A new decade for social changes
The contribution of the design characteristics of public spaces in enhancing social interactions in social housing: The case of social neighborhood of 520, M’sila, Algeria

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Abstract. This paper studies the public outdoor spaces in social housing and the role of design characteristics of the public spaces and their impacts on enhancing social interactions. However, since 1962, one may notice that Algeria has opted for social housing in its housing programmes to meet the growing demand; but social housing did not satisfy the residents’ needs as authorities focused on the quantity of residential neighborhoods but they neglected designs of public spaces, which urged us to study them to see the extent to which the design characteristics of these spaces contribute to the achievement of social interactions between inhabitants. The research relies on the analytical approach by observing and analyzing the design characteristics of public spaces in social housing and their role in promoting social interactions in the neighborhood of 520 in M’sila, Algeria. A questionnaire form is addressed to the neighborhood residents to evaluate social interactions. The results of the study show dissatisfaction of the residents and the need to take into account the design characteristics during planning because of their importance in promoting social interactions.

Keywords. Design characteristics, public spaces, social housing, social interaction, M’sila

Introduction

Recently, urban planners and designers of social housing have paid attention to design and architecture to bring the architectural and urban output to the optimal image (Mallgrave, H. F. 2013). Therefore, housing is not a set of constructivist buildings governed by mere functional requirements as much as it is a social, economic, and cultural content of individuals dealing with the environment (Lawrence, et al., 1990).

For Sanjatmiko (2021) “The relationship between human behavior and the surrounding environment is a continuous, dynamic interactivity where the process of interaction is a set of human needs that require a certain medium to perform”. In this case, the medium is the outdoor public spaces. This notion is supported by Aysel et al., (2010) who consider social interaction as one of the basic human needs that is of great importance in the lives of residents of social housing” where some modern designs of social housing neglected somehow the human aspect,
resulting in shortage of social relations between residents. Therefore, social residential neighborhoods have become unresponsive to social needs of the inhabitants in contrast to the traditional ‘classic’ designs of neighborhoods, where the social relations between the inhabitants were “close and strong and the spirit of love and cooperation prevailed among them.” (Bloom, N. D, et al., 2016).

Concerning contemporary urban environment, which is represented by social neighborhoods, we noticed the opposite, because their public spaces have abandoned human aspects, creating the so called “urban deserts” (Carmona, M. 2010). Their design characteristics and their spatial organization are characterized by monotony and non-excellence, as well as deficiencies in the distribution of urban usage.

Some studies have indicated a gap in scientific knowledge about the concept of social interactions and their relationship to neighborhood planning, in addition to the exchanged effects between design and use. Some studies have emphasized the importance of outdoor public spaces and their organization within the city and their effective and direct effects within the social lifestyle, especially within social neighborhoods (Abrahamson, M. 2004). These studies pointed out the needs of the residents of these spaces, stressing to the impact of design characteristics on the efficiency of these spaces and thus on the degree of their social effectiveness.

Postmodern ideas have neglected the role of the street and the outdoor urban space, which in turn has led, to the absence of social harmony and “the gradual death of social life” (Carmona, M. 2021). This resulted in social imbalance in external public spaces. Therefore one of the orientations of postmodernism was the interest in the resident, the community, and social relations being the basis of interaction between individuals and the surrounding environment. Thus, one of the most important functions of outdoor public spaces is to encourage social interactions and communication between individuals via public spaces; however, social housing have not been able to achieve (Glaeser, E. L et al., 2001). Meeting the needs of the residents and the community has become an urgent necessity, hence, one can understand what the resident wants by dealing with the space.

This paper attempts to identify some indicators as well as negative and positive correlations between the design characteristics of the outdoor public spaces in social housing and the extent to which social interactions between the residents are achieved.

Algerian cities in general and their social neighborhoods in particular suffer from deterioration of public spaces, especially the absence of outdoor public spaces from human activity. This is what attracted our attention to the city of M’sila, where most of its social neighborhoods lack the human aspects in outdoor spaces for the design of these spaces did not reflect their importance.

