

Original Research Article

Assessing the Role of the Worship Axis in the Formation of Mosques in Yazd

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Abstract

Problem statement: The way of organizing mosques, which can be expressed in the form of a general shape, organizing a building plan, locating and decorating space, reflects the thoughts of its builders. For a long time, paying attention to the direction of the qibla and the formation of mosques on the map of settlements has been one of the most important issues in shaping the structures of mosques.

Research objective: The purpose of this study is to offer the methods by which the qibla is shown not only based on the position of the mihrab, but also in terms of the system of movement and the ratio of mass and space in the volumetric form of the mosques. In fact, it can be said that the purpose of the research is to know how to combine the religious and customary axes in the mosques of Yazd.

Research method: This research examines the plans of mosques in Yazd by descriptive-analytical and case study methods based on explaining their relationship with the hierarchy and rituals of worship. The information required for this research was obtained through library documents and archives of the cultural heritage, handicrafts, and tourism organization (CHO) of Yazd, books, and articles related to the subject of research, as well as field studies and visits.

Conclusion: It is concluded that the geometrical patterns of the plans of the mosques in Yazd are influenced by the Qibla axis. In terms of their geometrical axes, there are three categories: single axis, double axis, and multi-axis. In terms of geometric shapes, plans include right-angled geometric shapes, a combination of right-angled, and non-right-angled geometric shapes. In each of these mosques, depending on the regularity of the geometry of the site plan, the architect has contemplated measures such as adding extensions and sidings to the mosque or rotating the plan. Finally, a pure, ordered geometric space is obtained as a result of purposeful design. As a result, despite solving the plan in the exterior structure around the mosques, the axis of worship has been preserved as the most important direction in organizing the plans of mosques in Yazd.

Keywords: *Religious Rites, Physical Space, Mosque, Yazd.*

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Introduction

Architecture is the product of subjects such as culture, construction background, and a subject known as the software layer (Hammer, 2020, 105). In this regard, religious architecture is regarded as a symbol of the cultural history of any society, which can be investigated to obtain the religious and sacred viewpoints of societies (Knott, Krech & Meyer, 2016, 12-14). By relying on an intermediary concept such as rites, an architectural study can indicate layers such as the worship of a superior being, God, or any sublime religious concept and open a door to the religious foundations of social groups (Braunlein, 2016, 382). In Islam, the most important building is the mosque, which has long had a pivotal role in Islamic city planning. The first mosque spaces were constructed in deserts around Mecca; however, they only specified the direction of Qibla (virtue of the place to say prayers and establish a mosque) and the physical structure of the mosque was not formed yet. In the development of Islam, along with historical developments, the structures of mosques also changed. The first mosques in Islam included the house of the Mohammad prophet and several other houses in Mecca or other roofed spaces in the valleys outside Mecca (Kamil & Darajat, 2019, 42-44). Investigating this mosque shows that in the following periods, the qibla element is still the only condition to ensure the correct worship in mosques. However, changes in the shape of mosques that occurred due to cultural and geographical differences can be effective in discerning qibla. This study addresses Yazd city, as one of the most important cities in Iran with a worship background. The authors try to demonstrate how the shape formation of mosques still depends on and emphasizes the qibla axis. The objective of this study is to describe methods by which qibla is demonstrated not only based on the location of the mihrab but also in terms of the movement system and ratio of mass

and space in the volume shape of mosques. This study employed the descriptive-analytical approach and case studies to investigate the plan of mosques located in Yazd based on determining its relation with the hierarchy and rituals of worship. The required data was gathered through library documents, the archive of the cultural heritage, handicrafts, and tourism organization of Yazd, books, and papers published in this area, and field observations and investigations.

Research background

In previous studies on the geometry of Iranian mosques in the plan, the geometry of these mosques has been generally discussed, and only a few studies have addressed their accurate typology on a citywide scale, and most of the conducted studies in this field discuss a single building. Hojjat and Maleki (2012) in a paper entitled "Convergence of Three Fundamental Geometric Types & Genesis of the Persian Mosque's Geometry" investigated the archetypes of mosques and the trend of their evolution and then the origin and circumstances of the appearance of the geometry of these mosques. Then, three types of geometry used in the plan of mosques are introduced, and finally, the appearance of the present geometry in the plan of Iranian mosques is attributed to the convergence of these three fundamental geometrical types. In a paper entitled "Geometric-spatial evaluation of Tehran contemporary mosques by using thematic analysis of religious" Raeesi and Noghrekar (2014) employed content analysis based on the interpretative analysis to extract three categories for the mosque's design including descriptive, interpretive, and comprehensive. The conclusion of this study showed that spatial geometry principles of religious texts have received less attention in new mosques compared with old mosques in Tehran. In another study, Dahar and Alipour (2013) analyzed the architectural geometry of the Sheikh Lotfollah mosque of

