

Original Research Article

The Architecture of the Gate in the Defense Fortifications of the Towers and Ramparts of Iran's City*

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Abstract

Problem statement: Gates were created in cities for protective, military, and security reasons, and until the end of the Qajar period, they were an essential element of communication in the fences, towers, and ramparts of cities. Paying attention to the creation of privacy between the inside and outside of the city required a structural and architectural structure around the city. Over time, the gate appeared as a part of the city rampart in an architectural body along with its other components and elements according to the existing needs and conditions; these instances in every period were the factors that openly and secretly influenced the architectural body of the gates. These influences are shown in the form of features and different forms according to goals, specifications, usage, etc. For this purpose, the research questions are designed as follows, what are the influencing factors in the formation of Iranian gates? How have these factors affected the architectural features and components of Iran's gates?

Research objective: The purpose of the research is to identify these influencing factors and their manifestation in the form of the architectural features and components of urban gates of Iran.

Research method: This research is a type of theoretical and qualitative research that uses a descriptive-analytical method. The required data for research were obtained through library sources, documents, and field visits.

Conclusion: The results of the research show that culture, society, politics, economy, function, use, and body were mutually influenced by the architectural features of the gates. The mutual and close relation of the factors on the architecture of the gate has caused the body of the architecture to be a combination of several features. Considering that there are limitations in identifying factors affecting the formation and architectural features of gates, all the factors found in the formation and body of architecture of urban gates of Iran have been shown in continuance and combination with each other.

Keywords: *Architecture of city gates, Architectural features of gates, Architectural components of gates, Defense fortifications of Iranian Cities.*

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Introduction

With the appearance of civilizations and sedentism, the way of forming the structure of cities also became important and governments and communities to protect and defend the land under the rule, and provide and strengthen security started to build castles, fences, towers, and ramparts, moats, etc. Fortifications have long been a very powerful symbol of possession, monopoly, independence, status, and political power (Keeley, Fontana & Quick, 2007, 81). With time, this fortification complex has emerged from its original form in an architectural body with components and elements over time according to the needs and existing conditions. Throughout history, with the development of civilizations, this complex has expanded, and other elements and components have been added to it. The gate was the most important element in this architectural body and provided the only way to relate the fortifications with the external space.

The manifestation of the appearance and exterior of the fortifications reveal a lot of information about the internal space, the ruling government, facilities, power, culture, etc. According to Tutak before the sight of strangers or attacks, the defense system was the first building of the city that attracted attention (Tutak, 2019, 77). From a distance, gates and fortifications have always been the first visible element of a settlement. The gate contains different features of the inner settlement, and by approaching it and observing its details, an impression of that place was formed in the audience. This element as the entrance has helped to perceive and discover the meaning and message of the phenomenon called the city (Fereidouni, 2016, 52 & 65). By moving into this architectural element and its area, a sense of entering the city has been created in the audience (Pakzad, 2007, 9). Thus, it can be perceived that in the placement and shape of the fortifications, attention has been paid to various conditions such as social, economic, cultural, military, defensive, geographical, etc. As a result, the gate was formed under the influence of the same conditions and

factors in an architectural framework. Based on this, the research questions are looking for the influencing factors in the formation of Iran's gates and how these factors affect the features and architectural components of Iran's gates. As mentioned earlier, the gates were built for security and military reasons, and these reasons are one of the main factors affecting the features of the gates, but in the current research, considering that the city gate is one of the important and main elements of the city structure, numerous factors It has been effective and it is assumed that other factors have had an impact on the architectural body of the gates in line with and on an equal scale with the factors of creating defensive and security gates. In general, the identification of these factors in the expanse of Iran will lead to familiarity with the ruling thinking in the structure and its impact on the Iranian gates body and which hidden and obvious factors are included in this element. We find out how it manifests in the framework of the features and architectural components of Iran's urban gates. On the other hand, knowing the features and architectural components of the gates by specifying their importance, place, and role in the cities of the past also shows the political, social, and economic conditions of societies and governments.

Research Method

This research is a type of theoretical and qualitative research that has been done with the descriptive-analytical method. The essential information for the descriptive part and the theoretical foundations of the research through library sources and documents that have been addressed to the importance, introduction, and recognition of gates in general or exclusively examples of Iranian gates, and field visits have been conducted. In description and exposition, the nature of the gates, sources, and documents related to defense fortifications, castles, and cities have been studied, and the gate has been discussed as a part of a whole in the subset of those subjects. On the other hand, some specifications, features, etc. of the gate are used exclusively, especially in the example

of the gates, and in this regard, findings from the observations of the tangible samples and documents related to the samples of the gates have been used. By collecting and analyzing the findings of these sources, the architectural features and the factors affecting the gates of Iran have been presented in the form of a framework for achieving goals and answering questions.

Research Background

In most of the previous research, instead of exclusively focusing on the issue of gates, a subset of fortifications has been mentioned in its framework, or studies have been conducted on specific gate examples. Due to the destruction and loss of the traces of some gates, historical documents, especially travelogues and old pictures drawn from castles and cities, have provided the most information about the architectural body of gates in a specific historical period.

