Parameters contributing to the design of a successful urban pocket park

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ABSTRACT:
This paper attempts to identify some key design parameters for the creation of a successful pocket park. The study starts with a brief overview of the history of the urban pocket park. The literature review focuses on the design parameters guidelines. An extensive list was developed, which formed the basis for the survey that followed. Two case study spaces are investigated, one located in Athens, Greece and the other in London, UK. Users of the parks are surveyed for their responses to environmental factors such as sunlight penetration, acoustics, shading and shelter as well as qualitative factors such as desirability of trees, grass and water features. The statistical analysis of the surveys aims to elicit guidelines for the design of urban pocket parks in terms of environmental and qualitative design factors.
Keywords: urban pocket parks, design parameters, environmental parameters, neighbourhood regeneration

INTRODUCTION

The scarcity of open space in contemporary cities suggests that the creation of new large green areas is unlikely. Nevertheless, a network of small green spaces serving neighbourhoods could provide an alternative; spaces that are human in scale allow a greater proportion of the population to be very near a park. Urban pockets, also known as miniparks or vest-pocket parks, are urban open spaces at a small scale of 0.125 acres. These spaces have the potential to provide relief from the city, contribute to a sense of place, provide comfort and a sense of well-being to the user, and contribute positively to the urban microclimate. Pocket parks can be defined as greens or quiet enclaves. They should be accessible and viewable from the street and can have a variety of characteristics, such as trees and greenery, urban furniture, recreation facilities etc. As stated by Barton, the design of the spaces between buildings is akin to designing a complex of outdoor rooms, with different, sometimes overlapping, but well –defined functions [1]. This study aims to identify a series of environmental parameters and qualitative design factors, which contribute to the design of a successful pocket park.

METHODOLOGY

The study begins with the identification of key environmental parameters and qualitative design factors through the literature review. These parameters are encapsulated into a one page questionnaire and users of two case study parks - one in Athens and one in London - are surveyed, for their responses to environmental factors such as sunlight penetration, acoustics, shading and shelter as well as qualitative factors such as desirability of trees, grass and water features. The surveys are analysed statistically using SPSS in order to identify the most significant parameters in the design of a successful pocket park.

ENVIRONMENTAL AND QUALITATIVE DESIGN PARAMETERS

Possible parameters for inclusion in the study were identified during the literature review, and were classified into three broad categories; namely Space, Environment and Society.

Table 1: The first category - Space.

Main categories	Sub-categories	Design Parameters
SPACE	size	• a small park 50 by 100 feet • determine exact size according to anticipated uses
	space identity	• determine the function/s of the space • innovative design concepts • variety and choice • greatest play value • adaptable spaces
	surfaces	• the walls, those of adjacent buildings, can become vertical lawns • the floor, textural interest and pattern • the ceiling- canopy of leaves, solid roof of shade • avoid blank walls in the space perimeter
	focal point	• need of focal point - water features, gazebos or other structures • defined edges which may contain a focal point.

The first category, Space, (Table 1) can be subdivided into Size, Spacial Identity, Surfaces and Focal Point. According to Saymour a good size for a small pocket park should measure 50 by 100 feet [3]. Another source suggests that determination of the exact size of a park should be made according to anticipated uses [6]. Qualities such as variety and choice, easy accessibility and the presence of a focal point are also significant. In an urban situation the park may be enclosed by 'walls', which could be covered with vines and therefore become vertical lawns. The ground should have textural interest and pattern, while trees and planting can provide a 'ceiling' [3]. Blank walls around the perimeter of a space should be avoided and water features, gazebos or other landscape structures can be introduced as a focus for the space [7].

Table 2: The second category - Environment.

ENVIRONMENT	environmental performance	• maximise the amount of natural shade • environmentally friendly features: pervious surfaces, bio-filter landscaping beds, high-efficiency lighting, solar-powered amenities • environmental education • explore aquatic and riparian habitat and stormwater and aesthetic enhancements • adequate lighting during night time
	location & linkage	• investigate vacant sites to provide opportunities for temporary public space • locate the park adjacent to a greenway and the largest concentration of housing • layout of public open space influences pedestrian flow • provide paths that lead somewhere • promote pedestrian use, linkage to network, high use corner or mid block link • linked to other recreational, cultural and community facilities • ensure a good flow of park users between the greenway and the park.

