

Provision of Intervention Strategies to Convert Leftover Spaces to Pocket Parks, with an Emphasis on User Preferences

Maryam Naghibi^a- Ahmad Ekhlassi^{b*}- Mohsen Faizi^c

^a Ph.D. of Landscape Architecture, School of Architecture and Environmental Design, Iran University of Science and Technology, Tehran, Iran.

^b Associate Professor of Architecture, School of Architecture and Environmental Design, Iran University of Science and Technology, Tehran, Iran (Corresponding Author).

^c Professor of Landscape Architecture, School of Architecture and Environmental Design, Iran University of Science and Technology, Tehran, Iran.

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ABSTRACT

Rapid urbanization causes many problems in the development of urban spaces. One of the most important problems is the generation of relatively marginal areas and lost spaces in which anomalies can occur. Therefore, the type of small-scale interventions in such spaces influences user behavior and can be influenced by user preferences. Based on the examples presented in other parts of the world, the present study attempts to investigate the feasibility of establishing a pocket park by examining abandoned spaces in Tehran as the case study. So, to find the most proper type of intervention for the site selected, it is essential to investigate user preferences. The present study is descriptive-analytic research aiming to find the most proper intervention strategies for the vacant lands considering both the residents' preferences for urban intervention and the experts' opinions through pairwise comparisons. After recognizing the selected abandoned spaces, the opinions of six experts are examined. Next, to determine the user preferences, the options selected in the first step are included in a pictorial AHP questionnaire. Analyzing 165 questionnaires shows that in both men's and women's opinions, the intervention of relaxing spaces has the top priority and the last priority belongs to workout spaces. Those aged 20 to 40 have different priorities for urban open spaces from others. Also, comparing the two options of sitting space and relaxing space indicates the importance of the type of urban furniture used for pocket parks. Since small spaces between urban blocks, i.e. in-between spaces, are more accessible to residents, it is required to convert these spaces into natural spaces considering the residents' preferences to make the revitalization of abandoned spaces feasible and enhance the dynamics of local spaces.

Keywords: Leftover Spaces, Lost Spaces, Pocket Parks, Environmental Preferences, Urban Landscape.

* E_mail: ekhlassi@iust.ac.ir

1. INTRODUCTION

Urban parks are important multi-functional public spaces used for a wide range of activities. The level of use of parks depends on their spatial characteristics (Hami et al., 2014). Carmona (2010b and 2010a) categorizes urban spaces in management into two categories: lowly-managed urban spaces and highly-managed urban spaces. According to him, missing spaces are those public spaces that need to be redesigned. Although public spaces are often designed for specific activities, unplanned spaces (leftover spaces) seem to be combined with the urban landscape. In the design process of urban landscapes, solutions and optimizations are considered while providing a rational design, increasing design efficiency, and facilitating decision-making. Such a process mainly aims to enhance the environmental qualities in urban spaces (Behzadfar & Shakibamanesh, 2008).

This present study aims to investigate the residents' preferences for the function of the leftover space to create a pocket park. In recent decades, due to their uncontrolled development, metropolises, including Tehran, have experienced many problems. The leftover space in the urban landscape has caused many economic, social, environmental, physical, and security problems. In Tehran, one can see some spaces for which there is no specific definition. In other countries, these lands are known as brownfield lands, leftover spaces, lost spaces, and urban vacancies, which are studied according to urban development policies and aiming at the less usage of green lands. The expansion of such undefined or abandoned spaces leads to urban decline. Due to the expansion of the city towards the suburbs, inattention to such spaces can be a serious threat to the urban landscape of Tehran. In recent years, converting leftover lands to parks and green spaces has helped to increase the green space in Tehran to some extent and provided space for its residents to have social interactions and communication. To do this, leftover and unoccupied lands have been designed as local parks by planting trees and placing benches, sports, and playground equipment in them. However, this doing has become a recurring trend. In addition to their advantages, these parks have disadvantages such as the gathering of addicts, and many of them have been not successful in enhancing the quality of the surrounding space. As the research on leftover spaces, one can mention the study entitled "Users' Preferences For Designing Spaces Under Urban Bridges As Vital Urban Spaces" by Lak and Ramezani (2018), and the study entitled "An Evaluation of Missing Spaces and Recommending Some Strategies for Development of Creative Spaces (Case Study: Ali-Qapu Square in Ardabil)" by Darskhan & Hajisattari (2016). Although many researchers and designers have recently focused on polluted industrial areas, relatively few studies have been carried out on the strengths of different types of leftover spaces in

