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Research Article

Evaluation of the privacy concept in traditional houses through the interaction of street and facade using isovist areas: The case of Tokat houses

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Abstract
Traditional houses, shaped and transformed according to the needs of individuals and societies, are influenced by the physical and socio-cultural characteristics of their respective regions. The concept of privacy has played a decisive role in traditional dwellings' spatial organization and facade design, also shaping users' perception of privacy in their interaction with the street. In this context, the study examines how privacy affects the visual connection and field of view between users and the street in traditional houses. The study area focuses on the traditional houses of Tokat, which have largely preserved their original character and texture. In this context, nine traditional houses with different cumba types located on Bey Street and Beyhamam Street were examined. In the study, isovist analysis, a method that enables analysis based on the field of view, was employed. In this context, the visual connections between the street and different floors of traditional houses were calculated, and their effects on the perception of privacy were analyzed. The findings revealed that, depending on the type of cumba, the visual connection with the street is stronger at the ground floor level in traditional houses; however, privacy is not entirely compromised, and the visual relationship varies quantitatively between floors.

Keywords: Traditional housing, Privacy, Cultural heritage, Isovist, Tokat

Extended Abstract

Introduction: Throughout history, spaces have been shaped to meet both the physical and social needs of individuals and societies, evolving in line with the physical and socio-cultural requirements of their time and continuing to the present day. In this context, traditional houses serve as significant examples, reflecting their respective periods' architectural style, economic conditions, and socio-cultural structure (Muşkara, 2017: 445). Anatolian rural architecture has been shaped by environmental and cultural factors such as climate, topography, lifestyle, and socio-economic structure, which have played a decisive role in the formation of regional architectural characteristics (Batur & Gür, 2005: 165). Beyond meeting basic needs, these structures have varied according to their users' lifestyles and the environmental conditions (Turgut, 1990: 28-29). Traditional houses have been shaped in accordance with the physical and socio-cultural characteristics of their region, with the concept of privacy serving as a determining factor in this process. Privacy has influenced not only the spatial organization but also the facade design. This study examines how the concept of privacy in traditional houses alters the visual connection between the users and the street.

Purpose and scope: Traditional houses have survived to the present day, shaped by the physical norms of the region in which they were designed, as well as the socio-cultural characteristics. The most important of these characteristics is the concept of privacy. Privacy has played an important role in shaping the facade designs as well as affecting the spatial organization of traditional houses. Privacy changes the facade character of the buildings and especially reduces the visual perception of the interior spaces of the ground floors by the users on the street. This study aims to examine how much the visual perception of the users in the interior spaces of the building towards the street is affected in these structures shaped according to privacy. In this regard, the study aims to determine how the visual connection and line of sight between the street and the ground and upper floors of traditional houses change from the perspective of users. Furthermore, it explores the impact of cumbas on the visual connection with the street in traditional houses from the users' standpoint. The study area consists of traditional houses located on Bey Street and Beyhamam Street in Tokat province, which largely preserve

their original fabric. Within the scope of the study, nine traditional houses have been selected based on their preservation of traditional characteristics and their facade cumba types, including single-cumba, double-cumba, and full-width cumbas.

Method: In the study, the isovist analysis method has been used to calculate the visual connection between traditional houses shaped by the concept of privacy and the street. This method, employed in spatial analyses, defines all areas visible from a given point, thereby enabling the assessment of visual perception and spatial relationships. In addition, the Depthmapx program was used to calculate the viewing angles and areas at the specified points. Therefore, in the first phase of the study, AutoCAD drawings of the ground and upper floor plans of the selected traditional houses were created according to their cumba types. The visual points of the spaces with a street relationship on the ground and upper floors of the evaluated traditional houses were determined in groups. The visual points were evaluated for each building using the same grid sizes and scale within each structure. To facilitate a better understanding of the data, the line-of-sight areas for the ground and upper floors of each building were analyzed separately and presented in tables. The other buildings were grouped according to their cumba types, and the data were assessed comparatively.

Findings and conclusion: This study evaluates how the concept of privacy affects the visual connection and interaction with the street in terms of interior users in traditional houses. The visual connection between the ground floor and upper floors of traditional Tokat houses, which have preserved their traditional texture and identity with the street, according to the cumba types, has been examined from the user's perspective. As a result of the study, it has been seen that the visual perception of the interior user towards the street is not negatively affected in the ground floors that are designed as solid in a way that the user outside cannot perceive the interior due to privacy. If the cumbas in traditional houses have side windows, this also appears as a positive factor that increases the visual perception towards the street. In this regard, in traditional houses shaped by the concept of privacy, the difference in the visual relationship between the interior and the street on the ground and upper floors has been demonstrated through numerical data using the applied method. As a result of the evaluations, it was determined that the positioning of cumbas and windows plays a significant and diversifying role in the visual connection with the street. Through isovist analyses, the users' line of sight has been evaluated numerically and visually, allowing for comparisons in this context. These findings provide a framework with the potential to contribute to future studies, particularly those focused on visual integration and perception at the spatial and urban scale.

Keywords: Traditional housing, Privacy, Cultural heritage, Isovist, Tokat

INTRODUCTION

Throughout history, individuals and societies have strived to shape and transform their environments in accordance with their socio-cultural and physical needs. In addition to addressing physical needs such as shelter, rest, and protection, people have designed spaces that fulfill socio-cultural needs such as privacy, beliefs, customs, and traditions. In this regard, spaces created in response to the changing physical and socio-cultural needs of individuals and societies have undergone continuous change and transformation. Traditional houses stand at the forefront of structures that offer data on the various characteristics of their time. Traditional houses have been shaped and transformed in accordance with two main factors: physical and socio-cultural norms and needs, continuing to the present day. In the formation of traditional houses, socio-cultural norms have a significant influence alongside physical norms. It can be understood that the variations and diversification in the location, space, and facades of traditional houses built under similar physical conditions and needs are influenced by socio-cultural norms and needs (Rapoport, 1977: 289; Rapoport, 1980; Turgut, 1990: 92). Among the socio-cultural norms, the concept of privacy, influenced by the Islamic faith in Anatolia, has played a significant role in the spatial organization, facades, and positioning of traditional houses (Altman, 1977: 82; Altman & Chemers, 1980: 73; Yüksel, 2003: 183; Yürekli & Yürekli, 2007: 13-14).

