

Investigating the Relationship between Gender and Perception of Environment and Its Effect on Design from Gestalt Perspective

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ABSTRACT: Human communication and interaction with architectural spaces need understanding and information from their surroundings. Since there is a difference between males' and females' attitudes towards the universe, their priorities lie in understanding the environment as well as the process of perceiving and recognizing them. This study aims to investigate the relationship between space perception based on gender and its effect on architecture design, which could be identified by recognizing gender's components and understanding the perceptions of peripheral people, which decline the difference between perceptions of both genders. Accordingly, this article studies the factors affecting the formation of the relationship between gender and perception and the components of perception based on Gestalt's theory and its impact on design quality. The research method used in this paper is a descriptive-analytical method with a visual image questionnaire and data collection was conducted through library-documentary studies of literature review and field studies. The population under study in this research is Samarkand Commercial Complex located in District 5 of Tehran, among which 217 people were examined using Morgan table. Finally, the obtained data were analyzed using SPSS software and considered by inferential and comparative analysis method and the questions' results are identified in the tables. The results show that gender-based perception is that both men and women are in one's perceived desirability, experience, symbiosis and aggregation, however in the perception of other elements of Gestalt, which are known as role and background, common area, common result, similarity, and the proximity is different.

Keywords: Perception, Gender, Business, Gestalt Psychology.

INTRODUCTION

All human life passes through space and arts play an important role in people's activities. People are sensitive to all aspects of architecture in exposing architectural spaces, which are active in communicating processes with the environment; therefore, they try to perceive the forms around them. Women and men live together peacefully in space and have different experiences (Arjomandi, 2017, 6); and they receive various messages from the environment needed to communicate with space. The most significant issue is that the messages received from space could be readable and understandable for the person (Bandarabad& Sheikhi, 2016, 4); since based on the gender's users,

perceptions could lead to different receipts from the quality of the place, resulting in a stable architectural environment, male and female may understand the quality of life differently. The human's spiritual and physical comfort are dominated by the creation of ideal works, that is, in "architecture for man", so it is essential to understand perfectly man and his needs so that each gender of human beings is recognized with his needs and by knowing and understanding each of them. Architectural space would create an environment where the difference between perceptions of both sexes (men and women) and the difference in their perception minimizes both sexes to comfort (i.e., physical, mental, psychological, verbal, auditory, etc.) (Kakoli et al., 2016, 2).

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Consequently, the design should be such that space for both genders brings peace, and that men and women, based on their perceptions, find this environment as the beautiful and safe one. Thus, this study aims to examine the relationship between spatial perception and gender- based on Gestalt's theory and its effect on the design of different spaces that could be determined by identifying the components of perception and its relationship with environmental gender, which minimizes the difference between perceptions of both genders. This means that the environment is suitable for both sexes. The present research seeks to answer the question of what gender components are in the architectural spaces of the code and how could it be designed in a way that is suitable for men and women? Then, by examining the difference in perception in a sample society (District 5 of Tehran Municipality), the relationship between perception and gender and its effect is considered on the design of spaces.

LITERATURE REVIEW

In an article entitled "Exploring the Different Perceptions of Architectural Spaces Based on the Gender of Users", Kakleli, Soltani and Zakerharofteh (2016) examine the difference in the perception of architectural spaces based on the girls' and boys' genders, females and males. These studies indicate that women are particularly attentive to architectural spaces to achieve calmness and comfort in architectural beauty and the created works, while men consider security.

Sadeghipour Pour-Roodsari (2015), in an article entitled "The Study of the Relationship between Gender-Perceptions of the Environment and its Impact on Designing Urban Spaces", explores urban space and gender-based differences in perceptions. Its results illustrate that the formation and urban spaces design are male's roles, which should be balanced by emphasizing the presence of females and the acceptance of their presence as well as providing their requirements in the urban space of the community. In an article entitled "Analyzing Perceived Environmental Perceptions and Features of the Geometric Structure in Iranian-Islamic Architecture Based on the Principles of Gestalt Theory", Gudarzi Ardakani and Jahanbakhsh (2016) examined the components of perceived Gestalt in Shiraz's lawyer mosque and its results demonstrate that all these components observed in this mosque.

