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Physical and architectural variables in the public space from Women's perception

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Abstract. This research aims to establish whether the qualitative deficit of public space affects the use and appropriation of it by women, through the analysis of variables associated with architecture, urban planning and physics. It uses a mixed analytical methodology, through a dimension per measurement, it is longitudinal, non-experimental and transversal. Within this research, concepts of architecture and urban planning such as image-comfort, accessibility-connection, use-activity and sociability were assumed, as well as concepts of physics such as space-time, displacement and trajectory. As a relevant finding, it is highlighted that the poor planning and development of the physical components of the public space, negatively affects the mobility, displacement and trajectories of women, generating a decrease in the use and appropriation of it.

1. Introduction

City planning is framed within the generation of conditions, through which it is possible to satisfy the needs of the individuals that make up society. These needs include: basic security and protection needs, social needs and recognition needs [1], elements that can be analyzed from the experience that the human being presents within the urban space. This statement becomes relevant to the understanding that cities behave like living, dynamic and fluctuating organisms, that shape an individual or collective experience [2], framed in physical-experiential aspects that are developed according to the practices derived from the use, appropriation and spatial transformation within the public spaces of the city. In this way, the relationship, and therefore the perception that occurs between the individual and the public space, can be configured as a tool through which the satisfaction of the basic needs of the human being can be established, and also, by through which you can determine compliance with design criteria for public space planned for Latin American cities [3].

In addition to the above, it is important to keep in mind that the experience of use and habitability of collective space within cities must be understood in a different way, respect to the groups that use and appropriate it. This is due to the fact that urban practice shows a clear differentiation in the lived experience regarding the use and appropriation of public space according to gender [4]. Women present a more complex spatial vision in terms of experientiality that must be approached according to the relationship that the physical-constructed component manifests, respect to the variable of space-time, since this study allows us to understand the relationship of time with objects physicists present in the urban mesh (quality, quantity and state / time, displacement and trajectory) and the lived experience or



female perception associated with the collective urban space [5]. The latter, taking into account that contemporary urban planning is developed under a masculine vision, which can affect the displacement and pedestrian trajectories by women regarding the negative experience within the public space, determined by aspects such as perception of insecurity, quality and material design of the space, as well as the arrangement of urban elements; among others [6].

Under this order of ideas, the analysis of the relationship between women and the public space allows us to understand the importance of carrying out coherent urban planning, in which aspects related to the needs of the groups that use it are specified and responded to; In addition, considering that the daily lived experience within a public space can configure negative experiences that can affect its determination and frequency of use. This refers to the fact that quality of the design of public spaces must be focused on the autonomy of transit, use, permanence, and communication; through which women can enjoy moving around the territory [7]. Therefore, this research aims to establish whether the qualitative deficit of public space in urban planning can affect the use and appropriation of it by women, through variables associated with architecture and urban planning, such as appreciation of the physical-built environment in terms of image, comfort, accessibility-connection, use-activity and sociability; as well as by variables associated with physics such as the frequency of use and the space time [8] regarding the pedestrian movements carried out within the public-urban context of the city.

2. Methodology

This research is carried out under a mixed analytical methodology, by means of a dimension per measurement, it is longitudinal, non-experimental, and transversal. The population is classified as floating and corresponds to the inclusion criteria such as: Being a woman, of legal age and a passerby in the area under study, corresponding to 13th street between Zero and Fifth avenues of the Center of San José de Cúcuta city, Colombia. The sample of this research is non-probabilistic due to the selection procedure for women, regarding the application of the research tools.

