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# Developing Semantic Model of Privacy in Architecture based on Logical Reasoning Method

[1]*Nastaran Nakhjavani*,[2*]*Ali Javan Forouzande*,[3]*Ghasem Motalebi*,[4]*Masoumeh Yaghoubi Sangharchi*

*1 Ph.D. Candidate, Department of Architecture, Ardabil Branch, Islamic Azad University, Ardabil, Iran.*
*2* Assistant Professor, Department of Architecture, Ardabil Branch, Islamic Azad University, Ardabil, Iran.*
*3 Associate Professor, College of Fine Arts, University of Tehran, Tehran, Iran.*
*4 Assistant Professor, Department of Architecture, Ardabil Branch, Islamic Azad University, Ardabil, Iran.*

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**ABSTRACT:** To study human social behavior concerning the environment, the concepts of privacy, personal space, and territory have been studied by interdisciplinary experts. Examining how behavior is formed in the environment is very important in improving the environment's design with the culture of uses. Since experts in the field of architecture and urban planning need to provide real and objective solutions, they often do not have the opportunity to conduct practical research on the concepts of privacy. Identifying the formation of privacy of users can be desirable in the design of new housing. By linking the main concept and how they are in the architectural elements of different cultures, a cultural pattern appropriate to each region can be achieved. The main purpose of this study is to link the main concept with the cultural and architectural perspectives. This logical reasoning study used content analysis in two fields privacy and culture. For this purpose, definitions related to the privacy of collection and the method of open coding of its categories have been extracted. Then the privacy layers are extracted using social sciences and environmental psychology studies by summarizing qualitative content analysis. The semantic model of Rapoport's cultural meaning and privacy are combined in the research, and the main matrix of how the cultural layers of privacy are formed is drawn. Based on this matrix, the layers of social behavior can be categorized from the initial qualitative-perceptual level to quantitative-behavioral.

**Keywords:** *Social Behavior, Privacy, Personal Space, Personalized Space, Territory, Built Environment, Culture.*

## INTRODUCTION

Many theorists have expressed privacy as a global cultural need. The study of privacy as individual and interpersonal relationships in the environment are of great importance in various fields of architecture.

For example sense of belonging to a place involves one's characteristics, and on the other hand, social relationships and relationships with others in the environment affect the sense of belonging. (Javan Forouzande & Motallebi, 2011).

Privacy has been considered one of the pillars of housing desirability in different cultures and has always been one of the important criteria for valuing a house. Architectural design can greatly influence the degree of privacy of its occupants.

Scholars such as Schwartz (1968), Altman (1976), and Nelson et al. (1972) have all pointed to the sanctity of closed doors in Western culture. In American culture, physical boundaries such as fences are considered private mechanisms.

Rapoport (1996) considers visual privacy in Muslims as socially important.

In Iranian culture, according to the religion of Islam, visual privacy and the indigenous architecture of Iranian houses are evident according to the observance of all levels of privacy in all cases and with the observance of religious and Islamic sanctity. Cultural mechanisms, including worldview and ideology, are among the effective and influential factors as differences or closeness in the classification of privacy mechanisms. Cultural privacy Events between individuals are influenced by intradermal processes (perceptions and motivations). The continuity of privacy goals (one side close to oneself and the other side close to society) are directly influenced by cultural layers.

This is also the case with views of privacy as the control of information flows (Rapoport, 1990).

In addition, privacy, a recurring concept in housing architecture, has given rise to symbolic forms or spaces in homes. These symbolic spaces are manifested in Islamic architecture as well as Iranian architecture. For example, it has a physical

*Corresponding Author Email: *a.javanforouzande@iauardabil.ac.ir*

appearance as attic spaces, earrings, closets, and chests. On the other hand, in contemporary architecture, the correct design of privacy layers influenced by culture and predicting the potential behavior of the environment leads to individual independence and identity and instills a sense of security. The study of privacy, personal space, and territory in the human environment of biocultural construction and how the effect of changing the family structure in the body can determine the solutions and the relationship between privacy and culture in indigenous culture. For this purpose, first, by collecting, categorizing, coding, and analyzing theoretical foundations, privacy indicators were identified. Then, by exploring the theories of theorists, a conceptual model of privacy was drawn.

## MATERIALS AND METHODS

This logical reasoning study used content analysis in two fields privacy and culture. Qualitative content analysis is where quantitative analysis reaches its limits. Qualitative content analysis can therefore be considered a research method for the subjective interpretation of textual data's content through systematic classification, coding, and thematization or design of known patterns. It is also one of the fundamental features of qualitative research theory rather than hypothesis testing.

The qualitative content analysis deals more with discovering the fundamental meanings of the message. Qualitative content analysis is inductive; That is, it is based on the study and inference of topics and themes from raw data that sometimes leads to the theory. Examples in qualitative content analysis usually include a purposeful selection of items that reflect research questions.

### Literature Review

Privacy is a widely used term, and, as with so many other terms, people often assume that there is agreement on its meaning(Altman & Chemers, 1984).

Privacy as an interpersonal process is how to monitor the exchange of information and personal and social communication. Amos Rapoport has defined privacy as the ability to control social interaction, the right to choose, and the possibility of one's social interaction (Lang, 1987). This view emphasizes Altman's definition of privacy on the basis that he considers an important view of privacy based on the concept of control theory and the choice of reciprocity: "selective control of access to oneself or one's group" (Altman, 1974).

Petronio (1991, 2002) introduces privacy as a boundary-setting process.

Privacy is expressed as a controlled and mutually selective element: "controlling the amount of stimulus input from others and the degree of mutual awareness and separation of individuals from others" (Altman, 1975).

On the other hand, providing privacy and control of spatial territory is of special importance in designing the environment because basic human needs such as identity, motivation, and security can be satisfied (Lang, 1987).

Privacy can be achieved by organizing activities on time (Rapoport, 2005).

Definitions of different domains form the dialectical process of information presentation and its mechanisms. This information varies according to their field and culture. The definitions can be studied in ontology and epistemological approaches (Table 1).

The concept of privacy has been studied in different sciences, and several orientations in different sciences can be presented as follows. Anthropology: Amos Rapoport has defined privacy as the ability to control social interaction, the right to choose, and the possibility of one's desired social interaction (Lang, 1987).

This view emphasizes Altman's definition of privacy because he considers an important view of privacy based on the control theory and the choice of reciprocity: "Selective control of access to self or group" (Altman, 1975).

Rapoport (2016) believes that there are fundamental cultural differences in people's view of privacy, and in his view, people often give up physical comfort to meet their cultural needs.

Altman defines privacy as selective monitoring of an individual or group's relationship with others. For him, privacy is an interpersonal event that deals with interpersonal relationships. Communication may be between person, person to group, group to individual, and group to group. Social units may have a variety of relationships with each other. Each of these units may require its process to achieve privacy. And privacy processes may or may not be similar to all of these combinations of social units (Altman, 1975).

**Public Law:** Westin's Theory of Privacy (1968) discusses how people protect themselves through the temporarily limited access of others to themselves. He shows that people need privacy, which, along with other needs, helps us to adapt emotionally to everyday life. According to Westin, "privacy" is the study of individuals, groups, or institutions to determine when, how, and how much information about them is transmitted to others, depending on one's relationship to social participation. Privacy is the voluntary and temporary withdrawal of an individual from society by psychological or physical means, either in isolation or close to a small group or between large groups in conditions of anonymity and tolerance. Individuals desire for privacy is never absolute, given that participation in society is just as powerful. Thus, each person uses a process of personal adjustment according to the environmental conditions and social norms set by the society in which he lives, his desire for privacy with his desire to disclose and give his information to others (Westin, 1968).