Arjmandi, (2015), in an article namely; "Gender Reading of Iranian Tourists in Open European Urban Spaces (Case Study: Open Urban Spaces in France and Italy on Gender and Perception in Urban Spaces)" showed that among the spaces, the open spaces of the Jorges Pompidou Museum and Dell Campo Square, the men's spaces, the Spanish Spinal Women's Stairs and the Masena Square in Nice are a non-gendered (i.e., balanced) space.

In this article, the perceptual components are analyzed based on Gestalt's theory, and the difference in perception is measure in different genders.

THEORETICAL FOUNDATION

Perception

Perception never happens very smoothly, and it is not an explicit stream of ambiguity. However, stream influenced by various factors, included the environment and the perceptive person in such a way that two human beings could never perceive an object in the same way and in a way. Moreover, many perceptions, such as darkness, brightness, color, size, etc., are similar in many people, so in some cases, humans' perceptions could be similar but in some others, is different (Veronon, 1962).

Definition of Perception: The concept of "perception" has many dimensions and meanings. In psychology, perception refers to a mental or psychological process that both selects and organizes sensory information and makes their sense actively. In this process, previous sensory experiences, implications, and perceptions result in individual motivation and a position in which perception takes place (Kakoli,et al., 2016, 3). Perception is the stage between environmental sensation and perception, the feeling of the external mechanism and the recognition of the internal mechanism. Perception is the stage between external and internal mechanisms; therefore, the part of the perception that is based on the outside of the mind and in the environment between people is a similar process, but the other parts of the perception that is based on the processes of the brain and the mind is completely personal, which happens as a unique. In the perceptual process, it is impossible to separate a person from the environment. The perceptual process is a continuous stream of interactions between individuals and the environment (Pakzad& Bozorg, 2012, 153).

Environmental Perception

It is clear that each environment is shaped, based on a solid cultural foundation; therefore, it could not be expectable that the environment of the city planner and architect considered to be fabulous and efficient. Moreover, other people in that community have the same interpretation, because human beings are highly dependent on their experience and meaning knowledge as well as the interpretation of the environmental information (T.Mc. Andrew, 2008). The environmental perception results from the interaction of sensory perception and knowledge that experienced in the human mind. In this process, the role of the environment as an emotional factor is taken into consideration in growth, development, and eventually learning (Motallebi, 2002, 55). If the most important factors of relative perception of the environment are considered (in general) as well as the human environment (in particular), the following list would be without priority (Barati, 2011): 1- People ages: in the relativity of understanding and environmental perception. They are effective. 2. Gender also has an unequivocal role in peripheral perception; the totality and components of the environment understood by males and females in various ways. The universal experiences have

indicated that the males' and females' priorities are different in understanding the environment. 3. The natural environment also affects the environmental perception. People, who have lived in different natural environments, have observed and interpreted different surroundings. 4. Occupation, people's education level and proficiency also influence how they understand the environment. 5. Culture and language are also the most influential factors in the process of perceiving and recognizing human beings from the environment.

Components of Perceptual Environments

1. Sensory perception: In man's sensory perception, he encounters through the senses with the outside, so in this type of understanding, what is perceived is sensory and facial. The human sees or touches the object, or touches, or joins, or hears or picks it, and thus this sense plays a role in his mind based on information received from five senses (Akbari& Falamaki, 2016, 5); and includes feeling: it is man's five senses and perception that is chosen, organized and interpreted.
2. Recognition: it is the process of acquisition, storage, retrieval, the knowledge and information processing. When it comes to perceptual information, the types of information and the activities towards them are determined (Goodarzi Ardekani& Jahanbakhsh, 2016, 5).