The second category, Environment (Table 2), can be subdivided into Environmental Performance and Location and Linkage. The park may incorporate environmentally friendly features [6]. Maximising the amount of natural shade is considered to be of high importance [8]. Adequate artificial night time lighting is also one of the parameters strongly recommended [7]. Imagination has to be used in order to locate spaces for pocket parks as these may be found in non–traditional locations such as roof tops, building facades or foyers and vacant sites [8]. The park should be located adjacent to a greenway and ensure a good flow of park users between the greenway and the park [8]. The whole space should be linked to other recreational, cultural and community facilities [4], and also to a greater pedestrian network [8].

The third category, Society (Table 3), can be divided into 5 sub-categories - namely Users, Accessibility, Amenities/Activities, Public Art and Safety and Maintenance. The identity of possible users is to be considered alongside determining the functions of the space, and activities there [8]. Goals may include physical fitness, social adjustment, mental and moral improvement and neighbourhood betterment [2]. The involvement of the neighbourhood in the park design process is favoured [6]. The space should provide opportunities for comfortable social interaction, and be inviting to users with multiple points of entry if possible [7]. Accessibility is identified as a design parameter - there should be a lack of barriers to the street, and the space should be adaptable [8]. In terms of amenities, play equipment and play spaces should be designed for the population presently in the area, and should be flexible [4]. Zion, suggests that individual seating should replace the traditional bench [5]. Drinking fountains, bicycle racks, trash receptacles, etc. can be included in the design as well as opportunities for public art or sculpture [4], [7]. Pocket parks also need to be supervised and well maintained in order to be kept clean and safe [4]. The reduction of any onerous maintenance requirements in the space is also favoured [8].

Table 3: The third category - Society.

SOCIETY	users	• goals: physical fitness, social adjustment, mental and moral improvement and neighbourhood betterment • play spaces designed for the present population of the area • comfortable social interaction • welcoming and appealing design to a diversity of users • determine major users • involve neighborhood in design process
	accessibility	• easily accessible • inviting with multiple points of entry • convenient and safe pedestrian access • non–traditional locations: roof tops, building facades or foyers
	amenities-activities	• individual sitting replacing bench • drinking fountains, bicycle racks, trash receptacles, etc. • playground, opportunities for sitting, and open, grassy areas • range of activities that will activate public space at all times • maximise the amount of seating. • opportunities for public art
	safety & maintenanc	• supervision and maintenance • well buffered from moving cars • equitable access • free from barriers to the street • reduce onerous maintenance requirements

The above tables form the basis for the survey questionnaire. While many possible design parameters were identified, it is clear that they could not all be included, therefore a selection of the ones considered to be the most important were used to form the final questionnaire.

SURVEY DESIGN

The questionnaires were presented as one A4 sheet divided into 5 sections (Figure 1). Section A of the questionnaire asks respondents specifically about the design of the park they are in. The questions were set up in an attempt to elicit the most important environmental factor contributing to the design of a successful park. The question asking respondents to rate the inclusion of trees and greenery was included as this was perceived by the researchers as likely to be very significant. Section B asks respondents generally about water features, artificial light at night and seating.

URBAN POCKET PARKS SURVEY

This is a survey undertaken by TEI of Athens and Craig Hamilton Architects in order to identify design issues in urban pocket parks.

A. Please tick the box that agrees most closely with your rating of this park.

	Excellent	Good	Neutral	Bad	Very Bad
1. How good is the design of this park?					
2. How adequate is the shade from direct sunlight?					
3. How adequate is shelter from the wind?					
4. How adequate is shelter from the rain?					
5. How adequate is of direct sunlight into the park?					
6. How adequate is shelter from traffic noise and city noise?					
7. How adequate is the inclusion of trees and green surfaces?					

B. How important are the following issues to you?

	Very Important	Important	Neutral	Unimportant	Very Unimportant
8. How important are water features?					
9. How important is artificial light at night time?					
10. How important is seating?					

C. Please circle any other of the following features you think are important

inclusion of a 'focal' point	inclusion of children's play equipment	outdoor gym equipment	public art	the inclusion of 'different' textures - i.e. paving, grass, gravel etc.	safety	maintenance

D. Please circle your age group and sex.

Age Group	16-24	25-34	35-44	45-54	55-64	Over 65
Sex		M			F	

Thank you for taking the time to fill in this questionnaire!