Isfahan to determine the geometrical relationship of the prayer hall with the entrance of the building. They concluded that the dimensions of the prayer hall space are proportional to the entrance dimensions and the location of this space is correlated with the location of the entrance of the building. Khademzadeh (2005) in a book entitled “historic mosques of Yazd city” provides an extensive introduction of each of the mosques of this city together with their associated documents and plans. Attarian, Momeni & Masudi (2016) investigated the proportions of the courtyards of Isfahan mosques belonging to the Safavid dynasty and addressed the proportions of the sides of the courtyards of these mosques. They concluded that the ratio of the length to the width of the courtyards of the mosques is closer to 1.118, but in their general dimensions, peymoun (module) is used. The scarcity of integrated research addressing the relationship between the geometry of mosques in the plan and worship rites is a reason for conducting the current research.

Theoretical foundations

The worship axis is the main principle in the arrangement and layout of religious spaces in some religions. In some religions, this axis is in line with a specific geographical direction, and in some religions, such as Islam, it refers to a specific geographical point (Forbes, 2017, 15). The mosque, as a place of sajdah (prostration), should have both the purity condition and be directed toward the pure direction, namely qibla (Ibn Manzur, 2005, 3-4; Al-johari, 1979, 232). Qibla is described as the factor distinguishing Prophet Mohammad from his adversaries (Dunn, 2001, 32), and adherence to qibla is a conscious act that determines the boundary between the followers of Islam and other religions. The return of qibla from Jerusalem to the Kaaba is one of the most important religious events and legislative laws facing people after the hijrah

of Prophet Mohammed to Madina. The shift in the direction of the qibla from Jerusalem to Mecca was one of the most significant religious events for Muslims following the migration of the Prophet Mohammad from Mecca to Medina (Tabatabai, 2018, 142-151). In the Mohammad Prophet mosque, the wall toward the qibla acts as the index of worship and comprises the main element directing the space without any holes damaging its wholeness. In the next mosques, determining the wall toward the qibla was the main priority. Therefore, the orientation of the building toward the qibla and the prominence of this orientation should be regarded as the main and most evident approach in building mosques (Akbarzadeh, Piravi Vanak & Mozaffar, 2019, 64). The arrangement of Muslims in their congregation lines affects the shape of shabistan and, consequently, the position of the mihrab and its axis in the mosque (Guidetti, 2017, 62). One of the two possible strategies to organize the lines of prayers is to decrease the length of the lines rather than increase the number of lines, and the other is to decrease the number of lines by increasing the length of the lines. The choice of the Prophet Mohammad, which was made based on the principle of the qibla and pure geometry, made the lines perpendicular to the qibla axis and the front line longer (Akbarzadeh et al., 2019, 60). The transformation of the form of mosques in the next centuries took place by creating other spaces such as dome chambers, maqsurah, two-part and four-part iwans, or adding other spaces such as Khodaikhaneh (the house of God in Persian), etc., which reduced the initial readability of the qibla direction and mihrab.

A similar tendency exists in the architectural history of mosques across the Islamic world. In other words, with respect to the architecture of mosques from Andalusia and North Africa to China, these types have been present, and in all of them, the generality of lengthening

and organization is observed not only in the accuracy of the location of the mihrab but also in the configuration of the courtyard, location of the iwan, etc. In the architecture of mosques, there are architectural arrangements that emphasize the axis of worship. For example, in Qubbat al-Sakhra (Dome of the Rock) mosque, the Mihrab and the way of entering the space are emphasized; in mosques in shabistan, such as Qirvan and Ibn Tulun mosques, the way of entering the shabistan and the axis of view to the mihrab are emphasized; and in mosques with the iwan, the iwans are emphasized (Al-Ratrout, 2013, 42). In Table 1, several examples of mosques are provided in terms of the geography of the expansion of Islam. The geographical location of these mosques is shown on the left side of the table. In mosques with shabistans, due to the presence of columns and a wide middle span, the qibla direction is clear. Indeed, the effect of walls perpendicular to the wall facing the qibla is evident. However, due to more elongation in the direction of the qibla, this effect is neutralized. Thus, the unifying factor is the axis of the qibla. In some cases, a form defect in the plan leads to a fracture in this axis. However, the orientation of subspaces along the main axis neutralizes this effect as well. The special arrangement of elements around an axis determines the visual strength of an axial arrangement. In mosques with chartagh and iwan, the arrangement can be studied based on the location of the dome chamber as well as the shape and width of the span of iwans. In the following, the plan configuration of the mosques of Yazd in terms of shape-axis geometry is investigated, and the architectural strategies devised for an orientation toward the qibla direction in these mosques are discussed. As can be seen in the figure, the rectangular shape is desirable since in coordination with geometry, a person has the best orientation by being located in front of the wall facing the