How to Perceive Environment

Different schools have tried to explain how people perceive their behavior in the environment or from it. The most significant schools had a profound effect on environmental theories. Designs are also the Gestalt Psychology School, Compassionate Psychology, and Ecological Psychology. The process of environmental perception and the position of different schools in expressing how environmental perception is summarized in the Fig . 1.

Gender and Difference

As a social category Gender is different, which is devised and influenced by social culture. The term "gender" which generally uses to express the same category from an ecological point of view. As gender refers to the fact that a person is a

man and a woman, this difference relates to his physical and biological characteristics (Sadeghi Pour rodsari, 2014, 3). If gender refers to beliefs and behaviors that are of males or females, its concept varies in different cultures and social classes (Barati& Soleimannezhad, 2011, 23). Gender is a physical and biological reality, which is a social concept that plays an important role in shaping their gender behavior in a social structure, which includes masculinity and femininity in the social structure process, along with beliefs and opinions about men and women. On the other hand, the gender concept altered in various cultures and different social classes. Not only they manifest in different ways as being man and woman, but they are also employed in different ways in individual lives, in which all cultures impose certain expectations on women and men (Kakoli, et al., 2016,2). In gender's structure and values, like any social thing, it depends on the conditions of time and place and changes with social context alteration (Arjomandi, 2017, 5). Gender is entirely attributable to physical characteristics and our kind of chromosomes; it indicates that gender, social expectations, roles and norms, are attributable to be male or female. In other words, gender has challenged the general perception of the normal nature of sex and created space. It is obvious that being a man and a woman have been viewed from a social point of view, and the belief that many social inequalities have been imposed on society (Holmes, 2009: 44), (Table 1).

Perceptual Differences between Women and Men

One of creative surprises is the difference between males and females. In addition to the individual differences between men in general, there is a significant difference between men and women in terms of physical and mental differences (Shoaibi, 2015, 4). Since there is a difference between the females' and males' attitudes towards the world, their priorities lie in understanding the environment and the process of perceiving and recognizing them. Understanding the universals and components of the environment understood by men and women in various ways (Barati, 2010, 35). As the function of the women's and men's brains is different, they also have a different understanding of priorities and behaviors. For

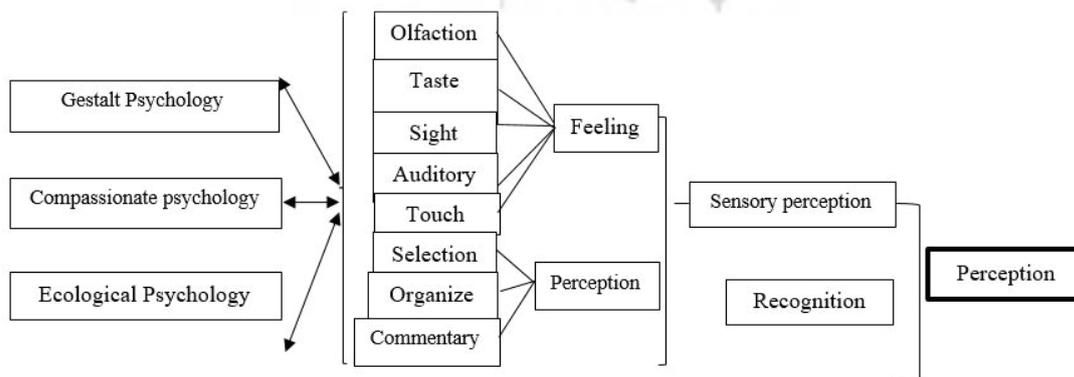


Fig.1: How to perceive the environment (Source: Goodarzi Ardekani & Jahanbakhsh, 2016, 6)

Table 1: Comparison of differences in males and females sense (Source: Shahcheraghi & Bandar Abad, 2015)