the urban landscape. On the other hand, designers pay more attention to the characteristics described by users and don't make decisions based solely on the prescribed inferences, implying the need to pay attention to residents' preferences for different types of spaces. Considering user preferences plays an effective role in selecting the type of intervention. The type of intervention selected is important because it plays an effective role in preventing the conversion of spaces into abandoned places. Therefore, user preferences must be considered during the design and construction process. This prioritization will be used to develop strategies to manage, plan, and reuse local spaces. Therefore, the present study attempts to provide design strategies to intervene in abandoned spaces to convert them to vest-pocket parks and enhance the desirability of spaces in them considering residents' preferences. Considering residents' preferences in interventions in spaces can prevent the formation of abandoned spaces.

2. RESEARCH BACKGROUND

In today's world where cities are deteriorating and communities do not have the opportunity to revitalize different areas and cultures, leftover spaces are a top priority for many urban planners and managers (Pearsall & Lucas, 2014). Leftover spaces as excited potentials in cities (Lee et al., 2015) are of great importance and considered latent opportunities for making necessary changes (De Sola-Morales, 1996; Armstrong, 2006). Accordingly, vacant lands, as Roger Trancik calls them lost spaces, can be considered an opportunistic strategy for "green urban development" (Lee et al., 2015).

Open spaces also include spaces between buildings (Chermayeff & Alexander, 1963; Abu-Ghazze, 1996; Ford, 2000; Faizi, 2011). The present study attempts to investigate user preferences by emphasizing such spaces as available spaces with the potential for becoming pocket parks. Urban parks are important multi-functional public spaces used for a wide range of activities (Faizi, 2006). Today, due to the high building density in most neighborhoods in metropolises, there is a lack of public open space. Recently, micro-scale planning and intervention have been used as a new tool for managing public affairs, developing spaces, and making urban policies. Such plans have increased public participation. Thus, micro-scale planning and intervention can facilitate the success of macro-scale urban plans (Kim et al., 2020). In this regard, leftover spaces can be considered spaces with the potential to become pocket parks. Hence, pocket parks are important strategic places that can play an important role in creating new public spaces in cities. Despite their small size, pocket parks can be increasingly an efficient source for meeting social needs. According to Labuz (2019), uses such as children's playgrounds can become spaces for rest or

places for temporary exhibitions. Therefore, considering the research goal, i.e. the provision of strategies for intervention in leftover spaces based on residents' preferences for creating a pocket park, the literature review includes three areas of leftover spaces, pocket parks, and user preferences.

2.1. Leftover Spaces

Leftover spaces (Lynch, 1960; Trancik, 1986) are considered spaces that have not been fully used and there is no clear definition of their function in the city. These spaces are also known as spaces of uncertainty (Muller & Busmann, 2012), boundary gaps (Jacobs, 1961), liminal spaces (Turner, 1967), unknown and leftover spaces (özkan, 2010), informal spaces (Mahmoudi Farahani & Maller, 2019), negative urban spaces (Kallus, 2001). These spaces are often with no form or located in corners because they contain narrow and irregular lots between buildings, contaminated lands, places with limitations such as steep slopes, or areas divided by paths. They have sometimes been changed due to the use of the main facilities in the city, and there is no clear definition of their function. Hence, they can be considered in-between space, i.e. spaces left between the elements of the landscape (Loukaitou-sideris, 1996). Abandoned spaces with no use are increasingly recognized as an important barrier to regenerating landscape (Sperandelli, 2013; Millington, 2015; Newman et al., 2016; Zhang & Klenosky, 2016). However, it is common for these vacancies as part of the urban fabric to emerge in contemporary metropolises, and there are many opportunities to enhance abandoned spaces using environmental and social approaches (Hollander et al., 2011; Pallagst et al., 2017; Pearsall & Lucas, 2014; Kim & Kim, 2012; Mofidi Shemirani & Saeidi Mofrad, 2015; Torres et al., 2018; Madanipour, 2018). However, abandoned spaces are thought to be inherently negative spaces and a symbol of urban decay or urban problems (Trancik, 1986; Franck & Stevens, 2007; Garvin et al., 2013; Kim, 2015; Newman et al., 2016; Li et al., 2018; Mahmoudi Farahani & Maller, 2019; Zhang, et al., 2019). The present study shows that these spaces can serve as potentials and alternative spaces (Bowman & Pagano 2004; Burkholder, 2012; Kremer et al., 2013) for human and non-human interactions and processes (Shemirani & Mofrad, 2015).