The technique used to obtain the data from this investigation, from the qualitative approach, corresponding to the implementation of interviews under a semi-structured script, by means of which the intention was to analyze, explore, detail, and track relevant information for the investigation through flexible communication [9]. Women interviewed number was determined by the method of information saturation [10], coding of the interviews was carried out from the Atlas Ti program, in order to quantify, classify and establish the concepts and properties derived from the relationship between the use and appropriation of public space by women [11]. Codes assigned to the data sets correspond to theoretical codes, substantive codes, and in vivo code [12], and the representation was made using semantic networks. The quantitative approach was carried out using technical data sheets of cartographic material [13], through of which an urban analysis of physical-spatial components presents in the study area such as landmarks, nodes, pedestrian movements, materiality and urban elements; among others. Validity of instruments was performed by expert judgment [14] using the technique of measuring the proportion according to inter-judge agreement [15]. Validity index is calculated by counting the agreements and dividing this value by the total number of items. In accordance with the above, the instrument with its respective items meet the established criteria, since the values obtained are greater than 0.70 [16].

3. Results

Women profile who participated in this research is represented by 8 women, aged between 21 and 65, Colombian nationality, sector study passersby (Thirteenth street between Zero and Fifth avenues in San José de Cúcuta, Colombia) under productive-labor purposes and associated with domestic tasks, with specific roles stipulated as a housewife, student, merchant, employed and retired. Regarding the perception that women manifest within the public space based on the experience lived within it, Table 1 shows the dimensions (negative experience-positive experience), as well as the codes resulting from the interviews carried out. Based on this, it is important to note that results obtained are represented in 12 responses that have a mention frequency of 26 times ($f = 26$), of which 92.3% ($f = 24$) correspond to related negative experiences with physical-experiential aspects and perception of public space; Among

which stand out: Negative experience due to insecurity ($f = 8$), negative experience due to characteristics of physical space ($f = 3$), negative experience due to contamination ($f = 3$), negative experience due to insufficient urban elements ($f = 3$), negative experience due to insufficient space ($f = 2$), negative experience due to space obstruction ($f = 2$), negative experience due to gender exclusion ($f = 1$), negative experience due to mobility ($f = 1$), and finally, negative experience due to gender violence ($f = 1$).

Table 1. Subcategory lived image and its dimensions.

Dimensions	Codes	f	Subcategories	Category
Negative experiences	Negative experience due to characteristics of the physical-urban space	3	Lived image	Perception
	Negative experience due to contamination	3		
	Negative experience due to gender exclusion	1		
	Negative experience due to insecurity	8		
	Negative experience due to insufficient space	2		
	Negative experience due to pedestrian mobility	1		
	Negative experience due to obstruction elements in space	2		
	Negative experience due to gender violence	1		
Positive experiences	Cleanliness and order of the public space	1		
	Provision of public space	1		

Aforementioned responses reflect non-compliance with the basic design criteria for public spaces in Latin American cities [3], components of public space and the essential qualities to the success of public spaces [17] through which it is possible to observe that women, by their lived experience in the sector under study, demonstrate how deficient urban planning can affect the use and appropriation of urban collective space.

In this order of ideas, according to the crossing of variables: elements, components, characteristics, deficiencies of the public space and conceptualization with respect to the qualities: Image-comfort, Accessibility-connections, use-activity and sociability [17,18], a reading on the urban-architectural shortcomings found in the sector under study was obtained from the application of the instruments: interview and data collection through cartography, typical of this research. In Figure 1, it is highlighted that among the variables that appear most frequently under negative perception are: Physical characteristics of the space, insufficiency of space, insufficiency of urban elements, insecurity, contamination, gender exclusion and violence, and displacement by pedestrian mobility, analyzed from the conceptualization taken from areas of knowledge that comprise architecture, urban planning and physics.

Comfort-image: for this quality of public space, urban elements such as urban furniture and vegetation were taken into account through the components related to gardens, trees, urban nomenclature, street banking, lighting, bus stop and quality-state of physical materiality of public space, correlated with tangible and intangible characteristics such as perception of security, vegetation, the correct formal and material use of urban components, cleanliness, equipment and the current state of urban furniture and platforms; for which there were deficiencies in public space in the study area associated with characteristics of the physical-urban space, insecurity, pollution, insufficiency and deterioration in the quality of urban elements such as benches, lights and platforms. The conceptualization taken for the analysis of this quality is based on areas of knowledge that comprise architecture, urban planning, and physics.