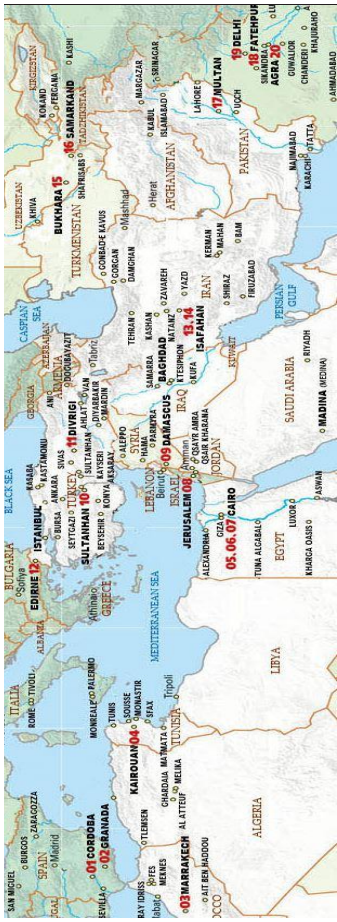
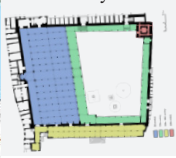

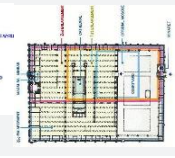
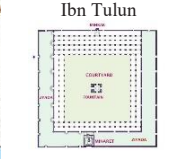
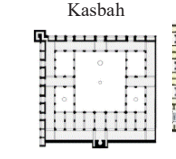
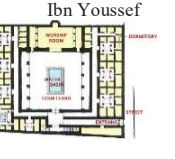
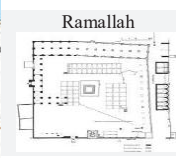

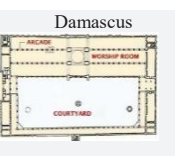






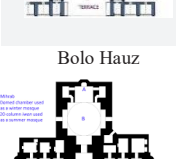
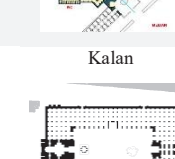




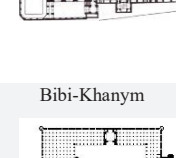

qibla, and the coordination of congregation lines parallels the qibla-facing wall.

Geometry is not produced separately, and it is the product of the function of the mosque and its combination with the surroundings. Thus, the form of mosques can be regarded as the product of interaction between the design context and the function of space, because of which the extension, edge orientation, proportions, symbols, regulations, and patterns of the use of that function will be effective. In the approach to space in the mosque, the presence of rituals can be observed. The attention of mind and body in prayer, whether it appears in the form of attention to the content of prayer, or its words and phrases, is associated with a higher degree of attention to the spiritual direction towards the House of God called the Kaaba in Mecca (Dora, 2018, 60). Therefore, finding the direction of the qibla in the prayer is one of the most important formative aspects of the prayer and, consequently, the mosque space as the place of prayer. The criterion for determining the axis is the subspaces in the plan and their combinations (Elkhateeb, Attia, Balila & Adas, 2018, 246), which can be expressed by connecting and separating the spaces, decreasing the mass relative to space, and placing a vertical axis to reinforce the horizontal axis (Hamdani, Rojak, Amalia, Hutami & Rosyidah, 2020, 85; MirAhmadi & Mahdavi pour, 2016, 105).

Research setting

Among cities in Iran, Yazd has a special place due to the existence of the religious buildings of different religions. However, due to the long history of this city and its religious base, one can always observe layers of the presence of religion in the life and culture of its inhabitants. Considering the research context, different mosques in the present-day Yazd including the buildings of the historic part of the city together with buildings added to the texture of the city

Table 1. Investigating the plan of prominent mosques of the Islamic world. Source: Authors.

