Evaluation and Optimization of Models' Priorities in Redesigning of Urban Parks in Semi-Mountainous Areas

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Abstract

With the growing trend for semi-natural spaces in urban areas, urban parks and the related social behaviors have been faced with more interest. However, the flaw in the original design, changes in the park field and variation in living standards level of users, causes situation that lead to some inappropriate performance functions of the parks or parks unable to provide optimal quality of these functions. The main objective of this study was to address these failings and to advance the cause, using problem solving method proposed in this social-architectural research. In this context, semi-mountainous areas parks, review as case studies due to the nature of subject and locating in the particular region in the country for evaluation the priority of redesigning principles.

To achieve this goal, redesigning in urban parks is defined and after studying worldwide experience and situation analysis, by using a qualitative evaluation in an urban park in Khoram-Abad, Arak and Hamadan, redesigning principles is proposed. The research method was descriptive-analytical and information collecting method have been taken by theoretical studies through library method and field studies including survey of the physical condition of the park and picked up a case study and statistical distribution of questionnaires among 224 presented persons in the park. The statistical analysis was performed on the responses of consumers by analysis program R and the frequency response is obtained. To assess the principles' priority of redesigning in the city's parks, the covariance was used.

The results show that the three principles: consideration to the union, linkage and coordination between the initial layout and redesigning plan of parks, optimizing the ecological functions of Park and optimizing social functions of Park through the relevant mechanisms should be in interest and commitment in redesigning parks of semi-mountainous areas.

Keywords: preference survey, optimal model, redesigning urban parks, semi-mountainous areas

1. Introduction

Urban sprawl, changing people lifestyle and apartment dwelling causes urban green spaces change to the necessary and thinkable issue. Cities that are located in the semi-mountainous areas are no exception and by the changes in the shape and texture of the lifestyle of residents, everyday, the amount of urban green space reduced. (Woudstra, 2000, p. 191) In the complex environment due to the construction and manipulation of human-caused, Adverse effects of environmental factors such as vegetation, water, light, land and was undeniable and with that every day more and more pollutants in urban life and the problems faced by patients, Green space, are effective in creating a beautiful, comfortable, air and noise filtration and etc. and finally create peace and relaxation situation to residents in environment. So urban parks act as an air pollution systems and greatly reduced the pollution caused by oil and other contaminants and are a filter to prevent noise nuisance to nearby residents.

In general, the design process has a cyclic process and reversible. In other hand, this process began from the point of creation and definition of the problem and continued to implementation level and then reach to the stage of project evaluation that can define a new problem which can be terminated. The park design process is not exempted from this matter, in the event the procedure of this process after evaluation can finish by defining the issue or present failures and then lead to some sort of redesigning or elimination of defects and failures in future.

(Aganj, 1997, p. 39) In evaluating a park after the operation, lack of an issue, and plans are defined. These failings, sometimes was formed due to the shortcomings of the original design or sometimes generated during operation and sometimes was formed due to changes in external conditions, such as social and environmental conditions. So the failing's incidence is inevitable in park due to the dynamic and continuous changes in context, it is done all the time and also because of the possible deficiencies in the original design; Hence the need to address these failings has always existed and no park will be in no need of it. (Bell, 2002, p. 103)

Overcome the deficiency of an urban park, often call as "reform" or "regeneration" and this subject is due to the necessity and importance and also due to lack of research and studies conducted on this issue is the one issue that must be addressed more. (Adams, 1991, p. 40) Due to the growing trend of urban parks in Iran, the issue of reform is one of the most valuable requirements for proper parks maintenance so that it can overcome the shortcomings of the design and modifying according to the requirements and needs of users and having better adapted to the environmental conditions (Majnooniyan, 1995, p. 12). However, the issue of the parks redesigning in the country shows that in most cases, the balance between ecological and social functions of is ignored and fixing deficiencies isn't proper done. This redesign process is done just by adding some functions and superficiality changes. So whole system of parks and the quality of its functions have been damaged and it endangers the health system (Hultsman, 1987, p. 83).

So the main research question focuses on the fact that what criteria and conditions for the optimal reform urban parks according to the needs of people who visit the park is recommended?

According to the redesigning of urban parks, based on the comments of Barlow et al. expression of the philosophy and principles of the original design of the park, is like a starting level on the design. (Barlow et al, 1987, p. 178) and then you need to investigate and understand the history of the park management and various parts of the park. In this research, to analyze the global success case studies, Central Park as seen in a historical perspective landscape. Barlow considered to the factors such as natural resources and many uses of the park as causes to damage and make deficiencies in the Park and he wants to redesign of various components contribute in the Park.