**Sociology:** Simmel concluded that privacy is a "universal sociological form." Social theories of privacy recognize that privacy serves a social function (Waldman, 2018).

The definitions presented were openly coded to be used in the development of contextual theory. Orientation The definitions provided about privacy can be classified into three main

Table 1: Definitions of privacy and extraction of categories

| The concept of privacy | | | | |
|---|---|---|---|---|
| **Major category** | **Definition** | **Researcher/year** | **Cognitive approach** | |
| Monitoring and control in individual and collective interaction | Ability and choice to monitor interaction | Rapoport (1972) | Anthropology | Epistemology |
| | Privacy and control elements are the same. | Robson (2008) | | |
| Dialectical relations of exchange or non-exchange of information in social relations | The dialectical quality of exchange and social relations | Simmel (1950) | Sociology | |
| | Lack of privacy is associated with maladaptive behavior. | Glaser (1964) | | |
| | The negative potential of communication power | Kelvin (1973) | | |
| Destroying solitude with the internet | Constant connectivity degrades solitude. Advocating for solitude is critical to society. Internet addiction destroys solitude. | Gordon (2022) | Technology and society | |
| The physical design of systems can affect the .privacy level | slight changes in the physical design of systems can increase users' perceived levels of privacy. | Little et al. (2005) | | |
| Externalities and information leakages characterize .privacy | Conceptualizing privacy as a public good suggests a collective approach to privacy protection. | Sætra (2020) | | |
| Laws based on the invasion of individual and collective privacy | Voluntary and temporary withdrawal of a person from society by psychological or physical means. | Westin (1968) | law | |
| | Common features of privacy and control underlie intimacy and anonymity | Tripathi & Tripathi (2010) | | |
| Psychological and therapeutic states of layers of privacy and control of .personal information | Distinguishing between behavioral, cognitive control, and crowding decision-making (from control definitions) | Baron & Rodin (1978) | Psychology | |
| | Different forms of personal control. | Brehm (1966) | | |
| | Source of internal and external information control. | Newell (1998) | | |
| | Psychological and therapeutic state of privacy. | McCallum et al. (1979) | | |
| | Social psychology | | | |
| Selective control of layers of individual and collective privacy | Distance and closeness to the other and freedom of choice. | Altman & Chemers (1984) | | |
| | The dependence of the need for privacy on the sense of control in prisoners | Smith (1982) | | |
| | Privacy and control communication is positive | Ruback & Pandey (1991) | | |
| | Improve performance in a crowded environment by inducing cognitive control | Langer & Saegert (1977) | | |
| | Media Psychology | | | |
| Altered privacy | .Self-disclosure of people in mobile relationships | Masur (2019) | | |
| | Environmental Psychology | | | |
| Providing privacy and spatial territory through individual and collective behavior in micro and macro environments to meet the needs of identity, motivation, and security | Provide the need for identity, motivation, and security through privacy and territory. | Lang (1987) | | |
| | Personal space is an invisible area around the person. | Sommer (1969) | | |
| Stressful reactions cause information sharing | More stress when displaying information on a public screen | Bosch et al.(2016) | Environmental Psychology | |
| Employee perceptions of workplace privacy and psychological ownership .are important | Negative effects on privacy and psychological ownership are persistent over time. | Halldorsson et al. (2021) | | |
| desired privacy=achieved privacy | The effect of culture and gender on privacy in American and Turkish students | Kaya & Weber (2003) | | |

Continiue of Table 1: Definitions of privacy and extraction of categories

| The concept of privacy | | | | |
|---|---|---|---|---|
| Major category | Definition | Researcher/year | Cognitive approach | |
| Architecture | Shape and scale of rooms effects the privacy control | Al-Homoud (2009) | Epistemology | |
| | A positive correlation between intimacy and social interaction, which was conditioned by the environmental context. | Abu-Obeid & Atoun (1999) | | |
| | The hierarchy of access to spaces and the recognition of territories are limited in modern houses. Hence, privacy in modern houses fades. | Alitajer & Nojoumi (2016) | | |
| | privacy in traditional Islamic homes involves four main layers of privacy: (a) privacy between neighbors′ dwellings, (b) privacy between males and females, (c) privacy between family members inside a home, and (d) individual privacy | Bahammam (1987)<br>Mortada (2011) | | |
| | Transparency in the environment's design has caused more communication and lack of privacy and .has caused tension and reduced well-being due to the hierarchical position | Bentinck et al. (2020) | | |
| | Not violating the visual privacy of other people's houses according to Islamic teachings | Daneshpour (2011) | | |
| | Greater density limits the attainment of privacy | Day (2000) | | |
| | Results showed no difference between the sexes' preferences of solitude, reserve, anonymity, and isolation. | Demirbas & Demirkan (2000) | | |
| | individual spacing among persons that leads to personal space invasions is a more salient environmental condition than density per se. | Evans & Wener (2007) | | |
| | Work satisfaction and task performance exhibited contradictory relationships with the visual parameters. | Jeon et al. (2022) | | |
| | privacy models had significantly more rooms, somewhat more corridors, and more exterior wall surfaces. | Keeley & Edney (1983) | | |
| | Satisfaction with the workspace environment was the highest for those in enclosed private offices. | Kim & De Dear (2013) | | |
| | Personalization in the workplace is directly related to privacy. | Laurence et al. (2013) | | |
| | Privacy from trees in parks and security are inversely related. | Lis & Iwankowski (2021) | | |
| | Increasing the distance from other people in a particular area has a positive effect on preferences, caused by increased privacy and safety | Lis & Iwankowski (2021) | | |
| | The need for privacy shows a direct relationship between the concept of family in culture and the scale of privacy and territory. | Memarian & Ranjbar-Kermani (2011) | | |
| | Design considerations involve the control of visibility through visual privacy, noise transmission through acoustic privacy | Mortada (2011)<br>Hallak (2000) | | |
| | Guarding home privacy is vital in Islam to promote a tranquil and functional family structure | Omer (2010) | | |
| | The Muslim house is the main element in achieving optimal family privacy. | Othman& Aird (2014) | | |
| | The open space, geometry, and position of the yard play a fundamental role in the view of the house spaces and provide visual privacy. | Rahimi et al. (2022) | | |
| | Privacy moderates the relationship between secure workplace attachment and exhaustion. | Scrima et al. (2021) | | |
| | How to plan different spaces to achieve multiple levels of privacy | Tomah et al. (2016) | | |
| | For Iranian adults, family privacy was important, while for American adults, the individual's relationship with the government was important. | Zabihzadeh et al. (2019) | | |
| | The study's findings suggest that, in all construction patterns, the least privacy concerns first the courtyard space and then the guest space, and on the contrary, most privacy concerns the bedroom. | Zangeneh et al. (2022) | | |
| According to Altman, one of the functions and mechanisms of privacy is to achieve individual independence and identity, which is in the third stage of needs based on the hierarchy of the Maslow pyramid. Also, privacy is important in the relationship between the individual, the group, and the rest of society. Privacy and territory are mechanisms for regulating privacy between oneself and others, among other factors affecting the perception of the environment. These behaviors are common in humans and lead to satisfying other needs such as security, self-fulfillment, and self-esteem (Altman, 1975, Hall, 1990). | | | Ontology | |

categories, and their frequency can be measured (Table 2). The coded categories of privacy definitions include three items (isolation and non-interaction, relationship monitoring, and selective relationship monitoring), of which the relationship monitoring category is more common. The conceptual model of privacy based on the categories obtained from Table 2 can be drawn in ( Figure 1).