In the review of previous research related to the gate in the article “Structure of Defense Fortifications and their Roles in Providing Security in Khorasan and Transoxian during the Early Centuries to the Middle Ages” (Khosravi & Mohammadi, 2020), two features function and body of the gate, which are specific in the place and period The results are presented. The role and some characteristics of gates have been investigated in the following studies: The research “The Impact Construction the Entrance of Sense of Place in Tehran City Gate for Strengthening” (Fereidouni, 2016) the gate has not examined outside the context of the sense of place and identity. The article; “ Survey of the Impact of Urban Symbols on Promoting Youth Social Identity (Case Study: Northern Entrance of Shiraz City: Quran Gate)” (Nasr, Mosallanejad & Amiri, 2018) has focused on the investigation of one feature of the gate in one example, “A Study of City Gates in Early Islamic Cities of Iran” (Rahimzadeh & Ahari, 2022) Investigating the nature and role of gates and the role of human actions in three general frameworks without distinguishing features

in the military, political, social, economic, etc. And “Darvaze-haye Qadim dar Khatereh Jamei Shahr Moaser” (Sholeh, 2006) the only functional, symbolic, and semantic feature of the gate is mentioned in the form of a case example. The books that have described the architectural components of the gates without providing a classification or summary of the architecture of the gates in the form of an introduction of the castles include “Galae va Estehkamat Nezami” (Mollazadeh & Mohammadi, 2006) Description of the castles based on the region, “Iranian Islamic Period Defensive Fortification” (Pazooki Torudi, 1997) with the separation of castles before and after Islam and “Gale-ha va Estehkamat Azarbaijan” (Omrani & Rahmatpour, 2008) which were specific to one region.

According to the results and reviews of previous research, some architectural features have been identified and several factors have been investigated as the role of gates. The current research seeks to know the factors affecting the architecture of the gates and how the factors and features affect and appear in the architectural components of city gates. To further identify the nature and origin of the architectural features and components of city gates in Iran.

Theoretical Foundations

• Architecture and factors related to it in city gates

The entrance and egress to the city fence and military fortifications are provided by placing small gaps on it, to control all kinds of possible dangers from the outside and the entry and egress of foreigners to the settlement (Tutak, 2019, 31). Access to an enclosed or surrounded space requires an element to relate outside and inside. At the same time, this enclosed space together with the entrance formed an integrated structure and was not functional separately. The formation of this boundary between inside and outside was initially without a structural and architectural structure, and with time, along with other fortification elements,

it took architectural shape and concepts. A gate is an entry point that provides access to a closed and limited space with a wall, or an open space surrounded by a wall and a fence (Sholeh, 2006, 19). This gate was placed in the castle, fortress, city ramparts, palace, etc., and connected two significant spaces. By being present at the initial point of each space in the mind of the public, a perception of the general characteristics, the way of entry, and other features of the space is obtained (Pakzad, 2007, 2). According to Bora “the gate as an architectural element contains many meanings that found its material existence in the architecture function and appeared symbolically with different contents” (Bora, 2010, 3). And it has been a place to pass from the external state to the internal state (Sholeh, 2006, 19). which functioned as a part of people’s daily life (Bora, 2010, 5). Therefore, the gate was appropriate, coordinated with the functional goals and thoughts of its formation period, and played a role in the introduction of each period (Monjezi, 2015, 3). Parlak “The castle gate in the simplest and most general description, provides an opening with the possibility of entering and exiting a place surrounded by ramparts to create a safe settlement or a strategic point” (Parlak, 2010, 950). Although the gates provided transportation and communication between the city and the outside, they were actually the weakest part of the solid and magnificent defense system (Tutak, 2019, 31). While its most objective and obvious use has been maintaining security and defense (Rahimzadeh & Ahari, 2022, 79). For this reason, the gates usually have stronger and firmer towers and ramparts than other parts of ramparts and fences (Khosravi & Mohammadi, 2020, 160). However, the most damage and destruction to the fortifications took place in this element, because passing through it meant capturing the fortifications or the settlement and finally the victory over the ruling government. A gate is a joint for connecting two places having distinctive features with those two places (Pakzad, 2007, 2). It has provided the possibility of being

present in the environment and the possibility of moving to the next place (Nasr et al., 2018, 189). In addition to the role of the intermediate joint of the gate, it has had many different functions and uses. Fortifications, including gates, have appeared in the architectural body over time. Although it was placed in the ramparts and walls of the city or castles for reasons of access and security, it had a role beyond the entrance between two spaces. According to the architectural components and features of the gates, it is clear that security reasons were not the only influential factors. To identify these factors, in the current research, the characteristics and components of architecture and the role of gates have been examined in general. Architectural features and components are categorized based on the influence of which feature they were created and appeared. These architectural features were not formed without a background, and each one is part of a coherent whole, which the needs of the society have caused the creation of those general factors. The architectural body of the gate along with features and components is to respond to the needs of the settlement, residents, and strangers. Based on the type, nature, quality, and origin of each architectural feature, it is placed in the form of an internal factor. These internal factors are also affected and rooted in the general factors, which led to the achievement of four main factors. In (Fig. 1) the classification of these factors and features and the impact of each feature on the spatial specifications and components of the gates in the form of four factors: a) cultural and social, b) political and economic, c) functional and usage and d) physically. Is. These factors and features have been used with different frameworks in the example of Iran’s gates.