Wudstra and Fieldhouse in valuable research, considered to maintaining and improve the quality of British parks, especially historical parks in the country. Wudstra and Fieldhouse (2000, p. 203) and believed that Urban parks in the second half of the twentieth century have largely lost their users due to the lack of modern beauty, destruction and insecurity among changes in lifestyle and recreational activities for people in the vehicle entry. Based on this research, redesign as a means to enhance beauty and restore quality loss of the Old Park and related measures in relation to buildings, roads, vegetation, etc., will be examined.
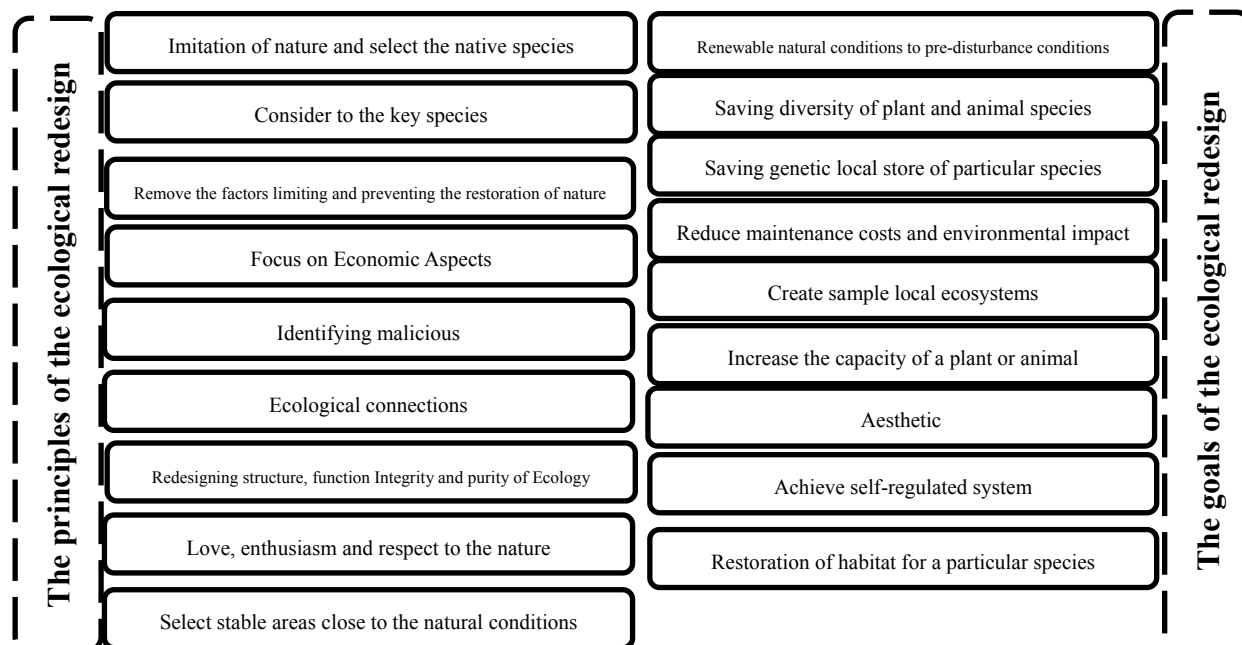
2. Redesigning of Urban Parks

Figure 1. Correspondence of principles and objectives of ecological redesign

Filor believes that in the subject of urban areas, the redesign has a long history (Filor, 1991, p. 111) and noticed that it was a reaction to the policies after World War II for Clearance and redevelopment of slums. In various resources has not been any references to the history of urban parks redesigning directly; but due to the fact that New York City Central Park was the first urban park in the history of the park landscaping, by historical view it could be accounted as the first activities on the redesigning of urban parks (Bell, 2002, p. 50).

3. Semi-mountainous Areas

Semi-mountainous areas where the city has narrow streets and slim design for better heat and prevent the exchange of heat and cold. Usually in this type of climate, biological complexes are located in the middle of the mountains and to the south and in the field or on the find due to raise heat capacity of the Northern frame walls and increase the internal volume than the outer surface. Climatic design in this area is based on the amount of low precipitation in summer and high in winter, despite abundant rainfall, humidity is low in this region. So the form of the building is designed and performed to withstand the extreme cold. In this climatic region buildings have dense plan and texture. The form must be such that the lower surface in contact with the outer cold air to less heat transfer from the inside to outside. Other features of buildings in these areas include small openings, relatively thick walls, flat roofs and stone used in the construction of building. (Pourmohammadi, 2003, p. 77) The urban and rural textures of this climatic areas is formed in order to cope with the extreme cold and have some characteristic such as dense and compact texture, small and enclosed spaces, gaining the sun light and the earth and narrow passageways directions parallel to the ground line.

