isolation (geometry and climate, ritual and politics, pedagogy and cosmology) into an indivisible system of space. Safavid architects did not treat transitional zones as connective residue; they endowed them with agency, making them the very sites where architectural identity was forged and performed. The implications are twofold. First, for historiography, this perspective challenges the persistent tendency to privilege surfaces and monuments while neglecting the sequences that organize experience. A more accurate account of Safavid architecture must therefore be written not from the façade outward but from the interstice inward. Second, for contemporary design, the Safavid project offers a precedent for integration: environmental responsiveness, cultural codes, and symbolic narratives can be synthesized spatially in the in-between rather than treated as separate design agendas. Ultimately, the Safavid achievement lies in transforming passages into places, thresholds into stages, and spatial voids into vessels of meaning. Recovering the centrality of interstitial spaces not only clarifies a historical legacy but also reasserts the continuing relevance of architecture's most overlooked dimension: the power of the in-between to bind climate, community, and cosmology into a coherent architectural language.

## REFERENCE

- Aghadavoudi, M. (2019). Analysis of decorative elements in educational-religious buildings of the Safavid period: Case studies (Molla Abdullah, Chaharbagh, and Ali Qoli Agha). *Islamic Culture and Civilization History*, 10(37), 69–86.  
<https://civilica.com/doc/920118>
- Ahmadi, M., Farkish, H., Ahmadi, V., & Mirzakochak Khoshnevis, A. (2020). Recognition of the relationship between architectural codes of mosques and the quality of worshipers' spiritual presence (Case study: Safavid era mosques in Isfahan). *Islamic Architecture and Urbanism Culture*, 5(2), 51–74.  
<https://civilica.com/doc/1134901>
- Alemi, M. (2010). The reflection of Safavid palaces in European travel accounts. In S. Babaie & T. Grigor (Eds.), *Iran and the world in the Safavid age* (pp. 223–240). London, England: I.B. Tauris.  
<https://www.bloomsbury.com/uk/iran-and-the-world-in-the-safavid-age-9781845117450/>
- Ardalan, N., & Bakhtiar, L. (1973). *The sense of unity: The Sufi tradition in Persian architecture*. Chicago, IL: University of Chicago Press.  
<https://press.uchicago.edu/ucp/books/book/distributed/S/bo5977274.html>
- Babaie, S. (1994). *Safavid palaces at Isfahan: Continuity and change (1590–1666)* [Doctoral dissertation, New York University]. ProQuest Dissertations Publishing.  
<https://www.proquest.com/docview/304115252>
- Babaie, S. (2008). *Isfahan and its palaces: Statecraft, Shi'ism and the architecture of conviviality in early modern Iran*. Edinburgh, Scotland: Edinburgh University Press.  
<https://edinburghuniversitypress.com/book-isfahan-and-its-palaces.html>
- Babayan, K. (2002). *Mystics, monarchs, and messiahs: Cultural landscapes of early modern Iran* (Vol. 35). Cambridge, MA: Harvard University, Center for Middle Eastern Studies.  
<https://cmes.fas.harvard.edu/publications/mystics-monarchs-and-messiahs>
- Belilan Asl, L., Etesam, I., & Islami, S. G. (2011). The role of interstitial spaces in defining spatial identity in the historical textures of Iran. *City Identity*, 5(8), 59–71.  
<https://civilica.com/doc/140765>
- Blair, S. S., & Bloom, J. M. (1999). *The art and architecture of Islam: 1250–1800*. New Haven, CT: Yale University Press.  
<https://yalebooks.yale.edu/book/9780300088670/the-art-and-architecture-of-islam-1250-1800/>
- Blake, S. P. (1999). *Half the world: The social architecture of Safavid Isfahan, 1590–1722*. Costa Mesa, CA: Mazda Publishers.  
<https://www.worldcat.org/title/42293558>
- Diba, L. (2001). Residential architecture in Safavid Persia: Continuity and change. In *Studies in Persian art and architecture* (pp. 45–60). Tehran, Iran: Tehran University Press.  
<https://www.worldcat.org/title/47573612>
- Esmaeili, A., & Piri, S. (2020). Examining the necessity of interstitial spaces in a macro scale with transitional characteristics, focusing on the concept of indoor-outdoor connection (Case study: Transitional spaces in four domestic and international public complexes). *Haft Hesar Environmental Studies*, 9(33), 79–92.  
<https://civilica.com/doc/1119348>
- Gholami, M., & Rezaei, M. (2018). Analysis of interstitial spaces in Safavid mosques. *Iranian Architecture Studies Journal*, 6(1), 110–123.  
<https://civilica.com/doc/937572>
- Grabar, O. (1987). *The formation of Islamic art* (Rev. and enl. ed.). New Haven, CT: Yale University Press.  
<https://yalebooks.yale.edu/book/9780300040463/the-formation-of-islamic-art/>
- Hakim, B. S. (1990). The Islamic city and its architecture: A review essay. *Third World Planning Review*, 12(1), 75–90.  
<https://doi.org/10.3828/twpr.12.1.v58u81r8g81613h1>
- Hedayati, F., Soheili, J., & Rahbarimanesh, K. (2023). Examining the connection between the configuration of in-between spaces and the quality of flexibility by focusing

