

# Comparative Study of Physical Structures of Isfahan's Traditional and Contemporary Houses Using Privacy Preservation Approach

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## ABSTRACT

Traditional houses attach importance to preserving privacy and detaching family arenas from other arenas such as those dedicated to guests and strangers, and this varies in different climatic, geographical, and cultural contexts. A survey of privacy modeling in traditional and contemporary houses in Isfahan, Iran, indicated that the subject of privacy was highly important in the past, though it is fading away in modern architecture. This study, however, aimed to investigate and compare widely-recognized traditional and contemporary houses. The methodology incorporated a comparative study using the Brady Model. The goal of the study was to examine the concept of privacy and analyze how it emerged within traditional and contemporary houses while presenting some solutions to make modern architecture better. The study also aimed to answer the following questions: How were the concept of privacy and its characteristics defined and what led to the rise of this concept in Isfahan's traditional houses? How were the physical developments of contemporary Isfahan's houses characterized by privacy criteria? And What solutions could be offered to improve privacy? For this, several traditional and contemporary houses in Isfahan City were selected to study their behavioral patterns and to examine their nature of privacy. Finally, the differences and similarities of the two types of houses were examined under two different periods to extract the internal components of traditional houses. This was followed by redefining these spaces and how they began to emerge in contemporary houses and providing such solutions as observing a hierarchy of accessibility by guests, detaching public arenas from private arenas, using porous surfaces, e.g., lattices, plants for controlling neighbor view, designing pre-entrance spaces, and designing open and semi-open spaces, not to mention others.

**Keywords:** Traditional Houses, Contemporary Houses, Privacy, Brody Model, Isfahan.

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## 1. INTRODUCTION

The Qur'an has emphasized preserving house privacy, and ethics, as one of the principles of human existential perception, has long advocated private spaces in Islamic-designed houses. Privacy, or what is known as a private realm, embraces a social sense. This sense represents a key value and stresses respect for human dignity, denoting people's right to receive support against others' unauthorized interference with their lives (Valizadeh Oghani 2012, 47). In the book *Iranian Architectural Styles*, the late Mohammad Karim Pirnia discusses the concept of privacy in Iranian architecture, suggesting that Iranians had long focused on designing introverted spaces due to their special attitudes to houses and family. He went on to indicate that Iranian special ideological and cultural beliefs were quite effective in constructing various spaces, especially residential spaces. These beliefs were mainly focused on respecting and valuing privacy. Iranians also attached significance to self-esteem which highly affected designing introverted spaces. Privacy is understood to be one of the key factors in forming internal spaces and a subject of interest in traditional Iranian architecture (Pirnia 1997, 98). In [privacy-based] architecture, pre-entrance (ante-room), vestibular, courtyards, and corridor spaces forge to create in-between (or linking) spaces that direct the individual from the city's urban spaces to the house's private spaces (Soltanzadeh 1993, 75).

Consistent with the lifestyle of a Muslim family, the concepts of inner and outer spaces serve as an architectural response to the residents' natural needs for Hijab (i.e., protection) and the preservation of privacy against outsiders (Masaeli 2009, 31-32). Meanwhile, the appropriate location of spaces and openings on walls create privacy in Islamic-designed houses (Aminpour et al. 2017, 58). Also, detaching interior arenas from exterior arenas using joints and controlling the dimensions of openings could play a very effective role in adjusting the openings that open to the interior of houses. Principles of privacy,

hierarchy, harmony and proportions, relationship with nature, and geometry, among others, are already forgotten in modern times; however, they could be of assistance if employed. Contemporary Iranian architecture is nowadays suffering from a kind of confusion, and a lack of identity while shifting towards the West [architecture]. Additionally, contemporary Iranian architecture is not formulating programs, cannot properly understand what contemporary architecture means, and is distancing itself from past architecture. This will culminate in more serious problems if cultural principles are also discarded (Seifian and Mahmoudi 2018). Modernism and international styles are failing to meet the cultural and identity needs of Muslims (Hashempour and Yazdani 2015), too.

The significance of reviving Islamic moral principles in modern-day designing architectural and urban planning spaces represents a gap created in adhering to the principles of Iranian architecture in modern houses, with Isfahan being a notable example of this. The goal of the study was to examine the concept of privacy and analyze how it emerged within traditional and contemporary houses while presenting some solutions to make modern architecture better. As the title suggests, the study aimed to answer the following questions based on the goals stated:

- How were the concept of privacy and its characteristics defined and what led to the evolution of this concept in Isfahan's traditional houses?
- How were contemporary Isfahan's houses' physical structures characterized by privacy criteria?
- What solutions could be offered to improve privacy?

## 2. Literature Review

As a key subject, privacy has been taken up by philosophers, psychologists, sociologists, and architects, and much research in social behavior has investigated the concept of privacy and its implications in cultural, behavioral, environmental, and residential settings, not to mention others (Chemers and Altman 1981; Brown, Vinsel, and Altman 1985, 1).

**Table 1. Privacy from the Perspectives of Sociologists, Psychologists, and Architects**

Scholars	Perspectives
Proshansky	Emphasizing increasing the freedom of choice and individual or group control over their activities
Rapoport	Privacy: A mechanism for avoiding unwanted interaction and achieving desirable interaction
Altman	Privacy: The selected control of access to one single unit
Ziporin	Emphasizing how privacy is controlled
Buk	Emphasizing how privacy is controlled and protecting against others' unwanted access
Hall	Developing Proximity Theory in Private Realms
Newwell	Privacy as a temporary condition in detaching types of public ownership
Fahey	Privacy is the boundary between the individual, the environment, and the outsider.
Pedersen	The significance of privacy lies in the opening and closing of its functional features.

