

Review of Iranian Geometrical Patterns in Facade Design

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ABSTRACT

This article presents a comprehensive review of the rich tradition of Iranian repeating geometrical patterns in facade design, a crucial element of Persian architectural heritage. It explores the historical evolution of these patterns from ancient Persia, highlighting their development through key architectural periods, including the Seljuk, Safavid, and Qajar dynasties. The article delves into the characteristics of these intricate designs, examining their various motifs, colors, and arrangements, as well as the materials and techniques used to create them. Additionally, the review addresses the applications of these patterns in both religious and secular architecture, emphasizing their role in conveying cultural and spiritual meanings. The mathematical relationships and governing geometry of these designs are analyzed, revealing how concepts such as symmetry and proportion contribute to their aesthetic appeal and structural integrity. A detailed table summarizes the findings, categorizing various patterns and their historical contexts. The conclusion emphasizes the significance of these patterns in both historical and contemporary contexts, advocating for their integration into modern architectural practices. This exploration ultimately underscores the enduring influence of Iranian geometrical patterns, inspiring designers to draw upon this rich heritage while fostering continuity in architectural identity.

Keywords: geometrical pattern, façade, architectural periods, characteristics

1. INTRODUCTION

Iranian architecture is renowned for its intricate and diverse geometrical patterns, particularly in facade design. These patterns serve not only as decorative elements but also as reflections of cultural, religious, and philosophical ideals. Often perceived as visual poetry, they encapsulate the essence of Persian identity and tradition, weaving together narratives that resonate through the ages. The meticulous craftsmanship involved in creating these designs showcases not only artistic skill but also a deep-rooted understanding of mathematics, geometry, and aesthetics [1]. This review aims to systematically analyze the existing literature on these patterns, categorizing them into distinct styles and motifs, while providing insights into their applications throughout history and into the modern era. By exploring the significance of these patterns, we can uncover the ways in which they have influenced architectural practices and continue to inspire contemporary design.

2. HISTORICAL CONTEXT

The use of geometrical patterns in Iranian architecture dates back to ancient times, reflecting a profound understanding of mathematical principles and aesthetics. This intricate art form can be traced to the early civilizations of Persia, where geometric designs emerged as a means to convey complex ideas and values. The patterns often symbolize the relationship between the earthly and the divine, embodying the spiritual

beliefs of the society. As various dynasties rose and fell, they each contributed to the evolution of these patterns, leaving an indelible mark on the architectural landscape [2].

The Achaemenid period (c. 550-330 BCE) showcased early examples of geometric motifs, often seen in the reliefs and decorative elements of palatial architecture. However, it was during the Islamic Golden Age, particularly under the Seljuk (11th-12th centuries) and Safavid (16th-18th centuries) dynasties, that the use of geometrical patterns became more pronounced and sophisticated. The Seljuks integrated intricate tile work and stucco designs into their mosque facades, while the Safavids elevated these patterns to new heights, employing complex star motifs and tessellations that exemplified the mathematical precision of the time [1].

The Qajar dynasty (19th century) further continued this tradition, embracing both traditional motifs and influences from Western architecture, resulting in a unique fusion that characterized the era. Throughout these periods, geometrical patterns served not only aesthetic purposes but also educational functions, teaching principles of symmetry, proportion, and harmony to both artisans and the public [3].

In modern times, the revival of interest in these historical patterns is evident in contemporary architectural practices, where designers seek to harmonize traditional motifs with modern materials and techniques. This blending of old and new not only honors the rich history of Iranian architecture but also provides a platform for innovation and sustainable design practices. By examining the historical context of geometrical patterns, we can better understand their enduring significance and potential for future applications in both Iran and the global architectural discourse [4].

3. OVERVIEW OF PRIMARY PATTERNS

Iranian architecture is characterized by its intricate geometrical patterns, each with unique shapes and meanings. These patterns are not only visually appealing but also embody cultural, religious, and philosophical ideals. The following sections provide an in-depth exploration of various geometric patterns commonly found in Iranian architecture, detailing their characteristics, applications, geometric designs, advantages, mathematical relationships, historical periods, and significant architectural examples. Table 1 shows the summary of whole primary patterns.

3.1 Square and Rectangle Patterns

Square and rectangle patterns form the foundational building blocks of many designs in Iranian architecture. These basic geometric shapes are often arranged in repeating sequences, creating a sense of order and harmony in the structures they adorn. Their versatility makes them suitable for various applications, including courtyards, walls, and flooring (figure 1). The geometric design of these patterns typically utilizes simple Cartesian coordinates, allowing for straightforward construction processes. The advantages of square and rectangle patterns lie in their ease of construction and adaptability, making them a popular choice among architects and artisans throughout history [5].