Accessibility-connection: with regard to this quality, urban elements such as pedestrian and vehicular traffic, urban junction and articulation, signage, through the components related to pedestrian routes, roadways, road zones, overpasses, were taken into account, squares, parks, urban nomenclature elements, correlated with tangible and intangible characteristics such as public urban transport, pedestrian mobility, accessibility, connections and ease of pedestrian movement; for which deficiencies of public space with respect to pedestrian mobility, elements of obstruction in the space, characteristics

of the physical-urban space were presented. The conceptualization taken for the analysis of this quality is based on areas of knowledge that comprise architecture, urban planning, and physics.

Use-activity: regarding this quality, urban elements such as urban furniture and signage were taken into account, through the components related to street banking, lighting, bus stops, service and security elements, and urban nomenclature elements, correlated with tangible and intangible characteristics such as the diversity of land uses, the equipment with a public-private function, the trajectories and the vitality of the space; for which there were deficiencies in public space with respect to insufficient urban elements and pedestrian mobility. The conceptualization taken for the analysis of this quality is based on areas of knowledge that comprise architecture, urban planning, and physics.

Sociability: for this quality, urban elements such as furniture were taken into account, through components related to pedestrian routes, squares, parks, street banking, lights and bus stops, correlated with tangible and intangible characteristics such as diversity, security, tolerance, presence of women, children and older adults, the number of people in public space and the interaction of uses, services and people; for which there were deficiencies in public space regarding gender exclusion, gender violence, insecurity and characteristics of physical-urban space. The conceptualization taken for the analysis of this quality is based on areas of knowledge that comprise architecture, urban planning, and physics.

PERCEPTION	LIVED IMAGE	NEGATIVE EXPERIENCE DUE TO GENDER VIOLENCE	
		NEGATIVE EXPERIENCE DUE TO PEDESTRIAN MOVILITY	
		NEGATIVE EXPERIENCE DUE TO GENDER EXCLUSION	
		NEGATIVE EXPERIENCE DUE TO CONTAMINATION	“Just pass over there and smell, it’s... To me it’s really unpleasant”
			“You know? There at First Street with Thirteen Street, in the whole corner, there is a tree that is full of mice. Nobody takes out the trash”
		NEGATIVE EXPERIENCE DUE TO INSUFFICIENT SPACE	“It’s not very comfortable, there is nowhere to walk. There are many spaces where the platforms are damaged, you must throw myself into the street. Uncomfortable for not having space, how to pass.”
		NEGATIVE EXPERIENCE DUE TO CHARACTERISTICS OF THE PHYSICAL-URBAN SPACE	
		NEGATIVE EXPERIENCE DUE TO INSUFFICIENT URBAN ELEMENTS	“Oh, no! At night that is terrible. Súper Dark! Twice I’ve spent the night and... Ahh!... (Gesture of fear) Noo, Lord! Protect me! Keep me from all evil! But, no! That is... mmm... if you get to the part where the cultural house is, that’s even darker. That is! Everything can happen there!”
NEGATIVE EXPERIENCE DUE TO INSECURITY	“The truth is that if you feel... well, you go through fear and that, because you find a lot of homeless people, a lot! That is... people who know that... They are there is for other things. Because it’s not a secret that Colón Park, huh! It serves for drug trafficking.”		

Figure 1. Perception and negative experiences by Women in the public space.

On the other hand, it is highlighted that within this research the materiality and the current state of the public space is presented as a recurring problem manifested by women that affects its use and appropriation. In this regard, it is highlighted that platforms showed a state of deterioration associated with the materiality implemented that does not respond to those established in decree 308 of 2018 (Bogotá, Colombia) [19], as well as to the differentiation in heights present in them, since in the sector object of study it was observed that platforms double the maximum height value (15 cm) in different

sections. The aforementioned directly affects the mobility and pedestrian movement of women, taking into account that the irregular typology (materiality/shape/location) of platforms affects the flow and free pedestrian traffic, also this fact does not comply with the established in the manual of design and construction of components of public space (MPS) [20]. This, in turn, generates a decrease in the frequency of use (number of times the space is transited); and in the trajectory, understood as the distance and the pedestrian displacement carried out under a straight or curved, continuous or interrupted line scheme [21].