Urban public spaces

Public places are areas where members of various social groups meet; as a result, they offer a forum for the exchange of ideas and information due to the development of social networks. Additionally, public spaces offer more than just a space's experience (Hajar et al., 2001). Community identity, self-worth, skill development in the community, and social participation are the outcomes of these interactions and experiences amongst individuals. Urban planners and theorists have taken into account this understanding of public spaces regarding human social bubbles (Douglas, 2003). Streets, walkways, squares, roundabouts, beaches, play areas, city halls, shopping centers, plazas, and other types of locations are all considered public spaces.
Methodology

As any qualitative research, this paper adopted a descriptive analytical approach to study the design characteristics of public spaces and social interactions. The neighborhood of 520 in M’sila was chosen as a research field because it contains variety of degrees and types of design characteristics. In particular, it includes the required difference in the degree of containment and closure of space as well as the relationship of public spaces with the entrances of the surrounding buildings. The variables are obtained from the theoretical part of the research and the review of literature, especially the study of Najeel Kamal Abdel Razzaq (2008).

Data collection tools

Data were collected from field survey of the study area and the horizontal plans using the program (Qgis) to define the physical boundaries of open spaces and number them, in addition to the allocation of the entrances. Site observation was relied upon to collect data of behavior patterns and occupancy time over two phases:

1) Initial observation: The first phase was devised to explore the nature of the events occurring in public spaces.

Detailed observation: This was conducted in May, 2022 being a mild weather. The observation used the method of visual monitoring to identify patterns of behavior and social interactions that take place within public spaces. Each public space was observer twice a day the records were from (8:30 to 10:30) in the morning and from (16:30 to 18:30) in the evening. Three readings are recorded for each public space a week for one month, which makes a total of 12 records for each public space.

In order to assess the social interactions in the neighborhood of 520, a questionnaire was designed according to the research axes, and 260 forms were distributed randomly to the residential units (buildings) of the neighborhood, and 250 forms were retrieved and used to present the statistical analysis.

Introducing the study area:

M’sila city is located in the North-central part of Algeria. It is seated within the following geographical coordinates: 35° 42'7 North latitude and 4° 32'49 E east longitude. The city is a connecting point between the east and west of the country and between the north and south of the country (Bediar, A., et al., 2022). It is located within the areas of the high plateaus extending over an area of 232 km² and the population is estimated at 214,669 inhabitants, with density of 925 inhabitants/km² (National Statistics Office, 2014). Since 1975, M’sila has witnessed the emergence of many social housing programs, where approximately 71 social neighborhoods have been built, ranging from 50 to 1000 dwellings per neighborhood (Arab, W., et al., 2022).

To narrow the scope of the study, we have chosen the neighborhood of 520 as a case study, which is located on the Western side of M’sila city surrounded by a group of social neighborhoods and a group of public equipments like the school of social activity, secondary school, and police school. The project of the neighborhood started in 2007 and was exploited in 2009, where the real estate area of the neighborhood is 50893 m², and the built up area represents about 11756 m², that is 24% of the total area. The neighborhood contains 53 buildings with a density of 102 residents/Km² and it is built in two types F2 (apartments consisting of living room, bedroom, and a kitchen) and F3 (apartments consisting of living room, two bedrooms, and a kitchen) as shown in Figure 1.
Results

The degree of space containment

Before the analysis, we identified the studied spaces and numbered them as shown in Figure 2 and then made cross sections of each space to obtain the height and width of each space. The degree of space containment can be measured by using the following equation:

\[ S = \frac{H}{W} \]  \hspace{1cm} \text{Equation No. 01}

\( S \) is space containment degree.
\( H \) is the height of buildings surrounding the public space.
\( W \) is the width of the public space.
When \(W=1H\), the sense of containment and closure of space starts and it becomes new until \(W=3H\). This sense decreases after this ratio when \(W=4H\). That is, the containment declines and buildings determine the edge of space in a horizontal direction more than in a vertical direction. However, the sense of containment rises and space becomes narrow at the ratio \(W=0.5H\) to \(W=0.12H\), and the feeling of phobia of confined spaces begins. (McCluskey, Jim, 1979).

Equation 01 shows the results shown in Table 1.