Scholars	Perspectives
Margolis	Privacy represents how the relationship between the individual and others is controlled.
Edward	Privacy represents the culture.
Hesham Morteza	Privacy depending on gender separation and the detachment of private life from public communication
Al-Tabab	Privacy relating to private and public spaces inside the house

(Alkhateeb 2015)

According to the table, Rapoport discusses privacy to help meet desirable interactions. His approach to privacy and respect for privacy corresponds to the Iranian culture. To him, as a concept, privacy is primarily influenced by culture and influences house designs. To demonstrate his theory, he suggests that housing is not just a structure; rather, he continues, it is an institution established to meet some complex objectives. Since a house design is considered to be a cultural phenomenon, its spatial form and configuration are highly influenced by its cultural environment (Rapoport 1990, 223). In the following, he defines some of the key factors that may influence house designs.

1. Basic needs
2. Family
3. Role of women
4. Privacy, and
5. Social relations

A house design is a pivotal aspect of the urban architecture and design process concerned with all human life characteristics and takes on a context-specific form in any culture or environment. In an Islamic culture, a house must feature Islamic characteristics and enjoy some religious and spiritual dimensions, as well as desirable physical characteristics (Jebel Ameli et al., 2012).

Investigating the physical developments of historical neighborhoods, particularly the historical Daftarilar Azab Neighborhood of Tabriz, Parisa Hashempour et al. (2017) concluded that modern neighborhoods should integrate all their components and spaces to help provide cultural and social life for their residents and ensure their perceptual and psychological comfort. This indicates the significance of understanding the human intrinsic characteristics, how they are represented in contemporary lifestyle, and the need to pay attention to the local culture as a key element in the design stage.

Somayyeh Omidvar et al. (2021) investigated the concept of "privacy" in Middle Eastern Muslim nations' houses (Case study: Houses of Isfahan, Sanaa, and Damascus), and found three key components of arena layout (space separation), spatial continuity, and the extent of openness, which affect privacy in the studied houses. Arena layout and spatial continuity were found to be more closely related to privacy. This suggested that the extent of privacy in any of the cities was closely related to these two components. The

expanding spaces of houses in Isfahan have allowed for detaching the guest's privacy from the family's privacy by separating the courtyard, as well as separating spaces in various fronts of the courtyard, as separating different arenas and sites plays a more important role in privacy.

Hanieh Okhovat (2012) comparatively investigated dimensions of privacy in traditional and contemporary houses using the analytical BDSR model. They categorized dimensions of privacy into four categories: relative barriers, relative distance, relative order, and relative circularity within traditional and contemporary houses, and presented some solutions to deal with them.

Mohammad Kazem Seifian et al. (2007) analyzed privacy in traditional Iranian architecture, suggesting that hierarchy would help organize and preserve private and public privacy. They also concluded that proportions, order, and geometry would result in unity and represent the shared roots of traditional principles. An appropriate understanding of what was done in the past and the recognition of traditional architectural principles appear to help us meet our desired goals.

Hashemnejad et al. (2013) also investigated the effects of the quality of openings on privacy satisfaction in residential complexes (Case study: Shushtar-e-Now), concluding that users held low satisfaction rates in this connection. Changes to openings, space land uses, and the lack of security and comfort caused by an inadequate sense of privacy were reasons why users felt less satisfied.

In a study on contemporary Iranian houses' spatial structures, Seyyedeh Solmaz Rastjo et al. (2019) highlighted the need for privacy and hierarchy (Case study: Tehran Houses in the 70s, 80s, 90s, and 2000s), concluding that out of the six indicators, privacy and hierarchy were highly correlated with the houses' spatial relationships.

Islam has emphasized and respected privacy, stressing that it is a key concept in citizenship rights. It is also recognized as a valuable moral principle. Paying attention to privacy has been a key principle of human rights and is closely related to human dignity. It is a fundamental principle of a civil society. In sum, privacy is concerned with people's rights to avoid others from illegally interfering with their private and familial lives (Nemakdoost 2015, 201).

Visual privacy at home denotes performing daily

activities without fear of being seen by others; therefore, visual privacy at home is a crucial factor for increasing the quality of life of residents by separating private life from social relations. Meanwhile, as a network of visual access to urban spaces, the physical structure of façade elements and their dimensions and proportions could explain vision control and visual privacy. This study investigates the components of privacy, especially visual privacy (from outside to inside), as well as the observance of the visual privacy of interior spaces based on arena layout and hierarchical orders in Isfahan's duplex houses.

### 3. METHODOLOGY

This article employed a comparative investigation

method based on Brady's Model<sup>1</sup> to distinguish between traditional and contemporary houses, which represents transformative spatial privacy in contemporary houses. Methodologically, the article first described and analyzed Isfahan's traditional and contemporary houses in isolation and then elaborated and interpreted their components in a table. This was followed by juxtaposing both traditional and contemporary houses to elaborate on their similarities and differences and to eventually compare them by redefining the interior spaces of traditional houses with contemporary houses. In the end, the article also proposed some solutions to help preserve privacy. The samples were selected as suggested above.