Studies in this field, such as those by Rapoport (1980), Altman and Chemers (1980), and Lawrence (1987), have examined the role of socio-cultural and environmental factors in the shaping of dwellings. Research by Turgut (1990), Tomgaç (1997), Zorlu and Keskin (2017), Halaç & Doruk (2020), and Bekâr and Altuntaş (2021) has focused on the impact of culture and privacy on spaces and dwellings. In the studies by Akın (2009), Akın & Özen (2010), Akçay (2013), Paç & Binan (2019), and Akın & Ercan (2023), the architectural characteristics of Tokat's traditional houses and street fabric were described, and recommendations for their preservation were provided. Bıyık (2019) evaluated Tokat's traditional houses from the perspective of climatic design, while Ünal (2019) assessed them in terms of sustainable tourism. In his study, Gülebenzer (2016) evaluated the spatial characteristics of the Tokat Cultural House.

Upon reviewing the existing studies, it has been observed that no research has been conducted on the visual interaction between privacy and the street in traditional houses. In this regard, nine traditional houses located on Beyhamam and Bey Streets in Tokat, which have preserved their traditional fabric and facades, have been selected as the study area. In selecting traditional houses, nine houses were chosen, with three examples of single-cumba, double-cumba, and full-width cumba facades, frequently observed in traditional houses' facade designs. The study aims to reveal the impact of privacy on the visual connection between the street and the users of traditional houses, specifically comparing the effects between the ground and upper floors. In this context, the isovist analysis method was chosen to calculate the visual connection between the interior users of the ground and upper floors of traditional houses and the street. In this regard, the study examines how the visual interaction between the traditional houses, shaped by the concept of privacy, and the external environment affects the visual connection of the interior users with the street.

Norms Affecting Traditional Houses

Throughout the centuries, humans have designed spaces that not only address physical needs such as shelter, rest, and accommodation but also respond to socio-cultural needs. The continuous interaction of individuals and societies both among themselves and with their environment has played a decisive role in shaping spaces in line with evolving needs and transforming habits over time (Şahin & Eroğlu, 2020: 727). In this regard, the structures formed by spaces provide data on various aspects such as the cultural, social, and economic conditions of the period in which they were constructed, as well as architectural style (Karpuz, 1984: 4; Şahin & Eroğlu, 2023: 775-776). The most significant factors determining the character and identity of traditional houses, which are among these spaces, have been climate, geographical location, traditions, customs, and the needs of the period (Akyıldız, 2020: 72; Bekar & Altuntaş, 2021: 101). Traditional houses have been shaped according to the needs and conditions of the period, and they are among the most important cultural heritage structures reflecting the architectural identity specific to their region. One of the significant representatives of these houses, the Anatolian Turkish House, is a product of the interaction between the environmental and cultural context of Anatolia, Islamic beliefs, and the cultural and architectural elements brought by the Turks from Central Asia (Bozkurt & Altınçekiç, 2013: 70; Göğebakan, 2015: 54-55). In traditional houses, the interior organization has a flexible structure, with rooms holding a central position (Kuban, 1982: 196; Bektaş, 1996: 24). Eldem (1954: 24) classified Turkish houses based on the position of the sofa as sofa-less, with an external sofa, internal sofa, and central sofa designs (Figure 1).

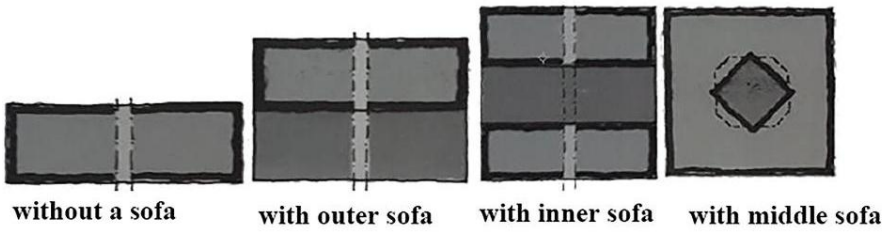


Figure 1. Plan types of the traditional Turkish house

Anatolian rural architecture has been shaped by various factors such as environmental, cultural, social, and individual elements. Climate, topography, lifestyle, socio-economic structure, and individual perceptions play a significant role in determining regional architectural characteristics (Batur & Gür, 2005: 165-166). These elements have shaped traditional houses in accordance with the physical and socio-cultural norms of a region. While the houses respond to basic needs such as shelter, seating, and nutrition, they have varied according to the users' lifestyles and environmental conditions (Korur et al., 2006: 178-179) (Table 1).

Table 1. User Requirements and Subcriteria

User Requirements	
Physical Criteria	**Psychological Criteria**
Spatial, Health, Physical Environmental Conditions, Security	Privacy, Behavioral, Aesthetic, Social

According to physical requirements, topography, climate, materials, and construction techniques have contributed to the formation of regional identities. At the same time, psycho-social and cultural needs, through elements such as privacy and aesthetics, have influenced the spatial organization of houses (Büyükçam & Zorlu, 2018: 426; Ersoy, 2010: 70). Socio-cultural structure and cultural differences have led to diversity in housing architecture, even in similar geographical regions. Social components such as beliefs, privacy, and social structure have been decisive in the shaping of houses (Rapoport, 1969: 46-49; Altman & Chemers, 1980: 4). In this context, traditional houses are not only structures that meet physical requirements, but also significant cultural heritage that reflect the users' cultural values and social interactions.

Privacy in Traditional Houses

Privacy is a multifaceted concept that regulates individuals' relationships with their surroundings and society, and is addressed at personal, individual, societal, and public levels (Halifeoğlu & Dalkılıç, 2006: 95). With its perceptual, cognitive, and behavioral dimensions, privacy holds significant importance in individuals' daily lives (Newell, 1995: 98; Leino-Kilpi et al., 2001: 665). Related to personal space and boundaries of sovereignty, privacy plays a decisive role in spatial design (Ünlü, 1998: 54; Karaman, 1991: 38). In the formation of living spaces, religious, socio-economic, and cultural factors are important elements that influence privacy behaviors. Religious beliefs, societal values, and social structures of individuals and communities determine the perception of privacy. Individuals' socio-economic status and cultural norms also hold significant importance in spatial design. Combining these factors results in residential spaces emerging as a complex and layered formation that meets the privacy needs (Turgut, 1990: 41; Yüksel, 2003: 182). The concept of privacy is an important mechanism that regulates the lifestyles, physical environments, and living spaces of individuals who constitute societies (Çakın, 1988: 21) (Figure 2).