2.2. The Concept of Pocket Park

The first pocket park (approximately 2,000 m²) was established in 1733 on the initiative of three New York residents and was called Bowling Green (Seymour, 1969). Pocket parks or mini-parks were established as small green spaces in the urban landscape. These parks, as small urban spaces, provide small relaxing spaces among the busy streets in the city (Shinew et al., 2004) and places to rest or socialize (Peschardt et al., 2014; Gibson & Canfield, 2016). After World War II, the "pocket park" concept was

introduced in Europe. Then, inspired by European experiences, the idea of creating green space in small undeveloped areas was introduced in the United States. In 1914, Charles Downing Lay classified parks in relation to their size. Accordingly, pocket parks were smaller than parks or playgrounds. The pocket park concept has emerged in the 1950s and 1960s in the United States, due to limited access to public green space. Since the dense development in cities has led to insufficient green or recreational spaces in neighborhoods, it was difficult to find undeveloped lots to create new public spaces. In early 1965, following Hoving's call for the creation of public green space as small as one building lot (Labuz, 2019), the idea of pocket parks was popularized in New York, and the Paley Park was introduced as the first pocket park. Although pocket parks have advantages such as less land occupation and being daily available for residents, they have limited performance due to their very small size (Hu, 2018).

2.3. User Preferences

The environment of a city is a part of residents' lives and its quality greatly influences people's perception of their surroundings (Lynch, 1977; Nasar, 1998). Today, the landscape can be considered one of the components playing a key role in creating a relationship between the environment and users, whether biological, physical, perceptual, or behavioral. Therefore, it is of particular importance to study people's perceptions of a landscape (Golchin et al., 2012). Regardless of the quality of the space, the leftover spaces are an opportunity to balance and stabilize cities through the revitalization of the city. Since studies on abandoned spaces mention the main role of users and their preferences (Lynch, 1977; Trancik, 1986; Thompson, 2002), considering their preferences is effective in choosing the type of intervention. The type of intervention selected is important because it plays an effective role in preventing the conversion of spaces into vacancies, so the user's preferences must be taken into account in the design and construction stages.

In the present study, environmental preferences are a set of factors defined for the users by the preference for urban space and refer to their preference for urban spaces. In addition, preferences are related to mental qualities. For example, one can refer to participation in the environment as one of the qualities related to environmental preferences (Lak & Ramezani, 2018). The urban landscape can be a source of people's satisfaction. Therefore, reshaping the city should be directed by a visual plan including a set of codes and recommendations for the visual form on a city scale. It is essential to develop such a plan to understand how users perceive the landscape. In this way, sources can be compared in terms of the likability of different environments in the city. Likable areas tend to have the sub-variables of the "likability" variable (Nasar, 2014). Proper use of urban spaces requires the prefer-

ences of users of that space. Abandoned spaces sometimes become unused and criminal places again after being designed to be converted into usable spaces. Therefore, providing facilities in urban environments, although according to the scientific rules and theories, will not meet the user satisfaction if the user preferences are not considered, making the environments become unused and abandoned spaces again. Therefore, planning and designing spaces require careful attention to their user preferences.

3. METHOD

The present study was carried out using a mixed approach through pairwise comparisons. In multi-objective decision-making models, the best option must be determined based on the constraints of the system, different goals as well as the desired values determined for the goals by the decision-maker. In multi-criteria decision-making models, there are several predefined and limited options, each of which considers a level

of characteristics intended by the decision-maker (Qolipour Gashniani et al., 2017). In the Analytic Hierarchy Process (AHP), comparisons are made in pairs, and the decision-maker selects the best option considering the ranking of the sub-criteria and the optimal option selected. In the present study, the case study is an abandoned space in the Zafar neighborhood, one of the neighborhoods in the north of Tehran, with a population of 70677 people (Fig. 1). The reasons for the selection of this area were the authors' complete familiarity with it and the types of leftover spaces in it, the possibility of field observations at different time intervals, and the availability of residents. The inclusion criteria were being in a residential neighborhood, being considered an abandoned space by the residents, and being classified as pocket parks. Therefore, after the initial selection, interviews were conducted to understand the residents' opinions. As shown in Figure 1, this site is limited to Zafar Street from the north and Takharestan Street from the west.



