ISSN: 2008-5079 / EISSN: 2538-2365
DOI:10.22034/AAUD.2020.237770.2247

Analysis of Semantic Distinctions Affected by "Void" in Public Physical Spaces*

Zohreh Attarabbasi[a]- Alireza Einyfar[b]- Manouchehr Froutan[c]- Mohamadmehdi Soroush[d]**

[a] Ph.D. in Architecture, Faculty of Art and Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran.
[b] Professor of Architecture, Faculty of Architecture, University of Tehran, Tehran, Iran (Corresponding Author).
[c] Assistant Professor of Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran.
[d] Assistant Professor of Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran.

Received 02 July 2020; Revised 23 October 2020; Accepted 31 October 2020; Available Online 22 September 2022

ABSTRACT

The presence of in-between elements in architecture is effective in the coexistence of its components. Between spaces are used with invisible structures to clarify and gradually reduce the material. These spaces are called “void”. The current study aims to evaluate the effects of each component of the void on social interactions in the architecture. The main research question is to what extent can the presence of the ‘void’ in different uses change the social components of space? In other words, are the effects of void on the users’ behavior the same in all uses? The main research objective is to identify the social indicators of the ‘void’ in public spaces and determine its facilitating or inhibiting effect on individuals’ social interactions. The present study is mixed method research carried out through survey and purposeful sampling, and after extracting the components, the theoretical framework was explicated. The research procedure included two phases of the initial survey in 5 different administrative, medical, educational, hotel, and commercial uses, and the main survey in 3 educational, hotel, and commercial uses. The required data are collected by the use of questionnaires and interviews, and the obtained results are analyzed by the software. The findings indicate the significant effects of physical and semantic components of the void on people’s social interactions. In the initial survey, the findings showed asociality in the administrative building and somewhat neutral effectiveness in medical use, while the main survey indicates the sociability effect of the ‘void’ on the behavior in the commercial, hotel, and university buildings. The research concludes that the ‘void’ plays a connecting and separating role at the same time, in the architectural space. The effectiveness of the social relationships and interactions in a space with ‘void’ depends on the extent the people are affected by the environment, use type, activity, and their purpose of being present in the places.

Keywords: Void, Semantic Distinctions, Behavior Settings, Social Interactions.

* This article is extracted from the doctoral dissertation of the first author, which is titled "Analysis of Semantic Distinctions Affected By "Void" in Public Physical Spaces" under the guidance of the second author and the advice of the third and fourth authors, at Hamedan Azad University in 2019.

** E_mail: aeinifar@ut.ac.ir

1. INTRODUCTION

Architecture, as a phenomenon with different components, and at the same time, a single whole, can be studied with different approaches. Each architectural component reveals some capabilities of space depending on the type of function and the environment in which they are located. The environment, as a platform for social interactions, is of great importance in the field of environmental psychology and architecture studies. Mumford emphasized architecture as a built environment responding to environmental, social, and cultural effects. The influence of each architectural element on space and behavior was investigated based on this point of view. In this research, "void", as an architectural element that affects space and subsequently behavior, is raised as the main issue. In this regard, activities and behaviors performed in the environment are emphasized as "environment-related". The results of investigations on behaviors provide further knowledge of the void in space. The hypothesis of "creation" or "inhibition" of the behavioral patterns in the environment was formed in this regard and based on the fluidity and spatial openness resulting from the void, which creates borders in the physical space despite being borderless. The space syntax, dimensions and hierarchies, arrangement of spaces, light, privacy, legibility, and visual depth are physical components that make the behavior proportionate to the behavior settings and shape it (Markus 1987, 467). The importance of the relationship between man and the environment is due to repeated behavior and events that occur periodically in the environment (Lang 2015, 128) and how the considered environment is affected based on the people who live and work in it. It is a topic that is discussed in the field of environmental psychology. In this regard, to understand the behavior of individuals or groups, Lewin emphasized examining their opportunities, choices, and environmental limitations. Therefore, the related literature was formulated in two parts. First, the study of different theories and approaches to space, the position of "void", as a kind of between space, and the understanding of the concept of "void" and "empty" based on "absence", "nothing" and "thing", and in the second part of the literature, environmental psychology literature were investigated to evaluate the indicators of void space in architecture and people's exposure to it. Therefore, the semantic distinctions method was used to collect the data and record the people's feedback in the spatial-collective systems. The research aims to further recognize the space and the 'void' as between space. The use of the void in modern and postmodern architecture, insufficient studies on the spatial qualities caused by the void, and the lack of enough attention paid to the effects of this architectural element on the social and behavioral subjects necessitate the conduct of the current study. In this regard, investigation of the effects of different architectural elements on the users' relationships and spatial qualities in various uses through the analysis of the user's experience can be considered an effective strategy. Two main questions are raised here:

- What is the role of the void in revealing the hidden qualities of space?
- What changes do use differences create in the social components of the space affected by the void?

According to Barker, environments generate behavior settings. In fact, it is the environment that leads to activities in the behavior settings by creating the places (Barker 1968, 106). Early studies show that the void in collective physical spaces is an effective factor in people's behavior and the degree of their social interactions. And these effects emerge differently based on changes in the use type. In the current study, investigation of the facilitating and inhibiting effects of the 'void' on people's social interactions in behavior settings based on different uses was considered the research hypothesis.

2. METHODOLOGY

The conceptual framework of the research was developed based on the philosophy and intellectual foundations of the research. Accordingly, the variables related to the research components are introduced, and to develop the theoretical model, and investigate and collect users' opinions, the research process includes the design of questionnaires, unstructured face-to-face interviews, and detailed on-site observation. Regarding the related literature, the data have been collected by the library study and reviewing relevant theories. Due to the formation of mental meanings in social interactions and historical and common cultural norms in daily life, the process of interaction between people was considered (Creswell 2014, 44). Therefore, the case studies were conducted in addition to the interviews, observation, and in-depth analysis of activity. Considering the mixed or quantitative-qualitative approaches, this research goes beyond simple data collection and analysis, and both research methods are used simultaneously. Studies conducted with this method are more robust than merely quantitative or qualitative research (Creswell and Clark 2007). Accordingly, semantic distinctions were used to collect data and record people's feelings when exposed to the environment. This method is based on structuring and was first formulated by Kelly (Lawson 2001, 243). This path, which is based on bipolar-related attributes, includes a 5-section domain. In line with the proposed theories, some types of buildings will be less important than others. Some features are not a priority regarding the designs. However, these attributes sideline the designers regarding of the design, or overlooked important attributes are identified and investigated (Lawson

2001, 243). Accordingly, in the research, two stages as the initial and main surveys were considered. In the following, based on the initial survey, three final uses were considered as the main samples of the study. The control and selection criteria are mentioned in the "case studies" section to carry out an initial survey, and based on the requirements. Five different cases were purposefully selected. Data collection and analysis were done by the use of questionnaires and interviews. The questions were organized into three physical, semantic, and social systems. The statistical population includes all space users over 13 years of age, men and women, present in the space permanently or daily. The statistical analysis was done by the SPSS software for the initial survey, and smart PLS software was used for the main survey.