Time of day			
Weather	sunny	overcast	rainy

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Figure 1: The survey questionnaire

The questions for the first two parts of the survey are based on 5 point scales - for section A the rating is from Very Bad to Excellent, and for Section B from Very Unimportant to Very Important. Section C asks people to identify any other important features out of 7 possible options - including safety, maintenance and public art. Finally the survey asks for age group, sex, time of day and weather.

CASE STUDY PARKS

The surveys were carried out in two case study parks - Evangelismou-Rizari in Athens, Greece and Soho Square Park in London, UK. In Athens there are no existing well designed pocket parks that are used by the public. It is a new concept which has not yet been implemented in Greece, thus another small park was selected. It is located in the city centre and covers an area of 0.8 acres (Figure 2). It is relatively busy, which also made it feasible to collect a good number of questionnaires. It has extensive greenery, seating, rainwater permeable surfaces and several pathways. The survey was undertaken for a whole day and 87 responses were obtained.

Figure 2: Evangelismou-Rizari Park, Athens

Soho Square Park in London is located in the heart of Soho (Westminster), and has an area of approximately 0.89 acres (Figure 3). The park dates back to 1681 and has a distinctive half-timbered building at its centre, which serves both as a focal point and a gardener's hut. The park is accessed on all four sides from the surrounding streets. The park has large mature trees, grass, paved and planted areas, a large number of benches and ping pong tables for public use. It is well used which also made it a feasible choice for study. The survey was undertaken on 1 May 2013 and 121 responses were obtained.
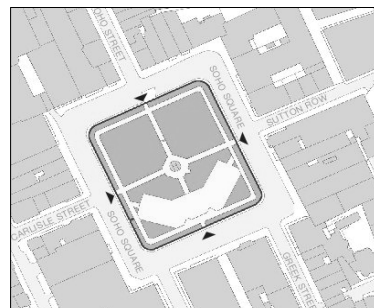

Figure 3: Soho Square Park, London (map reproduced from Westminster City Council)

The climate in Athens is typical Mediterranean, mild and rainy winters, relatively warm and dry summers and, generally, extended periods of sunshine throughout most of the year. In the summer the average maximum temperature stands at 35°C. The period receives a little rainfall and witnesses a great level of sunshine. July, which is the sunniest month, gets more than 345 hours of sunshine. Winter months from December to February, have generally mild temperatures, averaging between 8 and 10°C during most of the season, and a higher level of precipitation. London has a temperate climate with all four seasons and no extremes of temperature. During summer, from May until August, climate in the city remains somewhat hot and humid with the average temperature of 22°C. Autumn, on the other hand, receives pleasant temperatures with the average of 20°C. The wintry weather begins to appear in November and the winters are cold with frost on average twice a week from November to March. The average temperature during winter is 5°C, with the maximum and minimum being 7°C and 2°C respectively.

RESULTS

Section A: The survey results for Athens and London were analysed separately and together. When the results are analysed together, the data indicates that there are strong correlations between shade from sunlight, shelter from rain, direct sunlight, shelter from traffic noise, the inclusion of trees and green surfaces, and the rating of the design of the park (Table 4).

Table 4: Significance of Pearson Correlation for both London and Athens combined, where the environmental factors are used to predict the rating of the park design

Variable	Significance (1-tailed) $p<0.05$
Shade from sunlight	0.000
Shelter from rain	0.003
Direct sunlight into park	0.003
Shelter from traffic noise	0.019
Inclusion of trees and green surfaces	0.000

There were however some significant differences in response between the two locations, and therefore the results below are presented as split by location. The design of both of the case study parks were rated as 'good', with a mean rating of 1.2 for London and 1.1 for Athens (on a scale where 1 is defined as 'Good' and 2 is defined as 'Excellent'). The means of votes in Section A