Name of mosque and plan		Location	Name of mosque and plan	Name of mosque and plan	Location
	Al-Zaytuna	Tunisia	Granada	Cordoba	Spain
		Kairouan			
	Ibn Tulun	Egypt	Kasbah	Ibn Youssef	Morocco
		Ammer			
	Ramallah	Palestine	Aleppo	Damascus	Syria
		Al-Sakhrat			
	Qutb	India	Samarra	Diyarbakir	Iraq
		Delhi			
	Sheikh Lotfollah	Iran	Jameh Zavareh	Tarikhaneh	Iran
		Shah			
Bolo Hauz	Kalan	Bukhara	Agha Bozorg	Jameh Atigh Isfahan	Iran
					
Qing	Xi'an	China	Bibi-Khanyim	Registan	Samarkand
					

during different historical periods were selected and analyzed.

The method of determining the worship axis in the mosque under study

As previously mentioned, not only the worship axis must be demonstrated by placing the mihrab in the wall facing the qibla but also it must be recognizable with the help of full and empty

spaces, the shape of the courtyard, the arrangement of elements in the enclosure, and the form and skyline. Regarding the recognition of the axis, not only the pathways, but also the shape, height, extent of empty space, and other structural dimensions of the entrance-courtyard-shabistan area and sometimes the dome chamber must be mentioned. In other words, the above-mentioned tools allow for the adjustment of the

axis and/or their weakening and strengthening. Conducting a comparative assessment of the mosques shows that in the al-Rahman mosque, despite the existence of more than one-geometric core, the extension of the plan, the arrangement of walls, and the boundaries of spaces prevent the emergence of a strong axis relative to the qibla axis. Thus, the plan layout remains uniaxial in the direction of the qibla. In this mosque, the geometry and its extension emphasize the qibla axis. In Bazare-No mosque, despite the presence of two masses in front of the courtyard and boundaries between two shabistans, the qibla-facing axis can be discerned when entering the shabistan. In addition, in Tal mosque, although the mosque geometry has developed in a disorderly texture, the geometrical order of the layout of the shabistans of the mosque is specifically in the form of a square in the anterior shabistan and a rectangular in the posterior shabistan. The posterior shabistan is characterized by the emphasis of the form on one axis, while the anterior shabistan is clearly biaxial. In Pir-Hosseini mosque, two analyses can be discussed. If the entrance from the building context is considered as an axis, the mosque is biaxial; however, since in all mosques, the axis is considered from the start of the presence of a person in space, the uniaxial feature of the mosque can be recognized. In this mosque, piers and their thickness play a significant role in the clarity of the qibla direction. In Omm-Saleme mosque, after entering the mosque, the shape of the courtyard weakens the axis; however, in the shabistan, due to a protrusion in the wall facing the qibla, a strong, clear axis toward the qibla appears. In Jome' mosque of Maryam Abad, not only the layout of the column but also the gradual movement of walls to focus on the key role of the mihrab has created a triangle with the mihrab as its tip, which doubly emphasizes the direction of the qibla. Among the mosque examples provided, this building has a special plan, with

its semicircle shape being of interest. In Haji Mohammad-Ali-Arab mosque, the wall piers are arranged in a way opening toward the qibla increases, and this spatial configuration further emphasizes the qibla axis. In terms of the entrance rituals, there are also two tendencies among uniaxial mosques. The first tendency existing in mosques such as Omm-Saleme is based on performing rituals along the qibla axis. In this tendency, in the same passage system from the entrance to the place of congregation for prayer, the qibla axis is defined, and there is no change in the angle of sight. However, in Bazare-No mosque, the system of rituals is conducted with a complete rotation in relation to the qibla axis, such that the person saying prayers must pass a portion of the pathway in the direction opposite to the qibla. The general similarity of uniaxial mosques is the emphasis on their elongated shabistan space on the worship axis. The shape of urban texture sometimes forces the mosque to have an entrance axis, different from the qibla axis, due to factors such as the difference between the building entrance and qibla direction or limitations resulting from adjacency and/or structural and construction measures. In these mosques, the shape of the courtyard is sometimes acting as a factor weakening the qibla axis. In other words, the manner of the courtyard-pool extension and/or arrangement of the garden system leads to the emergence of an axis different from the qibla axis. Therefore, in these mosques, more than two geometrical cores are observed. Therefore, the conflict between geometries in filling and empty spaces, the emergence of iwans, and/or emphasis of the thickness of columns in some plans as well as increasing the thickness of the walls and creation of openings such as iwan, maqsurah, and other elements have led to the appearance of a second axis against the qibla axis. In Poshbagh mosque that was once outside the historic texture area of Yazd city, after entering the