Mathematically, the area and perimeter calculations for square and rectangle patterns are straightforward, facilitating their use in architectural planning. Historically, these patterns have been widely used since the Achaemenid Empire, which flourished between the 6th and 4th centuries BCE. Significant applications can be observed in ancient Persian palaces, where these geometric forms were employed to create visually striking and structurally sound designs. The enduring legacy of square and rectangle patterns demonstrates their importance in the evolution of Iranian architectural aesthetics [6].



Fig. 1. A sample of square and rectangle pattern in design (a) and implementation (b)

3.2 Circle and Semicircle Patterns

Circle and semicircle patterns are prominent features in Iranian architecture, symbolizing unity and eternity. These circular motifs are often used in domes and arches, creating a sense of grandeur and continuity in the structures they embellish. As shown in figure 2, the geometric design of these patterns is based on the properties of circles, particularly their diameters and radii, which allow for intricate yet harmonious designs [6].

The advantages of circular patterns lie in their effectiveness in distributing loads across architectural structures, making them ideal for large-span constructions such as domes. Mathematically, the relationships involved in these patterns often include calculations related to π (pi) and the radius, highlighting their connection to fundamental geometric principles. The prominence of circle and semicircle patterns can be traced back to the Sassanian period (3rd-7th centuries CE), during which architectural innovations flourished. Notable examples of these patterns can be found in the Great Mosque of Kufa, where their use contributes to the overall aesthetic and structural integrity of the building [7].

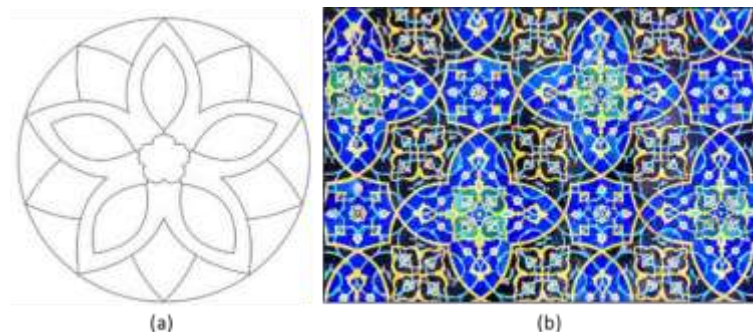


Fig. 2. A sample of circle and semicircle pattern in design (a) and implementation (b)

3.3 Pentagonal Patterns

Pentagonal patterns, characterized by their five-sided shapes, create complex and visually captivating designs in Iranian architecture. These patterns are commonly found in decorative tile work and architectural motifs, adding depth and interest to the surfaces they adorn. The geometric design of pentagonal patterns can be derived from dividing a circle into five equal parts, resulting in a harmonious arrangement that captures the eye [8]. Figure 3 is an instance of pentagonal Persian pattern.

The aesthetic depth and complexity of pentagonal patterns are among their greatest advantages, allowing for creative expression and artistic exploration in architectural design. Mathematically, these patterns are often related to the golden ratio, which enhances their visual appeal and harmony. The popularity of pentagonal patterns surged during the Islamic Golden Age (8th-14th centuries), a period marked by significant advancements in art and architecture. An important application of pentagonal patterns can be observed in the Shah Cheragh tomb, where intricate tile work showcases the beauty and intricacy of this geometric form [9].

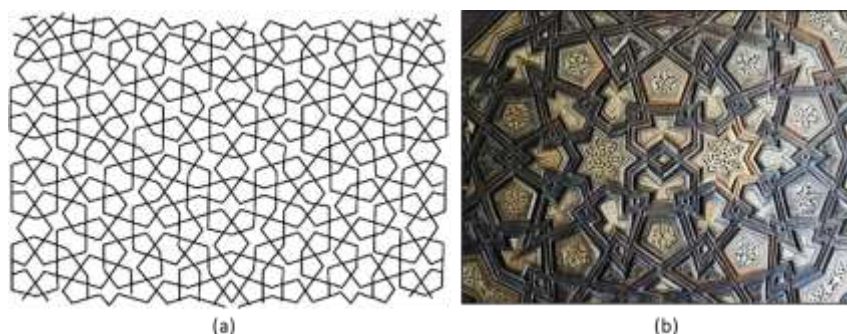


Fig. 3. A sample of pentagonal pattern in design (a) and implementation (b)

3.4 Hexagonal Patterns

Hexagonal patterns, defined by their six-sided shapes, are known for creating tessellating designs that efficiently utilize space. These patterns are commonly found in tile work and surface decorations, contributing to the overall aesthetic coherence of architectural designs. Figure 4 shows that the geometric design of hexagonal patterns is formed by arranging equilateral triangles, resulting in a visually striking and mathematically interesting arrangement [1].