3. RELATED LITERATURE

As the research title suggests, the study of the void and the space domain with an environmental psychology and behavior approach makes up the research background. Due to the effects of the concept of void on art and the fact that this concept is rooted in the Zen School, the East is known as the main origin of the void. Japanese Buddhists have used the term "Maa" in Japanese to express "void". An example of such use is the poems by Saigyō, a poet from the 12th century A.D., who used the word " Maa" as an equivalent to emptiness and void in his poems (LaFleur 1974, 227-248). Also, in the definitions, concepts of Zen School, and the essence of Japanese culture aesthetics, the void is interpreted as a kind of between space, the middle space, and an empty, pure and vital space between all things interpreted under the title of " Maa" (Oyamatsu 2013). In the Eastern vocabulary, " Maa" refers to the space between two gaps, the stop, and the middle, which includes space and place (Etezadi 2014). A domain in which things can exist, and be visible and meaningful, while "Maa" itself is non-visual and invisible. The first glimpses of the influence of Eastern culture on Western art can be found in the works and writings of Ralph Waldo Emerson and Henry David Thoreau, in the mid-19th century. They showed the West deep questions, emphasis on intuition, and a comprehensive vision of the interconnectedness of humans and nature. An attitude of integration of Buddhism, Hinduism, and Western art which influenced many Western artists such as Gauguin, Frantisek Kupka, Kandinsky, Mondrian, Klee, etc. (Oyamatsu 2013).

3.1. Between Space Theory in the Architecture

The issue of the boundary is raised in the first step to explain the characteristics of the between space, because this component itself is the reason for its distinction in the architectural space. In other words, making one object or concept distinct from another object or concept determines its boundaries. In architecture, it is the distinctions between spaces that determine their differences. The boundaries beyond which something is neither possible nor allowed (Tschumi 1975). The between space is a space that is constantly moving, a place in itself, a limit built on the edge, the conquest of the space between two realms, ambiguous, confused, hybrid, and unknown. A space that is not empty or leftover. In a geometry with complex relations, the between space becomes a stable place, a place of simultaneous ambiguities. Therefore, the between space does not disintegrate but always connects (The Metapolis dictionary of advanced architecture 2003).
In the following sections also, definitions related to the architecture of the between space are provided: "The architecture of relations and contacts, architecture without limitations, architecture without restrictions, the architecture of minimal connections and disinterested in composition. The tangent mode is desirable for this type of architecture. The architecture of between space absorbs everything it can use for its structure (Ibid).

3.2. Void in Sciences and Architecture

According to Aristotle, the void cannot exist, neither in space, nor empty space, nor the time outside the universe. Therefore, "Aristotle" totally rejected the possibility of void and proposed his famous claim for its impossibility on Earth: "Nature abhors a vacuum" (Denkel 1998, 58). Later, the matter of void was somewhat clarified by the theory of "all matters are composed of atoms" by the atomists, because there is nothing between and inside the atoms and there will be no movement without the void. The space between the particles is filled with forces that keep them in place. While general relativity explains the gravity and the structure of the large observable universe, quantum mechanics deals with phenomena at the atomic scale (Hawking 2005, 19). Today, with general relativity and quantum mechanics, there is more than one explanation for the void. The description of black holes refers to a theory in which light consists of particles and therefore is affected by gravity. Any light radiated from the star's surface is pulled by the star's gravity before it can travel very far. These black voids in space are black holes (Ibid).
Black holes can only be seen as empty forms in space. Quantum theory introduces this space as a space that may be energy (Close 2007, 13). The concept of the void has also grabbed the attention of researchers in the field of mysticism and philosophy. In his studies, the German thinker and architect, Gunter Nietzsche, introduces the void in Zen thinking as a quality that extends from the realm of visible to the invisible. It is associated with time, and at the same time, it represents some quantitative concepts (Etzadi 2005). Also, he explains the history and role of void in Japanese culture and architecture in Kyoto magazine under the title "Place, Space, and void". In

his research, the Japanese researcher "Oyamatsu" has discussed in detail the meaning of void in classical and modern Japanese art and architecture as well as its effects on Western art. "Seyed Hossein Nasr" has provided many references for the position of the void concept in Iranian mysticism and art, especially architecture. "Libeskind" considers void independent and a substitute for what has value and meaning in architecture, as in his designs in the Berlin Jewish Museum and the September 11 Memorial, he presents it as an immaterial and valuable replacement for the deceased.

Lao Tzu, the ancient Chinese philosopher, remarkably reveals the importance of the concept of the void in the realm of architecture. Also, Peter Conrad, not only quotes a summary of Lao Tzu's words in the form of thought entitled "The reality of a vessel is the void inside it", but also names a chapter of his book "Vessels and Voids" in which he discusses modern architecture (Conrad 1998, 289). Conrad claims that Wright was so fascinated by Lao Tzu that he implemented his idea in the design of the Robie House in the suburbs of Chicago. Colbert also defines the modern space as "emptiness, purity, and predominance". In the two books that they published in the field of the void, Smithson and Smithon introduce the void as the between space or the non-visual empty middle space, which has energy in different urban and architectural scales and can organize the surrounding space and form it based on the forces that come from the spaces (Smithson and Smithson 2005, 15). Rem Koolhaasuses the void's forces extraordinarily to organize spaces along horizontal and vertical lines, in Jussieu Library. He believes that if it were otherwise, the void would be removed and the surrounding spaces would be filled (Lahiji 1997). When Peter Eisenman was retelling the modern rules in architecture, he mentioned "full and empty" as one of the unified categories. Therefore, to create spatial relationships, he used the void (Eisenman 2008, 206).