• Cultural and social factors

Some architectural features of the gates are rooted in the cultural thoughts and values of the ruling societies. that these features have appeared in the form of hidden or obvious specifications (components) in the architectural body. Its impact has been preserved over time in history and has

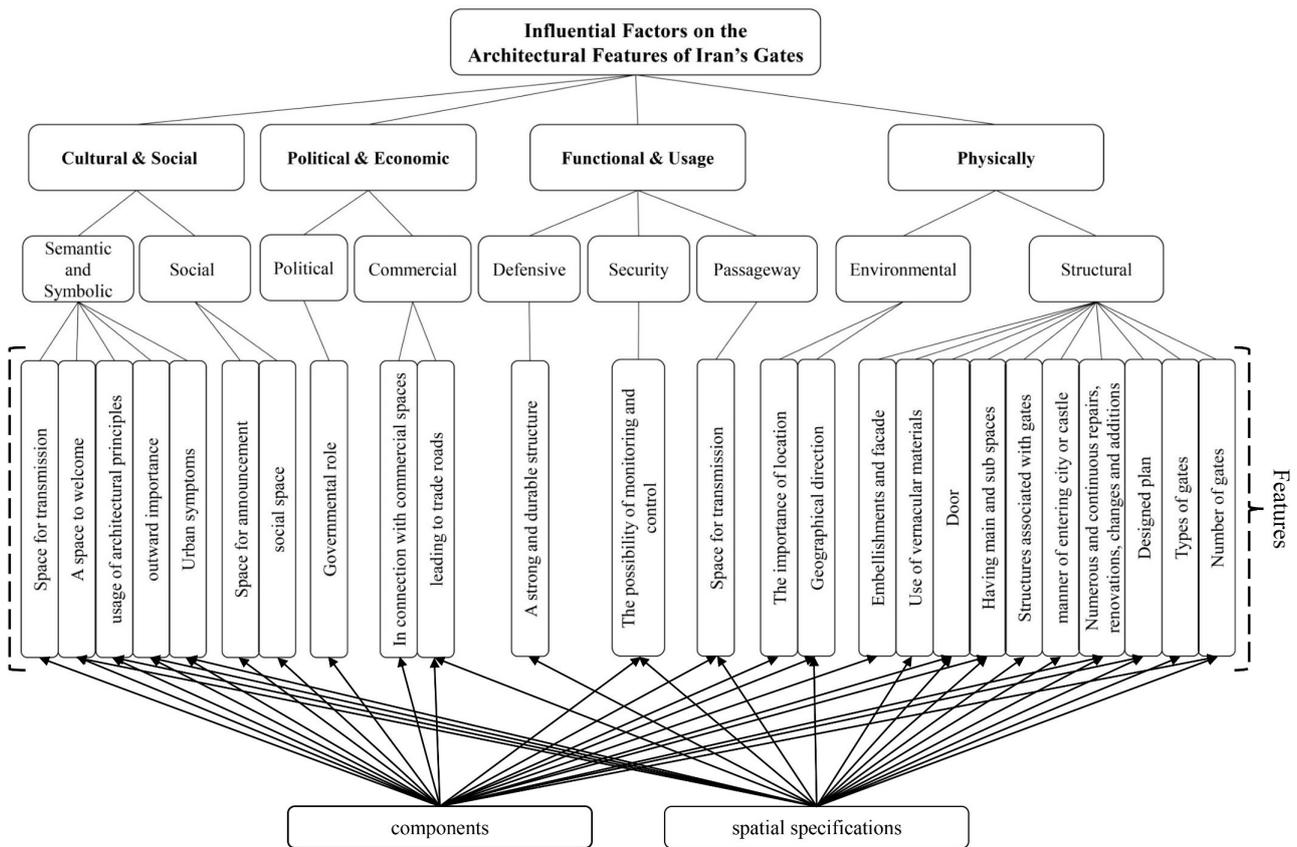


Fig. 1. Influential factors on the architectural features of Iran's gates. Source: Authors.

given the entrance space permanent meaning (Table 1).

• **Political and economic factors**

Since the gates had the role of the only entrance to the settlement and were an intermediary element and a connection between the inside and the outside, they played an important role in the fortifications from a political point of view. In the past, it was very important for governments to dominate and use commercial roads. Iran also had a special place in terms of being on the route of commercial caravans and the connection between East and West. Therefore, fortifications and especially gates have played an important role in this regard (Table 2).

• **Functional and usage factors**

Security, protection, and defense is the reason and factor for the formation of fortifications, and the gate was formed to provide access and security and to control entry and exit. The two factors of defense and security have played a decisive role in the architectural design of the gates (Table 3).

• **Physically factors**

These factors include environmental factors and structural factors. Environmental factors, including location and geographical environment, are important factors that have a decisive role in the architectural body, shape, form, plan, components, etc. of the gates (Table 4).

The features of the structural factor from the physical factors of the gate have had a role and influence on the body and architectural components of the gate (Table 5). According to the table, this structure was related to the city, castle, place, elements, etc. The structure of the features of the gate components also played a role in this case. For example, the structure of the door including (the amount, materials, direction of opening, opening system, dimensions, etc.) as the main components of the gates are influential in the architectural body of the gate.