One of the key advantages of hexagonal patterns is their high efficiency in space usage, allowing for seamless integration into various architectural elements. Mathematically, hexagonal tiling principles are employed to create these designs, emphasizing the geometric relationships inherent in the arrangement. Historically, hexagonal patterns gained prominence during the Safavid period (16th-18th centuries), a time when Persian architecture experienced a renaissance of artistic expression. The Sheikh Lotfollah Mosque serves as a notable example of hexagonal patterns, where the intricate tile work showcases the beauty and sophistication of this geometric form [8].

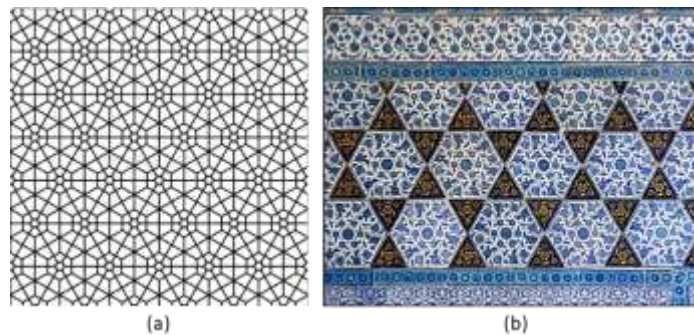


Fig. 4. A sample of hexagonal pattern in design (a) and implementation (b)

3.5 Octagonal Patterns

Octagonal patterns, characterized by their eight-sided shapes, are often utilized in complex designs that add visual interest to architectural elements. These patterns are commonly found in domes and decorative art, enhancing the overall aesthetic of the structures they adorn. The geometric design of octagonal patterns is formed by extending the sides of a square, resulting in a balanced and symmetrical arrangement [2].

The advantages of octagonal patterns lie in their ability to offer variations in design while maintaining a sense of symmetry. Mathematically, these patterns are related to both squares and circles, highlighting the interconnectedness of different geometric forms in architectural design. The historical use of octagonal patterns can be traced back to the early Islamic period (7th century onward), where they were employed to create visually captivating structures. An important application of octagonal patterns can be observed in the Jameh Mosque of Isfahan, where the intricate designs contribute to the mosque's grandeur and architectural significance [3].



Fig. 5. A sample of octagonal pattern in design (a) and implementation (b)

3.6 Decagonal and Dodecagonal Patterns

Dodecagonal patterns, defined by their twelve-sided shapes, enable the creation of intricate designs that captivate the viewer's imagination. These patterns are often seen in decorative tiles and architectural details,

adding a unique visual complexity to the surfaces they adorn. The geometric design of dodecagonal patterns is derived from dividing a circle into twelve equal sections, resulting in a harmonious arrangement that showcases the beauty of symmetry [4].

One of the key advantages of dodecagonal patterns is their ability to add unique visual complexity to architectural designs, making them stand out in a crowded visual landscape. Mathematically, these patterns are related to circular geometry and symmetry, emphasizing the deep connections between different geometric forms (figure 6). The historical popularity of dodecagonal patterns gained traction during the Qajar period (18th-20th centuries), a time marked by a resurgence of interest in traditional Persian art and architecture. Notable examples of dodecagonal patterns can be found in the Golestan Palace, where the intricate designs reflect the artistic mastery of the period [5].

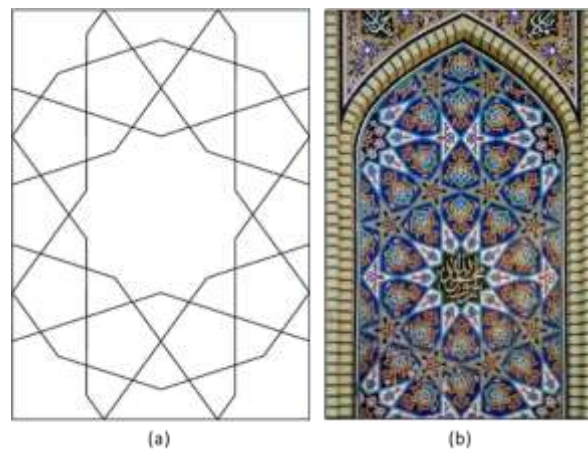


Fig. 6. A sample of decagonal pattern in design (a) and implementation (b)

3.7 Six-Pointed Stars

Six-pointed stars, formed by the intersection of two overlapping triangles, are rich in symbolism and are commonly used in religious and cultural motifs. These geometric designs are not only visually striking but also carry deep meanings related to duality and balance (figure 7). The applications of six-pointed stars are widespread, often appearing in religious architecture, decorative arts, and cultural artifacts [2].