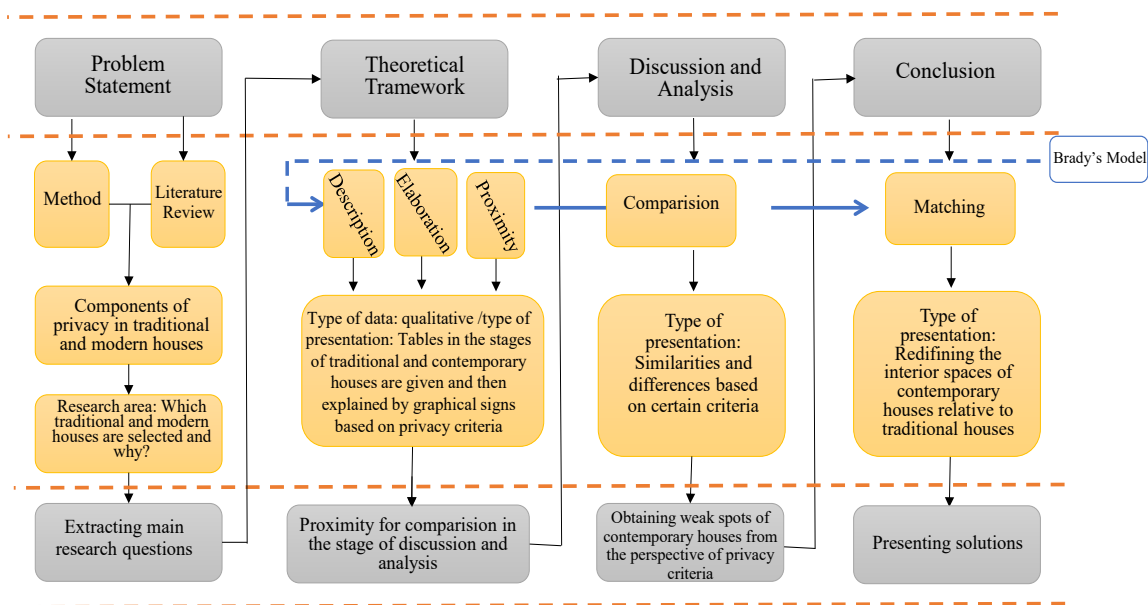


Fig. 1. Study Procedure Stages

The area under study involves traditional and contemporary houses in Isfahan, Iran. The article demonstrated that traditional houses attach value to privacy, while modern houses pay less or little attention to this concept. The representative houses were selected in two respects: first, traditional houses

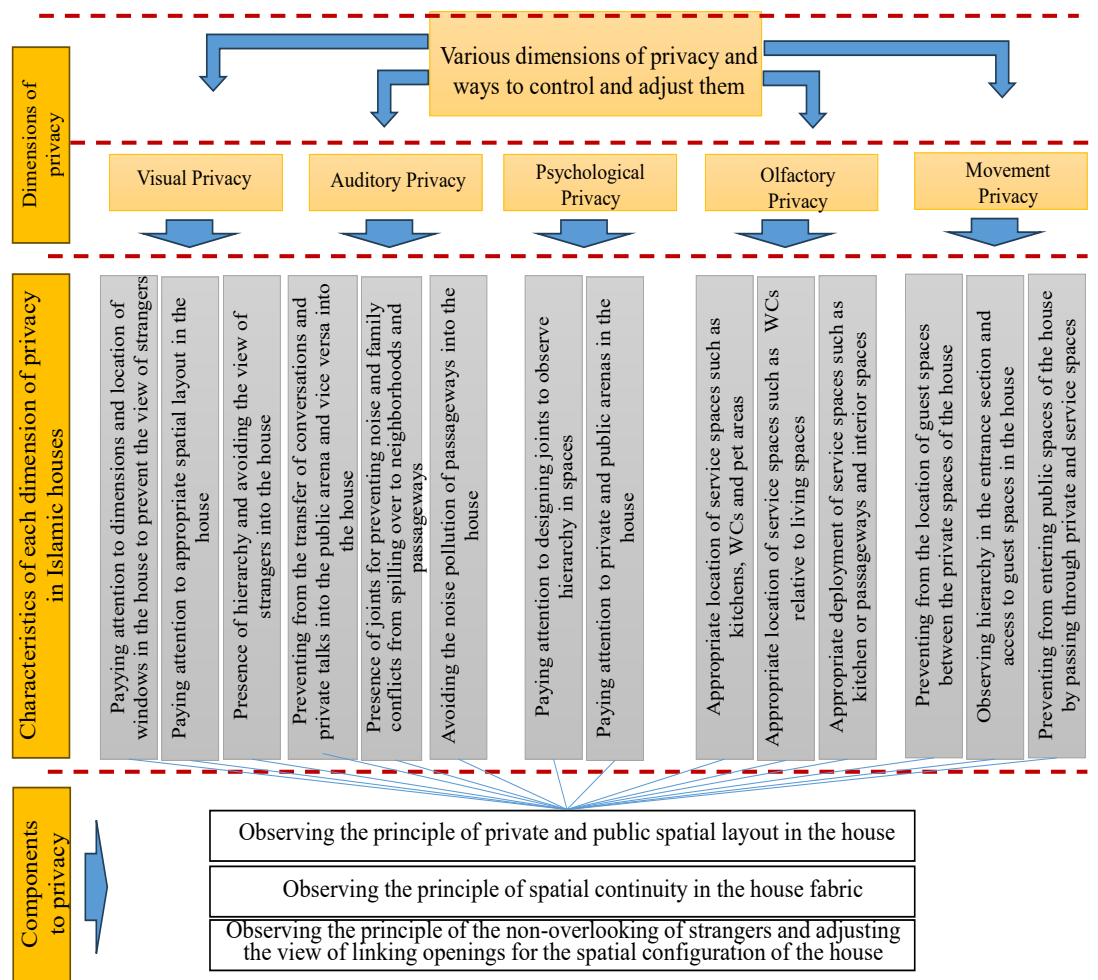
were selected based on the typology of spatial configuration in Isfahan City. As stated earlier, because traditional house samples were many and the majority of Isfahan's houses were constructed in single-courtyard and two-story configurations, seven houses were selected to investigate their privacy.