Fig. 1. Sample Selected for this Study

First, the authors selected 52 images related to social interventions in urban spaces. To make more accurate decisions on the images, 6 experts with at least 9 years of relevant working experience (including 3 architects, 1 urban designer, and 2 landscape architects) were asked to choose the images best suited for the site selected considering the limitations of pocket

parks (size, being located in the residential texture, type of intervention). Next, 23 images were selected. The frequencies of the selected images were recorded by the authors. Those images with a possibility of being selected at least 4 times were selected. Then, these 23 images were divided into 7 different main categories to eliminate similar selections in the same categories.

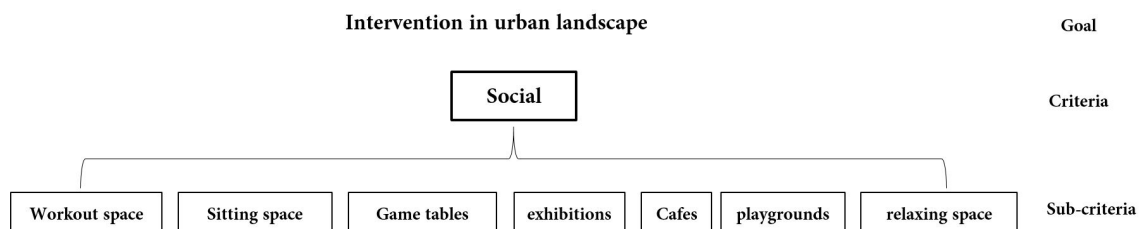



Fig. 2. Criteria and Sub-Criteria Used in the AHP Model

Due to the limitations on the size of pocket parks and the type of intervention, the AHP technique was used to select the appropriate space. When there are several evaluation factors in the decision-making process, this technique allows decision-makers to have a deep understanding of issues in specific situations for an "independent hierarchical structure" (Nekhay & Arriaza, 2016; Saaty & De Paola, 2017). Thus, to investigate the relationship between the properties of urban intervention and attention to user preferences, a pictorial AHP questionnaire was used. To this, the seven main interventions selected (workout space, play space, cafe, sitting space, relaxing space, and exhibition space) were modeled by experts using the Sketch up software. Before distributing questionnaires at a large scale, to improve the questionnaire, it was examined through a pilot study. To this end, 12 persons were asked to fill out the questionnaires. Then, the

questionnaire was modified considering the respondents' comments. The final questionnaire was sent to the residents online during the period from April to May 2020. It was not required to install any application to develop and answer the online questionnaire. The respondents were selected by the snowball sampling technique. The first part of the questionnaire included the residents' demographic characteristics (Table 2 - the characteristics of the residents and the level of use of local open spaces) and their current place of residence (to ensure that the respondents are the residents of the area studied). The second part included 17 questions based on the 17-point Likert scale. For this part, the respondents were asked to determine the priority of the selected image. The data collected from this survey were analyzed using Excel and IBM SPSS 26 software. The final results are described and presented using analysis.

Table 1. Sample Questionnaire

<p>Extremely important</p> <p>Very important to extremely important</p> <p>Very important</p> <p>Important to very important</p> <p>Important</p> <p>Moderately important to important</p> <p>Moderately important</p> <p>Neutral to moderately important</p> <p>Neutral</p> <p>Neutral to moderately important</p> <p>Moderately important</p> <p>Moderately important to important</p> <p>Important</p> <p>Important to very important</p> <p>Very important</p> <p>Very important to extremely important</p> <p>Extremely important</p>																		
Image 2	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Image 1
																		

3.1. Data Analysis

Out of all questionnaires filled out by the residents, 165 questionnaires were valid. According to Table 2, about 57% of the respondents were females and 43% were males. Regarding their ages, about 78.1% of the respondents were in the 20-40 age group, 12.7% in

the 41-60 age group, and only 9.1% were over 60 years old. Regarding their education, about 57.6% of the respondents had a master's degree, 19.4% had a bachelor's degree, 15.8% had a Ph.D. degree, 3.6% had an associate's degree, and 3.6% had a diploma. Also, about 57% of respondents were unemployed and 18.2% were university students.