The geometric design of six-pointed stars is based on the principles of trigonometry, reflecting the intricate mathematical relationships that underpin their formation. One of the primary advantages of these patterns is their visually striking nature, which draws attention and evokes a sense of wonder. Historically, six-pointed stars have been prominent since the early Islamic era, where they served as powerful symbols in various contexts. An important application can be found in the Imam Mosque, where the intricate use of six-pointed stars contributes to the mosque's overall aesthetic and spiritual significance [1, 3].

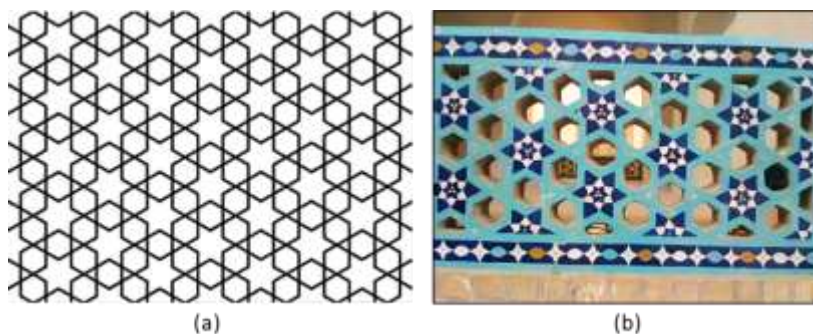


Fig. 7. A sample of six-pointed star pattern in design (a) and implementation (b)

3.8 Eight-Pointed and Ten-Pointed Stars

Eight-pointed stars present a more complex star shape with multiple points, offering depth and movement in design. These geometric patterns are often used in decorative tile work and ceilings, adding a dynamic

quality to the architectural elements they adorn. As shown in figure 8 the geometric design of eight-pointed stars is derived from overlapping polygons, resulting in intricate forms that capture the eye [5].

One of the primary advantages of eight-pointed stars is their ability to create a sense of depth and movement in design, enhancing the overall visual experience of the space. Mathematically, these patterns involve advanced geometric transformations, showcasing the complexity of their construction. The development of eight-pointed stars can be traced back to the Safavid period, where they became popular in various decorative contexts. Notable examples of eight-pointed stars can be seen in the Ali Qapu Palace, where their intricate designs contribute to the palace's grandeur and artistic richness [3].

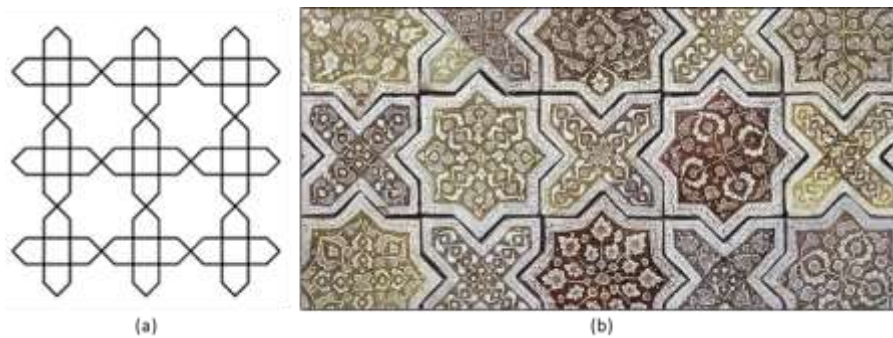


Fig. 8. A sample of eight-pointed star pattern in design (a) and implementation (b)