**Table 2. Dimensions and Criteria of Privacy**

Main Criteria	Various Dimensions of Privacy	Significance
Privacy	Visual Privacy	Allowing for entering the space to prevent an outsider stranger from viewing the house
	Auditory Privacy	Avoiding overhearing and inconvenience for other members of the family and neighbors
	Olfactory Privacy	Avoiding dislike and sense of inconvenience among family members and neighbors
	Movement Privacy	Paying attention to ways of entry into the space through specific customs
	Psychological Privacy	Paying attention to human spirits

(Mohtasham and Hamzehzadeh 2014, 55)

**Fig. 3. Dimensions and Characteristics of the Components Affecting the Formation of Privacy**

(Omidvari and Hamzehnejad 2021, 150)

**- Principle of Spatial Continuity**

Preserving the principle of hierarchy in traditional houses, constructed by Islamic architectural principles, indicates that hierarchy highly influences privacy in architectural fabric and urban planning. In Islamic architecture, entering private arenas is made possible by passing through public arenas, representing the role of hierarchy in preserving the

privacy of private spaces.

**- Principle of Arena Layout in Private and Public Spaces in Houses**

Privacy is met through the separation of interior spaces from exterior spaces and the creation of diverse joints to strengthen the separation, as well as providing comfortable open interior spaces

(Silversmith 2012). In considering people's economic and welfare conditions, the guest's space is separated from the space of other members of the family by various courtyards, or dividing the spaces in single-courtyard houses.

#### **- Principle of [the guest's] Non-Overlooking and Adjusting Linking Openings within the Houses' Spatial Configuration**

Protecting the house's interior spaces from the view of strangers is what would likely affect the family's comfort; therefore, the house should be so designed to serve as a safe and comfortable haven while being protected from others' views (Naghizadeh 2007). The most important factors involved in creating privacy in Islamic houses include the appropriate location of spaces, openings, and openness in the walls (Aminpour et al., 2016). Meanwhile, separating interior arenas from exterior arenas using joints and controlling dimensions, as well as opening sizes, could affect the adjustment of openings including spaces within the house.

### **3.2. Investigating Traditional and Modern Houses in Isfahan**

Iran's arid and hot climate conditions and its cultural and historical background have led to greater thermal exchange levels both inside and outside living environments, thereby resulting in the construction of more introverted houses. Introversion and deep relationship with nature, in conjunction with climatic conditions and cultural characteristics, have resulted in the formation of central courtyards in Iran's traditional houses. Put simply, central courtyards in these houses have served as a way to get nature into interior spaces and to help preserve privacy and introversion. Isfahan City has served as a major Iranian architectural hub and is home to a plurality of remaining valuable houses. For this, it is essential to understand this type of architecture. Characterized by a semi-hot and arid climate, this region mostly features introverted architectural patterns, and its geographical features and regional flat surfaces have led to the growing expansion of houses. As indicated by the existing samples and other historical evidence, Isfahan's houses commonly represent three different patterns, which are discussed below in detail:

- Introvert or pavilion type: In the middle of gardens lie pavilions featuring compact volumes belonging to traders and rulers.

- Two- or multi-courtyard types: The main courtyard belongs to the family, the second to the guest, and the third to the service space, with the wealthy class

residing in these areas.

- Single-courtyard type: The courtyard helps organize open and closed spaces, as well as the guest's space. The houses with courtyards usually consist of two northern-southern and eastern-western directions. One front of the house belongs to the landlord and family members, while the other belongs to the guests; the house's entrance also allows for the guest's direct access to these spaces without entering the courtyard and the family's privacy. These houses were most common among the public (Omidvari and Hamzehnejad 2021).

#### **3.2.1. Components Making up Traditional Houses in Isfahan**

- Entrance: Most entrance doors were two-part wooden doors, with each door featuring its knell.

Vestibule: A space serving as the main entry to the house, immediately lying after the portal.

- Courtyard: The center is surrounded by house spaces.

- Backyard: A small and open space usually lying on the back of the main spaces of the house and may pertain to service sections.

- Upper (upstairs) courtyard: A small courtyard on the second floor that, together with its surrounding spaces, forms an independent part of the house.

- Porch (Iwan): A semi-open space enclosed on three sides, with only one side being open.

- Small porch: A smaller and shallow porch.

- Columned porch: A semi-open space with columns usually standing in front of closed spaces.

- Mahtabi: A no-ceiling space above the courtyard surface, being enclosed on three sides and open only on one side.

- Hall: A large living room used to welcome guests.

- Alcove: A space above the hall and facing the window that is set aside for lords.

- Pond: An elevated covered space in whose middle lies a pond usually connected to other spaces.

- Panj-Dari: A large room with five large windows opening to the courtyard.

- Se-Dari: A room with three large windows towards the courtyard.

- Do-Dari: A large room with two large windows opening to the courtyard.

- Goushvareh room: A room located upstairs beside the hall.

- Anteroom: an intermediary space through which entry is made to the closed space.

- Kitchen: A place to make and serve food (Haji Ghasemi 1998, 2016).

**Table 3. Types of Rooms in Iranian Houses based on Private and Public Spaces**

Types of Room	Alcove	Panj-Dari	Se-Dari	Do-Dari	Post-Room
	Public	Semi-Public	Semi-Private	Private	Fully Private

(Sadeghi 2015)

### 3.2.2. Components Making Up Contemporary Houses in Isfahan

Bedrooms: In modern houses, bedrooms have become smaller and usually involve drawers, beds, and other appliances, making them almost unbreathable spaces. Instead of using these spaces, most people tend to go to living and dining spaces to perform their daily activities.

- Kitchen: A common problem with modern houses is the kitchen space. In this environment, women may be vulnerable because they spend too much time in the kitchen, which poses an adverse quality. The improper design of this space could expose it to the public view and cause the mental comfort of the residents to be lost while eliminating privacy.

- Service spaces: If eliminated, service spaces could make living rooms and bedrooms unhealthy and non-hygienic spaces, as the inappropriate design of interior spaces, the lack of pre-entrance spaces, and failure to observe family privacy may eliminate privacy in the

house.