Figure 2. An example showing the differentiation of ground floor and upper floor facade layouts due to privacy in traditional houses, Tokat

Culture has played an important role in the formation of Turkish housing. In traditional Turkish houses, this cultural structure, which developed under the influence of Islam, gave rise to the need for privacy (Büyükçam & Zorlu, 2018: 422). In these houses, spatial organizations emerge based on different perceptions and levels of privacy. In particular, various arrangements were made in the houses to protect the family's private living spaces (Halaç & Doruk, 2020: 69). In short, privacy in traditional Turkish houses has been preserved against the external environment and within the internal spaces of the house. In this context, the layout, floor plans, and facade characteristics of the houses have been shaped according to privacy needs. The placement and orientation of the houses, the organization and hierarchy between spaces, the re-functionalization of spaces, the distribution across floors, the street-house relationship and the definition of boundaries, as well as the organization of the building's facade in relation to the street, have all been shaped and transformed under the influence of privacy (Gür, 2000: 11; Zorlu & Keskin, 2017: 87). The facade designs, decoration, and ornamentation features of traditional houses exhibit diversity and richness according to the aesthetic elements of different cultures. In this regard, traditional houses shaped by the perception of privacy of societies and users reflect the socio-cultural traces of the period in which they were built.

Traditional Houses of Tokat

Historically, Tokat became an important settlement area under the rule of the Danişmends, the Seljuks of Anatolia, and the Ottomans, following the Türkmen incursions. The city, established around the historical castle, expanded towards the southern slopes during the Danişmend period, forming the present-day Sulu Street area. Tokat, located on trade routes during the Anatolian Seljuk and Ottoman periods, is significant in Turkish residential architecture with its rich religious and civil architectural structures (Akın & Ercan, 2023: 316). Tokat, known for its rich cultural heritage and traditional Turkish houses, is one of the rare settlements that preserved its architectural integrity (Ahunbay, 2011: 27) (Figure3).

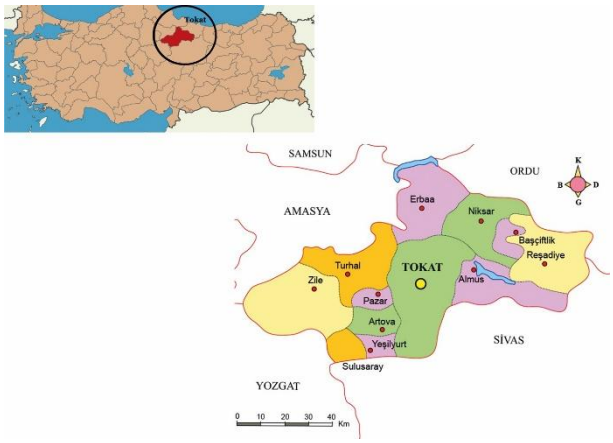


Figure 3. Tokat province map

However, due to new development, commercialization, and lack of awareness, it has lost part of its traditional fabric. Nevertheless, Bey Street, Beyhamam Street, and Halit Street have managed to preserve their facade characteristics and urban silhouette (Akın, 2009: 157) (Figure 4).

Figure 4. The traditional street texture of Tokat

Traditional houses in Tokat have been shaped in harmony with the topography and organized around the trio of street, garden (courtyard), and house. Typically built in a row-house arrangement, the gardens of these houses are located at the rear, while in detached houses, they are situated at the front (Akçay, 2013: 24-25) (Figure 5).

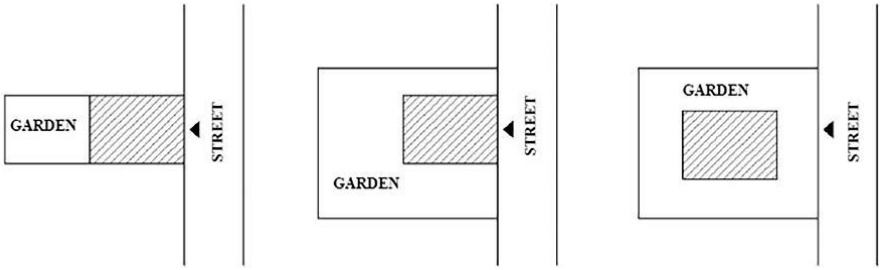


Figure 5. The street layout relationship of traditional houses in Tokat

In traditional houses of Tokat, the spatial organization has been shaped according to the socio-cultural and physical needs of the users, in line with the conditions of the period. The ground floors typically consist of storage areas, kitchens, pantries, and ovens, functioning as service spaces. These areas serve as transitional spaces between the street, garden, and courtyard (Leino-Kilpi et al., 2001: 665; Akın & Özen, 2010: 175). In traditional houses of Tokat, living spaces are located on the upper floors, illuminated by large windows and cumbas, and feature architectural elements such as storage spaces, lamps, and hearths (Kalkan et al., 2019: 104). The sofa arrangement plays a significant role in the spatial organization. Regarding plan typology, the houses are classified into three groups: those with an interior sofa, those with an exterior sofa, and those without a sofa. Examples of these plans have survived in areas such as Halit Street, Bey Street, and Beyhamam Street (Yılmaz, 2012: 151) (Figure 6).

Figure 6. Examples of sofa arrangements in traditional Tokat houses

Traditional Tokat houses are typically two or three stories high, and projections that shape the street facade are a characteristic feature of these houses. The projections are designed in forms such as single-cumba, double-cumba, or spanning the width of the facade, and are generally positioned to have a dominant view of the landscape or the street perspective (Yavi, 1986: 99; Çal, 1988: 30-32). Additionally, projections are an important architectural element that maintains privacy while facilitating the visual connection between the street and the house (Akın, 2009: 157). The facades are enriched with architectural details such as windows, doors, ornaments, and moldings (Kalkan et al., 2019: 105) (Figure 7).