Further studies on privacy and social relations have been conducted to draw a conceptual model of indigenous cultural privacy. Various types of privacy are used to achieve the desired access to one's self or group. The type and amount of privacy desired to depend on the current pattern of activity, the cultural context, and the individual's personality and expectations (Lang, 1987). The use of symbolic and realistic

Table 2: Classification of categories and subcategories related to privacy according to their frequency in their application in various sciences

| Selective monitoring of an individual or group's relationship with others | | Monitor relationships | | Isolation and withdrawal, and lack of interaction | Category |
|---|---|---|---|---|---|
| | | Freedom of choice | Distance and proximity | | |
| 33.7% | | | 34.3% | 32% | |
| To travel in in-ternal states and create a balance between external .and internal | Privacy acts as a two-way pro-cess that takes information from the environment and gives it to the .environment | The right to decide what points about his personality and under what circumstances is .best passed on to others<br><br>Ability to monitor the interaction, having the right to choose and the necessary arrange-ments and mechanisms to prevent unwanted interaction and achieve the desired relation-.ship | | The feeling that others should be separate from what is important to them<br><br>The value of being alone and relieved from the pressure of the .presence of others<br><br>Avoid interaction and visual and .auditory abuse and others | Subcategory |

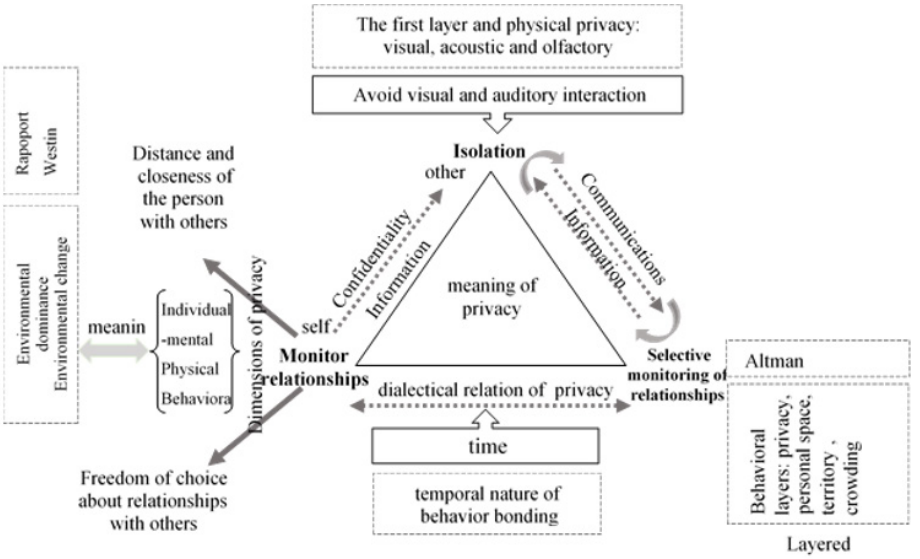


Fig.1: Conceptual model of the definition of privacy

walls, curtains, and markings to determine spatial area and distances are all methods of securing privacy that is somewhat under the control of environmental designers(Altman, 1975). The four-dimensional conceptual model of the desired type, amount of privacy, and the elements affecting its components can be drawn in (Figure 2).

Altman describes methods of securing privacy, personalized space, spatial territory, and using distances. The visual layers of each of these methods are mental and physical, respectively. Personal space is realized by mastering the natural and cultural environment and personalized space by changing and completing the coding environment. The spatial domain in the third layer can be identified in the physical dimension and by semi-fixed and fixed elements. "Personal space" and "territory" are mechanisms to achieve the desired amount of privacy, and "congestion" is a social situation that occurs as a result of the inefficiency of privacy mechanisms and leads to undesirable social relationships among individuals. One of the central ideas linking the four key concepts mentioned above is "personal oversight" or "border demarcation." The methods of securing privacy and its related components are presented in (Figure 3).

The conceptual model of the relationship between different

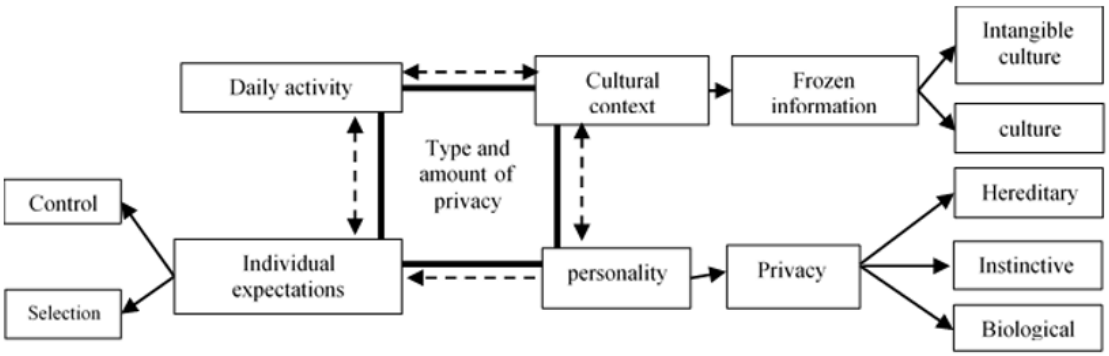


Fig. 2: Conceptual model of affected elements, type, and amount of desired privacy.

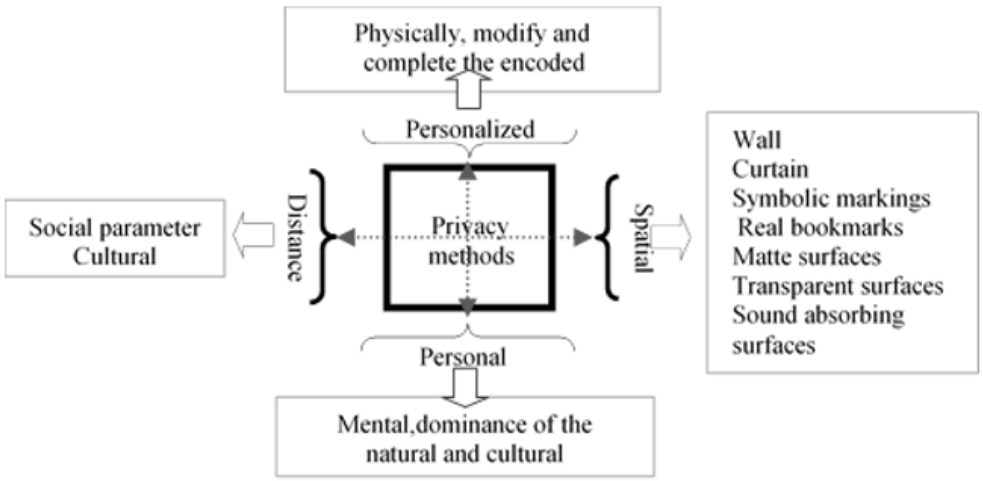


Fig. 3: Methods of providing privacy and classification of the analysis unit.

states of privacy from Westin's point of view and its coding and integration with the basic parameters of privacy-individual and privacy-collective can be deduced. The three levels of mental-personal, physical, and behavioral privacy can be coded in various states.