Table 2. Respondents' Demographic Characteristics

		Gender		Job				
		Female	Male	Employed	Housekeeper	Student	Retired	Unemployed
Age	20-40 years	78	51	12	10	29	1	77
	41-60 years	10	11	2	1	1	5	12
	Over 60 years	6	9	1	2	0	7	5
Total		94	71	15	15	30	13	94

One of the research objectives was to find the residents' leisure time habits, and the trend of using public spaces by them, and to compare the two male and female groups in them. Comparing the obtained data indicates that there was no difference between the two male and female groups in the priority of using local open spaces (Figure 1). The results of the present study showed that the respondents often spend their free time sitting and relaxing in open spaces (61.89% of females and 61.97% of males), followed by going to cafes and restaurants (55.31% of females and 56.33% of males), communicating with nature (48.93% of females

and 42.25% of males), walking (46.80% of females and 39.43% of males), communicating with friends (46.8% of females and 38.02% of males), participation in events and ceremonies (15.95% of females and 32.39% of males). Group games, playing with children, and performing exercises using sporting equipment were the residents' lowest priorities.

The results indicated that men participated in events and ceremonies about twice as high as women, and women used sporting equipment about twice as high as men. Therefore, the gender factor was influential in these cases.

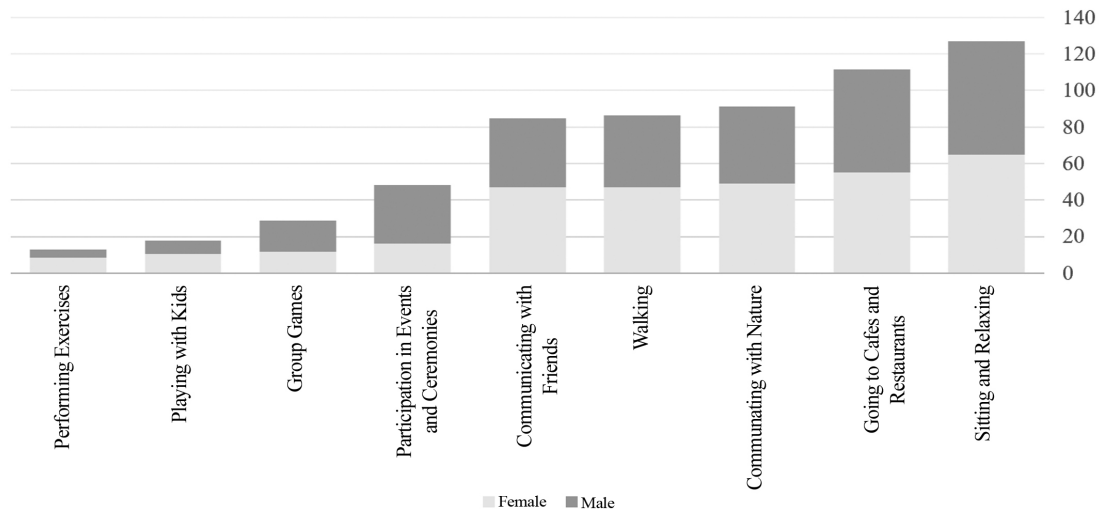


Fig. 3. Selection of Activities of Interest in Urban Open Spaces (Possibility of Choosing more than 1 Option)

According to Table 2, since 78.18% of the respondents were in the 20-40 age group, this group was examined separately. In this age group, sitting and relaxing was the third priority of males (45.09%), while they were the fifth priority of females. Walking was the top priority for both male and female groups (66.66% of females and 58.82% of males). The second priority of females was to go to cafes and restaurants (65.38%) while it was the third priority of males (45.02%). Participation in events and ceremonies (10.25% of females and 3.92% of males) had the lowest priority. Although in general, according to Figure 3, this activity was more selected by males than females, in the 20-40 age group, this option was selected 2.6 times

more by females than males. Participation in events and ceremonies, group games, and playing with kids were the lowest priorities of the residents. There was no difference between the two gender groups in terms of the priority of selecting these uses. Since 42.25% of males and 48.93% of females used urban open spaces to communicate with nature, it is important to create natural contexts in pocket parks. Gender was one of the influential factors in choosing exercise in the 20-40 age group. In this age group, 31.37% of males were interested in using workout spaces in pocket parks, while only 17.94% of females were interested in it.