Figure 7. Shows the traditional street texture and cumbas of Tokat

In terms of construction technique and materials, traditional Tokat houses utilize stone, wood, and adobe, employing the half-timber technique. A frame system made of wooden posts and beams was constructed on top of a stone foundation, and the space within this frame was filled with adobe (Akok, 1957: 131; Yavi, 1986: 101).

METHOD

Space is defined as the place where humans carry out all their activities and experience their perceptions (Tümertekin & Özgüç, 2017: 112). Morphological analysis examines the reasons for the formation of space and mass, the principles of shaping, and the relationship between spatial order and architectural elements (Hançerlioğlu, 1986: 271). This analysis emphasizes the importance of concepts such as unity, order, proportion, and composition, especially in architectural design (Yıldırım, 2002: 60). While space syntax provides a method for analyzing the general organization and circulation relations of spaces, isovist analysis

focuses more on visual privacy and perception by examining the visual areas that can be perceived from a certain point. Although these two methods focus on different spatial dimensions, they can be evaluated as complementary. In this study, the possibilities offered by isovist analysis, especially in the context of visual privacy, will be discussed.

Isovist Analysis Method

Space syntax is a model that enables the analysis of spatial arrangements and is used for the representation, analysis, and interpretation of space (Hillier & Hanson, 1984; Can, 2014: 127). The primary aim of this method is to examine the reciprocal interaction between space and social structure, demonstrating that space is both shaped by society and, in turn, influences society. Understanding how space shapes human interactions and its social, environmental, and economic impacts constitutes one of the key objectives of this approach (Czerkauer-Yamu, 2010: 21). In urban open spaces, space syntax particularly investigates the potential for people to come together through the overlap of movement and visibility fields (Çil, 2006: 226-227). By analyzing the relationship between spatial organization, human movement, and spatial perception, it seeks to reveal the effects on social structure (Gündoğdu, 2014: 25; Atak, 2009: 5; Yıldırım, 2002: 58). The space syntax method aims to understand the social logic of space through topological analysis rather than a geometric approach (Çakmak, 2011: 40-41) (Figure 8).

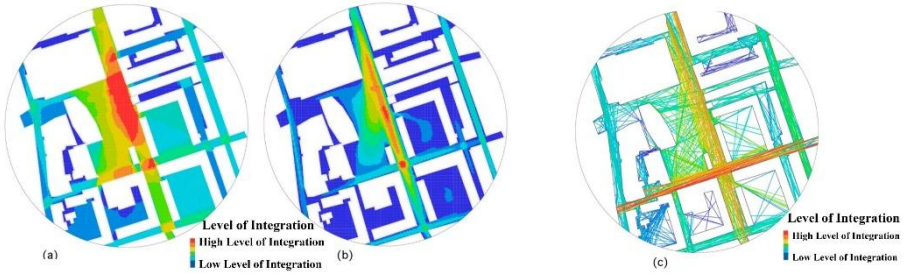


Figure 8. (a) Visual Graph Analysis (VGA), (b) Analysis through visibility, (c) An example illustrating total line integration analysis

The isovist method aims to understand how people perceive spaces by analyzing the visible areas within a given environment. In this method, an observation point is first determined, and then the area visible from this point is calculated, taking into account the walls or obstacles within the space. Finally, the geometry and dimensions of this visible area are analyzed to evaluate characteristics such as the openness or enclosure level of the space (Turner et al., 2001: 106-107) (Figure 9). This method is particularly utilized in architectural design and urban planning processes. The isovist method helps predict how users in architectural design will perceive spaces, examine the arrangement of open spaces and factors such as safety in urban planning, and anticipate pedestrian movements. Consequently, this method is regarded as a powerful tool that aids designers in making spaces more user-friendly (Benedikt, 1979: 64).

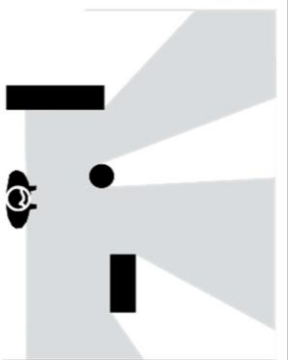


Figure 9. Isovist area under the influence of openings and limits according to the viewpoint

An isovist represents a limited volume visible from a specific point, and the size and shape of this area can be analyzed. The spatial relationships of isovists can be measured and mapped across the entire space (Turner & Penn, 2002: 478-479). In this method, parameters such as “isovist area”, “angle width”, “visual integration”,

and “visual control” are usually analyzed. The analysis is performed by calculating the fields of view created from the observation points defined in the space. For this process, space syntax-based software such as Depthmapx is usually used. (Turner, 2001: 10; Turner, 2004: 1-4). The user’s points of view, walls, windows, openings, and other physical boundaries and their dimensions and lengths are used as the basic data for the analysis. This way, visual privacy, wayfinding, and space perception in certain spaces can be evaluated objectively. Within the scope of the study, isovist areas were calculated using the Depthmapx program.

FINDINGS

In the scope of the study, traditional houses located on Bey Street and Beyhamam Street in Tokat, which have largely preserved their traditional residential fabric and characteristics, were selected. These houses are positioned in an adjacent row layout. The traditional houses of Tokat generally feature facade compositions consisting of single-cumba, double-cumba, and full-width protrusion. Within this context, three examples of each type of cumba were selected from the traditional houses, resulting in a total of nine traditional houses being evaluated. The locations of the evaluated traditional houses are indicated in Figure 10.

Figure 10. The locations of the traditional houses identified within the scope of the study on the site plan

The selected traditional houses’ ground floor and upper floors have been evaluated. To reveal the visual connection between the users and the street, the plans of the traditional houses were drawn in AutoCAD 2022, and the plans were divided into grids to determine the viewpoints. In calculating the visual sightlines of the users towards the street, the facades of the houses, as well as the street and garden walls, were considered as boundaries for both the ground floor and the upper floor. Thus, the same limiting surfaces were established for both the ground floor and upper floor of the traditional houses (Figure 11). In this context, the visual sightlines of users looking out from the designated viewpoints in the traditional houses towards the street have been calculated.