4. THEORETICAL FOUNDATION

The abstract rules of space, which govern modern space, caused the void to step into modern architecture through new construction techniques and materials that enabled new concepts in architectural elements. References from philosophers and architects have been presented in the field of the void in the studies conducted in the field of space and the comparison of contemporary views.

4.1. The Void and the Existential Philosophy

According to Libeskind, space is always empty; otherwise, it is not space; Rather, it is called a mass of materials (Lahiji 1987). In the studies on space, various categories have been presented from contemporary perspectives. Among space theorists, Freud believes that space is not a physical reality but a mental reality. He believes that if we destroy or remove the object placed in the assumed space, it will remain empty (Lahiji 1997). Žižek, elaborating Lacan's thoughts[1], introduces the void as the background, which constitutes the space itself and a state of absolute primacy that holds the space in itself. On the other hand, it can be inhibited. The void is inhibited and its dimensions are present within the range of space. At the same time, it is a possibility that arises from the impossible and is the cause of its initial atmosphere and scene. According to Žižek, in Lacan's thoughts, the void appears both as a background for the space and the events inside it, and it can be contained within the space where it will have a border. According to Žižek, Lacan implies two paradigmatic arts when explaining the concept of the void: painting and architecture. Painting replaces the void and creates the architecture of the void. Therefore, painting and architecture are related. The art of painting is the act of placing something or conveying a concept that is in the place of meaning; A task that is closer to fantasy than reality. While architecture is the act of creating a thought, which is closer to reality than fantasy (Saint-Cyr 2012). Lacan considers the void as an alternative for meaning where it cannot be expressed or described. In addition to introducing the void as a concept in architecture, it is recognized as a "thing" and architecture, which is closer to the real thing, not only shapes the void but also identifies it. Architecture creates the voidness without the intervention of the imaginary, although it can be directed towards painting and create a void through the realm of imagination (Ibid). Therefore, elaborating on this concept, it can be said the void is classified based on its existential philosophy. The first category: the void means empty, background, which is everywhere and things happen within it. In the beginning, the infinite world is a big void in which the whole existence is placed. Accordingly, in the scale of urban development, the unbuilt land is a void where something is supposed to be built. According to Christopher Alexander, this big emptiness is called the "Great Void" and is the source of existence and placelessness (Alexander 2005, 318). In his book, Alexander called it an "incorporeal" void. The second category is the between space which is invisible. Voidness, which has no identity of its own, but gives identity to other spaces, has boundaries. It has specific components that all originate from its uncertainty. In the second type, the void is "physical" and forms the essence of matter; It is present in architecture, and architects must know and understand it because they create things (Ibid). A thought whose basis is mixed with Eastern mysticism on the one hand and quantum physics science on the other. Based on Alexander's comments that indicate that a void is a place in architecture, the current research will adopt two phenomenological and environmental psychology approaches in place studies that deal with

the phenomenon of place. According to Norberg-Schulz, the place is essentially what it is. This is due to the same inherent qualities found in the physical environment. Therefore, the intervention of humans in a place will be more successful when the place is recognized correctly (Norberg-Schulz 2018). Places make us aware of who we are and how we behave. In other words, where we are means "who" we are (Cheng et al. 2010). More importantly, places exist by collective structures and often enable environmental behaviors. Therefore, a place is not just a simple and ineffective container for physical activities. Rather, it is created and treated by behavioral and collective processes and has meaning. With such a perspective, the 'void' is recognized by identifying the effects on human behavior and perception, individually or collectively. Based on this topic, knowing the components of the place in the void is one of the essentials of the research. On the other hand, based on the main objectives of the research, the perception of users of the environment and improving the quality of the space are discussed. The discussion of place in the field of phenomenology is the knowledge of the environment based on the nature and essence of the phenomenon itself. The people's perceptions, opinions, and feedback are used to prove the knowledge of the phenomenon under discussion. In this regard, the environmental psychology approach was formulated as the theoretical foundation of the research.

4.2. The Void, Between Space, and Behavior Settings

The difference between the spaces reveals the existence of a space with a middle identity. Diversity in the structure of space was revealed when humans slowly, and through the development of different behavioral patterns, transitioned their activities from outside to inside space. This change in spatial behavior and gradual and constant progress continued exponentially throughout history through changes in lifestyles and production methods (Ibid). Hillier and Hanson consider the relationships between spaces based on social functions. The distinction between interior spaces of the building is the result of the difference in how to create and control individual and social interactions (Hillier and Hanson 1984, 36). The factor that separates spaces, in addition to making them distinct, acts as a communication interface between spaces. On the other hand, the border in front of each shelter becomes a gathering place and a place for various activities. This relationship is unavoidable since, without it, the enclosed space cannot function. So the separation or connection of two spaces always requires a third space to emerge. The above considerations provide a purposeful order between the lands through the content of the relationships of the accompanying elements, with the help of the features of the between space. Such a result is important because, in fact, how the elements are connected and the quality of their connection, create the character of a space, and in the process of creating links, the forms arrange the interspatial communication of the surfaces in different degrees. This influence is not a one-way form of formal relations to functional or semantic areas, rather, it establishes a two-way or multi-way relationship between the between space regarding the shape, meaning, and connection with the surrounding spaces. Accordingly, "void", with its communicative characteristic, transforms the differences in various fields into different proportions in spatial levels because of the difference in their constructive concepts, and it is due to the determination of the pattern of communication and the order that governs the relationships, which ultimately leads to spatial organization. As the Smithsons put forward the feature of organizing space by "void" and believe that voids are not just empty space. In this case, due to being insignificant, the voids should not have an impact on the surrounding spaces and would be filled by other spaces. In addition to the between space characteristics such as non-enclosure and invisibility, "void" plays an important role in linking semantic (abstract), formal (concrete), and functional (social-behavioral) concepts. "Void" as the between "space" affects the surrounding spaces and behavior as well. So, it can be also studied in the field of spatial behavior, behavioral habitats, and ecology. Based on what was said, the field of behavior settings studies is considered a unit in explanation of the intertwining of environment and behavior (Bechtel, Marans, and Michelson 1987, 192). Also, analytical-elemental behavior settings are used to describe environmental characteristics and behavior studies (Wicker 1979). In line with Barker's studies, two other factors that can be effective in explaining behavior settings were presented. Individual characteristics and plans, cultural differences on the one hand, and environmental and geographical features on the other hand are effective as controllers in behavior settings (Ibid). In this regard, and based on the studies conducted in the field of built environments, the case studies in the research, with a public use containing the void, were considered as the unit of study regarding the existence of current patterns of behavior.