shabistan, one must turn 90 degrees to face the qibla direction. The height difference between the two shibistans also emphasizes the area of qibla. In other words, in this type of mosque, one would face two subjects: the qibla axis and qibla area, and the height and volume of shabistan show the worship area, while the span of columns emphasizes the mihrab. In Khorramshah mosque, the form of entrance and approach to the dome chamber does not even follow a vertical axis. Due to the geometry of the courtyard and the arrangement of volumes in its northern part, discerning the qibla axis is difficult at the first glance. However, the volume and location of the dome chamber have been able to conceal this drawback. In Zeinoddin-Aqa mosque, the general form of movement from the entrance to the mihrab indicates that not only the pathway of a person breaks but also the positioning of passageways might interfere with discerning the mihrab. The same is observed in Kasnaviyeh mosque, where after entering, one faces two passageways, such that by breaking the movement to the right in the shabistan, they would enter the qibla axis. In the Nomalmir mosque in Yazd, the courtyards, play the main role in weakening the qibla axis. However, efforts to understand the qibla area via the extension of the hall and the placement of the shabistan with open spans facing it demonstrate an emphasis on the qibla axis. In the Baghe-Behesht mosque, the shape of the courtyard has drifted away from pure geometry intentional in favor of preserving the qibla axis; this indicates that generating the qibla axis is preferred over geometrical order and the formation of pure geometry. In Abolmaali, Charkoocheh, and Barkhordar mosques, the qibla axis is based on measures such as reducing the size of the courtyard relative to the mass of the building, and thickness of walls, and changing the position of the pillars. In multi-axial mosques, in addition to the qibla axis and its perpendicular axis, a third axis is also used. These parts create the third axis

as a result of rotation relative to the qibla direction usually side spaces. The third axis is either the location of parts outside the worship system such as cheraghdar and education centers or the product of changes in the physical structure of the mosque over time. In addition, the irregular shape of the site plan of the mosque and adjacent lands of the mosque building is another reason for the appearance of this axis. Regarding the incorporation of side spaces, two strategies are observed. First, the geometrical regularity of the side spaces is not important, and the maximal usage of the land area is a priority, which leads to the minimum possible thickness of the walls. In the second method, preserving the geometric regularity is of importance, and thus, the largest regular geometric shape is incorporated into the spaces, and the remaining shapes are incorporated into the wall. This case is seen in Jame Mosque of Yazd. In some mosques, a significant part of the building plan is not in the qibla direction. If proportions reach 1, these spaces themselves generate a two-axis, based on which the plan of mosques can be regarded as quad axial. In these mosques, the main effort is to maintain the integrity of the general axis of the building, particularly the shabistan toward the qibla, and other parts of the building are considered as side spaces supplementing the shabistan, which are effective in the appearance of order. The courtyard has no worship feature and is always acting as a place of passage and/or division. The status of the courtyard has decreased in the two previous axis configurations, to the extent that in mosques such as Kocheh-Khatib mosque, the courtyard was not designed in the direction of the qibla. The axis layout of rituals and attention in these mosques are usually not formed along the same path. In Amir chakhmaq mosque, due to the existence of a smaller span compared with the anterior span, the single-axis from the entrance to the mihrab is emphasized. In this mosque, due to the placement of entrances in the shabistan, the main axis is not

Table 2. Approaches for the arrangement of worship axis in mosques of Yazd. Source: Authors.