for the two locations are presented in Figures 4 and 5 below. The most negative votes in both locations related to the adequacy of shelter from the rain. Athens also scored less well on shelter from noise.
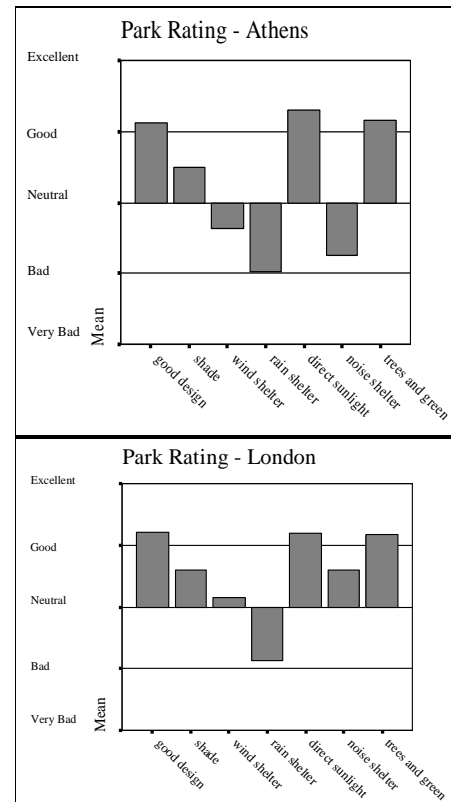

Figure 4&5: Mean rating for variables in Section A

Linear regression was used to predict factors influencing the rating of the design of the park in each location. A summary of these results is presented in Table 5. Although the R^2 values are low, the results are highly significant. This is typical of statistical analysis for survey data with discrete number scales.

Table 5: Results of linear regression on factors which predict the rating of the park in London and Athens.

Location	Variable	R^2 Value	Significance (1-tailed) $p<0.05$
London	Trees and green surfaces	0.101	0.000
Athens	Shade from sun	0.192	0.000

In London, the only significant predictor for the rating of the park is the inclusion of trees and green surfaces, while in Athens the only significant predictor is shade from sunlight.

Section B: With regard to the importance of water features, artificial lighting at night time and seating in both locations, the votes were positive for all factors. Figure 6 shows a bar chart of the mean votes. It is apparent that in both locations the least important feature is the inclusion of water features and the most important is seating.
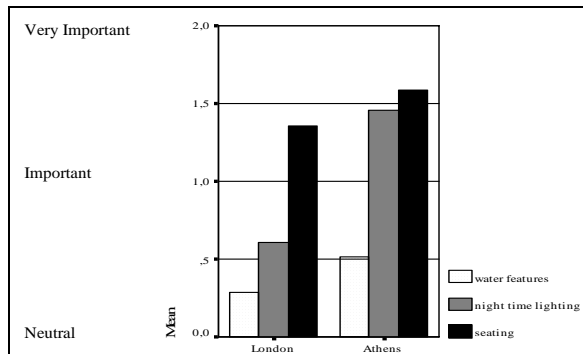

Figure 6: Mean rating for the importance of water features, artificial light at night, and seating - London and Athens. A vote of 0 is 'Neutral', 1 is 'Important' and 2 is 'Very Important'.

Section C: Of the seven qualitative features listed in Section C of the survey, the results showed that in Athens 'maintenance' and 'safety' were considered the most important features, and outdoor gym equipment was considered the least important. Similarly in London maintenance and safety were also considered the most important, however the inclusion of children's play equipment was the least important (Figures 7 & 8).

Using data from both locations, i.e. a total of 208 votes, the results for Section C are summarised in Figure 9, with maintenance, safety and the inclusion of public art being the three most important qualitative features.
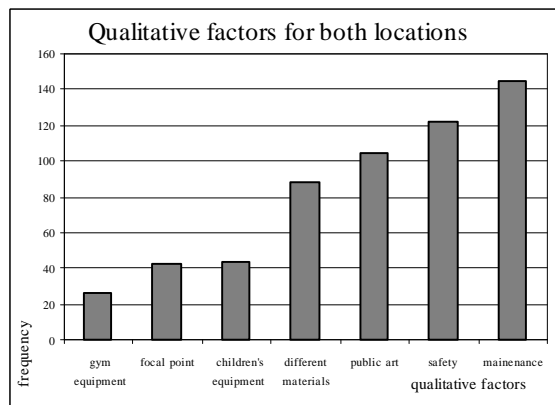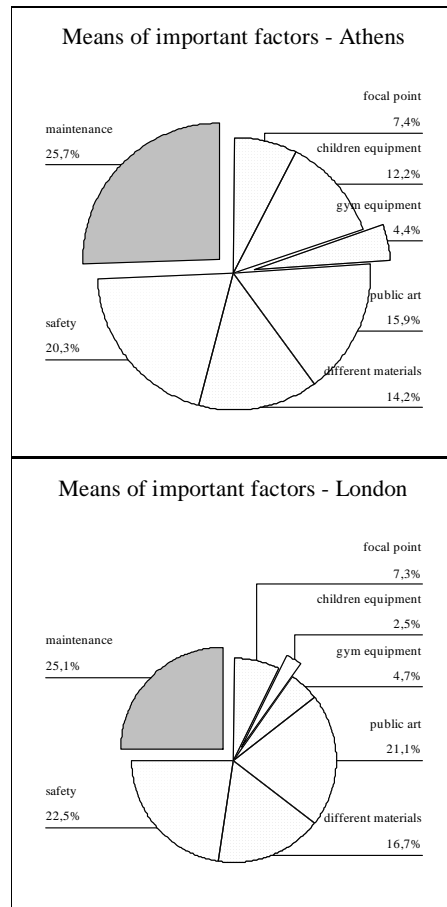