Table 1. Analysis of the experiences of the complexes in a relation to the case studies

Parks Aspects of the redesign	Central Park	Bryant Park	Potternewton Park	Hatfield Road Park	Fort Greene Park
Social View	The consideration to the park furniture, park improvements accesses to attract more citizens	Improving accessibility and inviting fragrance park facilities such as restaurants, rest areas and seating to attract more people to the park	Development of modern sports facilities and several playgrounds to attract young people to the park, restore parks gathering spaces	Create new seating areas along wooded streets, the removal of existing metal fence to create a link between the park and surrounding area	Renovation of places to sit with a pergola creating, improving visitor center, and creating incentives to attract more people to the park
Cultural View	– – –	Reconstruction of the cultural view of the Park, library, and other spaces for reinforcement of the cultural dimension of the Park	– – –	– – –	– – –
Historical View	Investigation and reconstruction of historic buildings, address the historical significance of the bridge in park	Redesign primitive layout in accordance with the original design of the park in French style	– – –	– – –	Introduced this park as the one have the concept of a ship's as a memorial of the historic jail, re-landscaping plans to close the park landscape to the Olmsted and Vaux plans as the primary designers
Climatic &	Restore the	– – –	The use of plants as a	Planting around 20	– – –

Parks Aspects of the redesign	Central Park	Bryant Park	Potternewton Park	Hatfield Road Park	Fort Greene Park
Ecological View	ecological health in non-native plant species in forest colonies in the park		carminative, hardwood trees to create shade in areas with intense sun exposure faced, dealing with drainage problems in parts of the park	semi-mature tree new vertices to complete the planting of trees, planting of 2,000, shrubs and bushes of various species to create vegetation.	
Economic View	---	---	Effective use of recycled materials such as telegraph poles and railway wagons on hard surfaces playground design	---	Making income and use of income from the visitors center at the park for reform process
Aesthetic View	Lakes Edge reconstruction in order to establish the park's natural attractions, the reconstructed old bridge that has aesthetic value	Improving the lighting in the park and create beautiful effects of light on plants	---	Beautification of nearby parks' trails by wood timbers, complete the planting of new trees in the park using a variety of colors, eliminating the points that had been occupied by construction and demolition wastes.	Rebuild and reinstall the bronze statue that has aesthetic value, redesigns open platform and watch monomer include improved lighting system of the monomer
Recreational View	---	---	Replacing playground toys including tubs with a variety of modern and adding new toys such as swing and merry-go-round, the construction of a football field surrounded by walls.	Applying modern toys (as the design view) and create an asphalt space to play and with the walls for playing with balls	---
Immunization View	Flooring reconstruction and edge directions for secure park's spaces, creating greater safety shields around the lake	Create a visual relationship between the inside and outside of the park and removing the remote areas of the park that was a gathering place for the delinquents.	Renovation shelters were destroyed in the course of insecurity in the park, which was invaded by the wind, renovated playground with soft flooring to prevent possible damage to the playground	Asphalt roads sloppy and unsafe park due to heavy use, the complete destruction seen in them, removes outliers, and outliers in the park	---

4. Analysis of Case Studies

In selecting the case studies the following points was considered:

1- Due to the aims of this research (redesigning in the semi-mountainous region) case studies was selected in three different cities that have semi-mountainous region of Khorramabad, Arak and Hamadan. (The case study in Hamadan selected because the park was in the semi-mountainous). 2- According to the principles of urban hierarchy, clear and synchronized case studies at cities in the semi-mountainous part of the country was selected. 3- Since the criteria to achieve the main objectives of this study was the redesigning of urban parks, it was tried to choose "designed parks "to as case studies. 4- In selecting case studies tried to select a park that is located in

the center of the social and cultural zone of the city and depicted most of the users in all age groups and different cultural segments.

4.1 Park-e-Moalem, Khorram Abad

This park is located in the city of khorram abad, Capital of Lorestan province and was stablished at 1987. The park covers an area of 31,630 hectares and has the basic Eastern-Western Axis and the length to width ratio is 3 to 1. The park is surrounded by residential complexes at west and Northern, southern and eastern streets and on the south of the park overlooking the river of Khorram Abad.