Table 1. Summary of primary patterns

#	Pattern Type	Characteristics	Applications	Geometric Design	Advantages	Historical Period	Important Applications
1	Square and Rectangle	Basic geometric shapes	Courtyards, walls, flooring	Simple Cartesian coordinates	Easy to construct, versatile	Achaemenid (6th – 4th century BCE)	Ancient Persian palaces
2	Circle and Semicircle	Circular motifs	Domes, arches	Properties of circles	Effective load distribution	Sassanian (3th-7th century CE)	Great Mosque of Kufa
3	Pentagonal	Five-sided shapes	Decorative tile work	Dividing a circle into five parts	Aesthetic depth, complexity	Islamic Golden Age (8th-14th century CE)	Shah Cheragh tomb
4	Hexagonal	Six-sided shapes	Tile work, surface decorations	Arranging equilateral triangles	Efficient space usage	Safavid (16th-18th century CE)	Sheikh Lotfallah Mosque
5	Octagonal	Eight-sided shapes	Domes, decorative art	Extending sides of a square	Symmetrical variations	Early Islamic (6th century CE)	Jameh Mosque of Isfahan
6	Dodecagonal	Twelve-sided shapes	Decorative tiles	Dividing a circle into twelve parts	Unique visual complexity	Qajar (18th-20th century CE)	Golestan Palace
7	Six-Pointed Stars	Overlapping triangles	Religious and cultural motifs	Intersection of triangles	Striking visuals, rich symbolism	Early Islamic (6th century CE)	Imam Mosque
8	Eight-pointed Stars	Complex star shape	Decorative tiles, ceilings	Overlapping polygons	Depth and movement	Safavid (16th-18th century CE)	Ali Qapu Palace

4. OVERVIEW OF SECONDARY PATTERNS

In general, a hybrid model combines different elements or systems to create a unified and versatile framework [10]. This approach enables more complex and comprehensive results by leveraging the strengths of each component [11, 12]. In architecture, secondary patterns are considered hybrid patterns derived from primary ones, merging foundational designs to produce innovative, adaptive, and multifaceted architectural solutions. The relationship between the primary patterns of Iranian architectural patterns and the geometric forms in the secondary patterns can be traced through the evolution of design and artistry that characterized various historical periods in Iran. Each first pattern demonstrates a unique application or combination of the geometric forms found in the secondary patterns, showcasing the rich heritage of Iranian architecture [3].

4.1 Islimi

Islimi is characterized by intricate, flowing designs that often depict floral and vegetal motifs, showcasing a deep connection to nature. This style emerged prominently during the Islamic Golden Age, particularly from the 8th century onwards. Figure 9 shows that the Islimi pattern often integrates elements from the Circle and Semicircle, Square and Rectangle, and Symmetrical Geometric Grids, reflecting a harmonious blend of geometric precision and organic forms [9].

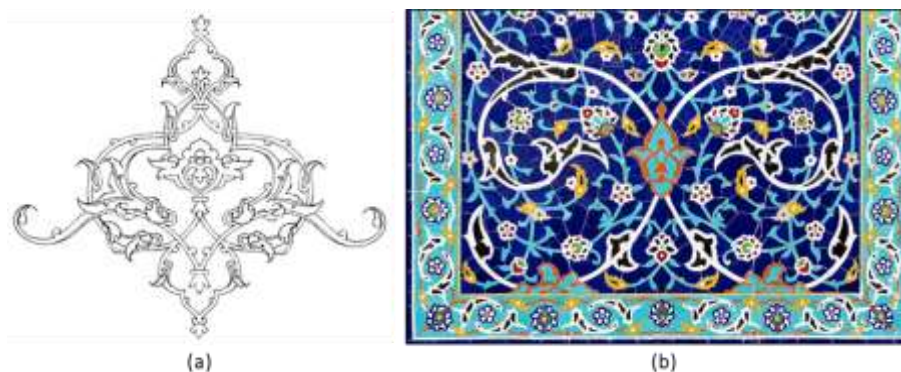


Fig. 9. A sample of Islimi pattern in design (a) and implementation (b)

4.2 Girih

Girih, a term that means “knot,” refers to the complex geometric patterns found in Islamic architecture, particularly during the Seljuk and Safavid periods (11th to 17th centuries). Girih patterns are derived from the combination of Six-Pointed Stars, Eight-Pointed Stars, and Symmetrical Geometric Grids (figure 10). These patterns involve intricate tessellations and interlocking shapes, emphasizing the spiritual and mathematical significance in the design [3].