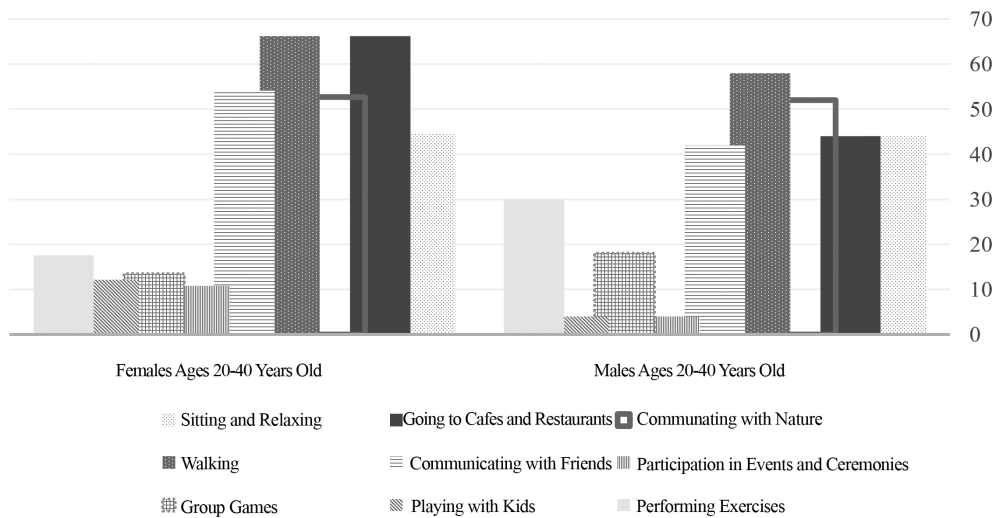


Fig. 4. Comparison of the Two Groups of Males and Females Aged 20–40 Years Old in Choosing the Activity of Interest

According to Figure 5, about 77.8% of users of urban open spaces at noon were females while at night about 38.2% of users were females and 61.8% were males. In the morning, most users were females (63.6%)

(36.4% of users were males). However, in general, 63.44% of females and 55.55% of males considered evening hours more suitable for attending public open spaces.

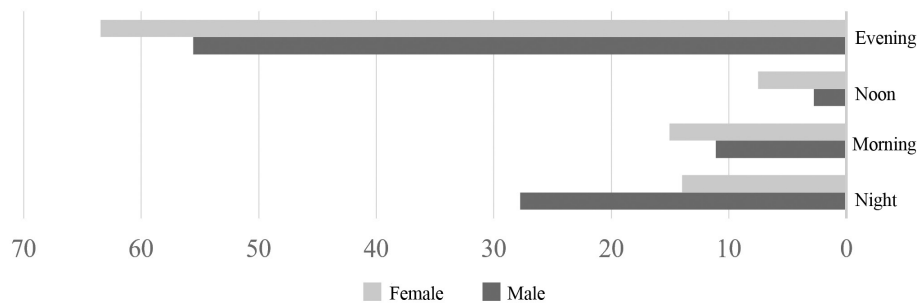


Fig. 5. Comparison of the Two Male and Female Groups in the Times of Using Urban Open Spaces

To investigate the relationship between the two variables of age and time of using urban open spaces, the Chi-square test was used. According to Table 2, there is a significant inverse relationship between age and

time of using open spaces ($p < 0.01$). Despite the negative gamma, none of the respondents over 60 years old used urban open spaces at night.

Table 3. Chi-Square Test, and Gamma Coefficient

	Value	df	Asymptotic Significance (2-sided)	
Pearson Chi-Square	16.765a	6	.010	
	Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Gamma	-.436	.132	-2.824	.005

ter calculating the final weights of the criteria from the average of weight vectors and the importance of the criteria relative to each other, the consistency ratio (C.R.) is calculated. This ratio is calculated by dividing the consistency index (C.I.) for the set of judgments by the random consistency index (R.I) (i.e. the

index for the corresponding random matrix). If the calculated consistency ratio is less than 0.1, the resulting weights can be trusted.

$$CR = \frac{CI}{RI}$$

According to Tables 4 and 5, the consistency ratio calculated in both male and female groups was less than

0.1, so the resulting weights can be trusted.