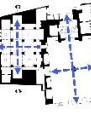






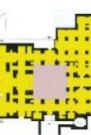
Mosque	Plan axis	Geometry of filled spaces (yellow) and empty spaces (gray)	Architectural measures to emphasize the qibla axis	Mosque	Plan axis	Geometry of filled spaces (yellow) and empty spaces (gray)	Architectural measures to emphasize the qibla axis
Mullah Ismail			Alignment of the building entrance, courtyard axis, and shabistan	Biyad Khan			Alignment of the building entrance, courtyard axis, and shabistan
Jameh Maryam Abad			<ul style="list-style-type: none"> -Extension of filling and empty spaces -The arch at the end of shabistan -Entrance in the qibla direction -General extension of the building land 	Al-Rahman			<ul style="list-style-type: none"> -Extension of filling space -Concavity at the end of shabistan (qibla-facing wall) -General extension of building land
Omm-Salameh			<ul style="list-style-type: none"> -Extension of filling and empty spaces -Concavity (qibla-facing wall) -Entrance in the direction of qibla -General extension of building land 	Bazare-No			<ul style="list-style-type: none"> -Extension of filling and empty spaces -Concavity at the end of shabistan (qibla-facing wall) -General extension of building land
In this category of mosques, the lines for praying are formed along the qibla axis, and due to the geometrical shape of the building land piece and/or the design of plan and shabistan, an axis perpendicular to the qibla axis is either not considered in these mosques or present so slightly that it can be neglected.							
Biaxial							
Zeinoddin Agha			<ul style="list-style-type: none"> -Reduced volume of space relative to the mass -Creation of a concavity in the qibla area 	Kasnaviyeh			<ul style="list-style-type: none"> -Extension of shabistan space -Concavity at the end of shabistan
Nomalmir			<ul style="list-style-type: none"> -Extension of hallway and placement of courtyard at its two sides 	Zaviyeh			<ul style="list-style-type: none"> -Reduced volume of space relative to the mass -Creation of a concavity in the qibla area
Abolmaali			<ul style="list-style-type: none"> -Concavity at the end of shabistan (wall facing qibla) -Entrance in the direction of qibla -General extension of the building land piece 	Barkhordar			<ul style="list-style-type: none"> -Extension of shabistan space -Concavity at the end of shabistan (wall facing qibla) -Entrance in the direction of qibla
Bagh Behesht			<ul style="list-style-type: none"> -Extension of shabistan space -Concavity at the end of shabistan -Entrance in the direction of qibla 	Charkocheh			<ul style="list-style-type: none"> -Concavity at the end of shabistan (wall facing qibla) -Entrance in the direction of qibla

weakened, and the mosque is thus multi-axial (Table 2).

Discussion

Shabistan has a major role in determining the worship axis, such as sometimes it emphasizes

Rest of table 2.

Mosque	Plan axis	Geometry of filled spaces (yellow) and empty spaces (gray)	Architectural measures to emphasize the qibla axis	Mosque	Plan axis	Geometry of filled spaces (yellow) and empty spaces (gray)	Architectural measures to emphasize the qibla axis
Chehel Mihrab			-The height pathway of domes shows the direction of qibla to some extent	Khorramshah			-The use of volume to show the qibla area
Shaholghasem Tashakori			-Only the volume of the dome strengthens the area of qibla	Pirhossein Damghani			-The lack of alignment between the entrance of qibla area is weakened by the extension of qibla axis
Hazireh			-Extension of shabistan space -Concavity at the end of shabistan -Entrance in the direction of qibla	Posht Bagh			-The use of the longer volume in the qibla area
Sheikhhiha			-The small depth of shabistan weakens non-alignment of the shabistan with the axis of courtyard and qibla				
<p>In this category of mosques, the congregation lines are formed both along the qibla direction and perpendicular to it, and due to the geometrical shape of the building land piece and/or the design of plan and shabistan, the second axis in these mosques, which is perpendicular to the qibla direction, can be understood. In these mosques, the general axis of the land piece and shabistan are sometimes perpendicular to the qibla direction, and other times, one is aligned in the direction of the qibla direction and the other is aligned perpendicular to the qibla direction.</p> <p style="text-align: center;">Multiaxial</p>							
Rig			-Extension of empty space -Extension of shabistan	Kochak Khatib			-Concavity at the end of shabistan -Entrance in the direction of qibla
Jameh Kabir Yazd			-Concavity at the end of shabistan (wall facing qibla) -General extension of the building land piece -Extension of empty space	Molla abdolkhalegh			-Concavity at the end of shabistan (wall facing qibla) -General extension of the building land piece -Extension of shabistan space
Sahl Ibn Ali			-Concavity at the end of shabistan (wall facing qibla) -General extension of the building land piece	Posht Bagh			-Concavity at the end of shabistan (wall facing qibla) -General extension of the building land piece -Extension of shabistan space -Entrance in the direction of qibla
Chaharom Naar			-Concavity at the end of shabistan (wall facing qibla) -General extension of the building land piece	Amir Chakhmaq			-Concavity at the end of shabistan (wall facing qibla)
<p>In this category of mosques, similar to biaxial mosques, the congregation lines to perform the act of prayer are formed along the qibla direction as well as perpendicular to it, and due to the geometrical shape of the building land piece and/or the design of plan and shabistan, the second axis in these mosques, which is perpendicular to the qibla direction, can be understood. However, what distinguishes this category of mosques from the biaxial mosques is the existence of another secondary axis in the building plan, which seems, in some cases, to result from the incorrect determination of the qibla direction in the shabistan. However, in some other mosques, with the proper orientation of the shabistans, this part of the building, whose axis is neither along the qibla direction nor perpendicular to it, is devoted to the courtyard and/or side spaces of the mosques.</p>							