Discussion and Findings

Since the gates were always subjected to the most

Table 1. Influential cultural and social factors on the architectural features of Iran’s gates. Source: Authors.

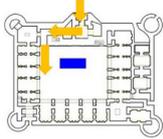
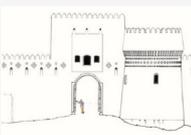
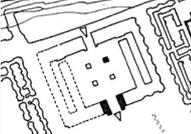
Factors	Feature	Spatial specifications & related components	Examples of gate pictures
Semantic & symbolic	Space for transmission	<ul style="list-style-type: none"> - Symbolic transfer, displacement, and physical connection between two spaces (Husseini, 2018, 68). - Sense of inter-spatial transfer. - A joint with a range of time and hierarchy (Fereidouni, 2016, 53). - Creating permanent and stable meaning in passing from one space to another (Sholeh, 2006, 20). - The importance of transfer method between boundaries, outside and inside, behaviors (speed, movement, halt, choice) (Pakzad, 2007, 8); Expansion and definition of the entry space including openings, interior spaces, corridors, movement barriers, internal gates (entry-exit). 	 <p>The Northern Gate of Takht Suleyman. Source: analysis; Authors, picture; Kiyani 1986, 200.</p>
	A space to welcome	<ul style="list-style-type: none"> - A symbol and a sign of arrival and entrance in destination (Fereidouni, 2016, 119) Being an indicator from a distance of the city view compared to the ramparts. - A place for a welcoming ceremony, respect, and acceptance (Rahimzadeh & Ahari, 2022, 88). 	 <p>Shiraz Quran Gate. Source Khalilian, Zandieh & Alehashemi, 2021, 82.</p>
	Usage of architectural principles arrival method into the city or inside the castle	<ul style="list-style-type: none"> - The gate in the Qajar period represents hierarchy, privacy, and security (under the influence of culture and spiritual and social values) (Soheili, Mahmoudi & Salehi, 2016, 40). - A) Directly - B) Indirectly - Derived from the traditional architectural style. - Creating a spatial hierarchy, maintaining privacy, separating outside and inside (Soheili et al., 2016, 44). - Turns in the entranceway and uses corridor, vestibule, etc. components. - Changing the rhythm in the arrangement of physical elements (Pakzad, 2007, 8). 	 <p>The entranceway to Kanjancham Castle, Ilam. Source: Soheili et al., 2016, 41.</p>
	Outward importance	<ul style="list-style-type: none"> - In addition to the main function, the gates of the Qajar period had decorative and symbolic aspects, such as the Tehran Gate, Semnan Citadel, and Qazvin Gates (Mollazadeh & Mohammadi, 2006, 16). - The gate shows the character and culture (cultural principles and values), civilization, features of the city’s inhabitants, thoughts and ideas of the formation period (Fereidouni, 2016, 61; Nasr et al., 2018, 188-189; Monjezi, 2015, 14). - The gate was the face of the city and had a performance capacity in terms of body and appearance (Rahimzadeh & Ahari, 2022, 82). - outward Components and specifications with a magnificent appearance, a sign of the power, greatness, etc. of the ruling government - Using decorations for reasons of protection, guarding, fear, respect, etc. (Monjezi 2015, 15 & 43). 	 <p>Metal gates of Takht-e Jamshid¹. Source: Tagavi Nejad Deylami, 2013, 61.</p>
Social	Urban symptoms	<ul style="list-style-type: none"> - An urban sign for orientation and positioning to maintain the continuity of space (Rahimzadeh & Ahari, 2022, 20; Sholeh, 2006, 20) for places outside the city and inside the city with the same name as the gate (in the gates facing the geographical directions, large-scale places, important political and commercial centers, city neighborhoods. - Adjacency of significant usage (mosques, bazaar, caravanserai, military use, etc.), neighborhoods of the same name, etc., with gates. - The route and main axes in the city leading to the gate. 	 <p>The main arteries in ancient Rey and the connection of some gates with the Bazaar. Source: Kariman, 1971, 97.</p>
	Space for announcement	<ul style="list-style-type: none"> - Recounting public announcements from the ruling government and the surrounding territories and news from within the city to the public with the topics of social norms, justice, politics, and power (Rahimzadeh & Ahari, 2022, 85). 	<ul style="list-style-type: none"> - Probably, to some extent, this feature existed in most of the fortification gates.
	Social space	<ul style="list-style-type: none"> - Creating social interactions through the presence, movement, and halt of city residents, travelers, etc. - Active role in national and religious ceremonies, trials, and introduction of elders (Fereidouni, 2016, 56). - Gathering due to the role of the main entrance to the city, the proximity to the commercial road, and the connection with significant usage. 	 <p>A picture of the gate of Tabriz city during the Qajar period by Eugène Flandin. Source: Alidoost, 1997, 56.</p>

Table 2. Influential political and economic factors on the architectural features of Iran’s gates. Source: Authors.