4.3. Study of the Collective Variables in the Public Space

Blumer believes that the social world means a world that has a specific yet common meaning for each particular social group, and the relationship between groups is formed based on this common meaning (Blumer 1969). In addition to physiological comfort and relaxation, which form a group of effective components in the physical space with a physical approach, the semantic activities and components are also effective in the non-emptiness of the collective spaces. Interaction with friends and relatives,

walking, activities and face-to-face meetings, sitting and watching the surrounding spaces, and even the movement of people, as activities that take place in a collective space, are considered to be appealing to people. Also, the possibility of creating complex architectural landscapes and spaces, the design of architectural elements such as voids with creative forms, attracting visitors to watch a special architectural design, or watching nature play an important role in responding to the sense of spatial discovery.

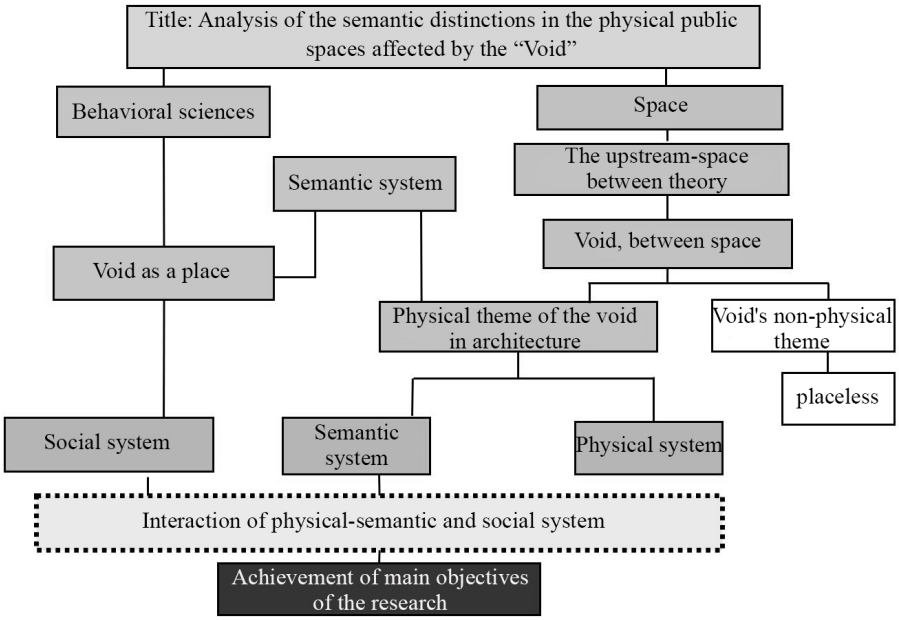

Fig. 1. Theoretical Framework

Creation of order and harmony through spatial organization and security, as well as visual continuity in space, which pursues the goals of legibility and spatial openness, and provides the possibility of performing various activities and social interactions are among the psychological needs of humans concerning the space, which ultimately consolidate the continued presence of people in space (Wekerle and Whitman 2014).

4.4. Case Study

Generally, public space and behavior centers have been created to meet the social needs of humans and create a platform for interactions. Hamedan city has been chosen as the case due to the researcher's complete familiarity with the cultural and social aspects of the urban context, as well as the homogenization of the backgrounds of the study samples regarding the culture of the users and the elimination of moderating factors such as climate, culture, etc. In addition, despite the great diversity in the samples, the research was concentrated in one city. Different types of use should be considered to explain the concept of void in architecture. So, in an initial division, the diversity of users and the dominant performance of each activity were assessed. In the case of performing several activities in one place, according to the resolution of the Supreme Council of Urban Planning and Architecture of Iran, the use's name was determined based on the dominant function. In the early views, about a century ago, the use was explained as a static concept and a definite and final product. However, new attitudes toward land use imply a dynamic concept, a continuous relationship between man and the land, and how man uses this relationship, which organizes place, space, and activity in the planning process. The functions of urban uses approved by the Supreme Council of Urban Planning and Architecture of Iran are educational, religious, administrative, residential, sports, industrial, laboratory, medical, cultural, commercial, park, and warehouse. Kiyo Izumi believes that some buildings are designed more for the proper functioning of machines and equipment than for the people who work with this equipment. The second needs are more important in these buildings (Fig. 2). Izumi called the first type of buildings Anthroposemic or non-human buildings and the second type Anthripophilic or human buildings (Lang 2015, 123). In line with the primary study and exclusive selection of the sample buildings, all non-human uses approved by the Supreme Council of Urban Planning and Architecture in the field of definitions and concepts of uses such as warehouses and industrial centers were excluded from the study (Supreme Council of Urban Planning and Architecture 2019). Also, based on the research subject, roofless buildings such as parks, as well as religious and cultural buildings, were not included

among the evaluated buildings due to the focus on the semantic component of the research. Therefore, administrative, educational, medical, hotel, and commercial uses, provided that they had a public space with the void, were considered case studies. The mentioned buildings are Anthripophilic and have flowing patterns of behavior in the collective space. Also, in the case studies, the void was considered to be centered in the middle of the building. The case study of the current research assigns the sample selection process to the presence in a theoretical, literature-based, logical, feasible, and practical way. Also, the scale of research in the field of architecture, the cultural, social, and economic similarities between the users of the mentioned buildings, in addition to the selection criteria of an equal area between the buildings and the area of the building proportionate to the user population were considered. A large area relative to the user population reduces the sociability of the spaces and vice versa (Lang 2015, 198).