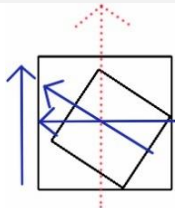
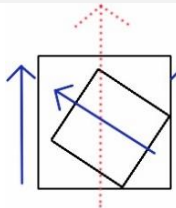
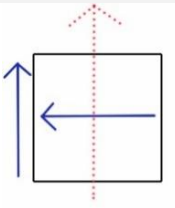
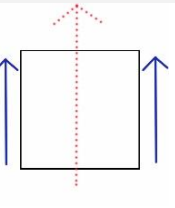
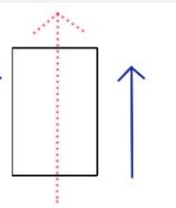
the qibla direction due to its extension and sometimes allows a view of the qibla area and mihrab axis through its lower depth compared with the courtyard. In cases in which the expansion of shabistan relative to the scale of the person might hide the axis, the shabistan was divided into several parts to allow for the recognition of the qibla area. In these mosques, the qibla is addressed from the two aspects of the axis and the area. In other words, the emphasis is sometimes on the worship axis and sometimes in the worship area, so that a person is directed toward the mihrab after finding the area. The courtyard usually has a key role in adjusting the qibla direction, which occurs through the extension of the pool and garden and/or its overall extension. However, there are cases in which the extension of the courtyard might be misleading. After designing the shabistan, other required spaces such as passageways, abdesthane, and courtyard were placed adjacent to the shabistan proportional to the required dimensions. Finally, next to the main spaces, the remaining parts were attached to main spaces such as the shabistan. Iwans have a fundamental role in the formation of the worship axis due to their receding shape and depth as well as their usually higher volume than other parts. The absence of a spatial center of gravity in mosques particularly multi-axial mosques reduces the possibility of a unit axis. In this regard, the mosques of Yazd can be classified into uniaxial, biaxial, and multi-axial types.

However, in biaxial and multi-axial mosques, further subtypes can also be observed (Fig. 1). In general, the presence of iwan in these mosques is sometimes so dominant throughout the main shabistan that the qibla axis in the courtyard is weakened. In addition, the extension direction of the courtyard that can be an emphasis on the qibla direction, such as Abolmaali Grand Mosque, is a factor weakening the qibla axis. Considering this direction scattering, the attention and ritual axis can be differentiated in biaxial mosques.

Conclusions

Determining the qibla axis is one of the oldest measures for the spatial organization of mosques. In cases of the location of mosques in the texture or the construction of mosques in usually organic textures, solving the location of the entrance to the worship space and worship axis has always been a concern of architects. In the solutions presented, avoiding the weakening of the worship axis by the design has always been a challenge. Design tools such as the extension and shape of shabistan, the extension and elements of the courtyard, volumes in the building, and even distance between the column spans, as well as the ratio between the mass and space and the placement and number of iwans affect the strengthening or weakening of the worship axis. Therefore, in Shabistans, the effort was to consider the worship axis and mihrab as factors shaping the geometry, extension, and

Table 3. Classification of mosques based on worship axes (land and shabistan axes in blue, the qibla axis in red). Source: Authors.

Yazd mosques based on the analysis of axis				
multiaxial		Biaxial		uniaxial
				

internal arrangement of the shabistans. However, in other spaces such as the courtyard or the general volumes of the building, emphasis on the concept of qibla area is of interest. In other words, in places where due to the above reasons, approaching the shabistan becomes complex due to spatial organization and different axis appears in the plan, the span of iwans and also volumes such as dome chamber and/or the skyline of vaults indicate the qibla area. For this reason, a person can recognize the qibla area in the mass after entering the space. In the conformity between the movement axis and attention path, access in the shortest distance is not intended, and following the hierarchy in accessing the space and creating mental readiness are inevitable. In some particular places, to reach the attention path, it is needed to pause and rotate, and in other places, a straight, uninterrupted movement is needed. In the movement axis, the only access to the location of interest is not intended, and the creation of mental readiness is a factor affecting the organization of the pathway and arrangement of spatial hierarchy. Therefore, despite geometrical differences which mainly result from the conformity of the building plan with the surrounding texture, approaches, and strategies adopted by architects in determining the qibla axis are the same and based on the two methods of the worship axis and worship area determination.