- Playing spaces for children: Children will grow if they are allowed to have direct contact with open spaces and nature, which helps raise their talents and health. Children's health can also be met by parental monitoring of the inside of the house and the courtyard spaces.

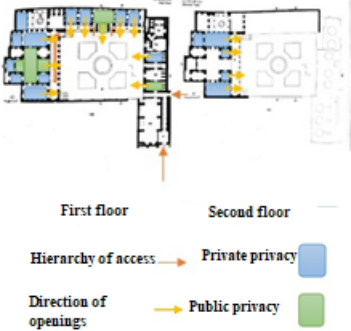
- Living spaces: Living rooms serve as the most important spaces for the congregation of members of the family. This sense of belonging to space has unfortunately faded away because of the combination of living and dining rooms, making people do their activities in different spaces in isolation.

Table 4 below gives traditional two-story houses in Isfahan. The plans also include private and public privacy and a hierarchy of accessibility, as well as the direction of openings. The dimensions of privacy have also been given. Table 5 that follows compares components of olfactory, movement, psychological, auditory, and visual privacy.

**Table 4. Plans of traditional houses in Isfahan**

Premises	Characteristics	Plans
Yadollahi House	As one of the registered national Iranian monuments, the Rahim Yadollahi House in Isfahan dates back to the Qajar era. The house features the most important sections in two northern and southern fronts positioned along the two ends of the main direction of an extended courtyard. Also, the main entrance to the house, located on the southwestern corner of the house, represents a relatively larger vestibule shared by the neighbors. The entry to the house is made by passing through the vestibule and the corridor to the main courtyard. The house has its interior arenas separated by such intermediary spaces as anterooms, serving as a mediating space. Meanwhile, the halls assigned specifically for guests are situated near the entrance, with private arenas detached from each other separately. The kitchen is located on the eastern front of the premises, and is separate from the private and public areas, with the olfactory privacy preserved completely. As an intermediary space, the courtyard links all interior spaces in isolation. In because there is no opening than the entrance to the public passageway, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings open towards the central courtyard. This will help preserve auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.	<p>Hierarchy of access → Private privacy (blue)</p> <p>Direction of openings → Public privacy (green)</p> <p>(Haji Ghasemi 1998; 2016)</p>

Premises	Characteristics	Plans
David House	<p>The David House is a Safavid-era mansion and is located in Isfahan's Jolfa City, in the Tabriziha Neighborhood next to the Agha Davoudi alley. The enclosed spaces of the house are located on four fronts of a rectangular courtyard. The most important space of this house is situated on its northern front which includes a cross-shaped hall as high as two floors in the middle and four Se-dari rooms on the two floors on either side. On the first floor, these rooms overlook the courtyard through a smaller iwan, on the one hand, and conjoin the middle hall, on the other hand. The rooms also overlook the hall space in a Goushvareh space, on the second floor. The hall's ceiling is dome-like and features muqarnas decorations. The premises' entrance is situated in the northeastern corner, and its vestibular space features a square-shaped form. This vestibule leads to an extended corridor along the eastern front, leading to the courtyard and its southern front which signifies the separation of the private and public arenas from the main entrance of the house. The entrance vestibule provides access to one of the Se-dari rooms situated on the northern front to avoid the entry of strangers to the inside of the courtyard, keeping the privacy of the interior space of the house. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	<p>(Haji Ghasemi 1998; 2016)</p>
Zoulitan House	<p>These premises showcase three historical architectural periods, namely the Safavid, Zandiyya, and Qajar eras. Thanks to its different ownerships, this premises has witnessed various decorations across different historical periods under the influence of various Armenian, European, and Iranian cultures, making it a blend of cultures. The first known owner of this house was Vakil al-Dolah (Estepanous Aghanourian), the English Chargé d'Affaires in Isfahan. Having been restored, the house changed its name to Polshir. The house was also registered in the Iranian Cultural Heritage List, having been awarded the UNESCO prize. The house spaces are situated on the four sides of a rectangular courtyard. All fronts of the courtyard are as high as two floors, but northern and western fronts are a bit higher. The house's entrance leads to the courtyard through a vestibule and a corridor. One of the Se-dari rooms is accessible through the corridor and thus helps avoid the entry of strangers to keep privacy. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	<p>(Haji Ghasemi 1998; 2016)</p>
Kahkeshan House	<p>The Kahkeshan House goes back to the Qajar period. The house features its spaces on three fronts of the courtyard. The northern front takes a two-floor form and has a hall in its middle. On the western front, the courtyard is seen projecting as a closed space, creating an open space with an octagonal pond that represents an indoor pond. The entry to the house is made through this section, as passing through the vestibule and the corridor leads to a smaller iwan on the corner of this section of the courtyard. This space serves as a pause space in the house's privacy before entry into the courtyard and after the corridor. On the northwestern side of the house lie the kitchen and the water well, from where there is a separate entrance to the lateral alley. On the second floor of this section of the house lies an upper courtyard, surrounded by a Se-dari room and other spaces, almost creating an independent section in the house. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	<p>(Haji Ghasemi 1998; 2016)</p>