**Table 01 :** Results of the degree of space containment in the neighborhood of 520

<table>
<thead>
<tr>
<th>Space number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Space width (w)</td>
<td>50.7</td>
<td>48.8</td>
<td>55.7</td>
<td>25.8</td>
<td>33.2</td>
<td>56.0</td>
<td>27.99</td>
<td>27.99</td>
<td>33.5</td>
</tr>
</tbody>
</table>
The average degree of containment is 0.34, which is considered weak and close to the actual degree of containment, where most of the spaces (1, 2, 3, 4, 5, 6, 7, 8, 10) recorded a weak degree of containment due to the clear disparity between the height and width of the space, which gave a sense of width of the space and reduced its containment.

**Space closure results**

Although outdoor spaces are open but they may be closed depending on how buildings are arranged around residential neighbourhoods. If buildings surround the public space from four sides, then the space is called open ‘closed’ space. In case there may be openings and separations between these buildings or when they surround three sides, then the space is less closed, hence is called ‘semi-closed’. But if the closure is less, then the public space is called ‘open’ (Lee, M. 2022).

Honey-Rosés et al. (2021) think that it is important to know the degree of openness and closure of space and they consider the degree as one of the basic elements of design for the sake of right exploitation of public space. By diagnosing the degree of closure of public space in our case study (neighbourhood of 520), we reached the following results as shown in Table (2)

<table>
<thead>
<tr>
<th>Space number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>The degree of space closure</td>
<td>Open</td>
<td>[x]</td>
<td>[x]</td>
<td>[x]</td>
<td>[x]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-closed</td>
<td></td>
<td>[x]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[X]</td>
</tr>
<tr>
<td>closed</td>
<td></td>
<td>[x]</td>
<td>[x]</td>
<td>[x]</td>
<td>[x]</td>
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</tbody>
</table>

Through the analysis of the degree of space closure in the neighborhood, the results show that there are no completely closed spaces, which are characterized by being completely surrounded from all sides without outlets. Results also show that public spaces fall within three types: closed, semi-closed, and open. The spaces 1 and 4 are closed, while Spaces 6, and 10 are semi-closed. The rest of spaces 5, 7, 8, and 9 are open.

**The relationship of open space with entrances of the surrounding buildings**

The relationship of openspace with entrances of the surrounding buildings can be classified to three types according to the accessibility: 1) direct relationship (very good) in case of direct accessibility between the openspace and the entrances of building, 2) secondary relationship (good) in case of indirect accessibility between the openspace and the entrances of buildings through another space, and 3) indirect (weak) relationship in case of indirect accessibility between the open space and the entrances via more than one space (Gehl, J.1987). Through analysis, we found the results shown in Figure 3 and Table 3.
Two indicators are used to determine the relationship of the open space and the entrances, as well as the number of each type. The results of the analysis show a direct relationship with the entrances of the surrounding buildings in three open spaces as in (1,2,3,4,5,6,7,8,9,10).
and 9), while the rest of the spaces ranged from weak to secondary. As for the number of entrances in the study area, it was even according to the number of buildings consisting of three floors with one entrance. Based on the previous indicators, the sequence of spaces for each type of relationship is downward from the direct to the weak relationships as in the open spaces (1,2,3,4,9,5,6,7,8 and 10).

**Discussion of results**

Through the results obtained from the analysis of design characteristics, the paper discusses the extent of their impact on social interactions by studying the relationship between the degree of containment and closure with the efficiency of use, and the relationship of open space with the entrances of the surrounding buildings. There are three indicators, namely the degree of effectiveness of spaces, the degree of space occupancy, the homogeneity of the distribution of patterns of behavior, in addition to the discussion of the results of the questionnaire.

**The relationship of the degree of space containment with the efficiency of use**

The comparison and the analysis of the degrees of space containment reveal a direct effect of the latter on the presence of users in space, children's play, and the sense of safety. A for the impact of the degree of space containment on space occupancy, the results show inconsistency in the sequence of spaces, which indicates the absence of a clear relationship between the degree of containment and the space occupancy. The study also showed that there is a positive relationship between the degree of space containment and the efficiency of use, although there is no clear pattern in the degree of containment and the degree of space occupancy.