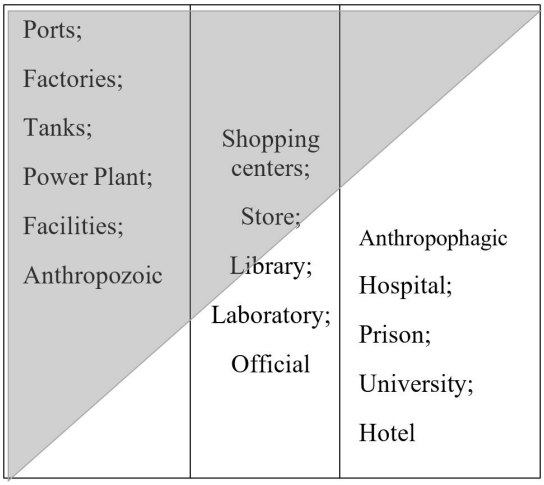

Fig. 2. Categorization of Izumi's Uses
(Lang 2016, 123)

The ease of communicating with users and the possibility of deep analysis and spatial study, the existence of void-included public interior space with a view as a non-moving space and stillness, and the presence of people either permanently or temporarily, are the other criteria considered for the five buildings under study. So, to carry out the study, Hamedan Farshchian Hospital, Hamedan Bu-Ali University's Faculty of Literature, Hamedan Governorate, Shahrara Commercial Center of Hamedan, and Katiba Hotel of Hamedan with a relatively similar area were purposefully chosen as case studies. What is considered in this research for categorization of the case studies is the division of uses as "formal" and "informal". A model designed based on Kanter's conceptual model has considered the physical characteristics including biological components and social characteristics, including types of user interactions, formal and informal relationships, etc. as the foundation (Cheng et al. 2010). Accordingly, the medical and administrative uses are introduced as " formal " uses, and commercial and the hotel are introduced as "informal" uses. Due to their nature, universities are used formally in some spaces and informally in some other cases. The collective public spaces in the university were considered the informal part of the university. The void's physical and semantic features were considered independent variables and the perception and reception of users as dependent variables. Despite the differences in the samples, discovering the commonalities between them allows for a deep insight into the studied phenomenon. Continuous activities in a clear context, a specific physical composition of the environment, and the harmony between the above components and activities at a specific time are observed in the research cases, according to the definition of "behavior settings", provided by Barker. The governorate building and Shahrara commercial center are part of the middle category, and the Katiba Hotel, Farshchian Hospital, and Faculty of Literature are among the Anthripophilic buildings. The typology of the plan, the position of the entrance, and the void's settlement relative to it, in each of the places studied, are shown in Figure (2). The discussed physical, semantic and social systems, as well as the effect of the main components of the void middle space on each of the components of social interactions, were evaluated to achieve the main research objectives. The main research objective is to investigate the impact of the physical and semantic components of the void architectural element on the social interactions of people in the collective space. Therefore, the "physical", "behavioral" and "social interactions" components in collective spaces, and the "physical" and "semantic" components in the void, were introduced separately. In the research process, the criteria proposed in the aforementioned theory, including scale, location, and visual and semantic as well as visual aesthetics (Madanipour 1996, 139-150) were taken into consideration. The data collection and analysis were initially done through a questionnaire, on-site observations, interviews, and careful observation. In this regard, the components of the "void" architectural element were introduced as follows:

a) Void's components (physical): Material transparency, material removal, (Giedion 1999), sound, ventilation, temperature, form flexibility, (formlessness), fluidity in use, visual communication and movement communication (Ibid), and perspective.

b) Void's components (semantic): Spatial transparency (Ibid), legibility, spatial openness (Norberg-Schultz 1980), organization, fluidity, and overall understanding of the unit (Smithson and Smithson 2001, 25). Also, the effective components in social interactions in behavior settings are introduced as follows:

c) Sociability components: Perception of space as a single whole, legibility, spatial openness, physical

relaxation, mental relaxation, connection with nature (Norberg-Shultz 1980), security (Altman 2012, 138), the possibility of pausing and watching, the desire to communicate with people (Markus 1987, 467), religious and social beliefs (Rapoport 2014, 186), and people's enthusiasm for doing activities (Hillier and Hanson 1984). The effects of each (a) and (b) component on the components of (c) were evaluated in the survey, and the respondents chose one of the scores of very low, low, indifferent, high, and very high in the Likert scale, based on the degree the environment affects their behavior concerning the interactivity. Each scale in the Likert scale was allocated a score of 1 to 5 for the analysis.