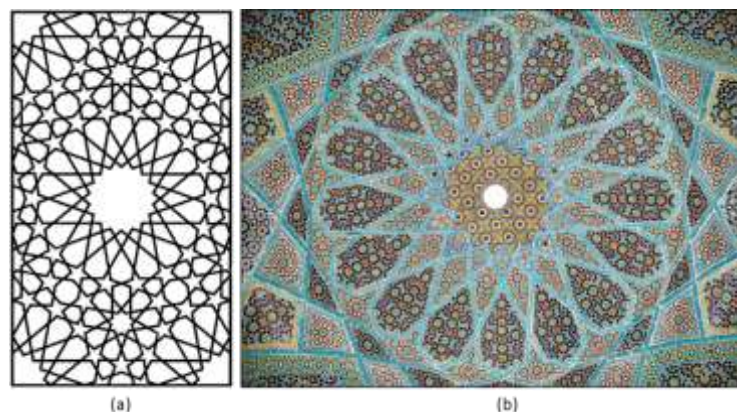


Fig. 10. A sample of Girih pattern in design (a) and implementation (b)

4.3 Rosette

Rosette Patterns feature circular motifs that radiate from a central point, resembling flowers or stars (figure 11). This style has roots in both pre-Islamic and Islamic art, with significant development during the Safavid era (16th to 18th centuries). Rosette designs typically draw from Circle and Semicircle and Eight-Pointed Stars, emphasizing symmetry and beauty in their arrangement [3, 5].

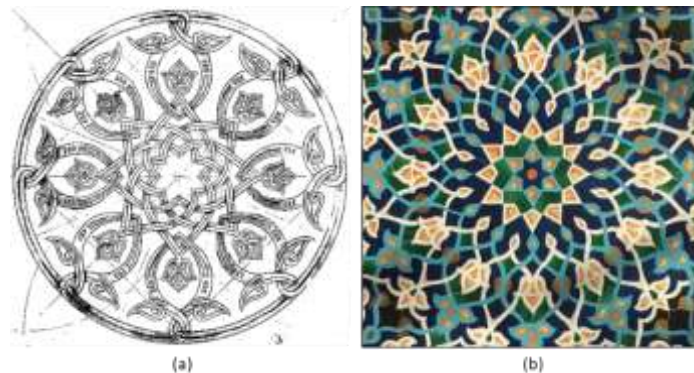


Fig. 11. A sample of Persian Rosette pattern in design (a) and implementation (b)

4.4 Other Symmetrical Geometric Grids

Symmetrical geometric grids are characterized by their balanced and harmonious arrangements, creating a sense of order in architectural designs. These patterns are often found in large-scale architectural projects, where the grid-based approach facilitates a systematic layout. The geometric design of symmetrical grids relies on the principles of coordinate geometry, allowing for precise arrangements of elements. Among the most famous of them is Khatai (figure 12), which consists of flowers with one or more symmetrical axes [3].

The advantages of symmetrical geometric grids lie in their ability to provide harmony and order in design, ensuring that architectural spaces feel cohesive and well-organized. Mathematically, these patterns explore geometric transformations, emphasizing the relationships between different elements within the grid. Historically, symmetrical geometric grids have been used since ancient Persian architecture, where they played a vital role in the layout of significant structures. A notable application can be observed in the ruins of Persepolis, where the use of symmetrical grids contributes to the overall grandeur and organization of the site [5].

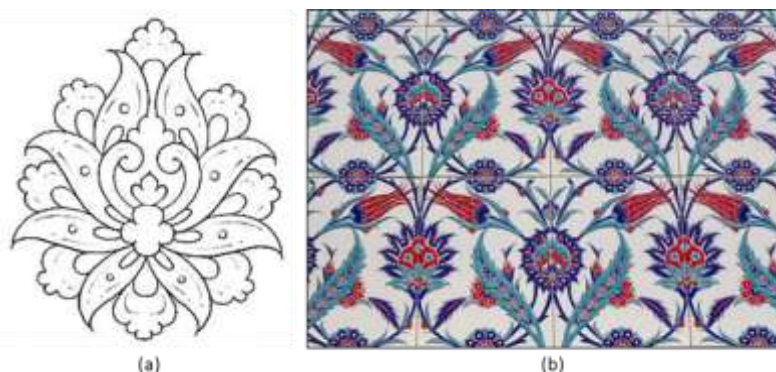


Fig. 12. A sample of Khatai pattern in design (a) and implementation (b)

Table 2 summarizes the connections between the primary and secondary patterns, illustrating how each architectural style draws from specific geometric forms. In summary, the intricate relationship between the primary patterns of Iranian architectural patterns and the geometric forms of the secondary patterns underscores the historical and cultural significance of Islamic art and architecture. The primary patterns reflect the artistic creativity and mathematical precision of various historical periods, from the Islamic Golden Age to the Safavid era. Each pattern not only embodies aesthetic beauty but also serves functional

purposes in architecture, showcasing the profound connection between art, geometry, and cultural identity in Iranian heritage.