The goals of privacy are based on a continuum, one side of which is closeness to oneself, and the other is closeness to society. This dimension is similar to the theories of Altman and Taylor (1973) about interpersonal relationships, which include intradermal processes (perceptions and motivations), simple processes (clothing and jewelry), and interpersonal events (actions). Verbal and non-verbal reciprocity) know. Intra-personal and extrapersonal communications are invisible in the form of invisible bubbles and, in some cases, visible physical (Territory) (Figure 4).

**Personal Space**

The second layer of the physical environment, one of the mechanisms of privacy, is personal space. Providing personal space is one of the main mechanisms for achieving privacy.

The concept of personal space refers to the preferred distance from other people that an individual maintains within a given setting. It has been defined as "an area with an invisible boundary surrounding the person's body into which intruders may not come" (Sommer, 1969). As such, personal space serves two primary functions: (1)It protects against possible psychologically and physically uncomfortable social encounters by regulating and controlling the amount and quality of sensory

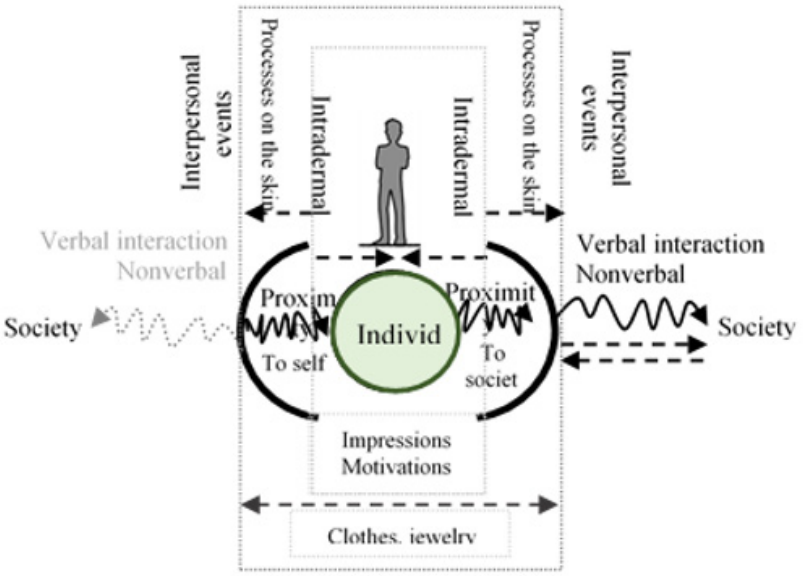


Fig. 4: Intrapersonal and extrapersonal communication of privacy and its threefold processes

stimulation, and (2) it communicates information about the relationship between the interactants and the formality of the interaction by making available to others (as well as to the self) cues as to the preferred distance which has been chosen (Aiello & Thompson, 1980). To design the established elements of the environment and the sitting spaces, one must understand the characteristics of the personal space (Hall, 1990).

**Personalized and Personalized Space**

Personalization is the marking, integration, and homogeneity of objects in a place that makes one feel inferior. The process of personalization can be conscious, but in most cases, it is unconscious. Personalization is a manifestation of the desire to control the spatial territory and express aesthetic tastes and an attempt to better adapt to the environment and behavior patterns. Some environments can be customized without damage or intrusion; Other environments that Summer calls hard architecture to become more difficult to personalize. The degree of personalization of a place depends on the ability of the materials used to build it, the severity of the residents' need to change it, the interests they have in the place, and the social norms and formal laws prevailing in that place (Rapopart, 1967). In areas where the population is homogeneous, the streets and neighborhoods become personalized so that the whole area becomes a symbol of the group's culture. The built-in environment is full of examples of adaptability and personalization.

**Territory**

Although human territorial behavior cannot be said to be directly tied to survival as it is in animals, the fact that it is so widespread suggests that it must serve an essential purpose. It is generally agreed that its purpose is to regulate social interaction (Altman, 1975).

Territorial behavior is a mechanism for regulating privacy between oneself and others, expressed by personalizing or marking a place or an object and belonging to an individual or group (Altman, 1975).

Attachment to place refers to an occupant's feeling of possessiveness toward a particular territory because of its associations with self-image or social identity(Brower, 1980).

Territory can make life easier by giving cues for behavior (the house as a social mechanism) and whether people, like animals, feel more secure and better able to defend themselves in their home ( Rapoport, 2013).

Territoriality should be distinguished from other spatial concepts, such as personal space, jurisdiction, and home range (Brower, 1980).

By examining how people use the environment in the process of social interaction, the meanings of the physical environment can be extracted. Individuals express the meaning of the environment created concerning social relations by dominating, changing, and completing the environment. Privacy is the core of the appearance of the next layers and is culturally influenced internally and instinctively. It is a personal space in which a person begins to dominate the environment in mental dimensions. Personalized space with a more physical and behavioral appearance, and people begin to code and change and complete the environment to change and complete the environment. The human territory uses fixed elements to take over the environment and apply individual

and group meanings as physical elements. Personal space is close to the person, it covers the area around his body, but the territory covers a wider area and requires the use of places and objects in the environment. The territory in a place acquires a psychological identity and becomes a symbol with a sense of ownership and physical composition. Mental, behavioral, and physical manifestations manifested in place, and its concepts can be classified into categorized layers.

Territory in the neighborhood can create social interactions and neighborhood ties among residents (Javan Forouzande & Motallebi, 2012).

The conceptual model of social interactions and the expression of meanings related to the environment can be drawn in (Figure 5).

**Privacy and Culture**

Culture has an important effect on the relationship between environment and behavior, and its role as a factor influencing human behavior is very important. Rapoport has introduced the types of environment-behavior relationships as the impact of environment on behavior, behavior on the environment, and their two-way impact. Culture plays an important role in all three cases, and it is necessary to link culture and environment with the EBS framework. To be studied. EBS is highly interdisciplinary and should include much knowledge from which anthropology can be directly related, especially dealing with culture, and it is a more useful approach (Rapoport, 2013). Rapoport, on the other hand, is not the definite or self-conscious quality of the environment or the classification of environments as "better" or "worse"; it is relative; In other words, it is based on judgments about cultural values and norms. With the impact of culture within a system on the Hidden function of built environments, especially houses, it is necessary to examine the impact of culture on how social communication is done concerning the built environment. The influence of different layers of social behavior on culture is objectively, mentally, and behaviorally different.

Privacy has been proposed as a global cultural need (Altman, 1977). Privacy in different cultures has been at different levels of physical differences and responsive to home design. The need for privacy is largely related to culture (Altman & Chemers, 1984; Hall & Watson, 1970). The design of neighborhoods, buildings, and rooms is based on human behavior, resulting in significant differences in different cultures. Rapoport (1969, 1977) argues that fundamental cultural differences exist in people's perceptions of privacy. These differences are reflected in the organization of the housing interior and exterior spaces (Lang, 1987). Rapoport (1969) has concluded that people often neglect physical comfort to meet their cultural needs. These cultural interests are more prevalent in the cities of the colonized countries.