Men	Women	Senses
Easier identification of the main colors	Stronger eyes	Sight
Better vision at night	Color spectrum detection and hybrid colors	
Better 3D view	Wider range of views	
Just use the left brain hemisphere.	Better two-dimensional view	Auditory
Better sound detection from far away	Both brain hemispheres are used.	
Have a colder skin.	Better sound detection from far away	Touch
The skin behind the men is four times thicker than the skin on their abdomen.	The sensitivity of women to the touch and pressure is ten times that of men.	
	The skin is more tolerant of the cold.	Taste-Smelling
	Stronger taste and smell	
Mae power is greater in detecting salience and bitterness.	They are stronger in diaper confectionery.	
	Females' empowerment is stronger.	

example, girls' brains focus on people and faces, but boys' brains focus on objects, which indicate that boys like objects and girls love people (Pease & Pease, 2001, 169). Personality, cultural, social and environmental factors all affect the process of feeling, perception, and cognition. On the other hand, peripheral and gender-related assumptions play a significant role in the process, making the difference in the level of perception and people experience from the place. Behavioral differences between women and men in the environment, in addition to acquired cultural criteria, are also affected by their brain properties. Also, differences in the sensory receptors of the environment between men and women is obvious in perceptual environments with differences in brain processing (Shahcheraghi, Bandar Abad, 2015, 191); and it is stated that perceptual differences lead to the existence along with sensory differences. The power of women's vision is greater than men because women are more inclined to perceive the seminal environment than men. Men are generally aware of situations

and circumstances, and they have general and comprehensive thinking, while women focus more on details and nuances (Bandar Abad & Sheikhifini, 2016, 4). Therefore, men and women look at a single world from a different angle. Overall, findings indicate that the perception and sensory perception of women is superior to men (Pease, Pease, 2001, 52). However, male perceptions are stronger than females; girls see two next or two faces are sketchy in their brains, but boys could see in their brains in addition to the two dimensions, the third dimension that gives the depth to the object (Shahcheraghi, Bandar Abad, 2015, 194-195). Men's spatial visualization skills and their sense of orientation are stronger than females due to better spatial visualization, and boys could measure angles more accurately than girls. Women are particularly interested in architectural spaces to achieve calmness and comfort in architectural beauty and the works created by architectural spaces, but men are beginning to look at security as they settle in the same spaces for peace (Table 2).

Table 2: Comparison of differences in the perceptions of women and men

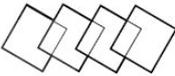
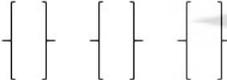
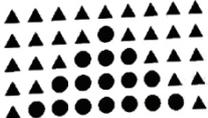
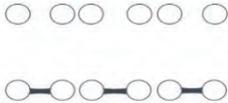
Description	Men	Women
Men are generally aware of situations and circumstances, and they have a thorough and comprehensive thinking, while women focus more on details and nuances.	Holistic	Partial
Girls are aware of two or more aspects of an object in their brains, but boys can see in their brains in addition to the two dimensions, the third dimension that gives the depth to the object	High ability in 3D perception	High ability in two dimensional perception
	High spatial visualization	Little spatial visualization
The skill of visualizing the spatial sense of men and their sense of orientation is due to better spatial visualization than women	Strong direction	Weak orientation
	More accurate measurement of angles	Inability to measure angles
	Attention to structures in architecture	Pay attention to the beauty in architecture

Gestalt Psychology

The Gestalt phenomenon first flourished in 1910 in the mind of Max Wertheimer, a Czech-based psychologist. This happened easily when Max Wertheimer traveled on the train, figuring out the trees, houses, and other things around him outside the train. Though many people had seen this before him, it was Wertheimer who asked himself: it is certain that these objects are all fixed and motionless, what is the reason for this displacement? The only thing that came to mind was that perhaps our perceptual process was not similar to the single feelings which created them (Shapourian, 2007, 74). He continued his later experiments with the assistance of two

young professors at the University of Frankfurt, Kurt Koffka and Wolfgang Kohler. These three triangles form the founders of Gestalt psychology (Goodarzi Ardekani, Jahanbakhsh, 2016: 7). In order to understand the intricate subjects composed of various components, the human brain seeks to sum up all the components in a single subject, and initially obtain a subject general understanding. No matter how the components of this set depend on each other, Gestalt set is more robust, and its complexity comprehension is made less effortlessly. Now we outline the most important Gestalt laws, based on which perceived organizational designs have been created (Table 3).