Table 2. *Connections between the primary and secondary patterns*

#	Secondary patterns	The primary pattern of origin	Historical Period	Characteristics
1	Islimi	Circle and Semicircle, Square and Rectangle	Islamic Golden Age (8th-14th century CE)	Intricate, flowing designs with floral motifs; a blend of geometric and organic forms
2	Girih	Six-Pointed Stars, Eight-Pointed Stars	Seljuk to Safavid (11th to 18th century CE)	Complex geometric patterns; intricate tessellations and interlocking shapes
3	Rosette	Circle and Semicircle, Eight-Pointed Stars	Safavid (16th-18th century CE)	Circular motifs radiating from a central point; symmetrical and visually balanced arrangements
4	Other Symmetrical Geometric Grids	Combination of all primary and secondary patterns.	–	Balanced and symmetrical patterns; Harmony and order; Grid-based layout

5. COMMON FEATURES OF PATTERNS

5.1 Symmetry

Symmetry is a fundamental principle in Iranian architecture, characterized by reflective and rotational symmetry in designs. This quality is integral to Islamic art and architecture, where balanced proportions and mirrored motifs create a sense of harmony and aesthetic appeal. The geometric design of symmetrical patterns relies on carefully considered proportions, ensuring that each element complements the others [13].

The advantages of symmetry in architectural design lie in its ability to create a sense of unity and balance, enhancing the overall visual experience of the space. Mathematically, symmetry explores geometric transformations, revealing the relationships between different elements within a design. Historically, symmetry has been fundamental since the dawn of Persian architecture, where it played a crucial role in the aesthetic principles guiding architectural practices. An important application of symmetry can be seen in the gardens of the Persian Empire, where meticulously planned layouts reflect the harmony and balance that are hallmarks of Iranian design [5].

5.2 Balance

Balance, in general, is the state of equal distribution or harmonious arrangement of elements to create stability [14]. Balance in architectural design is achieved through the careful distribution of elements, creating a sense of equilibrium in spatial arrangements. This principle is vital in facade compositions, where the visual weight of different elements must be carefully considered to achieve a harmonious overall aesthetic. The geometric design of balanced compositions relies on principles of visual weight and spatial organization, ensuring that each component contributes to the overall stability of the design [8].

The advantages of balance in architectural design enhance both the aesthetic and functional qualities of a space, creating environments that feel cohesive and well-structured. Mathematically, the principles of proportions and ratios underpin the creation of balanced designs, emphasizing the importance of careful planning and consideration. Historically, balance has been essential in Iranian architecture since ancient times, where it played a critical role in the layout of Persian gardens and other architectural elements. The careful attention to balance in these designs reflects the deep understanding of spatial relationships that has characterized Persian architecture throughout its history [15].

5.3 Grid Designs

Grid designs are composed of intersecting lines that create a structured framework, commonly found in urban planning and building layouts. The geometric design of grid patterns is based on a systematic arrangement of lines, allowing for efficient organization of spaces and elements (figure 13). The advantages of grid designs lie in their ability to facilitate organization and ease of navigation, making them essential for functional architectural layouts [7].

Mathematically, grid designs involve Cartesian coordinates, highlighting the systematic approach used in their creation. Historically, grid designs developed during the Islamic Golden Age, a period marked by significant advancements in architecture and urban planning. An important application of grid designs can be observed in the layout of ancient cities, where their structured approach allowed for efficient land use and organization of urban spaces. The legacy of grid designs continues to influence contemporary urban planning practices, showcasing their enduring relevance in architecture [16].

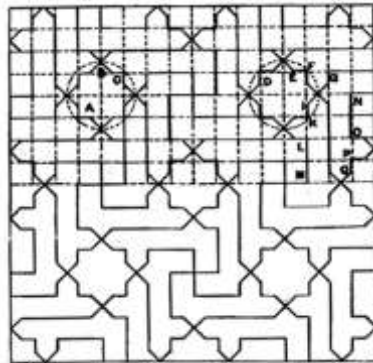


Fig. 13. Sample grid design of Persian pattern

6. CONTEMPORARY APPLICATIONS

In modern architecture, there is a renewed interest in these traditional patterns as architects and designers strive to integrate the wisdom of the past with contemporary materials and techniques. This resurgence is not merely a nostalgic yearning for bygone eras but rather a conscious effort to create a dialogue between the past and present, allowing traditional aesthetics to inform and guide modern design practices. By drawing inspiration from Iranian geometrical patterns, contemporary architects are exploring innovative ways to incorporate these forms into their works, often adapting them to suit the needs and sensibilities of today's society [15].