The cultural core defines a user group profile, a particular lifestyle, and a set of important activities. Although lists of elements are not generally useful, core elements are likely to be found among the following:

1. Characteristics such as ethnicity, language, and religion 2. Family and kinship structures and child-rearing practices 3. Residence patterns, land divisions, landowning and tenure systems 4. Food habits 5. Ritual and symbolic systems 6. Ways of establishing and indicating status and social identity

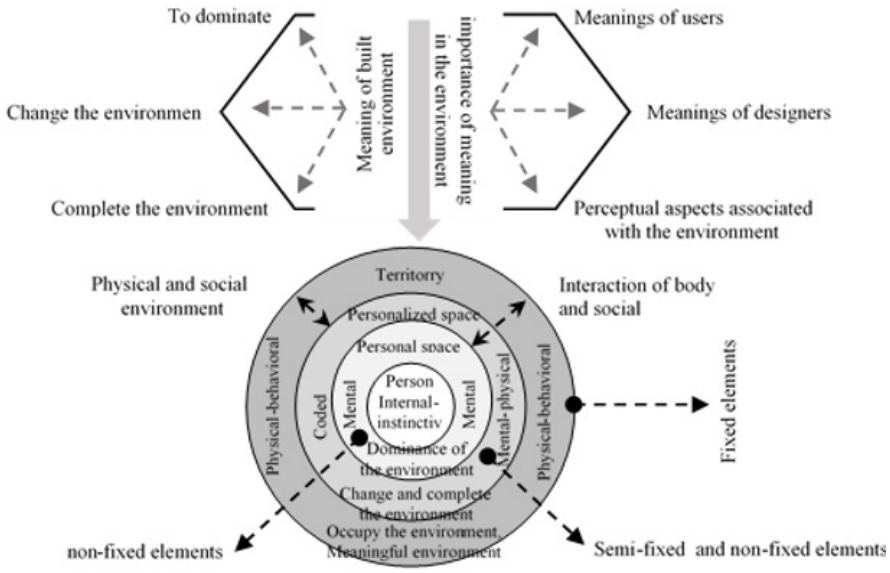


Fig. 5: Meaning of built environment and its effect on layers of privacy

7. Manners and nonverbal communication 8. Cognitive schemata 9. Privacy, density, and territoriality 10. Home range behavior and networks 11. Various institutions. The elements of the culture core are supported by supportive environments (Rapoport, 2013).

There are two ways to study how culture affects privacy and the mechanism of personal space and territory in the home. The first method considers a particular state of culture or related developments in home spaces. Using the scientific foundations of humanities in the field of culture and its description in the architectural body, it is possible to determine how behavior and visual privacy (territory) are formed. In the second method, case examples of houses are selected, and different spaces, behaviors, and markings are extracted and interpreted based on the culture of the users. In this method, selected examples of houses are cases where users' similarities, physical differences, and cultures are comparable. Also, in the research method, a combination of writing theoretical and cultural foundations includes dealing with culture at the scale of its components and elements and cultural analysis in architectural examples and explaining and interpreting specific dimensions of environmental psychology from the cultural dimension of its inhabitants.

## RESULTS AND DISCUSSIONS

### Model of Social Behaviour Forming in Environment based on User Culture with Analytical Approach

It is important to examine how culture affects environmental-related social behavior in changing societies that want to preserve their culture.

This study is not researching to "create" the cultural environment. However, the product is a framework for "critique" of the existing environment to what extent it has the potential to emerge the desired patterns of cultural behavior (Nari Ghomi, 2015).

Many definitions that refer to the concept of culture, more than anything else, resort to the symbols and elements of culture to clarify it. It is not far from the mind that a concept as broad as culture is so difficult to define is understood correctly. And the necessity of resorting to it.

On the other hand, Rapaport, in an earlier article (Rapoport, 1980), puts all the definitions of culture in three areas that he says are complementary: 1. The lifestyle of a particular group, 2. A system of symbols, 3. Meanings And mental schemas are transmitted through symbolic code and, finally, a set of adaptive strategies for survival in interaction with the environment and resources. Certainly, in societies formed and with cultural depth, all these three aspects have much content. They are mere symbols for the field of general and all-encompassing cultures, which cannot follow the physical design of culture.

Rapaport (1983), in his discussion of the adaptation of architecture to culture and what is called the "supportive environment" of culture, describes a strategy for including various aspects of the issue, in which the separation of issues from two poles - one culture And the other is the characteristics of the environment - is emphasized and claims that only after this separation and communication between the elements of the two can reach the environment; Another issue that he considers and proposes a practical way to do is to pay attention to the main cultural demands, marginal cultural demands and the main modern demands that identify the expectations of different categories of space within this issue and not During it, as mechanisms that model, the latent factors of culture in behaviors (Nari Ghomi, 2015).

According to the conceptual model presented by Rapoport (Fig. 6) and its expansion, it is possible to draw the layers of social behavior related to the environment in a matrix and apply these layers and how the physical signs of culture affect it.

Based on this matrix, the layers of social behavior can be categorized from the initial qualitative-perceptual level to quantitative-behavioral. Layers include four layers: privacy, personal space, personalized space, and territory (collective privacy). Each of these layers can be examined at the inner (inner-mental), middle (behavioral), and outer (physical) levels. At the intersection of each layer, the three levels of internal, internal-external, and external mechanisms of the cultural model are located. By placing each cultural feature in the matrix, the manner and shape of the effect and appearance of privacy in that layer are determined.

According to this model, in the case, of examples of houses, the residents can question the cultural items mentioned in the matrix. The physical and behavioral cases and the appearance of semi-fixed and non-fixed elements in the houses can be recorded. By drawing each matrix for each house and comparing them with each other, and extracting the similarities and differences in each sample, the effects of cultural expression on the social behavior related to the house can be achieved. The intra-organizational impact of residents' worldview factors is more evident in the primary and mental layers. Although mental layers have less physical appearance than physical layers, they are the basis for forming other meanings. The individual and the family's lifestyle as an internal mechanism directly affects the personalized mental-behavioral space. The behavioral manifestations of interpersonal characteristics are determined by defining the family lifestyle. Individual and social activity systems in the third layer of personalized space can be decoded in codings and changes made in the living space. Homeowners' individual and family social relationships influence the appearance of the hierarchical social body and territory under how to take over the environment. Elements of the environment constructed as an organization of space, time, meaning and communication, settlement system, and cultural landscape, made of fixed, semi-fixed, and non-fixed features in qualitative-perceptual layers as an individual to quantitative-behavioral solitude they are understood and embodied as collective solitude (territory).