Table 3: Gestalt perceptual rules (Source: Shahcheraghi & Bandar Abad, 2015; Goodarzi Ardekani & Jahanbakhsh, 2016)

Gestalt's perceptual rules	
Proximity law	Good shape law
We see objects that are closer to each other, both at a time (in the auditory gestalt, even in music) or locally, in one set.	Our minds transform and incorporate the shapes into a simple form. We see this shape as 4 squares, not 7 different pieces.
	
Correlation rule	Common area law
Pairing is a mirror image of other perceptual tendencies of man.	This law varies to the law of proximity. Our minds understand elements that are closed in a common area as a group.
	
Role and background	Common result
We could usually see shapes from a perspective, especially when the forms are both positive and negative and we could not see both at the same time.	In the human mind, the elements that move in one direction are interconnected with elements that move in the opposite direction.
	
Similarity Law	Related elements
Grouping components is another of our perceptual tendencies. In this shape there is a triangle inside the square.	Elements which are linked together by other components are perceived in a group.
	
The law of obstruction	Continuity law
The personal mind tends to complete forms when he/she perceives them or attempts to block empty spaces.	Based on this principle, humans follow the paths and stretch out the components in an innate process.
	

Continuation of Table 3: Gestalt perceptual rules (Source: Shahcheraghi & Bandar Abad, 2015; Goodarzi Ardekani & Jahanbakhsh, 2016)

Gestalt's perceptual rules	
Previous experience law	The law of desirable stretch
In male's visual perception, it is detected in random forms by familiar forms. It is also in the interpretation of the shape of the sky clouds and in the constellation naming.	The human mind prefers to understand the irreconcilable stimuli to be consistent and continuous.
	

MATERIALS AND METHODS

The research method used in this article is a descriptive-analytical one with a visual-video questionnaire, which is obtained by matching Gestalt elements. This also uses the elements of Gestalt's perceptual perception and examines the relationship between perception with gender and the difference data collection, a library-documentary textual review used as well as field studies. The obtained data are analyzed through inferential and comparative analysis and the items results were analyzed by using SPSS statistical software and are presented in the specified tables and general conclusions. Questionnaires were placed at the real location of the photo in the Samarkand Commercial Complex for ladies and gentlemen, and they were asked to rank the elements which attracted their attention. The following picture is used in the questionnaire. (The reason for

using this photo (same picture for men and women) is that it was the author's image questionnaire, which is preferred to be shared among all interviewees all interviewees. In other words, authors use this picture as a questionnaire instead of Written questionnaire), (Fig. 2)

In this image, each of architectural elements are discussed in the following which represents a perceptual element in Gestalt law (Table 4).

Study Range

The statistical population of this study was Samarghand Recreational and cultural Commercial Complex in District 5 of Tehran. The center covers an area of 32500 m2 and 11 floors include a commercial, cinema, amusement, and fast food spaces. Among them, 217 people were selected using Morgan



Fig.2: Image of the Samarkand Commercial Complex in Tehran

Table 4: Architectural elements based on Gestalt perceptual rules

Opposite escalators ←	Common result	Circular Exit ←	Desirable stretch
Escalators facing ←	Previous experience	Stores ←	Role and background
Elevator ←	Proximity	Ceiling ←	Common area
Columns ←	Affinity	Ground level ←	Rally
		Terrace (corridors) ←	Similarity

Table 5: Abundance in terms of gender, education and age

The abundance of gender, education, and age			
Percentage		Number	
49.8	108	Female	
50.2	109	male	
100	217	Total	



Fig. 3: Image of the Samarkand Commercial Complex in Tehran

table, 108 women and 109 men were male with different age (Between 20 and 60 years because of the high frequency of people and education level). To prevent the influence of control factors such as age and gender on the conclusion, these factors were not taken. The statistical population was selected at random from 6 to 8 pm at the peak of the complex (Table 5), (Fig. 3).