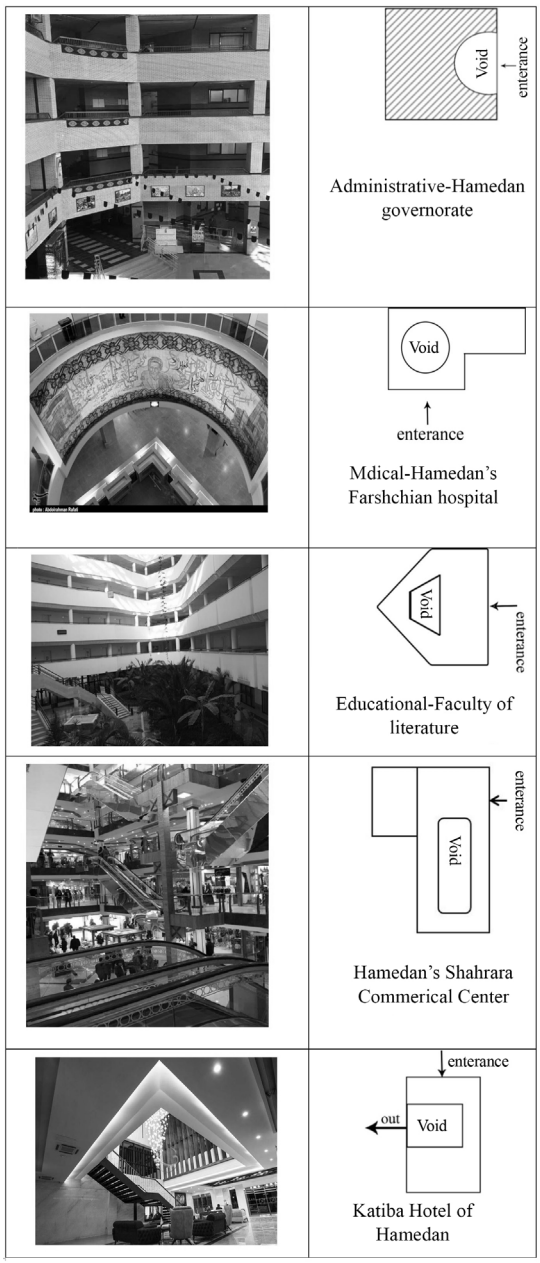

Fig. 3. Sample Cases and Their Schematic Plans in the Primary Survey

5. CASE STUDIES

Statistical analysis was carried out after formulating and distributing the questionnaire and conducting on-site interviews, based on the research question which sought to find the effectiveness of the Void on social interactions. The comparison of the mean values is indicative of the effectiveness of the daily presence in the space as a place to spend leisure time. The "average" or "indifferent" responses of the social system to the public space of the physical and semantic system with void are high, according to the statistics. In some uses, such as the Farshchian Hospital, the desire to perform social activities in the void-included public space, and the motivation to establish social interaction, have not been the "priority" of the users. The lack of sufficient (physical) furniture was introduced as an obstacle. While, in some uses such as the governorate building, despite the presence of light and enough space, people have introduced the same attributes as the reason for their unwillingness to be in public space, and lack of attachment, lack of privacy, and lack of motivation to communicate in this space have been among such attributes. The void in the space has not been very important. The hotel has had the greatest impact on social behavior, after the commercial center. Based on the studies, the analyzed behavior settings were divided into "formal" and "informal". Accordingly, commercial, hotel, and university uses were considered informal, and administrative and hospital uses were formal. Diagram (1) shows the initial results of three systems. Based on the initial results, the components of security, privacy, and social beliefs were added to the effective components in the social interactions and were analyzed by SmartPls software. Based on the primary results of the research, and to achieve the effective components of social interactions obtained from the void, in the main survey, the domain of case samples was limited to "informal" uses. In this regard, two examples of commercial use, two examples of educational use, and two examples of hotels were selected. In the main survey, Katiba Hotel, Bu-Ali Hotel, Shahrara Commercial Center, Milad Commercial Center, Faculty of Literature, and Azad University Building were introduced as 6 case studies of the main survey. After the interview and distribution of the questionnaire and data analysis by software, it seems that in "informal" use, the void is a good facilitator to promote social interactions, while in "formal" use, with the presence of the void, not only is this facilitating role reduced but also, in some cases, it inhibits the social interactions. What is important in the research is that, based on the design requirements, in the studied formal uses, the void has been the communication factor between different spaces, even spaces that do not have many similarities in the type of activity. For example, in Shahrara Commerical Center, due to the presence of the amusement park

on the last floor and its spatial connection with the commercial spaces through the void, noise pollution and to some extent, the dissatisfaction of the commercial users were caused. Such a problem was not observed in Milad commercial center. This issue could be also observed in the interviews in the hospital and administrative uses. Spatial continuity due to the location of the void in the hospital (reception area and administrative department on different floors) as well as its spatial continuity in the governorate (between the spaces with clients and the administrative department, employees, and directorate on different floors) caused the dissatisfaction of the users so that the failure in observance of privacy and boundaries has become the cause of asociality in the governorate or commotion and crowding in the hospital. While the spatial openness of the void space in the hotel, educational and commercial uses, due to the similarity in the activities of the continuous spaces, was described by the users as a favorable and sociable space in the public space. In other words, in places with "informal" uses, the void does not interfere with the activities.