Premises	Characteristics	Plans
Beheshtian House	<p>Constructed in the early Qajar period, this house was owned by the late Abbas Beheshtian, the contemporary historian, and is located in one of the old neighborhoods of Isfahan called "Jamal Kalleh" next to the Grand Bazaar. This house was constructed around 200 years ago and was later developed and completed. The house is seen as one of the middle-class mansions of the Qajar era and lacks a diversity of interior and exterior spaces, as it is made of rooms surrounding a rectangular courtyard. The northwestern and southeastern fronts are more elevated than the other two. The premises' corners are dedicated to passage and service spaces. The kitchen is situated in the closest area to the entrance and in the corridor. Service spaces have been separately located from public and private spaces inside the premises to help preserve olfactory privacy, with various arenas situated in isolation in a way to preserve auditory privacy. On the eastern corner, the main house's entrance features a simple vestibular portal leading to a smaller iwan on the southeastern front. On the western corner lies a simpler entrance leading to one of the smaller iwans on the northwestern front. The kitchen is situated in this section. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	 <p>(Haji Ghasemi 1998; 2016)</p>
Lababaf House	<p>The Lababaf House goes back to the Qajar-Pahlavi era. The house has its spaces sprawling on three fronts of an expansive courtyard, the northern front of which is the most important and most elevated of all. Another main spatial complex of the house is formed around the eastern front of the courtyard, in the middle of which are a rounded pond and four gardens. This combination is less seen in other houses. The southern front also consists of some service spaces such as the bathroom, the kitchen, and the stable. The separation of service spaces from public and private spaces is aimed at preserving olfactory privacy, with the courtyard serving as an intermediary space separating various arenas. The house features two entrances from two public passageways both leading to the corner of the courtyard through the corridor. The corridor serves to help observe the privacy. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	 <p>(Haji Ghasemi 1998; 2016)</p>
Vasiq Ansari House	<p>Built around 150 years ago by the leader of the Vasiq Ansari tribe, Zel al-Sultan, the ruler of Isfahan, this mansion represents one of the most beautiful mansions of the Qajar era. The most important part of the house lies in the northern front of the courtyard. There is a pond complex in the northeastern corner of the house which is the most elevated space of the house and involves three floors. The pond takes its illumination from the windows of the upstairs floors. The Western Front involves spaces similar to the Eastern Front. There is also a Mahtabi upstairs. On the southern front, the rooms are accessed through the intermediary space of the anteroom. The house is accessed from its southwestern corner. There stands a large vestibule in the entrance section shared by the neighbor but is now destroyed. This vestibule is led to the corner of the courtyard after the corridor. The entry to the vestibule and the corridor is made in two opposite directions, giving a hidden feature to the entrance and is highly important for keeping privacy. Because there is no opening to the public passageway except the entrance, no transfer of voice occurs from the inside to the outside and vice versa, nor any outside view of the house is made, as openings get open towards the central courtyard. This helps meet the auditory and visual privacy. The location of public and private arenas, based on the separation of different fronts in the premises, has completely helped preserve privacy and its dimensions.</p>	 <p>(Haji Ghasemi 1998; 2016)</p>

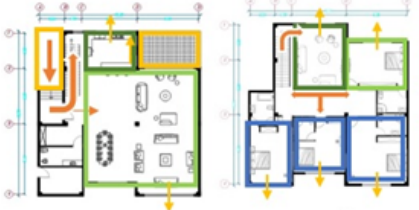
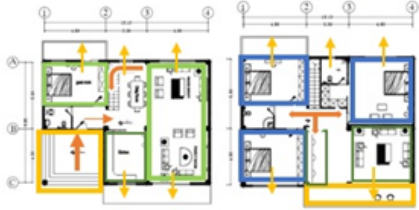
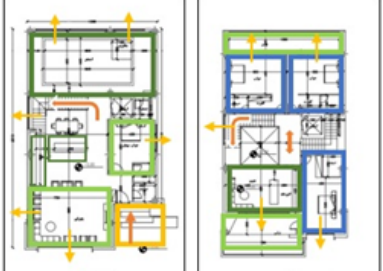
**Table 5. Comparing Privacy in Traditional Houses of Isfahan**

Dimensions of Privacy		Premises	Yadollahi House (Qajar)	Labfaf House (Qajar-Pahlavi)	David House (Safavid)	Vasiq Ansari Hoise (Qajar)	Zoulian House (Safavid-Zand-Qajar)	Beheshtaj House (Qajar)	Kakheshan House (Qajar)
Movement Privacy	Avoiding the embedment of the guest's space in the middle of the house's private arena	✓	✓	✓	✓	✓	✓	✓	✓
	Observing the hierarchy of entry and access to the guest's space in the house	✓	✓	✓	✓	✓	✓	✓	✓
	Avoiding entry to public arenas of the house by passing through private and service arenas	✓	✓	✓	✓	✓	✓	✓	✓
Olfactory	The appropriate location of service spaces such as the kitchen, along with the passageway or the interior space	✓	✓	✓	✓	✓	✓	✓	✓
	The appropriate location of WCs relative to the living space	✓	✓	✓	✓	✓	✓	✓	✓
	The appropriate location of service arenas, WCs, and the kitchen	✓	✓	✓	✓	✓	✓	✓	✓
Psychological Privacy	Paying attention to private and public arenas in the house	✓	✓	✓	✓	✓	✓	✓	✓
	Paying attention to designing appropriate joints to observe space hierarchies	---	✓	✓	✓	✓	✓	✓	✓
Auditory Privacy	Avoiding noise pollution from the passageway to the house	✓	✓	✓	✓	✓	✓	✓	✓
	Presence of joints to avoid noise pollution and family conflict to be transferred to neighbors and passageways	✓	✓	✓	✓	✓	✓	✓	✓
	Avoiding the transfer of private talks and conversations from public to private arenas and vice versa	✓	✓	✓	✓	✓	✓	✓	✓
Visual Privacy	Presence of hierarchy and avoiding strangers' view of the inside of the house	✓	✓	✓	✓	✓	✓	✓	✓
	Paying attention to the appropriate arena layout in the house	---	✓	✓	✓	✓	✓	✓	✓
	Paying attention to dimensions and place of windows in the house to avoid strangers' view of the house	---	---	---	---	---	---	---	---

Table 6 below summarizes the contemporary Isfahan's duplex houses, and the plans provide private and public privacy, the hierarchy of accesses, as well as the direction of openings and the dimension of

privacy. The following Table 7 compares components of olfactory, movement, psychological, auditory, and visual privacy.