Factors	Feature	Spatial specification & related components	Examples of gate pictures
Political	Governmental role	<ul style="list-style-type: none"> - Communicating information from outside the city and fortifications to the government center (Fereidouni, 2016, 119). - During the Qajar period, the gate had a political and social function and was used to meet the governor. - It has a Shahneshin or Hakemneshin (in some cases, it was located above the entrance, on the second floor) (Soheili et al., 2016, 39). - A sign of the power and greatness, etc. of the ruling government. - Influenced by the values and ideologies of the ruling government. - Exclusively belonging to the passing of kings, royal family, etc. - The capture of fortifications by the governments, and the need to repair or rebuild the gates cause changes in the architectural body (different architectural styles of each government). 	 <p>The second gate is, the entrance of the ruler’s seat of Arg Bam. Source: Joodaki Azizi, Mousavi Haji & Ebrahimi, 2016, 139.</p>  <p>The Natamam gate of Persepolis, the great marching route of men of other imperial tribes. Source: Bahar & Kasraian, 1998, 84.</p>
		Commercial	<ul style="list-style-type: none"> - Development of the Bazaar around the gates to provide the needs of travelers and city inhabitants (Fereidouni, 2016, 55 & 131). - In connection with usage related to commercial centers (caravansera, hammam, etc.).
<ul style="list-style-type: none"> - In the cities that had the role of passageways and main centers on commercial roads, the gate was placed on the road to those places. - The possibility of collecting customs taxes (Mollazadeh & Mohammadi, 2006, 19). 	 <p>Istanbul Gate in Tabriz city rampart (reconstructed gate). Source: authors archive, Spring 1402.</p>		

destruction and damage throughout history, they have disappeared without leaving a trace, or only the name, a few pieces of information, and in some cases significant information in the historical documents had remained. In the meantime, examples of gates belonging to the nearer era have remained intact, or gates with historical age have reached the contemporary era with different eras repairs. Probably some gates remain unknown, and no research has been done to identify or introduce them. However, in relation to the contents collected in the tables, these things should be kept in mind:

- Likely, all the features and components of historical gates are not mentioned in the documents.
- Some architectural features and components of the gates have disappeared due to destruction and damage throughout history.
- In numerous repairs, the features and components of

the gates have been exposed to changes and additions have been made.

Although the gates have been formed throughout history for military and security purposes, their plain body has changed over time under the influence of external and internal factors. All these factors together have a physical appearance in an architectural body. Having such a body affected by many factors, the gate has played an important role in the structure and appearance of the city and settlement and even in the introduction and survival of the ruling government in the region. inhabitants, strangers, travelers, etc. have always been in contact with the gate and its related elements. In reviewing the findings of the current research, we found that culture, society, politics, economy, function, usage, and body were influencing each other with the features and components of architecture. All these

Table 3. Influential functional and usage factors on the architectural features of Iran’s gates. Source: Authors.

Factors	Feature	Spatial specification & related components	Examples of gate pictures
Defensive	A strong and durable structure	<ul style="list-style-type: none"> - It had a strong structure for defense against attacks and security, protection, and prevention of invasion (Hafizollahi, 2015). - In some examples, deep openings were installed for better monitoring of entry and exit (Haj Yasini & Arzmand, 2012, 113). - In the interior space of the gate, inside the side towers, above the gate and the space behind it, rooms and a space for the guard who usually had openings to the outside of the castle existed (Rahimzadeh & Ahari, 2022, 79; Mollazadeh & Mohammadi, 2006, 17-18). - It has a single or double strong defensive tower on the sides of the gate (for guarding) and a congress for sheltering the defenders on top of the tower and the gate (Rahimzadeh & Ahari, 2022, 79) And loopholes to shoot. - Towers with a practical-movement space and a location above the gate suitable for guarding and encircling the surroundings and the ease of shooting guards and keeper (with loopholes) (Khosravi & Mohammadi, 2020, 167; Haj Yasini & Arzmand, 2012, 113). - It has a moat in front of the gate and rampart along with a bridge over the moat (Rahimzadeh & Ahari, 2022, 79) - movable or immovable bridge. - The door of the gates was made of wood, but it was covered with metal covering to protect against destruction, attacks, and fire by the enemy (Omrani & Rahmatpour, 2008, 22; Mollazadeh & Mohammadi, 2006, 17). - According to the importance of the castle, a narrow, and long passage with several turns and other gates was placed in the distance between the main gate and the space inside the castle (Pazooki Torudi, 1997, 163). 	 <p>The moat and the bridge over the moat in front of the gate of Izadkhash fortress by Eugène Flandin, 1840 AD. Source: Alidoost, 1997, 75.</p>  <p>Towers on the sides, loophole, and defensive congresses of the gate of Kasnava of Narenj castle, Meibod. Source: Esfanjari Kenari, 2006, 53.</p>
		Security	The possibility of monitoring and control
Passageway	Space for transmission	<ul style="list-style-type: none"> - In terms of function and usage, the main feature of the gate is its role as a passing, a space for the passage of residents, caravans, kings, chariots, soldiers, etc. (For example, the Tehran Gomrok² gate is named because of the passage of commercial caravans, cargo control, and tax collection place) (Haj Yasini, 2011, 150). - In some cases, it was assigned to a specific passing (For example, the Mashin-Dodi gate in Tehran rampart). 	 <p>Tehran Gomrok gate. Source: Haj Yasini, 2011, 150.</p>

changes and developments have appeared in different forms in each period and with the development and progress of architecture. with closer attention to the factors affecting the architecture of the gates, we find that these effects could not only be from the side of the ruling community, but foreign societies, neighboring governments, and even enemies played a role at the same time. Considering the findings, the points and results obtained can be presented as follows:

All these factors, features, specifications, and components of the gates are mutually and closely related to each other so that a component or feature of the architecture is simultaneously formed as a result

of several factors or features and the body in which it appears. It was a combination of several architectural features.