- on adaptability in Seljuk Grand Mosques. *The Monthly Scientific Journal of Bagh-e Nazar*, 20(126), 17–34. <https://doi.org/10.22034/bagh.2023.378019.5311>
- Heidari, S. (2010). Climatic analysis of the traditional Iranian courtyard as a passive cooling system. *International Journal of Sustainable Energy*, 29(4), 245–256. <https://doi.org/10.1080/14786450701770852>
- Hillenbrand, R. (1994). *Islamic architecture: Form, function, and meaning*. New York, NY: Columbia University Press. <https://cup.columbia.edu/book/islamic-architecture/9780231101320>
- Karimi, M., Hosseinpour Tovani, N., & Delshad Siyahkali, M. (2020). Comparative study of interstitial spaces in Iranian and global architecture. *Architecture Studies*, 3(17), 1–13. <https://civilica.com/doc/1139333>
- Mahboobi, G., Mokhtabad, M., Etesam, I., & Attarabbasi, M. (2018). Symbiosis of inside and outside in architecture of the Naqsh-e Jahan Square. *The Monthly Scientific Journal of Bagh-e Nazar*, 15(58), 51–64. [https://www.bagh-sj.com/article\\_68932.html](https://www.bagh-sj.com/article_68932.html)
- Mahboobi, Q., Mokhtabad, S. M., Etesam, I., & Attar Abbasi, M. (2018). The coexistence of interior and exterior architecture in Naqsh-e Jahan Complex. *Bagh-e Nazar*, 15(58), 51–64. [https://www.bagh-sj.com/article\\_68932\\_en.html](https://www.bagh-sj.com/article_68932_en.html)
- Memarian, G., & Brown, F. E. (2003). Climate, culture, and religion: Aspects of the traditional courtyard house in Iran. *Journal of Architectural and Planning Research*, 20(3), 181–198. <https://www.jstor.org/stable/43030656>
- Mitchell, K. (2004). *Iranian cities: Formation and development*. Syracuse, NY: Syracuse University Press. <https://press.syr.edu/supressbooks/245/iranian-cities/>
- Momeni, K. (2018). Comparative analysis of transparency in the body and design of houses from the Safavid and Qajar periods in Isfahan. *Islamic Architecture Research*, 6(1), 23–42. <https://civilica.com/doc/1123421>
- Morgan, D. O. (2013). Iran and the world in the Safavid age. *International Journal of Turkish Studies*, 19(1–2), 153–155. <https://www.jstor.org/stable/43855308>
- Mousavi Haji, S. R., Taghavi, A., & Sharifi Nejad, S. (2014). Comparative research on the spatial structure of Persian gardens in the Safavid and Mughal eras. *Subcontinent Studies*, 6(21), 151–167. <https://civilica.com/doc/309561>
- Moynihan, E. B. (1980). *Paradise as a garden in Persia and Mughal India*. New York, NY: George Braziller. <https://www.worldcat.org/title/6364924>
- Necipoğlu, G. (1996). *The Topkapi scroll: Geometry and ornament in Islamic architecture*. Los Angeles, CA: Getty Publications. <https://www.getty.edu/publications/topkapiscroll/>
- Nejad Ebrahimi, A., Qara Baglou, M., & Vafaei, S. M. (2018). Factors affecting communication and semiotics in architecture – Case study: Blue Mosque of Tabriz. *Javidan Kherad*, 15(34), 179–202. <https://civilica.com/doc/852478>
- Piravolia, M., & Soheili, J. (2017). Quality of interstitial spaces in historical passages: Case study of Saghrisazan Passage in Rasht City. *Iranian Architecture and Urbanism*, 8(1), 33–48. <https://civilica.com/doc/715432>
- Rostami Ghalelani, M., & Bakhtiarimanesh, E. (2021). Examining the interior-exterior relationship and its evolution in Iranian mosques (from the beginning to the Safavid era). *Architecture of Hot and Dry Climates*, 9(13), 119–138. <https://civilica.com/doc/1202818>
- Sattarzadeh, D., & Mohammadi, M. (2013). The analysis of light and color in Islamic architecture: Case study of Sheikh Lotfollah Mosque. *European Online Journal of Natural and Social Sciences*, 2(3), 2553–2560. <https://european-science.com/eojnss/article/view/2832>
- Tavakoli Arian, A., Foroutan, M., & Nazari Arshad, R. (2022). Arrangement of Iranian palaces in Azari architecture style: Comparative study of furnishings, interior architectural elements, and illustrations from the 7th to 11th centuries AH (13th to 17th AD). *Islamic Art Iconography*, 9(24), 1427–1456. <https://civilica.com/doc/1500944>
- Blair, S. S. (1998). *Islamic arts*. London, England: Phaidon Press. <https://www.worldcat.org/title/39728247>
- Babaie, S. (2008). *Isfahan and its palaces: Statecraft, Shi'ism and the architecture of conviviality in early modern Iran*. Edinburgh, Scotland: Edinburgh University Press. <https://edinburghuniversitypress.com/book-isfahan-and-its-palaces.html>
- Bonner, J. (2017). *Islamic geometric patterns: Their historical development and traditional methods of construction*. Cham, Switzerland: Springer. <https://doi.org/10.1007/978-3-319-69977-6>