Reference list

- Akbarzadeh, M., Piravi Vanak, M. & Mozaffar, F. (2019). Architectural Criticism of Nasir Al-Molk Mosque in Shiraz Based on Religious Texts. *Bagh-e Nazar*, 16(78), 53-68.
- Al-johari, I. B. H. (1979). *Sehah-Al-Loghah*. Beirut: Dor-Al-Elm.
- Al-Ratrout, H. F. (2013). The Second Mosque on Earth That Islamicjerusalem Forgot: Revealing the Ancient Al-Aqsa Mosque. *Journal of Islamicjerusalem Studies*, (13), 23-52.
- Attarian, K., Momeni K. & Masudi, Z. (2016). The study of Courtyard Proportions in Safavid Mosques of Isfahan. *Motaleate-e Tatbighi-e Honar*, 5 (10), 67-82.
- Bräunlein, P. J. (2016). Thinking religion through things: Reflections on the material turn in the scientific study of religion\'. *Method & Theory in the Study of Religion*, 28(4-5), 365-399.
- Dahar, A. & Alipour, R. (2013). Geometrical analysis of architecture of Sheik Lotfollah Mosque to find the geometrical relations between its prayer hall and the entrance. *Bagh-e Nazar*, 10(26), 33-40.
- Dora, V. D. (2018). Infrasecular geographies: making, unmaking and remaking sacred space. *Progress in Human Geography*, 42(1), 44-71.
- Dunn, K. M. (2001). Representations of Islam in the politics of mosque development in Sydney. *Tijdschrift voor economische en sociale geografie*, 92(3), 291-308.
- Elkhateeb, A., Attia, M., Balila, Y. & Adas, A. (2018). The classification of prayer halls in modern Saudi masjids: with special reference to the city of Jeddah. *Archnet-IJAR: International Journal of Architectural Research*, 12(2), 246.
- Forbes, B. D. (2017). *Introduction: Finding religion in unexpected places*. In Religion and Popular Culture in America. University of California Press.
- Guidetti, M. (2017). *The Contiguity of Churches and Mosques*. In the Shadow of the Church. Leiden Boston Brill.
- Hamdani, F. F. R. S., Rojak, E. A. Amalia, R., Hutami, A., & Rosyidah, U. (2020). *An Accuracy Test of Qibla Direction Measurement of Mosques and Prayer Rooms*. In 2nd Social and Humaniora Research Symposium (SoRes 2019) (pp. 82-87). Atlantis Press.
- Hammer, R. (2020). Decolonizing the civil sphere: The politics of difference, imperial erasures, and theorizing from history. *Sociological Theory*, 38(2), 101-121.
- Hojjat, E. & Maleki, M. (2012). Convergence of Three Fundamental Geometric Types & Genesis of the Persian Mosque's Geometry. *Honar-Ha-Ye-Ziba: Memary Va Shahrsazi*, 17(4), 1-14.
- Ibn Manzur, J. D. A. F. M. (2005). *Lesan-Al-Arab fi loghat va Al-Adab*. Tunis: Dar Al-Matavasetiah.
- Kamil, S. & Darajat, Z. (2019). Mosques and Muslim Social Integration: Study of External Integration of the Muslims. *Insaniyat: Journal of Islam and Humanities*, 4(1), 37-48.
- Khademzadeh. M. H. (2005). *Historical mosques of Yazd*. Yazd: Cultural Heritage and Tourism Organization.
- Knott, K., Krech, V., & Meyer, B. (2016). Iconic religion

in urban space. *Material Religion*, 12(2), 123-136.

- Mirahmadi, A. & Mahdavi pour, H. (2016). Analyzing the method of Hindi Circle for Determining the Direction of mosques' Qibla (Case Study: Isfahan-Jame-mosque). *Maremat & Memari-e Iran*, 6 (12), 103-114.
- Raeesi, M. M. & Noghrekar, A. H. (2014). Geometric-spatial evaluation of Tehran contemporary mosques by using thematic analysis of religious texts. *Journal of Researches in Islamic Architecture*. 2 (3), 28-44.
- Tabatabai, M. H. (2018). *Tafsir-e Al-Mizan* (S. M. B. Mousavi Hamedani, Trans.). Qom: Islamic publication.

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