Figure 2. Master Plan and the internal view of the Park-e-Moalem, Khorram Abad

4.2 Park-e-Mardom, Hamadan

This park was established at 1973, covers an area of 139160 Sq.m and is located in the semi-mountainous climate in Hamadan. This park (Lona Park, the old name) is located at the western side of Hamadan and in front of the Bu-Ali Sina University, and is one of the oldest parks in the city. Because of the play area and play equipment and locating of the park near the University of Bu-Ali Sina, It can be said that children and young people and families are the largest users group of the park. The park is used during the three periods, morning and noon by students and youth, children and families in the afternoon and evening until late at night by family groups. In this part of the city, approximately was allocated 23,684 Sq.m to the flowering, 100,700 to the grassing with multiple species trees and 231 Sq.m was allocated to the rose farming and ornamental trees.

The area of passageways was 13956 Sq.m, Hedge area 580 Sq.m and the number of trees is 1985.
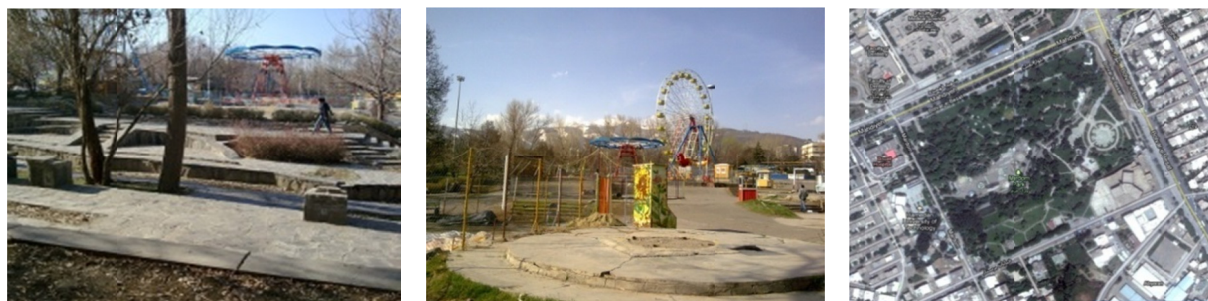

Figure 3. Master Plan and the internal view of the Park-e-Mardom, Hamadan

4.3 Park-e-Azadi, Arak

This park was established at three phases, 1st at 1993, 2nd at 1995 & 3rd at 1997 and covers an area of 12 hectares. According to the Park area, it can be said that although this park was surrounded by the sound pollution around the neighborhood streets but somehow play an effective role in reducing air pollution in that zone of the city. Access to the park, facilitate from the adjacent streets and squares. Although the park has no restriction and just separated by sidewalks and planting trees in regular and irregular mode from the adjacent streets but has the main entrance in southern side and secondary entrance in northern side. Per capita usage of the park is 40 percent by including of all groups of students as total weekdays except holidays for studying at park's library. Approximately park is used by children and teenagers in the early morning hours and families in the evening for

using sport equipment. Access to the park makes the park in all seasons, useful especially in spring and summer for the entire family from morning to night. Park irrigation is possible by wells and allocated 50 percent of area to the green spaces as 18130 Sq.m for trees, 1510 Sq.m to flowers, 44025 Sq.m to grass, 3910 Sq.m to playground and 1235 Sq.m to general and special libraries.

Figure 4. Master Plan and the internal view of the Park-e-Azadi, Arak

Table 2. Analysis of large urban areas of application definition of case studies

Analytical topics		Recreational	Ecological	Service	Social	Economical
Field position in the park	Moalem	lack of recreational zone Except playground in the East	Whole of the park	Northern & Western edge	Outspread in park	Eastern edge
	Mardom	Eastern edge	Center of the park near main pool	Southern edge	Green space is widely used in the park	Eastern edge
	Azadi	In Eastern edge and western side	Northern Side	Almost center of the park	Green space is widely used in the park	Southern side near to the center and western side
The factors influencing the shape-making	Moalem	Meet the needs of children and adults	Creating a green space in the heart of the city	Restricted to the primitive requirements	Free background check	Urban Requirements
	Mardom	Providing the financial budget needs of a park	Need space for gathering and social interaction	Providing the service needs of a park	Essential elements of water and trees to create a park.	According to the recreational needs of park use among the general population
	Azadi	Providing part of the financial budget of a park	According to the needs of children, adolescents and young people as part of the users in the park	Providing the minimum service needs of a park	Trees and green spaces are the key elements to create the park	According to the recreational needs of park use among the general population
Sub Spaces	Moalem	Children Playground	Fountain near center of the park, trees and vegetation species	Restroom	Seating spaces and platforms	Store near the playground
	Mardom	Tiny stores and playground	Main Square Park in interaction with green spaces	Restroom & praying room	Fountain, trees and vegetation species	Playground
	Azadi	Tiny stores and playground	Public and special libraries	Restroom	Trees and plant species	Playgrounds for children and