One notable trend is the use of advanced technologies, such as computer-aided design (CAD) and parametric modeling, to reinterpret these traditional patterns. Architects can now manipulate and experiment with geometric forms in ways that were previously unimaginable, allowing for the creation of dynamic and fluid architectural designs. This integration of technology not only preserves the essence of traditional patterns but also pushes the boundaries of what is possible in contemporary architecture. For instance, the use of laser-cut panels adorned with intricate geometric designs can create stunning facades that respond to natural light, transforming the appearance of a building throughout the day [7, 8].

Additionally, the incorporation of sustainable materials and green building practices into modern designs has opened new avenues for the application of Iranian geometrical patterns. Architects are increasingly exploring how these traditional motifs can be harmonized with ecological design principles, leading to buildings that are not only visually stunning but also environmentally responsible. This synthesis of traditional aesthetics and modern sustainability reflects a broader cultural shift toward valuing heritage while embracing innovation [5].

Furthermore, the global interest in cultural preservation has led to an increased appreciation for Iranian geometrical patterns in international architecture. Exhibitions, workshops, and academic conferences focused on Persian art and architecture are becoming more common, encouraging cross-cultural dialogues that celebrate the significance of these patterns. Architects from diverse backgrounds are now collaborating with Iranian artisans to create projects that honor traditional craftsmanship while also introducing contemporary interpretations. This collaborative approach fosters a deeper understanding of the cultural significance of geometrical patterns, allowing for a richer exchange of ideas and practices across borders [17].

7. DISCUSSION

The richness of Iranian geometrical patterns stems from a blend of mathematical precision and cultural symbolism, creating an intricate tapestry that reflects the complexities of Iranian identity. Each geometric pattern serves not only as an aesthetic embellishment but also embodies deeper philosophical meanings that resonate with cultural beliefs and historical contexts. The mathematical precision found in these patterns is rooted in the advanced understanding of geometry possessed by ancient Persian artisans, who used their knowledge to create intricate designs that engage both the eye and the mind. For instance, the symmetrical properties and tessellations found in these patterns demonstrate an understanding of spatial relationships that is both visually captivating and mathematically sophisticated.

Moreover, the historical context in which these patterns developed reveals how they have evolved over centuries while maintaining their core characteristics. From the geometric motifs of the Achaemenid Empire to the ornate tile work of the Safavid period, each era has contributed to the richness of Iranian architectural language. During the Islamic Golden Age, for instance, the synthesis of various cultural influences led to the emergence of new geometric forms, resulting in patterns that go beyond mere decoration to encapsulate spiritual beliefs and cultural narratives. This evolution reflects the adaptability of Iranian architecture, showcasing its ability to integrate diverse influences while remaining rooted in its unique visual language.

The utilization of geometric patterns in architecture is not just about aesthetic appeal; it also serves practical functions. For example, the intricate designs can enhance the acoustics within a space or create a play of light and shadow that transforms the atmosphere of a building. This multifaceted approach to design exemplifies how Iranian architects have historically prioritized both form and function, leading to structures that are not only beautiful but also deeply resonant on multiple levels.

8. CONCLUSION

In conclusion, Iranian repeating geometrical patterns in facade design represent a significant aspect of the country's architectural heritage. Their complexity, beauty, and mathematical precision not only shape the historical narrative of Iranian architecture but also continue to influence modern design practices. As contemporary architects seek to reconnect with traditional aesthetics, the enduring legacy of these patterns remains relevant and vital. By embracing the rich history and cultural significance of geometrical patterns, modern architects can create spaces that resonate with both beauty and meaning, fostering a deeper connection between the past and the present.

The exploration of Iranian geometrical patterns serves as a reminder of the importance of cultural identity in architectural design. As societies become increasingly globalized, it is essential to retain a sense of place and heritage within the built environment. Iranian geometrical patterns provide a unique opportunity to celebrate cultural narratives and values, offering a visual language that transcends time and geographical boundaries.

In an era where the dialogue between tradition and innovation is more crucial than ever, the application of these patterns in contemporary architecture can pave the way for a new understanding of how we perceive and interact with space. By honoring the mathematical precision and cultural symbolism inherent in Iranian geometrical designs, architects can create environments that are not only aesthetically pleasing but also rich in meaning and historical significance. The ongoing exploration of these patterns will undoubtedly continue to inspire future generations, ensuring that the legacy of Iranian architecture remains alive and vibrant in the modern world.

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