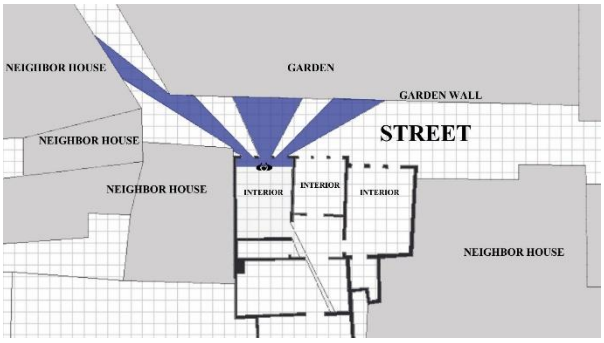
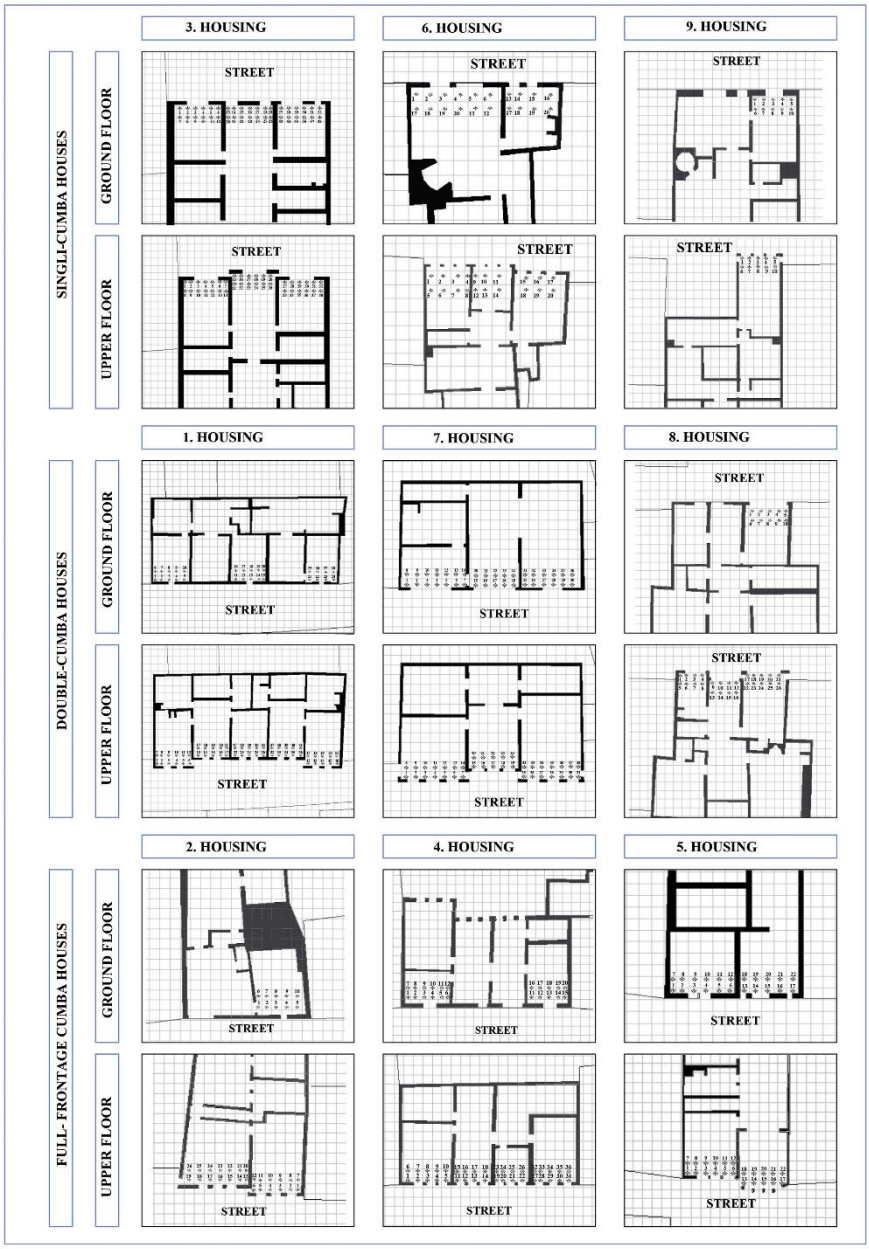


Figure 11. The visual sightline to the street from the user’s viewpoint. The garden walls and the facades of the buildings have been considered as limiting boundaries

In this context, the traditional houses have been categorized into three groups: single-cumba, double-cumba, and full-width cumba, and evaluated accordingly. Grids were created for the ground and upper floors of the traditional houses identified in the study, and the viewpoints were determined. In determining the viewpoints, grids of the same size and scale were created for both the ground and upper floors of the buildings, and the

viewpoints were identified. When determining the viewpoints within the interior spaces of the traditional houses, the center of the created grids was used as a reference. Additionally, all the viewpoints within the two rows of grid areas for all interior spaces with a visual connection to the street were determined for the traditional houses (Table 2).

Table 2. The viewpoints of the ground floor and upper floor of the traditional houses categorized according to the types of cumbas