Analytical topics		Recreational	Ecological	Service	Social	Economical
			as well as the Institute for Intellectual Development of Children and Adolescents			adults
Index of fields	Moalem	Failure to use the proper flooring in children's play field	The use of natural stone in the western part of stairs and using a variety of trees and plants	No element of service	Limited seating areas and communities that have been scattered in the park	Playground
	Mardom	Short stairs in recreational spaces	Pond and fountain in its center, in coordination with other components	Children's play equipment and park furniture and stone stairs and pathways circle	Create an axis and sense of public movement-based	Limited booth in the park
	Azadi	Recreation facilities at the park	Various forms of landscaping and vegetation	Restroom & praying room	Green space is widely seen in the park.	The use of child's play facilities and adult sports
Relation to the adjacent scopes	Moalem	Sporadically located outspread in the park.	Kio fairly large lake in the center, Fish lake in the south, the other artificial lake in the west	Restroom & praying room are located at the west and north of the park	Fish Lake is located in the north and west of park	Park edges
	Mardom	Buffet close to the playground	Main Square of the Park is located in the center of the park.	Praying room close to the restroom	A Fountain is located in the park's main entrance and the other in the middle of the main square, green spaces are located around all the spaces.	Playground close to the buffet, restrooms and approximately away from the entrance
	Azadi	Playground is located on the west side of the buffet and restrooms separate from other spaces and acts independently.	Libraries and the Center for Intellectual Development of Children and Adolescents, on the north side adjacent to locate a suitable and independent act.	The area near the center of the park and no direct relationship with any of the functional areas.	Green spaces are located all around.	Children and adults playground in the vicinity of each other and the police station is not far.
Restriction	Moalem	restricted	No fence	restricted	No fence	No fence
	Mardom	Playground is enclosed by a fence.	No fence and completely open to the surrounding environment	Restrooms have been enclosed with walls.	Restricted by stone edge	Use the Fence
	Azadi	Playground is enclosed by a fence.	Libraries and Intellectual Development Association are enclosed by walls.	Restrooms have been enclosed with walls.	No definition of a fence	No fence in child's play ground and adults sports field

Table 3. Analysis of landscaping elements in the Park area for case studies

| Case Studies | Furniture | | Architecture Building | | Flooring | | Presence of Water | | Plant Species | | Index Element |
	Function	Material	Material	Function	Function	Material	Function	Dominant Form	Planting Geometry	Form	
Park-e-Moalem	Benches, Waste Bins, Lights	Metal, Concrete	Metal, Wood, Concrete	Toilets and entry sporadic stands no identity	Definition of levels, uniformity and lack of variation	Concrete blocks	Boating, Decorating	Pool, Waterfront, rectangular	Scattered and fragmented	Flat and elongated	Merely the bird statue in the center of the stone
Park-e-Mardom	Lights, Benches	Metal	Brick, Metal, Wood, Stone	Toilets and play space for children	The hardness, strength and good eye appeal is limited	Precast concrete, concrete flooring, stone	The Visual charm of the original Square Park and at the beginning of the entrance	Rectangular and circular pools, Linear streams	Scattered and lacks the geometric order, Along the paths of pine plants	Flat, fitted and have been pruning the bushes, Cone and bangs	Statue in South of Park
Park-e-Azadi	Lights, Benches	Iron Leg by Aluminum & Metal Caps	Steel structure with a brick and glass facade	Toilets, Buffet, Library, Center for Intellectual Development of Children, park	Just function of unconforming transmission	Asphalt	----	----	In most such blocks scattered and no particular order	Flat and shrub pruning and fringe trees	Bower, Playgrounds