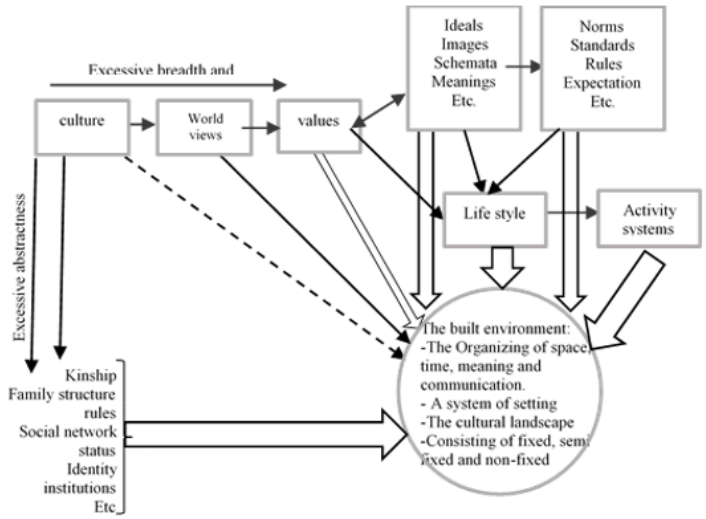


Fig.6: Diagram of dismantling of culture; relation of variables, built environment also are shown (Source: Rapoport, 2003)

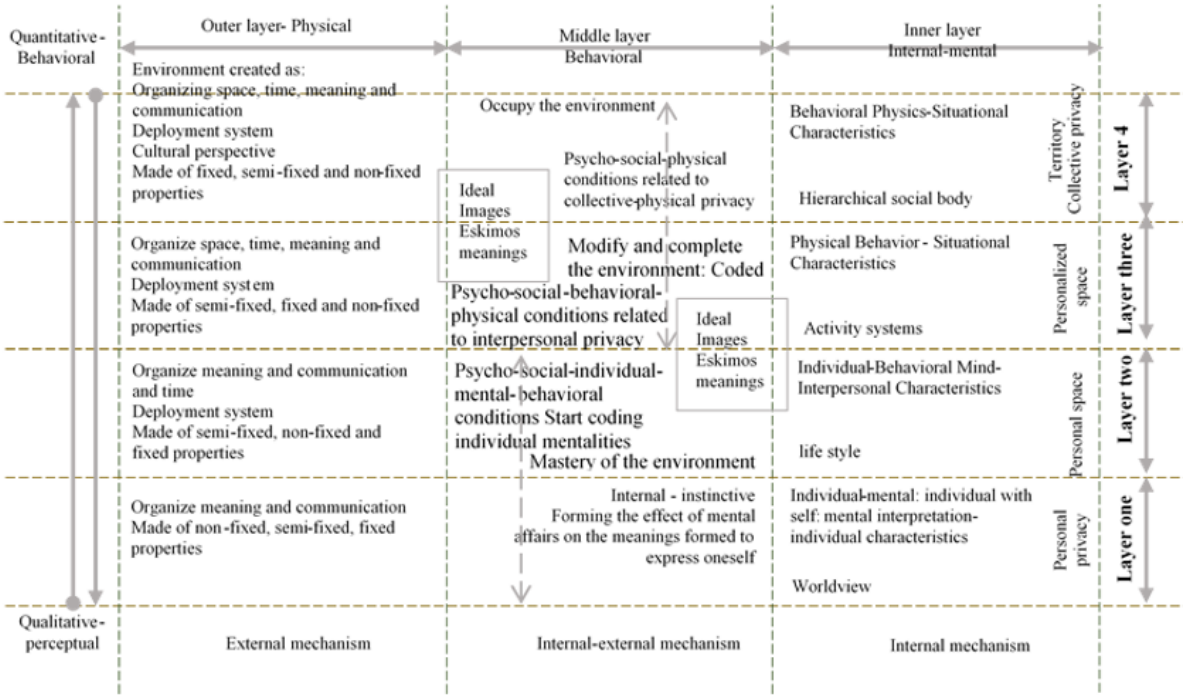


Fig. 7: Semantic model of matching the four layers of privacy and the three layers of culture

In the studied external mechanisms, the last column of the necessary study matrix can be examined in three scales: internal-internal, internal-external, and external-external. Fixed, semi-fixed and non-fixed elements in these categories with different dimensions can be recorded and examined (Fig. 8).

## CONCLUSION

Studying the artificial environment as human habitation, what it is, and how it originated has always interested researchers and scholars. How people use the built environment, especially the home, in the process of social interaction, especially in

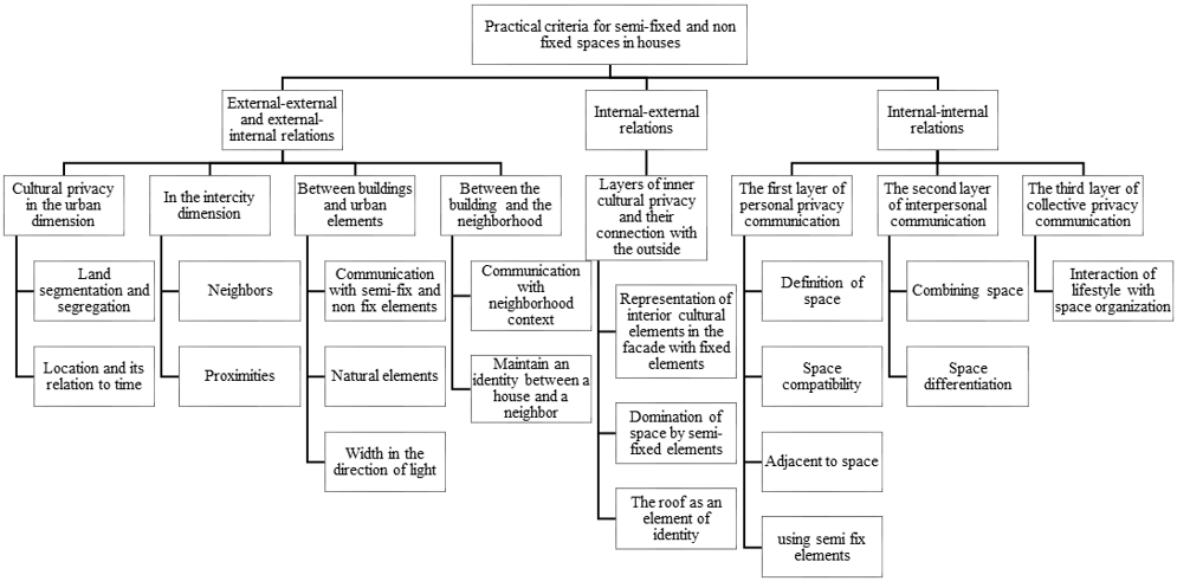


Fig. 8: Conceptual model of home use criteria and their multilateral relationships with each other

terms of the concepts of privacy, personal space, personalized space, and territory, is examined.

The concept of privacy is one of the basic concepts in various sciences. Three main categories can be achieved by categorizing and coding the definitions of privacy in different sciences. The coded categories of privacy definitions include three items (isolation and non-interaction, relationship monitoring, and selective relationship monitoring). The basic model of privacy and how to communicate is based on these three categories.

On the other hand, to achieve a model of privacy in the human environment, the construction of architecture has been studied in the field of privacy in social sciences and environmental psychology. By examining studies in the field of privacy, it is possible to categorize other elements, namely personal space, personalized space, and territory. According to this classification, it is a mechanism to achieve different types of privacy in all layers. The manifestation of privacy is divided into different embodied methods of individual and collective concepts and meanings based on the hierarchy that appears in different layers of the house. The classification of the inner layers is affected by the cultural, social, and living environment, and the outer environments are affected by the geographical, cultural, social, and living environment. Individual and social differences in the order and type of expression of privacy in the layers are very influential. Also, this expression is based on social culture subconsciously.

The connection between privacy and culture has been emphasized as the main issue in all fields. How culture affects, the appearance of different layers of privacy can be identified. Thus, the conceptual model of the meaning of Amos Rapoport culture in the human environment has been constructed and combined with the semantic model of privacy.

As a result, a matrix consisting of three columns and four rows can be drawn that shows different aspects of culture's influence in forming different layers of privacy. Based on this matrix, the layers of social behavior can be categorized from the initial qualitative-perceptual level to quantitative-behavioral. Layers include four layers: privacy, personal space, personalized space, and territory (collective privacy). Each of these layers can be examined at the inner (inner-mental), middle (behavioral), and outer (physical) levels. At the intersection of each layer, the three levels of internal, internal-external, and external mechanisms of the cultural model are located. By placing each cultural feature in the matrix, the manner and shape of the effect and appearance of privacy in that layer are determined.