**The relationship of the degree of closure with the efficiency of use**

The analysis of the degree of space closure with efficiency of use shows that there are no completely closed spaces in the neighborhood of 520.

**The relationship of open space with entrances of the surrounding buildings**

By studying the entrances locations and comparing them to the degree of effectiveness of spaces, we found that there are positive effects on the residents’ presence in space if the relationship is direct as in the spaces (1,2,3,4, and 9) and the effectiveness decreases the more residents use more spaces or if entrances are opposite to the space.

The relationship of entrances with the degree of occupancy efficiency also revealed spaces with a high occupancy rate even the relationship of the entrances with the space is secondary or even when entrances is opposite to the space as in space (6). This indicates the lack of a clear relationship of the entrances of the surrounding buildings with the degree of occupancy of that space. Concerning the impact of the distribution of entrances on the homogeneity of patterns and behavior in the neighborhood, the analysis shows a positive relationship between the entrances of the buildings and the efficiency of space occupancy in terms of homogeneity and distribution of pedestrian or cars traffic with residents’ presence in space or Children's play. This is evident in spaces (1,4,and 10).

**Discussion of the questionnaire results**

The analysis of the questionnaire results show that the organization of public spaces in the neighborhood of 520 is very poor in terms of their functional and social performance.
because most of the spaces are not protected from the movement of cars. This is indicated by 48.3% of the residents. In addition, the widespread of wastes affected the environmental and aesthetic aspects of the neighborhood and this was confirmed by 58.8% of the residents.

62.5% of the neighborhood residents also revealed the presence of strangers in public spaces, which decreases social privacy due to the lack of separation between the external and internal systems. In this vein, Miao, P. (Ed.). (2001) states that "the most important features and characteristics of open public spaces with high functional efficiency that they are called personal spaces". Therefore, the lack of privacy in public spaces is caused by the lack of transitional spaces between the outer spaces and the internal residential spaces, as stated by 48.6% of the residents. The residents showed dissatisfaction of the low level of maintenance and follow-up of open public spaces from authorities. The field study confirms that the spaces are no longer up to the aspirations of the residents nor to the goals for which they were designed. The study also indicates that 24.30% of the residents use the entrances of the buildings as playgrounds while 29.3% of the residents use their apartments as playgrounds. This is due to the lack of rehabilitation of public spaces which made them void from social interactions.

The questionnaire also indicates agreement of a total of 64.6% that the relations between the residents of the neighborhood are average, while 8.4% confirmed that the social relations are strong. From the above, we suggest that decision makers and authorities should reorganize and prepare public spaces in the neighborhood of 520 to increase social interactions. Approximately 54% of residents would like to form social relations in the neighborhood, and among them 42.7% who prefer to use public spaces in the neighborhood for the purpose of social interactions, but public spaces seem to abandoned and are no longer places of communication and social interactions 88.5% of the study sample confirmed that all social interactions within the neighborhood were due to their nearness to the entrances of the buildings.

**Conclusion**

The impacts of design characteristics on the use of public space and on social interactions is one of the significant studies that enables researchers suggest solutions to be implemented in the process of designing and planning public spaces. The study focused on the impacts of three design characteristics, namely the degree of containment and closure and the relationship of entrances of the surrounding buildings. Therefore, in order to know the role of the social factor in framing the relationship between the residents of the neighborhood and its outdoor space and to evaluate the social interactions, we conducted a questionnaire according to the indicators to be measured.

The study of the design characteristics showed the importance of these elements in expressing the differences between the spaces during the design stage, in controlling the design characteristics of public spaces, and in benefiting from the designs of residential neighborhoods in the future. The study also found that there is no effect of design characteristics on the use of space separately, but they overlap and cooperate to form a space suitable for particular use. The research also revealed that there is no clear relationship between the degree of containment and the degree of occupancy of space; however, there is a positive relationship between the orientation of the entrances of buildings and the efficiency of space occupancy. Finally, the research concluded that it is necessary to take into account the design characteristics of the outdoor public spaces and to follow the design standards in order to increase their social effectiveness by ensuring safety and privacy and achieving the humanitarian purpose for which they are designed.
References