5. Discussion and Research Findings

5.1 Research Methodology

In this Research Applied type was used and the methods of research was descriptive-analytical by utilizing the resources and historical works of the type of selecting case study as well as the correlation method to explore the relationship between two variables (Conceptual-functional dimensions of park and Redesigning and Optimizing strategies of Park). In this study, data were gathered through a theoretical studies including library techniques, Field studies including the study and picked up a physical condition, and landscaping the case studies and software analysis. The main objective of this study was to investigate and determine the optimal patterns of preference in an open urban park redesign for semi mountainous areas. Urban sprawl, changing people lifestyle and apartment dwelling causes urban green spaces change to the necessary and thinkable issue. Therefore, at the first the need to review, study and redesign of urban parks as the main issue of the presence of nature in urban spaces is important in promoting more their role in the lives of the citizens. The present statistical analysis of this article was done R statistical programming software. Qualitative data were collected with the survey by questionnaire (at the same time in all three parks) and view the behavioral patterns, and status of the. Perception and expectations of individuals achieved by surveys and at the same time outward characteristics and type of activity that has been recorded. Based on this, at first, conceptual dimensions reviewed by the interaction of analytical points of case studies and analysis of landscaping elements in case studies by using appropriate tables. To check the level of users' satisfaction of the landscaping elements in the Park and assess compliance, it is also the appropriate table and the average and variance of the rate of compliance of these factors by assessing the percentage frequency of responses were evaluated. To assess the principles' priority of redesigning in the city's parks, the covariance was used. Finally have been brought details of the principles of redesigning in the semi-mountainous areas in the conclusion section.

5.2 Statistical Society

The population characteristics assessed is based on individual characteristics, morphological characteristics, expected activities, frequency and duration before coming to the park. These properties have been registered on the basis of a questionnaire or observation of the researcher. The population characteristics including gender, age grouping and statistical analysis was performed for 224 people and the data shows that more than half of the assessed people was young and gender distribution relative to the normal extrusion. 59% of population have the college certification. In total, 53% of people were studying in different levels of education (university and high

school). 66.5% of people living with their parents and only 4.2% of people living alone.

Table 4. Characteristics of job, education, family and residential of statistical society

Education	Under Diploma	High school graduation	Bachelor	Master	Ph.D
Percentage	18.5	30.7	47.6	5.8	1.3
Employment Status	Employed	On studying	Retired	Unemployed	Housewife
Percentage	24.6	49.4	9.9	10.3	6.4
Family Status	Alone	Spouse	Spouse & Children	By Parents	By Friends
Percentage	4.2	15.4	19.3	66.5	2.6
Duration of dwelling in the city	5-15	15-20	20-25	25-30	More than 30
Percentage	14	20	22	14	17

Evaluation findings to the desired activity, and frequency of attendance at the parks show that more than 50% of people have the specified planning to attend weekly or monthly or daily in parks and nearly 50% of people choose parks for activities that require peace and comfort. Conclusion activities expected of park users indicate that 43% of people engaged in a conversation with another person in the park and 16% was studying and 12% did sport activities. Assessment activity showed that overall 94% was going to use the space and park.

Table 5. Evaluation of user satisfaction of landscaping elements in the Parks and assessment of compliance through the measurement of percentage of frequency of responses

Elements	Components	Evaluation of the satisfaction of parks' elements				Satisfaction (%)			
		Undesirable	Medium	Relatively Desirable	Desirable	Bad	Medium	Good	Excellent
Park Furniture	Benches		*			17	40	27	16
	Bins		*			19	36	24	21
	Signs				*	28	22	36	14
	Lights		*			20	43	25	12
	Pavements		*			11	62	23	4
	Innovation in design tools		*			19	28	39	14
	Green space & Water			*		8	31	41	20
	Design of Green space & Water		*			32	39	23	6
Cultural Facilities	Library	*				25	30	28	16
	Trade	*				41	21	29	9
	Theater	*				39	21	31	9
	Press desk sale		*			28	35	24	13
	Holding the cultural competition		*			19	42	22	17
Service Facilities	Toilets			*		20	23	36	21
	Pray Room				*	17	20	41	22
	Buffet &		*			34	44	19	3

Elements	Components	Evaluation of the satisfaction of parks' elements				Satisfaction (%)			
		Undesirable	Medium	Relatively Desirable	Desirable	Bad	Medium	Good	Excellent
	Restaurant								
	Information Office		*			19	40	22	19
	The initial assistance office	*				97	3	0	0
Playgrounds	Group of Playgrounds			*		8	16	37	39
Play Instruments	Group of Play Instruments		*			11	47	24	18
Visual symptoms	The pattern and characters		*			6	11	38	25
Security	All pros		*			7	47	31	15
	Social-Cultural				*	10	27	34	29
Safety	Play Instruments		*			17	37	30	16
	Safety of welfare facilities		*			25	38	22	15
Park Locating	A total of conditions			*		19	25	43	13
Park Accessing	Keeping a close and displacement			*		10	32	41	17