RESEULTS AND DISCUSSIONS

In this section, in order to analyze and interpret the research findings, the data of abundant and inferential tables are analyzed and evaluated.

Findings Analysis

In this research, according to the above tables, a survey was conducted through a visual questionnaire from the visitors to the Samarkand Commercial Complex in Tehran. It proves that men and women with a stable architecture space have a different understanding of that space. According to the above tables, it is stated that in terms of gender, age and education level, the perceptual differences could be various. Different people also with diverse backgrounds have various views about their environment. Table 6 shows that there is a perceptual difference between men and women, and their dissimilarities in shops, ceilings, opposite ramps, corridors, and elevators perceptions,

Table 6: Difference in perceptions based on gender

Difference in perception based on gender																		
Ninth priority		Eighth priority		Seventh priority		Sixth priority		Fifth priority		Fourth priority		Third priority		Second priority		First priority		
1.8%	4 people	4.6%	10 people	12.9%	28 people	10.5%	23 people	8.7%	19 people	9.6%	21 people	9.2%	20 people	8.2%	18 people	16.1%	35 people	female
Elevator	Corridors	Ground level	Pier	Stores	Ceiling	Opposite climbing	Circular Exit	Facade elevator										
5.5%	12 people	6.4%	14 people	7.8%	17 people	8.7%	19 people	9.6%	21 people	11%	24 people	9.2%	20 people	11%	24 people	15.6%	34 people	male
Opposite climbing	Stores	Ground level	Pier	Corridors	Elevator	Ceiling	Circular Exit	Facade elevator										

Table 7: Perceptual differences between men and women according to the questionnaire

Stores→ Role back-ground	Ceiling→ Common Area	Common Result →Opposite Climbing	Elevator→ Proximity	Corridors →Similarity
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Table 8: Perceptual similarities between men and women according to the questionnaire

Desirable Stretch → Circular Exit	Level Ground → Rally	Affinity → Pier	Previous Experience → Façade Elevators
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Table 9: The most similarity of people in the perception of architectural elements

Percentage	Equivalent to the Gestalt Rules	Most similar	The factors of difference	Title
31.79%	Previous experience	facade elevator	Female Male	gender

as indicated in the figure; based on Gestalt perceptual rules, these elements are as follows (Table 7).

But there are similarities between men and women in understanding the circle, ground, pillars, and faces of the like, which are as follows in Gestalt's perceptual rules (Table 8).

Understanding the desired course and the previous experience at first glance and in the next priorities are similar and similar gatherings.

The table below (Table 9) shows the most similarity of people in the architectural components, which is based on the questionnaire. Based on the results, it is seen that most people will at first glance understand the previous experience.

CONCLUSION

The findings indicate a significant relationship between gender and the level of perception of visual elements in the architectural space. The results of the research findings are consistent with existing scientific and theoretical discussions on the extent and mode of perception of the visual elements of space. Adapted and matched by men and women and factors influencing this perception, spatial segregation between sexes. Making space is sometimes rational by an architect, especially in societies where the distinction between men and women is often over. Even gendered space based on the culture