Many of the main components and characteristics of the gates, besides being influenced by other factors, the two reasons for creating the gate, i.e. defense and security, have been followed in priority. For example, defensive towers on the sides or single towers of gates were affected by the defensive factor, but other factors played a role in the embellishments, materials, build method, dimensions, form, scale, etc.

Should pay attention to the extent of the influencing factors and architectural features of the gates and

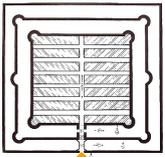
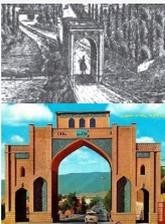
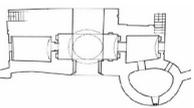
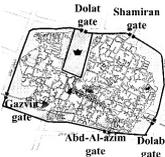
Table 4. Influential Physically-environmental factors on the architectural features of Iran’s gates. Source: Authors.

Factors	Feature	Spatial specification & related components	Examples of gate pictures
Environmental	The importance of location	<ul style="list-style-type: none"> - Attention to natural factors such as the direction of the wind, to reduce the effects caused by it towards the inside of the castle or towers (Moghbeli Gharae, Amirhajlu & Saghaee, 2018, 147). - The gates of Islamic cities had two types, internal and external: (Khosravi & Mohammadi, 2020, 160-161) - (Based on the location and place, the function of the gates was different: communication-social, economic-commercial, security-defense. <ul style="list-style-type: none"> - The gates of Arg³, Sharestan⁴, and Rabz⁵ in plain castles⁶: - Usually, the gate of the citadel opened to Sharestan, Sharestan to Rabz, Rabz to the outside of the city, and if Rabz was located inside the ramparts and walls of the city, it was the most external part, otherwise, the gate of Sharestan was the connection between the city and the outside). The gates of neighborhoods in Islamic cities were the internal type (Khosravi & Mohammadi, 2020, 158-159): - (Some neighborhoods, which are important defense and security structures in these cities, were reserved for a certain group with commonalities and had a gate with opening and closing hours based on the time of worship. This type of 4th-century settlement can be seen in cities such as Neyshabur, Sistan, Sarakhs, Herat, and Balkh. <ul style="list-style-type: none"> - The internal gate had a security function). - The wall and gates specific to each neighborhood increased the defense security, control, and supervision of these neighborhoods (Soltanzadeh, 2006, 145). - In terms of location, some kind of gates were built between borders, straits, and passages to connect different areas and there were garrisons and castles next to or around these gates to ensure the security of the gate. And in the Achaemenid period, these types of doors were made of iron (Pazooki Torudi, 1997, 124 & 169). <p>An example of an important gate is the Caspian Gate, which was a passage between Media and Parthia imperial (Mollazadeh & Mohammadi, 2006, 20) and the Arqun Gate of Shah-Kalat-Naderi of Khorasan (Pazooki, 1997, 127).</p> <ul style="list-style-type: none"> - External gates are a kind of gates that were built at the entrance between the fence and the rampart of cities and villages (Pazooki Torudi, 1997, 128). <ul style="list-style-type: none"> - The gates had proper access from different spots of the city and followed the geographical directions, sunrise, and sunset (Rahimzadeh & Ahari, 2022, 81). - In connection with the main arteries in the city. - Following a religious belief, worldview, philosophical meaning, etc. in locating (Fereidouni, 2016, 131). - Extension along with commercial and important communication roads due to the commercial role of the city (Molazadeh & Mohammadi, 1385, 19) or towards the access route to important cities. <ul style="list-style-type: none"> - To increase security in the mountain castles, a gate was built outside the tower and rampart to block the winding path of the rock, and the main gate was built further back and at a higher height (Pazooki Torudi, 1997, 162). - In the mountain castle, was usually located at the end of the narrow road leading to the castle. And in the plains castles, the gate was on the main side of the fence and often facing the road (Mollazadeh & Mohammadi, 2006, 17-18). <p>Due to the placement, differences in the appearance, structure, and physical of the city or castle gates happened (they were the same in terms of architectural style, but there are differences in the way of presenting that style.).</p>	 <p>The main entrance of the Bam citadel with the side towers, the congress and the viewing openings, and the bridge over the moat. Source: Pazooki, 1997, 231.</p>  <p>The only entrance to the Rayn Citadel. Source: Barsam & Faryabi, 2019, 127</p>  <p>The gates of Tabriz in connection with the city’s commercial role (bazaar) and the main arteries of the city. Source: Soltanzadeh, 2010.</p>  <p>The entrance of Barduk mountain castle. Source: Mollazadeh & Mohammadi, 2006, 299.</p>  <p>The Tehran gate of Qazvin city castle. Source: Kiyani, 1986, 333.</p>
		Geographical direction	

Table 5. Influential Physically-structural factors on the architectural features of Iran's gates. Source: Authors.