Figure 9: Frequency of qualitative design factors

Figures 7 & 8: Summary of votes for other features included in Section C of the survey

Given that maintenance was identified as the most important feature, it has been further analysed in relation to age group. A trend in both locations can be observed such that park maintenance becomes increasingly important with age (Figure 10).
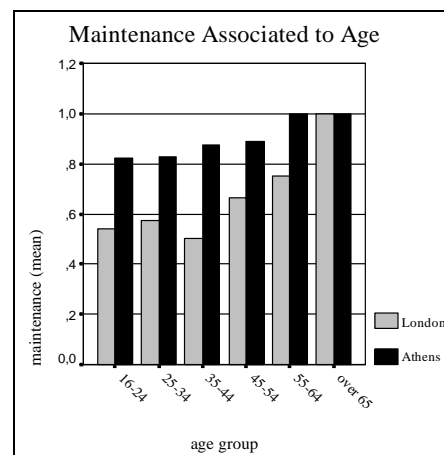

Figure 10: Summary of mean vote for maintenance by age group for London and Athens

Further analysis was undertaken with regard to the relationships between age and sex and the other parameters, but there were no results of interest with regard to this study.

DISCUSSION

The combined data provides different results to analysis of the separate locations for Section A. As these questions are chiefly the environmental ones we can conclude that the location and climate has a bearing on responses. The fact that people in Athens did not rate the inclusion of green as relevant to the rating of the park may be because the perception of a park is that it is by default a 'green' space. Outside of Section A, the trends in the data are very similar, suggesting that people in Athens and London have similar perceptions as to what a park 'should' be. This is fairly well represented by a scatter graph showing the mean votes for the whole survey compared between London and Athens (Figure 11). The main outlier on this graph is the mean vote in Athens for shelter from traffic and city noise, suggesting that the difference is down to location.
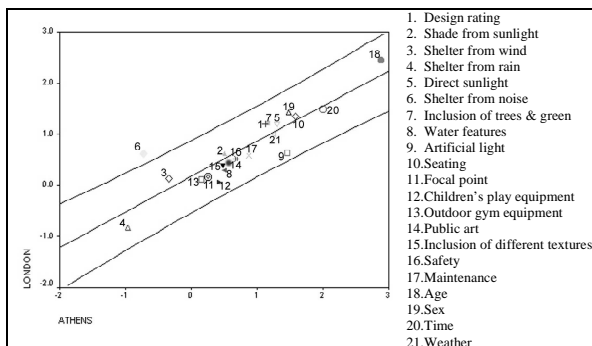

Figure 11: Scatter graph by location showing mean votes for all survey sections

CONCLUSION

This research set out to identify the parameters contributing to the design of a successful pocket park. Parameters thought to be significant were included in a short survey, which was undertaken in two small urban case-study parks in London and Athens.

Regression analysis of the survey results indicated that in London the most important factor for the design of a successful park was the **inclusion of trees and green surfaces**, while in Athens it is adequate **shade from the sun**. Given the extreme temperatures which can be experienced in Athens this is perhaps not surprising. With the data combined, **shade from sunlight, shelter from the rain, penetration of direct sunlight, shelter from traffic noise and inclusion of trees and green surfaces** were all significant factors

contributing to the design of a successful park. **Seating** was considered to be very important in both locations. Water features were not considered important in either location, however Athenians considered lighting at night to be particularly important. **Maintenance** and safety were rated highly in both London and Athens. Further analysis was undertaken regarding these parameters with relation to age group and sex and the most significant trend seems to be that the votes for maintenance rise as the age group rises. Children's play equipment was not considered important in either location, although this may be a factor affected by the location of the parks.

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