dominated by societies is not out of the question. Hence, gender space becomes a problem when one of the two sexes is forced to leave public space and deprived of the right to exploit that space, while allowing for the optimal enjoyment of urban and public space. The basic rights of citizens are considered. It can be said that specific places may be based on the gender of the people who make them occupy or be given gender characteristics based on the different sex activities in which they are engaged; Where in recent years, attention to the expectations and behavior of users of architectural spaces has become more important in the design of the role of the architect in society has become more prominent, and is expected to pay more attention to the perceptual characteristics of men and women. In designed environments and spaces, it increased the efficiency and acceptability of space. The process of adjusting the environment to behavioral patterns, It involves changing the physical environment to respond to the demands and behaviors and activities of users taking into account specific circumstances such as gender, age, education and aesthetic tastes, or to adjust to these and the physical environment in the architectural profession, it is considered. The overall conclusion in this process is how perceptions, reactions, and behaviors are Individuals (men and women) in the environment are the most important determinant of architectural design (Fig. 4).

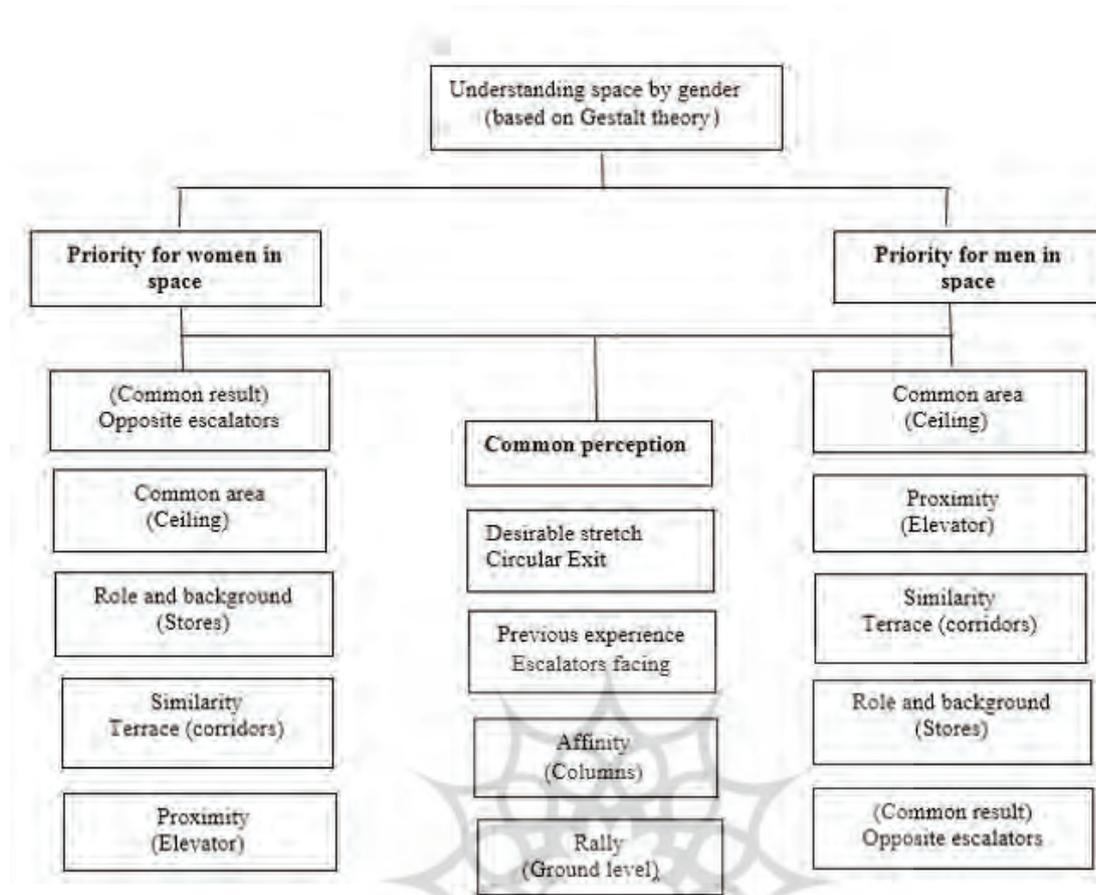


Fig. 4: Help chart for architects based on different perceptions of men and women from space

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