According to this model, in the case examples of houses, the residents can question the cultural items mentioned in the matrix. The physical and behavioral cases and the appearance of semi-fixed and non-fixed elements in the houses can be recorded. By drawing each matrix for each house and comparing them with each other, and extracting the similarities and differences in each sample, the effects of cultural expression on the social behavior related to the house can be achieved. The intra-organizational impact of residents' worldview factors is more evident in the primary and mental layers. Although mental layers have less physical appearance than physical layers, they are the basis for forming other meanings. The individual and the family's lifestyle as an internal mechanism

directly affects the personalized mental-behavioral space. The behavioral manifestations of interpersonal characteristics are determined by defining the family lifestyle. Individual and social activity systems in the third layer of personalized space can be decoded in codings and changes made in the living space. Homeowners' individual and family social relationships influence the appearance of the hierarchical social body and territory under how to take over the environment. Elements of the environment are constructed as an organization of space, time, meaning and communication, settlement system, and cultural landscape, made of fixed, semi-fixed, and non-fixed features in qualitative-perceptual layers as an individual to quantitative-behavioral solitude. They are understood and embodied as collective solitude (territory).

## AUTHOR CONTRIBUTIONS

The article was done as a team work by A.Javan Forouzande and N.Nakhjavani, and the final reviews were done by G.Motalebi and M. Yaghoubi.

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## CONFLICT OF INTERESt

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication, falsification, double publication and, or submission, and redundancy, have been completely witnessed by the authors.

## REFERENCES

Abu-Obeid, N., & Atoun, A. (1999). The effect of environmental context in eating places on students' intimacy and social interaction. *Architectural Science Review,* 42(3), 197-211.

Aiello, J.R., Thompson, D.E. (1980). Personal Space, Crowding, and Spatial Behavior in a Cultural Context. In: Altman, I., Rapoport, A., Wohlwill, J.F. (eds) Environment and Culture. *Human Behavior and Environment,* vol 4. Springer, Boston, MA.

Al-Homoud, M. (2009). Privacy control as a function of personal space in single-family homes in Jordan. *Journal of Design and Built Environment,* 5(1).

Alitajer, S., & Nojoumi, G. M. (2016). Privacy at home: Analysis of behavioral patterns in the spatial configuration of traditional and modern houses in the city of Hamedan based on the notion of space syntax. *Frontiers of Architectural Research*, 5(3), 341-352.

Altman, I., & Taylor, D. A. (1973). Social penetration: The development of interpersonal relationships. Holt, Rinehart & Winston.

Altman, I.,(1975). The environment and social be¬h¬avior: Privacy, personal space, territoriality, and crowding. Monterey, CA: Brooks/ Cole.

Altman, I. (1976). Environmental Psychology and Social Psychology. *Personality and Social Psychology Bulletin*, 2(2), 96–113.

Altman, I. (1976). Privacy: A Conceptual Analysis. *Environment and Behavior,* 8(1), 7–29.

Altman, I. (1977). Privacy regulation: Culturally universal or culturally specific? *Journal of Social Issues*, 33, 66–84.

Altman, I., Chemers, M. M. (1984). *Culture and Environment.* United Kingdom: Cambridge University Press.

Altman, I., & Wandersman, A. (Eds.). (1987). *Neighborhood and community environments.* Plenum Press.

Bahammam, A.S. (1987). *Architectural Patterns of Privacy in Saudi Arabian Housing.* Master of Architecture/Thesis, McGill University, Montreal. Bahammam: Architectural patterns of privacy in Saudi.

Baron, R.M. & Rodin, J. (1978). *Personal control as a mediator of crowding.* In A Baum, JE Singer & S Valins (Eds.), Advances in environmental psychology (Vol 1). Hillsdale, NJ:Erlbaum. (pp 145–190).

Bentinck, S. A., Van Oel, C. J., & Van Dorst, M. J. (2020). Perception of privacy in a university building: The transparency paradox. *Frontiers of Architectural Research,* 9(3), 579-587.

Bosch, S. J., Apple, M., Hiltonen, B., Worden, E., Lu, Y., Nanda, U., & Kim, D. (2016). To see or not to see: Investigating the links between patient visibility and potential moderators affecting the patient experience. *Journal of Environmental Psychology,* 47, 33-43.

Brehm JW (1966). *A theory of psychological reactance.* New York: Academic Press.

Brower, S.N. (1980). *Territory in Urban Settings.* In: Altman, I., Rapoport, A., Wohlwill, J.F. (eds) Environment and Culture. Human Behavior and Environment, vol 4. Springer, Boston, MA.

Daneshpour, A. (2011). Concept of privacy in housing design based on Islamic teachings. *In Proceedings of the First Iranian Students Scientific Conference,* Malaysia.

Day, L. L. (2000). Choosing a House: The Relationship between Dwelling Type, Perception of Privacy and Residential Satisfaction. *Journal of Planning Education and Research,* 19(3), 265–275.

Demirbas, O. O., & Demirkan, H. (2000). Privacy dimensions: A case study in the interior architecture design studio. *Journal of environmental psychology,* 20(1), 53-64.

Evans, G. W., & Wener, R. E. (2007). Crowding and personal space invasion on the train: Please don't make me sit in the middle. *Journal of Environmental Psychology,* 27(1), 90-94.

Glaser, D. (1964). *The effectiveness of a prison and parole system.* Indianapolis: Bobbs-Merrill.

Gordon, M. (2022). *Solitude and privacy: How technology is destroying our aloneness and why it matters.* Technology in Society, 101858.

Hall, E. T. (1990). *The silent language.* India: Doubleday.

Hall, J., & Watson, W. H. (1970). The effects of a normative intervention on group decision-making performance. *Human Relations,* 23(4), 299–317.

Hallak, M.E. (2000). *Privacy in Homes of Shaamy Muslim Immigrants: A Study of Privacy Patterns in Single-Family Detached Homes and Townhouses of Middle-Class Immigrants in Montreal,* Master of Architecture/Thesis Masters, McGill University, Montreal.

Halldorsson, F., Kristinsson, K., Gudmundsdottir, S., & Hardardottir, L. (2021). Implementing an activity-based work environment: A longitudinal view of the effects on privacy and psychological ownership. *Journal of Environmental Psychology*, 78, 101707.

Javan Forouzande, A. & Matlabi, G. (2011). The concept of the sense of belonging to the place and its constituent elements. *Journal of Urban Identity,* 8, 27-37.

Javan Forouzande, A.J. & Motallebi, G. (2012). The role of open spaces in neighborhood attachment (case study: Ekbatan town in Tehran Metropolis). *International Journal of Architecture and Urban Development (IJAUD)*. 2(1),11-20.

Jeon, J. Y., Jo, H. I., Santika, B. B., & Lee, H. (2022). Crossed effects of the audio-visual environment on indoor soundscape perception for pleasant open-plan office environments. *Building and Environment,* 207, 108512.

Kaya, N., & Weber, M. J. (2003). Cross-cultural differences in the perception of crowding and privacy regulation: American and Turkish students. *Journal of environmental psychology,* 23(3), 301-309.