Table 4. Weight Matrix of Males' Responses

	Relaxing Space	Playground	Café	Exhibition	Game Tables	Sitting Space	Workout Space
Relaxing Space	1	3.38105	3.135	4.33205	2.78695	1.6932	3.009
Playground	0.295766	1	1.768	3.3648	1.85005	1.8566	1.7621
Café	0.318979	0.565611	1	3.92615	3.0843	2.64585	3.53735
Exhibition	0.230838	0.297194	0.254702	1	1.1139	1.17255	1.9758
Game Tables	0.358815	0.540526	0.897747	0.897747	1	1.82685	1.8736
Sitting Space	0.590598	0.538619	0.37795	0.852842	0.54739	1	3.4179
Workout Space	0.332336	0.567505	0.282697	0.506124	0.533732	0.292577	1
Consistency Index: 0.1318 and Consistency Ratio: 0.998							

Table 5. Weight Matrix of Females' Responses

	Relaxing Space	Playground	Café	Exhibition	Game Tables	Sitting Space	Workout Space
Relaxing Space	1	2.49125	2.9198	3.28025	4.98355	1.7956	3.173
Playground	0.401405	1	1.5084	2.8198	3.1	2.2902	4.6339
Café	0.342489	0.662954	1	4.87015	5.0623	3.49265	5.21835
Exhibition	0.304855	0.354635	0.205332	1	2.5289	2.32975	2.2322
Game Tables	0.20066	0.322581	0.197539	0.395429	1	1.82585	1.6086
Sitting Space	0.556917	0.436643	0.286316	0.429231	0.54769	1	3.9101
Workout Space	0.315159	0.215801	0.191631	0.447989	0.621659	0.255748	1
Consistency Index: 0.1302 and Consistency Ratio: 0.0986							

After ensuring the consistency of the responses, to determine the selected priorities for the studied site, the

eigenvector (importance coefficient) was calculated for each of the two female and male groups (Table 6).

Table 6. Calculation of the Eigenvector for each of the Two Female and Male Groups

Function	Geometric Mean		Normal Weight (Eigenvector)	
	Males	Females	Males	Females
Relaxing space	2.523682	2.537545	0.3051	0.2922
Café	1.40204	1.777987	0.1861	0.223
Playground	1.538988	1.936237	0.1695	0.2047
Game Tables	0.642286	0.838717	0.1105	0.0965
Sitting Space	0.914527	0.548949	0.0955	0.0777
Exhibition	0.789881	0.675233	0.0776	0.0631
Workout Space	0.457794	0.368818	0.0553	0.0424

The eigenvectors were calculated by approximating the geometric mean without the use of special software (Zabrdast, 2001). To do this, the priority vectors were calculated. According to Table 6 and the eigenvectors, the male and female respondents' priorities of the main criteria are as follows:

The relaxing space with a normal weight of 0.305 for males and 0.292 for females is the top priority. The cafe with a normal weight of 0.186 for males and 0.223 for females is the second priority. The playground with a normal weight of 0.169 for males and 0.204 for females is the third priority.

The fourth priority belongs to game tables with a normal weight of 0.110 for males and exhibitions with a normal weight of 0.965 for females.

The sitting space with a normal weight of 0.095 for males and 0.965 for females is the fifth priority.

The sixth priority belongs to exhibitions with a normal weight of 0.077 for males and game tables with a normal weight of 0.063 for females.

The workout space with a normal weight of 0.055 for males and 0.042 for females is the last priority.

Calculating the eigenvectors indicated that gender does not play a role in prioritizing the use of space. However, analyzing the responses of the subjects aged 20-40 years old showed the influence of gender in choosing the activities in small urban spaces. Therefore, the gender variable will not affect the choice of activity in all age groups. So, paying attention to the type of activity can be sometimes more effective than addressing gender issues in space. Although the workout space was the last priority of the respondents, a significant difference was observed between the opinions of those aged 20-40 years old and other respondents (Figure 2). Although about 46.80% of all females and 39.43% of all males were interested in walking in pocket parks, however, only 8.5% of females and 4.2% of males were interested in exercising using sporting equipment in pocket parks. This lack of consistency may be due to the inappropriateness of the sporting equipment in the parks. Moreover, investigating the responses of the subjects aged 20-40 years indicated that 31.37% of males and 17.94% of females were interested in using sporting equipment in pocket parks. This difference may be due to the choice of sporting equipment without considering different ages.

There was no significant difference between the two male and female groups in prioritizing activities including selecting space for relaxing, going to cafes and restaurants, communicating with nature, and playing with kids. This indicates the same need of the two gender groups for the mentioned uses. On the other hand, participation in social events was the priority for 32.39% of males and 15.95% of females. For the 20-40 age group, the gender factor was effective in the level of interest in participation in social events (10.25% of females and 3.92% of males).