Table 6. Contemporary Isfahan's House Plans

No.	Characteristics	Plans
1	<p>The entry is made possible through a split level and a pause space into the interior space. The lack of an appropriate waiting place and the presence of strangers in the pause space cause the perfect view of the interior space. On the first floor, there is no private space for taking a rest. Meanwhile, on the second floor, the guest's house is adjacent to private rooms, disturbing the private privacy of the floor. The location of the WC space in the entrance section is aimed at observing olfactory privacy; however, the lack of ventilation has made the wardrobe space turn into an inappropriate place. The overlooking of the living and dining room spaces from the kitchen not only eliminates the visual privacy but also disrupts the olfactory privacy. The auditory privacy has been kept by the separation of the semi-public space from the private space on the two floors. This house is constructed in an extrovert form, with the openings towards the courtyard having their privacy preserved. The openings that open towards the alleys and streets have their privacy unreserved, with the interior space of the house only being kept from strangers' view through a curtain.</p>	 <p>First floor                      Second floor</p> <p>Semi-private privacy    Private privacy</p> <p>Semi-public privacy    Public privacy</p> <p>Opening direction    Hierarchy of accesses</p>
2	<p>The entry to the house is made through a split level and a pause space. The WC space is located in the entrance section to help preserve the olfactory privacy. The entrance filter is divided into the entrance, the WC, the guest's house, and the access to the living and dining rooms. However, it should be considered that the lack of an appropriate waiting place and the presence of strangers in the entrance filter create the perfect view of the interior space. The overlooking of the living and dining spaces from the kitchen not only eliminates visual privacy but also disrupts olfactory privacy. The separation of semi-public spaces and private spaces on the two floors has made auditory privacy preserved. On the second floor, like the first floor, the kitchen privacy is not preserved; however, since it is located in the private arena and serves daily needs, it is partly acceptable. On the other hand, the smell is easily transferred which is not good. The only WC in the parents' sleeping space prevents the transfer of stink to the interior space due to the installation of ventilation. The terrace on the second floor lacks privacy and is usually used as the warehouse space due to failure to pay attention to privacy components. This house features an introverted form. Its openings opening towards the alleys and streets have no privacy, with privacy (avoiding the strangers' view) only being preserved through the location of the curtain.</p>	 <p>First floor                      Second floor</p> <p>Semi-private privacy    Private privacy</p> <p>Semi-public privacy    Public privacy</p> <p>Opening direction    Hierarchy of accesses</p>
3	<p>The entry to the interior space is made by creating a split level from the courtyard. The lack of an appropriate waiting room for strangers in the pause space causes the full view of the interior space. On the first floor, there is no private space for taking rest, with the guest's room, the pool, and the living and dining spaces situated in there. The entry to and exit from the pool are made possible without a filter, which causes olfactory privacy and pool privacy to be not observed. The kitchen privacy indicates that the olfactory privacy has not been preserved. The second floor is accessed through a long corridor, with the hierarchy of access not observed completely. On the second floor, the kitchen is situated next to private rooms, causing olfactory privacy to be disturbed on the floor. Auditory privacy is observed by the separation of the semi-public spaces from private spaces on both floors. This house features an introverted form. The openings towards the courtyard has their privacy partly observed. The location of the lift next to the guest's room and the bedroom on the second floor have disrupted auditory privacy. These bedrooms on the second floor are accessed through the terrace, causing the sense of security to and privacy to be disrupted.</p>	 <p>First floor                      Second floor</p> <p>Semi-private privacy    Private privacy</p> <p>Semi-public privacy    Public privacy</p> <p>Opening direction    Hierarchy of accesses</p>

**Table 7. Comparing privacy in contemporary Isfahan's houses**

Privacy Dimensions		Premises	Contemporary House 1	Contemporary House 2	Contemporary House 3
Movement Privacy	Avoiding the embedment of the guest's space in the middle of the house's private arena		✗	✓	✓
	Observing the hierarchy of entry and access to the guest's space in the house		✓	✓	✓
	Avoiding entry to public arenas of the house by passing through private and service arenas		✓	✓	✓
Olfactory	The appropriate location of service spaces such as the kitchen, along with the passageway or the interior space		✓	✓	✗
	The appropriate location of WCs relative to the living space		✓	✓	✓
	The appropriate location of service arenas, WCs, and the kitchen		✗	✗	✗
Psychological Privacy	Paying attention to private and public arenas in the house		✗	✓	✓
	Paying attention to designing appropriate joints to observe space hierarchies		✗	✗	✗
Auditory Privacy	Avoiding noise pollution from the passageway to the house		✓	✗	✓
	Presence of joints to avoid noise pollution and family conflict to be transferred to neighbors and passageways		✓	✓	✓
	Avoiding the transfer of private talks and conversations from public to private spaces and vice versa		✗	✓	✓
Visual Privacy	Presence of hierarchy and avoiding strangers' view of the inside of the house		✗	✗	✗
	Paying attention to the appropriate arena layout in the house		✗	✓	✓
	Paying attention to dimensions and place of windows in the house to avoid strangers' view of the house		✗	✗	✗

#### 4. DISCUSSION AND ANALYSIS

The review of traditional and contemporary houses in Isfahan based on privacy components showed that the contemporary houses have completely or partly failed to observe such criteria as attention to the climate, popular customs, attention to material and spiritual

needs, and the non-overlooking of residential units, not to mention others. Modern architecture is more concerned with the types of houses and residences, with premises being built without attending to people's needs and understanding the location. Table 8 below compares the components of privacy in two different periods.