The above table shows that park furniture is evaluated in the two medium level (Benches, Bins, Lights, Pavement, and Green space design) or Relatively Desirable (Signs, Innovation in design tools, Green space & Water). Conclusions indicated that however green space and water, was adequately and relatively desirable in the three parks, but the majority of users are not satisfied with the design and organization of space so that 39% of people considered fells conditions medium and 32% average considered undesirable. As was mentioned before, there was no unique path in the park; totally the overall design of the park is irregular and in some sections there is a lack of coordination. In other words, the design of the park, far from being consistent with the criteria of Persian Garden, has used forms and principles of the West and the Far East schools. Studies table shows the park in terms of cultural facilities was not in optimal condition and given that most visitors to the parks were cultural students therefore, the cultural features of the park include the amphitheater, library, etc. should be improved. Park Service facilities, including rooms and bathrooms are relatively desirable. Buffet and Information Office of Park estimated medium while aid office was undesirable, basically, like many of our other parks, a place for first aid is not considered. Given the number of playgrounds in the park this index was desirable. Visual symptoms were assessed as medium, so this shows that there are multiple visual patterns and signs in the park, especially on the northern side which is the sculpture garden. Totally security estimated medium while socio-cultural security was desirable. This condition demonstrates the presence of social and cultural layer inside the park. Like many case study of parks safety, play tools and welfare facilities estimated medium and locating and access to park estimated relatively desirable that this condition shows that there is some need to park at this location and getting access to it has little problem. Only if you find a solution for the problem of traffic and noise pollution in the surrounding commuter routes considered, more citizens can attract into the park.

5.3 Covariance

In statistics, the covariance indicates the changes of two variables. In other words, the covariance is a measure for the change of one variable to another one. By considering to the covariance formula can be said that the covariance is effected by the data distribution for each variable. As two random variables are independent, their covariance is zero. Overall, we use the correlation coefficient for the distribution of the variable used to describe

the relationship between two variables. In the present study covariance parameters can be used to explore the relationship between the two variables (Functional-conceptual aspects of the park and strategies for redesign and optimization of the park)

Table 6. The correlation function of the park as dependent variables and strategies for redesign and optimization of the park as independent variables in semi-mountainous areas

The correlation coefficient	Recreational	Ecology	Service	Social	Economic
Consideration to the unity, linking and coordinating with the first layout and redesign plan of Park	0.889	0.949	0.844	0.953	0.906
Optimizing the ecological functions of Park	0.929	0.984	0.805	0.832	0.911
Optimizing the social functions of Park	0.966	0.847	0.912	0.976	0.890

As shown in the table above, average of the highest correlation in all three park is depend on the ecological dimension and optimize functions. So User typical in semi-mountainous areas recognize that natural things, plants, water, and topography have the main role in the success of the park than anything. The minimum one was service dimension but due to the correlation of 0.805 it was so important. Obviously, correlation coefficients close to 1 in all variables showed a relationship between dependent and independent variables are interconnected and dependent on each other.

6. Conclusion

Fundamental principles with regard to the reform of urban parks in mountainous areas of priority

The first principle: pay attention to unity, and coordination between the primary plans of the Parks with redesigning through:

- Given the layers of time in the park plan and Coordinating redesigning plan and preliminary plan in the context of semi-mountainous region

- The constituent elements of the Park according to the type, quality and location of their initial plan, In order to harmonize them with redesigning plans

- Given the connections between elements and Prevent interference in their redesigning plans according to climatic conditions, climatic and natural region and the necessity of a deep attention to cognitive elements fitted canvas

The second principle: Optimizing the ecological functions of Park through

- Use of native and adapted plant species and environmental conditions in semi-mountainous region

- Surface water circulation dropping water cycle in the Park and its reuse

- The selection and use of Canvas materials and due to their durability and non-thermic and also Permeability items such as the floor of the building in relation to surface water

- Pay attention to soil cover to prevent leaching, especially in land with slope in this region

- Due to the slope of the selection and establishment of plant species

- The use of plants to reduce pollution and dust

The third principle: Optimizing the social functions of Park through

- Quantitative and qualitative improvement of all functions of Park (recreational, cultural, academic, sporting and service) aims to meet the needs of different users.

- The appropriate distribution of functions at the level of the Park and to pay attention to the appropriateness of the relationship among them

- Due to the physical safety and social security of the park to attract users.