According to Figure 1 (selection of activities of interest in urban open spaces) and eigenvectors, the following can be mentioned on the users' priorities:

- There is a need to create a relaxing space for residents in this area and gender has not played a role in answering the questions related to this use. The site has been made suitable for this use with the interventions performed. However, the type of urban furniture has influenced the priority of users (relaxing space: top priority and sitting space: the fifth priority).

- Sites with similar characteristics to the study site can be used for cafes and restaurants. In addition, by establishing facilities, similar places can be used by lo-

cal restaurants. However, analyzing the responses of the subjects aged 20-40 years old indicated the role of gender in answering the questions related to this use. Although this use was the second priority for women aged 20 to 40 (65.38%), only 45% of men in this age group were interested in this type of use.

4. CONCLUSION

The present study aimed to identify the best type of intervention in urban open spaces and find activities with the lowest priorities for the residents to improve small urban spaces and convert abandoned spaces into spaces with suitable uses with residents' needs considering user preferences. To this end, first, the desirable and undesirable activities for the abandoned spaces were determined according to the experts' opinions. Then, the priorities of the selected activities for two male and female groups were compared to consider user preferences in designing the abandoned spaces. Choosing the design option considering socio-cultural factors can fill previous gaps in urban spaces.

Studies on the use of this space show that in both male and female groups, the relaxing space was the top priority for users in converting an abandoned space into a pocket park, followed by cafes and playgrounds. While, today, most of the local pocket parks in Tehran have been turned into workout spaces, they were the lowest priority for the users. Therefore, paying attention to user preferences can be an important step in preventing the creation of abandoned spaces, and using them as urban potentials. Since most of the residents spend a considerable amount of time in the cafe, this use was also a high priority in the designed sample. This use can be effective in promoting the relations between neighborhoods and neighborhood vitality.

The obtained data were accurately analyzed by age groups. According to the results, participation in collective events and ceremonies was more common among men over 60 and women aged 20 to 40 years. So, considering collective events appropriate to the age and gender of residents plays an effective role in enhancing the participation of residents in the ceremonies and their attendance in the neighborhood. Also, women's reluctance to use urban open spaces at night can be associated with issues such as a lack of security in the environment. In the use of urban pocket parks, the results indicated a significant difference between the 20-40 age group and two other age groups in their priorities of activities. Moreover, it was observed that the preferences of the two age groups of 41-60 and over 60 were nearly similar. Therefore, the appropriate approach to designing pocket parks can be different according to the demographic indicators of each neighborhood.

One of the considerable findings of this study is the need for flexibility in small urban spaces. Comparing the two options of sitting space and relaxing space,

and the importance coefficients of the options offered, indicate the importance of the type of urban furniture used in pocket parks. The small size of these spaces, constraints on the type of intervention, and users' need for a diverse environment make the use of flexibility approach in these spaces very important. This variety can be created using various colors, lighting, and portable urban furniture. Meeting the different and sometimes conflicting needs of residents, as well as changes in the user activity system, necessitates the coordination of these small spaces with a wide variety of activities and emphasizes the variety of environmental functions. In small spaces, flexibility can be seen beyond furniture and movable elements in space. Therefore, it is required to consider the creation of diversity in these limited environments to make it possible to change the space according to the users' needs in all stages of design, planning, maintenance, and management.

Given the importance of communicating with nature among residents, and since small spaces between urban blocks are more accessible, pocket parks need to be considered to create natural spaces. To enhance the dynamism of local spaces and revitalize abandoned

spaces, residents' priorities in using the spaces should be considered. In this regard, it is of great importance to pay attention to the limitations of small urban spaces and the needs of users, to investigate the types of activities and key criteria for designing responsive environments, to use the strengths of small urban spaces, and to prevent spaces to become abandoned spaces again.

This study shows the interest of residents in the use of pocket parks. So, to increase residents' satisfaction with these spaces, it is required to perform extensive studies. Investigating residents' perceptions and the strengths of small abandoned spaces will be effective in achieving spaces with elements enhancing the quality of the environment, developing appropriate urban design guidelines, and selecting urban decision-makers. Providing a participatory planning model can be effective in enhancing the relationship between the citizens and urban environments and revitalizing abandoned spaces. There is a need for additional research for investigating the role of socio-cultural values in determining the criteria for studying citizens' visual preferences.

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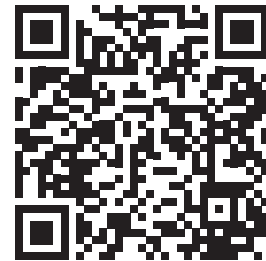
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