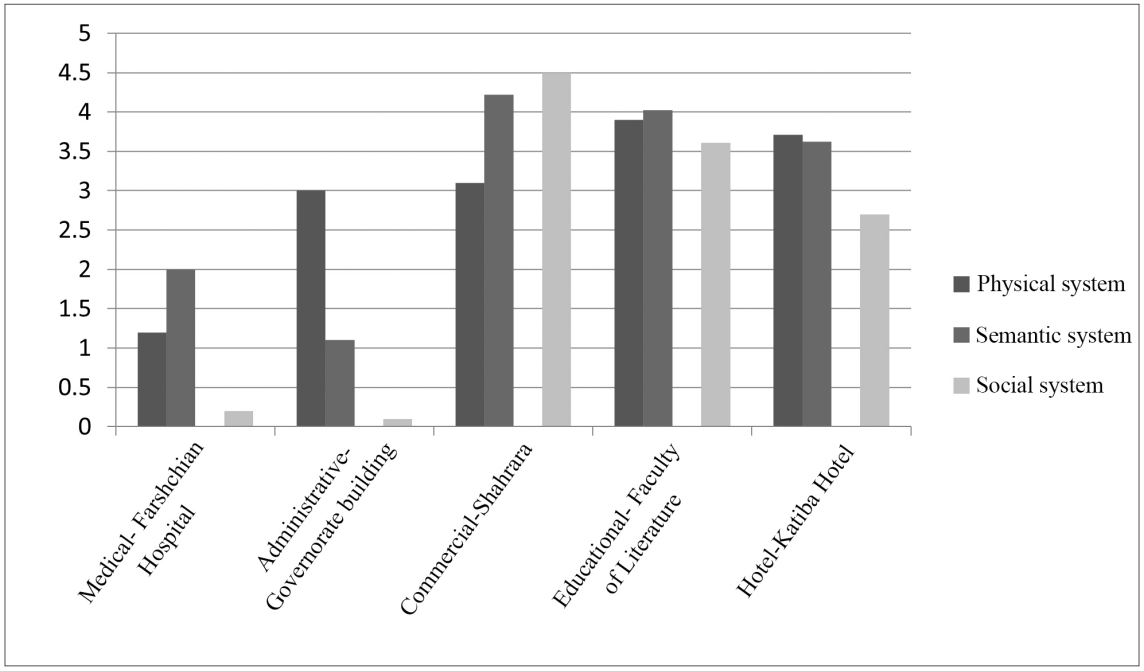

Fig. 4. Primary Survey of Social, Physical, and Semantic Systems

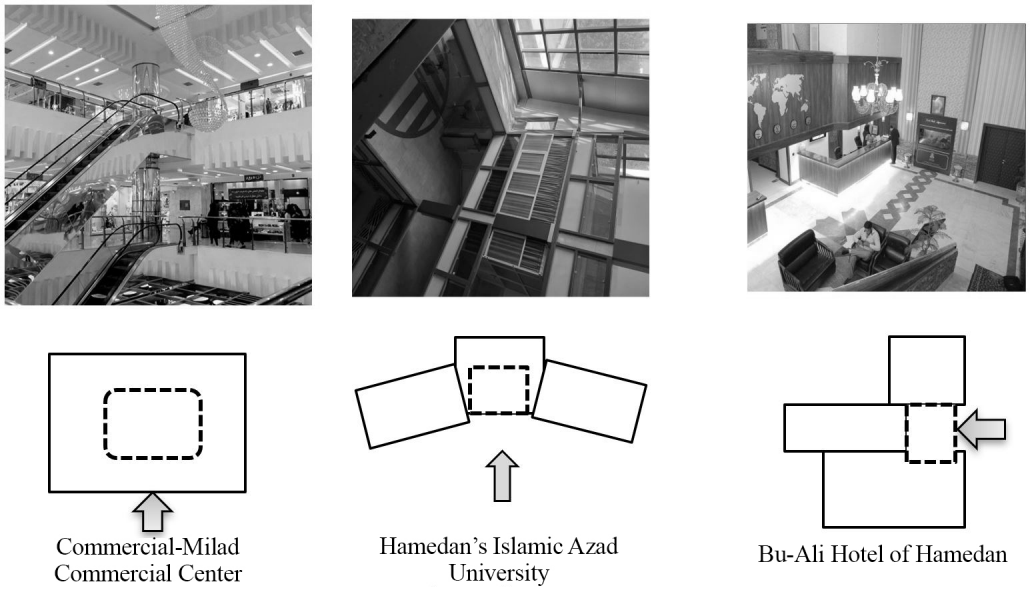

Fig. 5. The Case Samples and Their Schematic Plan in the Main Survey

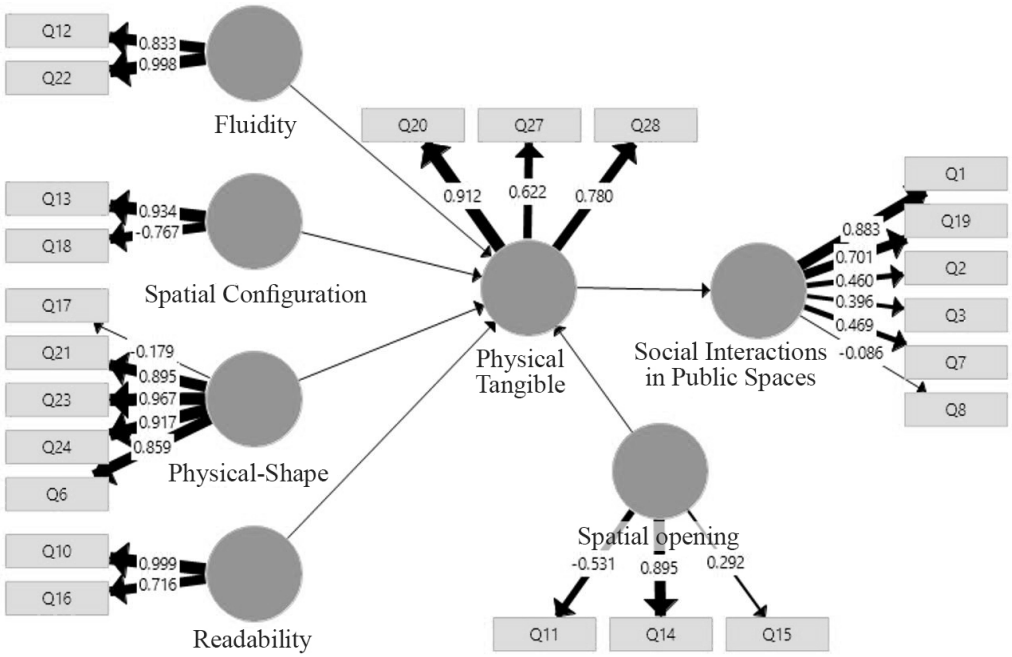

Fig. 6. Presentation of Factor Loadings in the SmartPLS Software for Milad Commercial Center

6. CONCLUSION

Following the survey carried out for different types of use, the final results of the research show that there are meaningful correlations between the three physical, semantic and social systems in the voids located in public spaces which confirm the spatial consolidation and continuity. The void plays a separating and at the same time, connecting role in the architectural space. The effectiveness of social relationships and interactions in a void space depends on the extent to which the people are affected by the environment, the type of use, the users' activity, and their goal of presence in the place. As was mentioned, intellectual and cultural backgrounds, or in other words, social habits and beliefs are among the most effective cases that play an important role in people's social perceptions and subsequently their behavior and actions in space. Therefore, according to the fluidity of its components, depending on the type of strategy needed by the designer, the voids play a facilitating or inhibiting role in social relations. In short, the research results show that the spaces with informal use are the most efficient concerning the effectiveness of the physical and semantic components on social relationships. Also, in a brief comparison of the three surveyed uses, it was found that the more the degree of spatial continuity in the void, or in other words, the more the physical and semantic components of the void, spatial openness, legibility, transparency and the more the logical organization, the more social interactions in the public space will be added. And the type of use will be effective as one of the "increasing" or "decreasing" factors of social relations. Therefore, in the interaction between two spaces and one between space, if the third space (between space) appears as a void, it is indicative of the separation or continuity in the inner space or communication in the public and private space.

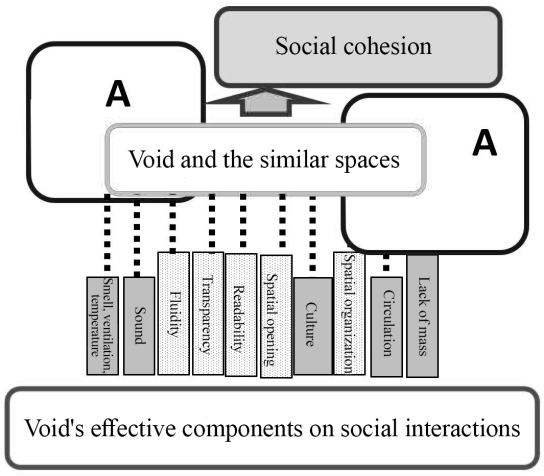

Fig. 7. The Void and Social Cohesion in Similar Spaces A, A

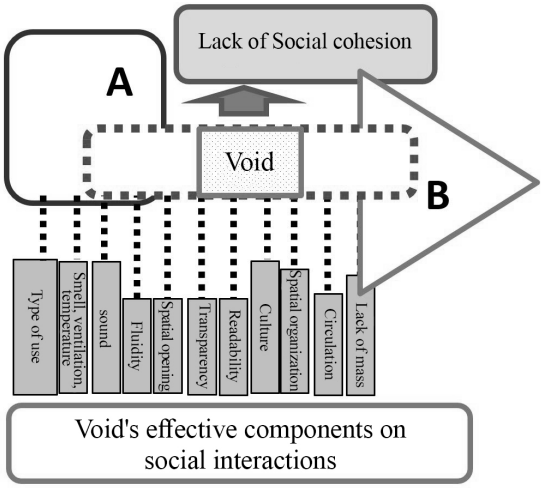

Fig. 8. The Void and Social Dissociation in Non-similar Spaces A, B

In the process of designing and organizing spaces, paying attention to the location of the void in the plan relative to the surrounding spaces, the correct space syntax, and the establishment of similar functions in the vicinity guarantee the Void's efficiency, taking into account the type of use of the building.