In Figure 2 it is highlighted that the irregularity in materiality and in typology of platforms are considered as elements of obstruction, deterioration and risks for pedestrian mobility, this considering that these problems lead pedestrians to invade the vehicular space, placing in threat their safety or well-being. All of the above reflects that bad practices derived from architecture and urban planning, directly affect the use, appropriation and perception of public space by women. Additionally, it should be noted that within this scenario there was a lack of urban control by territorial entities, as well as the absence of tools for maintenance and sustainability of public space [22].

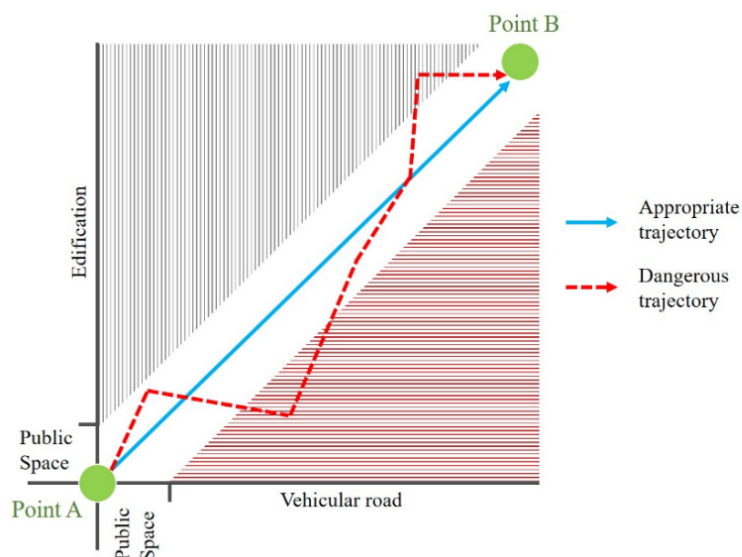


Figure 2. Analysis of irregularity on the appropriate pedestrian path in the sector under study.

4. Conclusions

As a result of this research, it was observed that the perception of the public space object of study by women, carried out based on a conceptualization taken from areas of knowledge of Architecture, urban planning and physics, presents an associated negative appreciation to the codification and characterization of aspects such as: (a) image-comfort: within which were found deficiencies of public space related to material characteristics of physical-urban space, insecurity, contamination, and insufficient-deterioration in the quality of urban elements (street banking, lights, and platforms); (b) accessibility-connection: where deficiencies of public space with respect to pedestrian mobility, obstruction elements in the public space and characteristics of physical-urban space were evidenced; (c) activity-use: which reflects deficiencies in public space with respect to insufficient urban elements (street banking, lights, and platforms) and pedestrian mobility; and finally; (d) sociability: within which deficiencies of public space with respect to gender exclusion, gender violence, insecurity and characteristics of physical-urban space were evidenced.

In the same way, it is established that urban planning must contemplate the satisfaction of the basic needs of the human being, approached from an individual or collective conception in order to potentiate the positive experiences derived from the use and appropriation of public space under an approach gender, which allows to potentiate the relationship of space-time variable according to the physical configuration of the public space, assumed from the correlation of the quality, quantity and state criteria with respect to the space-time variables, displacement and trajectory.

Likewise, it is concluded that the experience and characteristics of female community have not been considered in approach to the design and construction of public space, and therefore urban responses do not meet their needs. In this way, it is evident that deficient poor planning and development of physical components of public space, negatively affects the mobility, displacement, and trajectories of women, generating a decrease in its use and appropriation.

These results show that architecture and urban planning complemented from the basic concepts of physics, allow strengthening the understanding and comprehension of urban reality, complying with habitability indicators, and in turn promoting well-being and quality of life of the citizen.

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