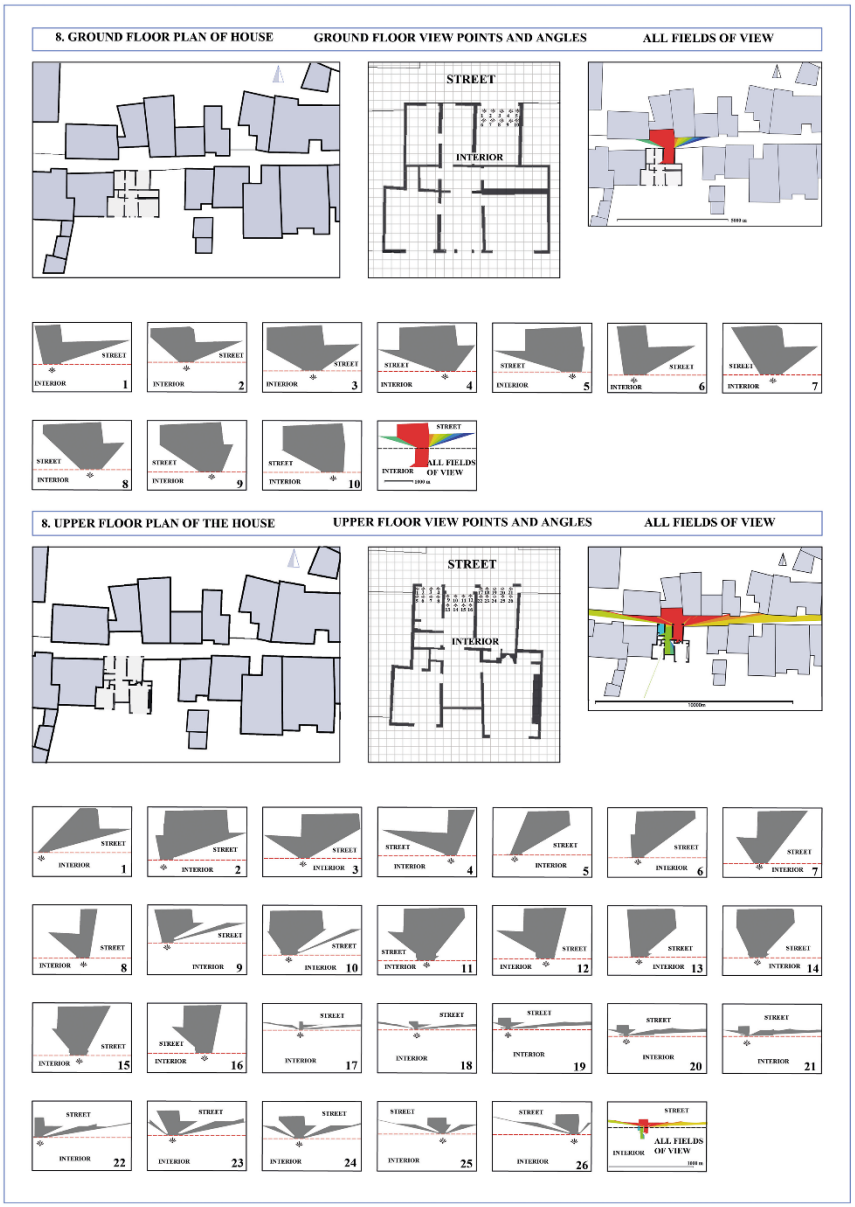
As seen from Table 2 above, viewpoints have been established for all interior spaces with a visual connection to the street on the ground floor and upper floor plans of the traditional houses, which are grouped according to the types of cumbas. In this context, a single traditional house was selected to illustrate the user-street visual connection and its spatial extent more clearly. All viewpoints and areas on the selected house's ground floor and upper floor plans were visualized individually using isovist areas. Subsequently, the viewpoints from all perspectives in the ground and upper floors of the other traditional houses, categorized and grouped according to the types of cumbas, were evaluated. When evaluating the structures, the delimiters, such as walls and

Windows, were the determining criteria in the calculation of the isochronous area for the calculation of the visual connection with the street. Therefore, all the traditional houses evaluated were added to the program at the same scale and the data were obtained.

Evaluation of the 8th House with Double cumbas

The 8th house, located on Beyhamam Street, is in an adjacent order and consists of a ground floor and an upper floor. Both the ground and upper floors of the building have been evaluated. In the study, to calculate the visual fields of users between the interior space and the street, grids of the same size were created for each floor, and viewpoints were determined. Viewpoints were established for all spaces of the traditional house connected to the street, and the visual fields to the street were visualized using the isovist method (Table 3).

Table 3. The viewpoints and visual sightlines to the street in the ground floor and upper floor plans of the 8th house with double cumbas

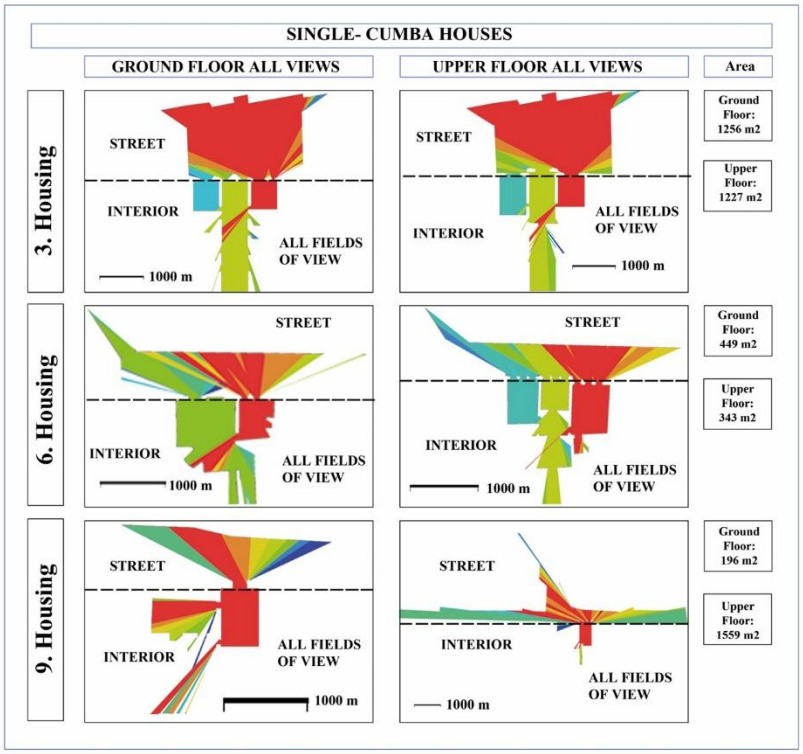


In this study, the viewpoints of the ground and upper floors of house number 8, among the structures considered, were shown separately to evaluate the visual relationship of the houses with the street and their fields of view. Similarly, in other traditional houses, the viewpoints and areas were calculated and evaluated

for each viewpoint in the ground and upper floor plans. However, since presenting each viewpoint separately in a table for all houses in the study would take up too much space, it was preferred to represent them with holistic visuals covering all viewpoints on each floor plane instead. Since data for all the traditional houses mentioned in the study were obtained following the same rules, processes, and scale, the visual fields related to the street for each user were calculated in square meters. This approach allowed for comparisons to be made between the buildings themselves. The traditional houses evaluated within the scope of the study were selected from neighborhoods where the traditional street texture was largely preserved and from examples of adjacent buildings with cumbas. These buildings, representing the Tokat traditional housing typology, were examined by classifying them into three groups as single cumbas, double cumbas and full-frontage cumbas, which are frequently encountered in the city. In addition, the viewing areas of all spaces that are related to the street in traditional houses were included in the calculation from the perspective of the users. The traditional houses used in the study were transferred to the digital environment at the same scale and one-to-one; thus, while calculating the isovist areas of the ground and upper floors, the realistic viewpoints and visual areas of the buildings were accurately determined by taking into account spatial limiting elements such as walls and windows.