Keeley, R. M., & Edney, J. J. (1983). Model house designs for privacy, security, and social interaction. *The Journal of Social Psychology,* 119(2), 219-228.

Kelvin, P. (1973). A Social-Psychological Examination of Privacy. *The British journal of social and clinical psychology,* 12, 248-261.

Kim, J., & De Dear, R. (2013). Workspace *satisfaction: The privacy-communication trade-off in open-plan offices. Journal of Environmental Psychology,* 36, 18-26.

Lang, J. T. (1987). Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design. United Kingdom: Van Nostrand Reinhold Company.

Langer EJ & Saegert S (1977). Crowding and cognitive control. *Journal of Personality and Social Psychology,* 35, 175–182.

Laurence, G. A., Fried, Y., & Slowik, L. H. (2013). "My space": A moderated mediation model of the effect of architectural and experienced privacy and workspace personalization on emotional exhaustion at work. *Journal of Environmental Psychology*, 36, 144-152.

Liang, H., Shen, F., & Fu, K. (2017). Privacy protection and self-disclosure across societies: A study of global Twitter users. *New Media & Society,* 19(9), 1476–1497.

Lis, A., & Iwankowski, P. (2021). Where do we want to see other people while relaxing in a city park? Visual relationships with park users and their impact on preferences, safety, and privacy. *Journal of Environmental Psychology,* 73, 101532.

Lis, A., & Iwankowski, P. (2021). Why is dense vegetation in city parks unpopular? The mediative role of sense of privacy and safety. *Urban Forestry & Urban Greening,* 59, 126988.

Little, L., Briggs, P., & Coventry, L. (2005). Public space systems: Designing for privacy? *International journal of human-computer studies,* 63(1-2), 254-268.

Masur, P. K. (2019). Situational Privacy and Self-Disclosure: Communication *Processes in Online Environments.* Germany: Springer International Publishing.

McCallum, R., Rusbalt, C.E., Hong, C.K., Walden, T.A .& Schopler, J. (1979). Effects of resource availability and importance of behavior on the experience of crowding. *Journal of Personality and Social Psychology,* 37, 1304–1313.

Memarian, G. H., & Ranjbar-Kermani, A. M. (2011). Privacy of house in Islamic culture: A comparative study of pattern of privacy in houses in Kerman. *Iran University of Science & Technology,* 21(2), 69-77.

Mortada, H. (2011). *Traditional Islamic principles of built environment.* RoutledgeCurzon, New York.

NariGhomi, M.,Tehrani, S.F., RajaGhomi, M., Abbaszadeh, m.j., Mahalatiyan, A.(2015). *Problem Paradigms in Architecture: An Approach to Culturalist and Application-Based Problem Design in Architecture.* Tehran: Elme Memar.

Nelson, P. A., Altman, I., Lett, E. E. (1972). *The Ecology of Home Environments.* United States: U. S. Department of Health, Education, and Welfare

Newell, P.B. (1998). A cross-cultural comparison of privacy definitions and functions: A systems approach. *Journal of Environmental Psychology,* 18, 357–371.

Omer, S. (2010). *Islam and housing.* Gombak, Kuala Lumpur: AS Noordeen.

Othman, Z., Buys, L., & Aird, R. (2014). Observing privacy, modesty, and hospitality in the home domain: Three case studies of Muslim homes in Brisbane, *Australia. Archnet-IJAR,* 8(3), 266-283.

Petronio, S. (1991). Communication boundary management: A theoretical model of managing disclosure of private information between marital couples. *Communication theory,* 1(4), 311-335.

Petronio, S. (2002). *Boundaries of privacy: Dialectics of disclosure.* Suny Press.

Rahimi, R., Moosavi, S. M., Beyshami, M., & Amini Goharrizi, S. (2022). Investigating privacy in the open spaces of traditional houses in Mazandaran using space syntax technique. *Iranian Islamic city studies,* 4(44), 65.

Rapoport, A. (1972). *Some Perspectives on Human Use and Organization of Space.* Australia: A. Rapoport.

Rapoport, A. (1980). *Cross-Cultural Aspects of Environmental Design.* In: Altman, I., Rapoport, A., Wohlwill, J.F. (eds) Environment and Culture. Human Behavior and Environment, vol 4. Springer, Boston, MA.

Rapoport, A. (1990). *History and Precedent in Environmental Design.* Netherlands: Springer US.

Rapoport, A. (1969). House Form and Culture. The United Kingdom. Prentice-Hall.

Rapoport, A., & Hardie, G. (2003). Cultural change analysis: Core concepts of housing for the Tswana. *In Housing the poor in the developing world* (pp. 51-77). Routledge. DOI:10.4324/9780203035788-8

Rapoport, A. (2005). *Culture, Architecture, and Design.* United States: Locke Science Publishing Company.

Rapoport, A. (2013). *Environment and Culture.* United States: Springer US.

Rapoport, A. (2016). *Human Aspects of Urban Form: Towards a Man Environment Approach to Urban Form and Design*. Netherlands: Elsevier Science.

Robson S.K.A. (2008). Scenes from a restaurant: Privacy regulation

in stressful situations. *Journal of Environmental Psychology,* 28, 373–378.

Ruback, R.B. & Pandey, J. (1991). Crowding, perceived control, and relative power: An analysis of households in India. *Journal of Applied Social Psychology,* 21, 315–344.

Sætra, H. S. (2020). Privacy as an aggregate public good. *Technology in Society,* 63, 101422.

Schwartz, B. (1968). The Social Psychology of Privacy. *American Journal of Sociology,* 73(6), 741–752.

Scrima, F., Mura, A. L., Nonnis, M., & Fornara, F. (2021). The relation between workplace attachment style, design satisfaction, privacy and exhaustion in office employees: A moderated mediation model. *Journal of Environmental Psychology,* 78, 101693.

Simmel, G. (1950) *The Sociology of Georg Simmel.* Wolff, KH (ed.) New York: The Free Press.

Simmel, G. (1955) *Conflict and the Web of Group-Affiliation*s. New York: The Free Press.

Smith, DE. (1982). Privacy and corrections: A reexamination. *American Journal of Community Psychology,* 10, 207–224.

Sommer, R. (1969). *Personal Space (The Behavioral Basis of Design).* United Kingdom: Prentice-Hall.

Tomah, A. N., Ismail, H. B., & Abed, A. (2016). The concept of privacy and its effects on residential layout and design: Amman as a case study. *Habitat International,* 53, 1-7.

Tripathi, S. and Tripathi, A. (2010). Privacy in libraries: the perspective from India, *Library Review*, 59(8), 615-623.

Waldman, A. E. (2018). *Privacy as Trust: Information Privacy for an Information Age.* India: Cambridge University Press.

Westin, A. F. (1968). *Privacy and Freedom.* United Kingdom: Ig Publishing.

Zabihzadeh, A., Mazaheri, M. A., Hatami, J., Nikfarjam, M. R., Panaghi, L., & Davoodi, T. (2019). Cultural differences in conceptual representation of "Privacy": A comparison between Iran and the United States. *The Journal of Social Psychology,* 159(4), 357-370.

Zangeneh, N., Moztarzadeh, H., Taghipour, M., & Nasr, T. (2022). Evaluation of Privacy in Different Types of Spatial Structure of Traditional Iranian Houses Based on the Space Syntax Mathematical Analysis (Case Study: Shiraz Qajar Houses). *Hoviatshahr,* 16(1), 71-86.