ENDNOTE

1. Lacan's Sublimation Theory: Sublimation is "the idea of turning something low and insignificant into something sublime and almost spiritual". Here, Lacan speaks of the void in line with his theory of the sublimation. The void, what does not exist, and is apparently "nothing", expresses that it has taken the highest values and is replaced by "empty" or "void".

REFERENCES

- Alexander, Christopher. 2005. *The Nature of Order: An Essay on the Art of Building and the Nature of the Universe. Book 1 - The Phenomenon of Life*. Center for Environmental Structure.
- Altman, Erwin. 1975. *Environment and social behavior. Translated by Ali Namazia*n. 2003. Tehran: Shahid Beheshti University Press. https://www.gisoom.com/book/1272475/.
- Barker, Roger G. 1968. *Ecological Psychology. Concept and Methods for Studding the Environment of Human Behavior*. Stanford, CA: Stanford University Press.
- Bechtel, Robert. B., Marans, Robert. W., and Michelson, William, eds. (1987). *Methods in environmental and behavioral research*. Van Nostrand Reinhold Co.
- Blumer, Herbert. 2012. *Symbolic interactionism: Perspective and methods*. Englewood Cliffs, NJ: Prentice Hall.
- Cheng, Antony S., Linda E. Kruger, and Stiven E. Deniels. 2010. "Place" as an Integrating Concept in Natural Resource Politics: Propositions for a Social Science Research Agenda. *Society &Natural Resources* 16 (2): 87-104. https://www.tandfonline.com/doi/abs/10.108008941920309199/
- Close, Frank. 2007. *The Void*. Oxford: Oxford University Press.
- Conrad, Peter. 1998. *Modern times, modern places: life and art in the 20th century.* London: Thames and Hudson.
- Creswell, John W. 2014. *Design research: quantitative, qualitative and mixed methods approach*. Translated by Majid Khorshidi and Fakhruddin Soltani. 2014. Tehran: Publications of the General Research Institute of Human Sciences and Social Studies.
- Denkel, Aaron. 1998. *Natural Philosophies in Antiquity*. 2nd edition. Istanbul: Ozne Publications.
- Eisenman, Peter. 2008. *Ten canonical buildings 1950-2000*. New York: Rizzoli International publication.
- Etezadi, Laden. 2014. "The concept of "Maa" in Japanese culture (Maa, the process of knowing the place)". *Khial Magazine* 15(1): 106. https://www.noormags.ir/view/fa/creator/140674/.
- Freud, Sigmund. 1953. *The Standard Edition of the Complete Psychological Works of Sigmund Freud*. London : Hogarth Press and the Institute of Psycho-analysis.
- Giedion, Siegfried. 2002. *Space, time, and architecture*. Translated by Manouchehr Mazini, 1999. Tehran: Scientific and Cultural Publications. https://www.gisoom.com/book/1935914.
- Hawking, Stephen. 2005. *A Briefer History of Time*. New York: Bantam Dell.
- High Council of Urban Planning and Architecture of Iran. 2019. *Definitions and concepts of urban utilities and determination of their per capita*. Organization of Management and Planning of the country, Center of scientific documents and publications. http://daramad.bandarabbas.ir/.
- LA fleur, William R. 1974. Saiygo and the Buddhist. Value of Nature. *Part II. History of Religions* 13 (3): 227-248. https://www.proquest.com/docview/1297292627
- Lahiji, Nadir. 1997. Void and Memory: The Architecture of Libeskind in Berlin. Proceedings of the ACSA International Conference. Berlin. Building as a Political Act. https://www.acsa-arch.org/chapter/void-and-memory-the-architecture-of-libeskind-in-berlin/
- Lang, John. 1987. *The creation of architectural theory, the role of behavioral sciences in environmental design*. Translated by Alireza Einifar. 2015. Tehran: Tehran University Press. 128.
- Lawson, Brian. (2001). *The language of space*. Translated by Alireza Einifar, 2013. Tehran: Tehran University Press. 243. https://www.gisoom.com/book/1988678.
- Madanipour, Ali. 1996. *Design of Urban Space: An Inquiry into a Socio-Spatial Process*. UK: Willey.
- Markus, Thomas A . 1987. Building as a classifying devices. *Environment and Planning B: Planning and Design* 14(4): 467-484. https://journals.sagepub.com/doi/10.1068/b140467
- Norberg-Schultz, Christine. 1979. *The Spirit of Place*. Translated by Mohammad Reza Shirazi. 2018. Tehran: Rokhdad Now Publications. https://www.adinehbook.com/gp/product/6009115501.
- Oyamatsu, keiko. 2013. "The presence of absence. thesis in University of Michigan." Ann. department of psychology (Center for Chinese Studies). https://www.dogtime.org/wp-content/uploads/201406//KEIKO-The-thesis-the-presence-of-absence-Keiko-Oyamatsu-for-DGT-publication.pdf
- Rapoport, Amos. 1990. *The meaning of the built environment*. Translated by Farah Habib. 2005. Tehran: Processing Publications and Science and Industry Program. https://www.gisoom.com/book/1954241.
- Smithson, Allison, and Peter Smithson. 2001. *The Charged Void: Architecture*. The Mona celli Press.
- Tschumi, Bernard. 1975. *Architecture and disjunction*. MIT press.
- Saint-Cyr, Viviana, M. 2012. Creating a Void or Sublimation in Lacan. Recherches en psychanalyse 13(1): 15-21. https://www.cairn.info/revue-recherches-en-psychanalyse-20121--page-15.htm
- Wekerle, Gerda R., and Carolyn Whitzman. 2014. Safe cities: Guidelines for Planning, Design and Manage-

ment. *Journal of Building Construction and Planning Research* 2(2). https://www.tandfonline.com/doi/abs/10.27473638.18.4.360-0272/

- Wicker, Allen W. 1979. *An Introduction to Ecological Psychology*. London: Cambridge University Press.

HOW TO CITE THIS ARTICLE

Attarabbasi, Zohreh., Alireza Einyfar, Manouchehr Froutan, and Mohamadmehdi Soroush. 2022. Analysis of Semantic Distinctions Affected by "Void" in Public Physical Spaces. *Armanshahr Architecture & Urban Development Journal* 15(39): 83-95.

DOI: 10.22034/AAUD.2020.237770.2247
URL: http://www.armanshahrjournal.com/article_158083.html