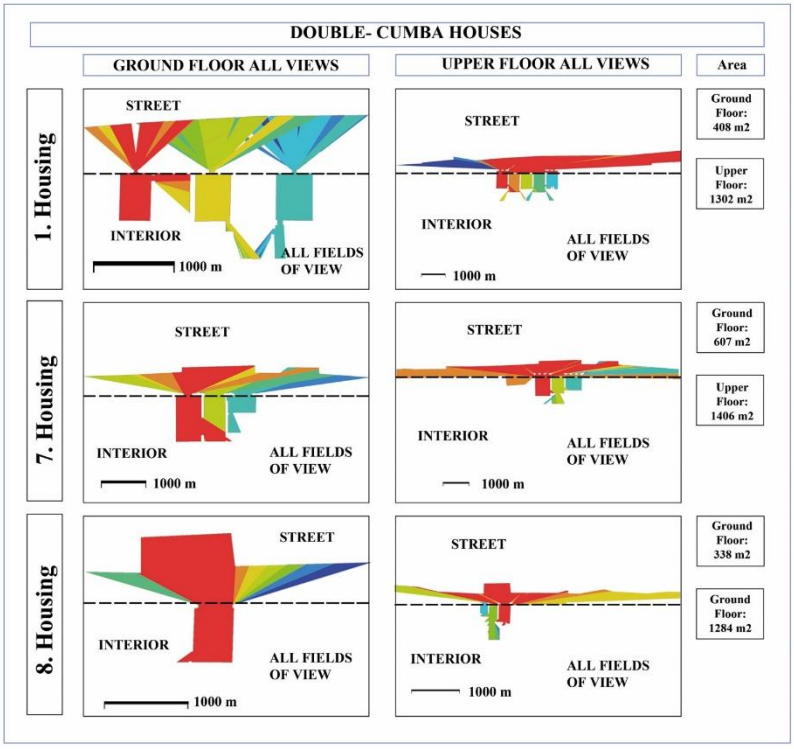
In the study, the 3rd, 6th, and 9th houses with single-cumbas were first selected for evaluation and tabulated (Table 4). The Depthmapx program was used to find the viewpoints and areas of the users at the specified points. Separate viewpoints were calculated for each viewpoint defined in Table 2 regarding the ground and upper floors of traditional houses. The Depthmapx program used during these calculations represents the viewpoint obtained for each viewpoint with a different color. These colors representing each viewpoint are visualized as the total field of view for all viewpoints by being superimposed in layers. The program automatically generates a color scale for each viewpoint, and the colors used are determined only for visual distinction; the colors do not have a special meaning regarding the areas they contain.

Table 4. Shows the street view areas and their square meters for the ground floor and upper floor of traditional houses with a single protrusion



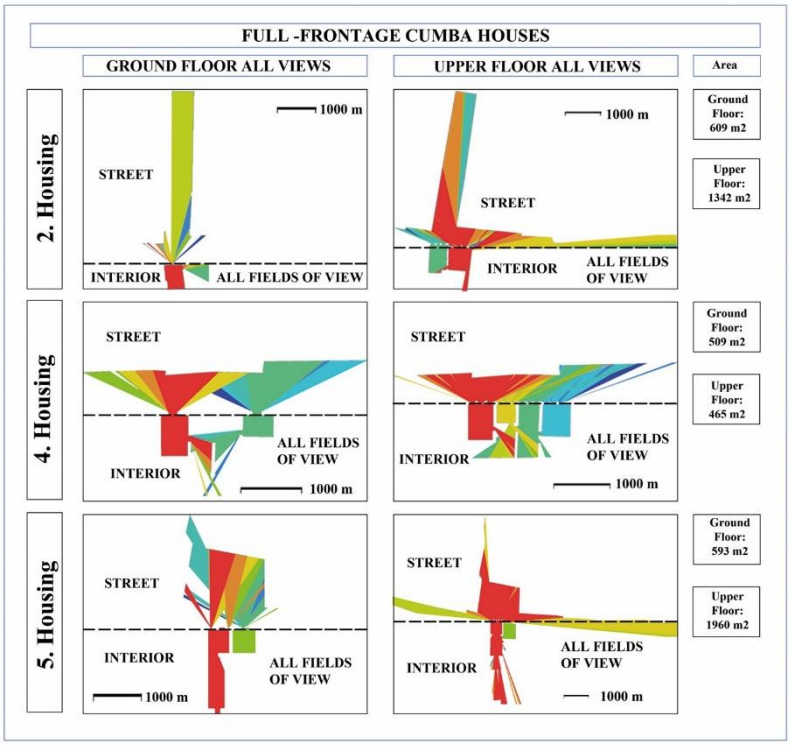
The evaluations have revealed that the upper floor plans of the 1st, 7th, and 8th houses with double cumbas have a greater connection to the street than the ground floors. In the study, the 1st, 7th, and 8th houses with double cumbas were selected for evaluation (Table 5).

Table 5. Shows the street view areas and their square meters for the ground floor and upper floor of traditional houses with double cumbas



As a result of the evaluations, it is observed that the upper floor plans of the 1st, 7th, and 8th houses with double cumbas have a greater connection to the street compared to the ground floors. In the study, the 2nd, 4th, and 5th houses with full-width cumbas were selected for evaluation (Table 6).