Factors	Feature	Spatial specification & related components	Examples of gate pictures
Embellishments and facade		<ul style="list-style-type: none"> - Distinguished and independent building (Pakzad, 2007, 2). - In mountain castles where the gates played an important defensive role in the castle structure, in the construction of its architectural body, the importance of solid proportions and structural strength was more important than decorations and so on (Khosravi & Mohammadi, 2020, 167). - had a manuscript on the gate or inscription (introduction of the city or construction specifications). - Usually, the gates had a cover of Taq (arch) and strong wooden doors (Mollazadeh & Mohammadi, 2006, 17). - Elements such as the congress and openings (loopholes) in the tower and rampart, in addition to the military and defense use, gave a beautiful view to the appearance of the castle (ibid., 18). - Using decorations for reasons of protection, guarding, respect, and fear. - Usually, the city gates had one opening, but since the Qajar period, in addition to the main opening, two secondary openings on the main sides were made artistically with Kashi-Kari⁷ and brickwork embellishments (ibid., 19). - During the Qajar period, the gate had more decorations than the other spaces of the castles (Sohili et al., 1394, 39). - Part of the important urban spaces (Mollazadeh & Mohammadi, 2006, 19). 	 <p>Shamiran gate, Tehran in Gajar period. Source: Haj Yasini, 2011, 132.</p>  <p>North Gate of Semnan Citadel. Source: Mollazadeh & Mohammadi, 2006, 333.</p>
		Use of vernacular materials	<ul style="list-style-type: none"> - Materials available in the region (stone, mud, clay, brick, etc.) (Rahimzadeh & Ahari, 2020, 80) according to the geographical environment and climatic conditions. - From the materials used in other buildings (same).
Structural	Door	<p>A) A vertical door or a movable door: (in the Rabz of plain castles)</p> <ul style="list-style-type: none"> - In moated castles, a fixed or movable bridge was built to cross it and access the gate, which a movable and wooden bridge in the past was called Takhte-Pol⁸ (Mollazadeh & Mohammadi, 2006, 18). - The door was lowered on the moat in front of the gate, and in addition to the function of the gate, they also functioned as a bridge through the rope and pulley. The main gate, which was thick, huge, and heavy, was placed behind this door (Pazooki, 1997, 227). - The movable door of the gate is used instead of a bridge, a large piece of the door with two chains came out from the holes on the top and both sides of the gate and was dismantled and blocked the gate during the danger (Mollazadeh & Mohammadi, 2006, 18). <p>B) Horizontal door (the entrance of most of the gate example was this type of door.)</p>	 <p>The main gate of Saryazd Castle and the movable door system in the upper part of the entrance opening. Source: Pazooki, 1997, 245.</p>
		opening direction	<ul style="list-style-type: none"> - The material of the door was wooden, but to protect against destruction, attacks, and fire by the enemy, they covered it with metal (Omrani & Rahmatpour, 2008, 22; Mollazadeh & Mohammadi, 2006, 17; Pazooki, 1997, 227). - There were also types of metal and stone doors in mountain castles (Mollazadeh & Mohammadi, 2006, 17). - The gates had single or double pieces (ibid., 19).
Having main and sub-spaces		<ul style="list-style-type: none"> - According to the usage and function of the gate, they had fixed and variable spaces. - Guard room, interior space, staircase, corridor, portal, platform, room, etc. - In the Qajar period: porch, platform, Hashti⁹, doorway, door, portal, corridor. 	<p>In the examples according to the plan, levels, location of the loopholes, openings in the body of the gate and the towers, etc., are clearly visible.</p>

Rest of table 5.