**Table 8. Comparing the Way Privacy is preserved in Traditional and Modern Houses in Isfahan**

Components	Similarities	Differences
Visual Privacy	Attention to appropriate arena layout in the house	Traditional houses: Visual privacy has been preserved by the location of the vestibule and the corridor that leads to the courtyard. Windows and iwans are introverted to the central courtyard. Contemporary houses: The entrance as a dividing section does not play a role in visual privacy. These houses are characterized by the failure to pay attention to the regional climate and construct introverted houses, as windows open towards the public passageway and the courtyard.
Auditory Privacy	Location of the private privacy on the second floor to prevent the transfer of noise and family conflict to the neighbors and passageways	Traditional houses: The location of various arenas on different sides of the courtyard Contemporary houses: The transfer of noise to the inside of the house, transfer of private talks and conversations to the public arena, especially in houses where the guest's room is situated by the bedrooms; the location of TVs by private rooms on the second floor
Psychological Privacy	Private and public arena layouts in the house has been partly observed in contemporary houses.	Traditional houses: Appropriate joints for observing the hierarchy of spaces Contemporary houses: The inaccessibility of the second floor's stairway near the entrance; passing through the public arena and facing the guests in the house
Olfactory Privacy	The location of the kitchen and WCs separately from other spaces	Traditional houses: Detaching services spaces and appropriate ventilation and access to such spaces through the courtyard and the corridor Contemporary houses: Thanks to modern designs, the kitchen is designed in an Open form, though it may not help preserve visual and olfactory privacy. In WCs, the lack of appropriate ventilation has caused privacy to be disrupted.
Movement Privacy	- Observing the hierarchy of entrance and access to the guest's space in the house - Preventing the entry to the public arena by passing through private and service arenas	Traditional houses: Different accesses to various arenas and space openings towards the central courtyard. Contemporary houses: The location of the guest's space in the middle of the house's private privacy and vice versa, and access to the private space through passing public arenas

Unfortunately, the inappropriate imitation of Western-style architecture has given a beautiful yet nonsensical appearance to contemporary architecture; for this, using traditional architectural aesthetics could help provide an appropriate space that best suits the Iranian culture. Only a handful of these criteria had

been applied in the samples studied. However, to achieve desirable quality in contemporary houses, Table 9 below presents some solutions that would improve Isfahan's contemporary houses using the concepts and criteria that create comfort and spatial quality in traditional houses.

**Table 9. Solutions**

Components in Traditional Houses	Redefining Contemporary Houses	Comparison and Presenting Solutions
Halls Panj-Dari Rooms	Dining Room Guest Room	- Location of public spaces close to the entrance and the observance of the hierarchy of access for guests - Detachment of public and private arenas
Se-Dari Rooms	Living Room	The possibility of personal comfort and solace in different house spaces such as small family living areas, smaller terraces, and semi-open spaces, as well as courtyards to preserve privacy
Do-Dari Rooms Post-Room	Private Room	Location of private rooms and private living areas along each other and the lack of view of the public space

Components in Traditional Houses	Redefining Contemporary Houses	Comparison and Presenting Solutions
Roof light (Do-, Se-, and Panj-Dari Rooms)	Roof light (Window)	- Using porous surfaces such as latticework in traditional architecture to control the view of the outside to the inside - Using flowers and plants in front of the openings helps create beauty, relates to nature, and controls the view of neighbors
Kitchen	Kitchen	Detachment of the place where service spaces are located from others spaces; placing appropriate ventilation and observing visual and olfactory privacy; designing the kitchen in a way it is detached from the house to control visual privacy
Vestibule	Entrance Filter	Designing ante-rooms to the entrance of the house and the possibility of people sitting and standing without their direct view of the interior spaces
Corridor	Corridors	Observing the hierarchy of access to public spaces and also interior spaces without passing private spaces
Iwan (Porch) Smaller Iwan	Terrace Balcony	Controlling the overlooking the outside of the house through roofed balconies such as iwans in traditional Isfahan architecture with a greater depth, which removed the need for the permanent use of curtains, in addition to utilizing natural light that would preserve visual contact.
Central Courtyard	Courtyard	- Using the central courtyard based on the regional climate - Designing open and semi-open spaces for several people

## 5. CONCLUSION

A review of the tables indicated that the sample houses have incorporated some concepts inspired by historical patterns into contemporary life while partly meeting resident needs, although none of the samples fully adhered to all traditional architectural principles. The review of historical houses suggested that they attached importance to preserving privacy. To this end, providing privacy was based on three components and attention to the view from the outside to the inside and preserving privacy in interior spaces were critical. The literature has shown that cultural factors have contributed significantly to this and determined three key indicators: arena layout, spatial continuity, and the extent of openness, with the first two being more closely linked with privacy. Also, the

extent of privacy in cities was found to be closely linked with these two components. In Isfahan's houses, the guest's space has been detached from the family members' spaces by separating the courtyards and the spaces on various fronts of the courtyard, with separating the arenas playing a much stronger role in preserving privacy. Other studies have also suggested that hierarchies could help create order in private and public spaces, while eventually leading to preserved privacy in the house. In sum, using proportions, order, and geometry may create unity, suggesting the shared roots of traditional principles. It seems that a better understanding of what was done in the past and the recognition of traditional architectural principles could help us translate these concepts into modern languages and meet our goals.

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## PARTICIPATION PERCENTAGE

The authors state that they have directly participated in the stages of conducting research and writing the article.

## ENDNOTE

1. Brady's Model: This model proposes performing comparative qualitative studies to help the researcher focus on the activities in the area under study. This model also includes four stages: description, interpretation, juxtaposition, comparison.

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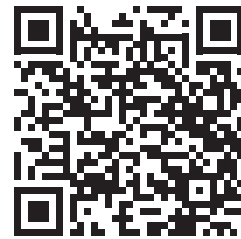
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