Table 6. Shows the street view areas and their square meters for the ground floor and upper floor of traditional houses with full-width cumbas



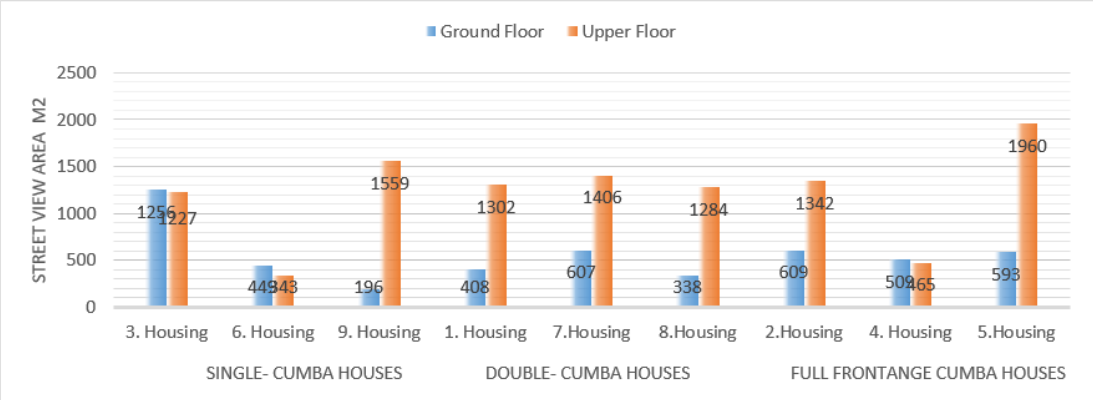
As a result of the evaluations, it is observed that the ground floor view of the 4th house with a full-width cumba is larger than that of the upper floor. On the other hand, it has been found that the upper floors of the 2nd and 5th houses have a wider field of view compared to their ground floors. In addition, it is seen that the side windows in the cumbas significantly increase the visual relationship established with the street for the user and provide wider perspectives of the space. This situation both strengthens the visual interaction from the interior to the street and enriches the spatial experience by providing the user with a wider perspective.

EVALUATION AND CONCLUSION

Throughout history, individuals and societies have designed open, semi-open, and enclosed spaces to facilitate their lives and meet their various needs. These spaces, when combined, form buildings and building complexes. Shaped by the conditions of their time, these structures, which have persisted to the present day, include primarily civil architectural works. Traditional houses are shaped according to the physical and socio-cultural norms of the region and period. In this context, traditional houses are significant cultural heritage structures that carry the social, cultural, and economic characteristics of their time, as well as their architectural style and identity, into the present. In the shaping of the spatial and facade configurations of traditional houses, physical conditions such as climate, topography, and location, alongside socio-cultural norms like traditions, customs, religious beliefs, and social structure, have played a significant role. Among these socio-cultural norms, the concept of privacy has had a particularly influential role in the spatial organization and facade design of the houses.

Therefore, nine traditional houses located on Bey Street and Beyhamam Street in Tokat, which have largely preserved their traditional fabric and identity, were evaluated as they reflect the characteristics of traditional housing. As part of the evaluation, the impact of privacy on the traditional houses was examined, specifically how the variation in facade configurations affected the visual connection between the users and the street. In this context, the ground floor and upper floor plans of three traditional houses with single-cumba, double-cumba, and full-width cumba were compared. To assess the users' visual connections with the street, sightlines were calculated using the isovist method. The visual connection between the floors of the traditional houses and the street was calculated in square meters, and the data was processed (Table 7).

Table 7. The visual relationship between the ground floor and upper floor of the traditional houses and the street in square meters



As clearly seen in the table above, it has been found that the ground floors of the 3rd and 6th houses with single-cumbas have a greater visual connection to the street. Due to the side windows in the upper cumba of the 9th house, its connection to the street has significantly increased compared to the ground floor. In traditional houses with double cumbas, it is observed that all of the upper floors have a stronger visual connection to the street. Among the traditional houses with full-width cumbas, it is observed that the ground floor of the 4th house has a stronger visual connection to the street from the users' perspective. The upper floors of the 2nd and 5th houses have a greater visual connection. The study also observed that, particularly in traditional houses, the addition of side windows in the cumbas significantly enhances the visual connection to the street.

In conclusion, it has been observed that solid facades are generally preferred on the ground floors of traditional houses in order to maintain privacy. This design approach aims to ensure user privacy by preventing individuals in the outdoor environment from visually accessing the interior spaces. However, the data obtained indicate that while the ground floors are arranged with solid surfaces to block external visual access due to privacy concerns, the visual perception of the street by the interior users is not negatively affected. It has been found that interior users on the ground floor continue to perceive their surroundings and establish a visual connection with the street, sometimes even more so than those on the upper floors. Furthermore, the side windows in cumbas, protruding architectural elements commonly found in traditional residential architecture, are identified as another significant feature that enhances this visual relationship. These windows contribute to the visual continuity between the interior space and the street, creating a positive effect that enriches the overall spatial experience.

As a result, the concept of privacy plays a significant role in shaping the spatial and, particularly, the facade configurations of traditional houses. Many researchers, such as Küçükerman (1985: 104), Turgut (1990: 93), Halaç and Doruk (2020: 52), and Zorlu and Keskin (2017: 87), have stated that privacy influences the spatial and facade design in traditional houses. It has been stated that, in traditional houses design strategies such as inward-facing spatial configurations and the use of more solid ground floors with an abstract understanding of the surrounding environment were employed to ensure the privacy of the interior. In this study, however, it was found that in some houses, depending on the type of cumba, the ground floor has a greater visual connection between the interior and the street. In traditional houses, particularly on the ground floors, while privacy from the external environment is ensured, it has also been observed that this does not necessarily mean a significant reduction in the users' visual connection and perception of the street. In this context, in traditional houses shaped by the concept of privacy, the difference in the visual connection between the interior and the street, in terms of both the ground and upper floors, has been quantitatively analyzed. The evaluation revealed that the positioning of the cumbas and windows plays a significant role in the visual connection with the street and contributes to its diversification. Through the viewpoints provided by the isovist analysis, the visual fields of individuals were determined both numerically and visually, allowing for comparative analysis. In this regard, this study is believed to be valuable in leading future research, particularly in terms of visual integration and perception at the spatial and urban scale.

Author's Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Figure 1: Küçükerman, Ö. (1985). *Kendi mekanının arayışı içinde Türk Evi*. Apa Ofset Basımevi.

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Table 2: The plans of the structures are taken from following references.

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