Factors	Feature	Spatial specification & related components	Examples of gate pictures
Structural	Structures associated with gates	<ul style="list-style-type: none"> - Based on the example of the gates and the general specification of the gates, structures were built along with the gate in most cases for defense and security reasons, including rampart/tower/minaret/moat (bridge over the moat). - Among these structures, the rampart or fence was the reason for the existence of the gate for access. 	 <p>The Gate of Nahavand Castle by Eugène Flandin, mid-19th century. Source: Alidoost 1997, 84.</p>
	manner of entering the city or castle	<ul style="list-style-type: none"> - Access path and direct-indirect input affected by function, usage, role, importance, type, etc. (The importance of the path that was taken to enter the fortifications.). - Determining the axis and communication network in the urban structure. - Importance of readability, invitingness, and use of permeability; The way of communicating and transforming outside and inside (Monjezi, 2015, 14; Pakzad, 2007, 8). 	 <p>Entrance of Saryazd Castle. Source: Mollazadeh & Mohammadi, 2006, 390.</p>
	Numerous and continuous repairs, renovations, changes, and additions	<ul style="list-style-type: none"> - The gates have been subject to the most damage and repair compared to other fortifications. because in the time of the attack and captured the fortifications by the government, it was very important to capture the gate because it meant the capture of the entire complex. - Affected by the passage of time, change of historical periods, change of government, development and improvement of defense techniques, development of military architecture, development of culture, development of civilization, etc. <p>For example, the difference between the Quran Gate of Shiraz in the 17th century Azd-Al-Duleh Deilami period (upper picture) and the second Pahlavi period (lower picture).</p>	 <p>Shiraz Quran Gate . Source: Khalilian et al., 2021, 82 & 85.</p>
	Designed plan	<ul style="list-style-type: none"> - According to the examples, the importance of defense, usage, function, etc. of the gates in most cases, especially city gates, required a design plan. - By designing a plan of it, the dimensions and size of the opening, the towers, the interior of the gate, the connection with the towers and ramparts, the access route, etc. were defined. 	 <p>The second gate of Bam Citadel. Source: Joodaki Azizi et al., 2016, 140.</p>
	Types of gates	<p>In terms of the importance of gates including main, secondary, and minor.</p> <ul style="list-style-type: none"> - Urban or external gates in terms of functions were main, secondary, and governmental, which are generally the body of the main gates in important and large cities built with an architectural design (Fereidouni, 2016, 132). - A door with small dimensions called the Dar-e Shab¹⁰ was placed in the middle of the main gate for the entry and exit of certain people (Pazooki Torudi, 1997, 227). - Usually, there was a minor gate and a secret way to be used in case of emergency in the mountain castles. Or these gates were opened to the desert or mountains as a way of escape or rescue (Mollazadeh & Mohammadi, 2006, 17; Khosravi & Mohammadi, 2020, 162). 	<p>The minor gates of Naein Castle were generally built without design and defensive elements to facilitate access to the outside of the city. Source: Soltanzadeh, 1995, 160.</p>
Number of gates	<ul style="list-style-type: none"> - Attention to the extent and population of the city internal, geographical extent, etc. (Pazooki Torudi, 1997, 128; Khosravi & Mohammadi, 2020, 161) in connection with the security of the city. - When the number of gates was low; The way of communication to the outside of the city was limited / ease of monitoring and control during the engagement and capture of the city/ease of guarding in case of emergency. when there were several gates; The attackers' forces were divided to control all the gates and the encirclement was difficult (Khosravi & Mohammadi, 2020, 162). - Iranian cities before Islam, under the influence of religious beliefs, generally had four gates (Nikaein, 2019, 48 & 49). - In the plains castles, including the government citadel and Sharestan, the main tower and rampart, the moat, and the Rabz, there was a gate in the citadel to connect with the inside of the castle and a gate to connect with the outside of the castle rampart (Mollazadeh & Mohammadi, 2006, 19). - The citadel had fewer gates due to greater security, a small area, and less population, Rabz had more gates due to the opposite reason (Khosravi & Mohammadi, 2020, 161). 	 <p>The gates of the city rampart and the government citadel of Tehran in the Zandiyeh period. Source: Pakzad, 2007, 465.</p>	

the lack of mentioning or documenting some of them and their disappearance.

Some features and components have appeared, repeated, and developed in the majority of the example gates, and they had the nature of the main feature and main components in the example of the gates. Of course, they have appeared in different bodies.

Some factors have been manifested in the form of exclusive features and exclusive components in the example of gates, which are specific to the factors that dominate each gate in a unique body.

In this way, during the studies and analysis of the findings and examination of the example gate, the limitations that clearly arise in the architectural features of each gate were identified in this research. According to the analysis of the specifications and components of the gates, the features that were not discussed in the previous research or some that were given less attention were obtained and expanded, and the relationship of various factors with all the found features of the architecture of the gates were determined.

Conclusion

The features and components of the examples of urban gates in Iran also include the foregoing limitations. It has been mentioned several times that the gates were built for defense and security reasons. But city gates throughout history were more distinctive and magnificent in terms of architectural body than the gates of mountain, rural, plain, and forest fortifications, because cities as political and governmental centers (capitals) or commercial, geographical, military, cultural, etc. importance have been important compared to other places. In this way and according to the findings, all the cultural and social, political and economic, functional and usage, and physical factors have influenced the formation of the gates of the city's fortifications of Iran and the architectural body of the gates in alignment and combination with each other. While in the gates of places other than cities, these factors were not

equally effective and the role and factor of defense and security were considered as a priority.

Regarding the effect of these factors on the architectural body of Iran's gates, the variety and difference in these features and components show how the architectural body of the gates has appeared in different forms under the influence of the same factors. Despite the architectural features and components similarity, it has had different types and methods of use. All these architectural specifications have been the reason for the difference between the gates of one city and other cities with each other. While in general gates have introduced the structure belonging to the architecture of a territory. As mentioned in the limitations earlier, these factors are shown in alignment and combination with each other. For example, in the features of the sub-set of structural factor, the functional and usage factor has caused the architectural components to have sufficient strength according to the type of passage (the passage of residents, kings, soldiers, etc.) and while the political and commercial factor has influenced the body, structure, and architectural style of the gate. And the cultural and social factor also represents the architectural characteristics of a government. The gate, as a part of the structure of a city, reveals important information about the history, identity, and culture of the city and territory in certain periods. However, the superiority of the results mentioned in the architectural body of gates should be considered for further studies, whether in the form of recognizing and examining the example of the gate, or the impact and role of the gate in different subjects.

Endnote

1. Persepolis
2. Customs
3. Citadel
4. City
5. Outer of the city
6. Castles situated in flat terrain.
7. Tile work
8. Wood bridge
9. Vestibule
10. Night door

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