- Appropriate use of the park for ease of use by disabled and low-power groups such as the handicaps and elderly

- Readability of the park and increase of the invitation in entrances to attract more users

6.1 The Parameters and Conditions of Urban Park Redesigning

- The majority of the citizens don't have satisfaction of the quality of the parks' furniture such as benches, trashes and Lighting base. In fact, the same components are connected in series and produced in the factory and use in the parks, if special and unique elements use in redesigning of the parks, without a doubt, the effect will be better in the citizen satisfaction.

- The form and material of pavement, Observance of the variation due to different location and use of the Park, Optimal quality to cope with vandalism and due to the different segments in the Park of are from the cases that need more attention. For example, pay attention to the safety and welfare of the physically disabled, elderly, children and pregnant women, is directly related to the type and quality of pavements.

- Landscape design and water is basically all of the important characteristics and features that affect the park. Qualitative evaluation of case samples showed the Park which intended to a unique and specific axis in their design and avoids disorder and confusion, as much as possible or in the other word was fitted with the geometric design of the Iranian garden, are more welcomed by the users. Therefore, in redesigning of the parks, a unique axis which interferes with the sub axis and divides the park to 4 parts, is strongly recommended.

- Due to the size and proportion of trees in conjunction with dimensions of the places where they are planted, is from the other important notes. In order to prevent planting of large trees in small spaces or narrow pathways. Also it must be pay attention to the color of the trees and their variety at the time of planting.

- Parks qualitative evaluation showed that most of the parks are not suitable in terms of cultural facilities, such as library and amphitheater and usually located far from the public eye and in isolation. In addition, the majority of citizens are demanding improved conditions for holding libraries also cultural programs and competitions in the amphitheaters, Therefore, in the redesigning of the Parks, assign a part of the park to services and cultural facilities are proposed. So. Places like libraries and amphitheaters remove from the far situations and are more exposed; so the citizens are more attracted to use the cultural facilities.

- To attract more kids and teenagers to the park, Special regard to the establishment of cultural-artistic exhibitions so that has free access to the public and in all seasons should be enabled to continue its activity (In terms the climatic conditions like wind, rain and sunshine have no effect on the function of exhibition)

- If the design of buildings, including a pray room, a buffet restaurant and other service areas associated with innovation and build by various colors and materials, can play a basic role to attract citizens.

- Since the park is a set of parts and different spaces that require relationship and a reasonable balance between each other appropriate distribution and reasonable relationship between them is recommended in the redesign of the park. For example, amusement and recreation facilities gathered in one place, resulting in congestion and overcrowding in some other parts of the park will remain parked and abandoned.

- It is recommended to build up specific space in the park as a primitive aid office to provide essential services to the visitors of the park. Notably, in developed countries such spaces are one of the integral and important areas of urban parks while such a primarily situation is not considered in the country's designed parks.

- Qualitative evaluation shows that in the majority of parks, citizens are not satisfied with the performance of Parks' information office. Almost In all the parks the building guard space is integrated with information office so guard function is important than the information aspect. So designing one of this independent spaces as an information office in the parks is recommended for presenting comprehensive information about the history, features, pictures and etc. to the visitors.

- Qualitative evaluation shows that the majority of clients want to improve the quality and variety of play tools and playgrounds in the parks. So playgrounds should be built according to the needs of different age groups and in redesign of the parks attempt to improve the quality and quantity of play grounds and tools

- Visual symptoms, including frameworks, and statues of famous personalities can improve the richness of the park cultural aspect. So placing statues and sculptures in certain parts of the park is suggested like along the main pathways, plaza and points, near the park entrance, etc.

- Qualitative evaluation shows that from the view of citizens there is no security at the most parks and obviously women and children suffer more than men from a lack of security in the parks. In general, women use and visit parks by family whereas men are more likely to use parks for social encounters

outside the primary and family relationship. So the issue of the lack of security for women than it is to understand their personal safety related to the security of family and children. So in the redesign of parks always have to pay more attention to the security of vulnerable groups in society including women and children.

- To improve security, parks should be designed to avoid create cozy spaces, the defenseless and the remote control. Private space in the park can be built in a subset of the larger public spaces so that the spaces are not defenseless and totally deserted. The proportional distribution facilities in the park (as was mentioned earlier) can improve the safety of the park.

- Facilities should be given to the human dimension, and man-made standards of safety and comfort and have the high quality materials and strict enforcement. Safety, children's playground and children's toys should be improved according to architectural standards.

- Positioning is important in park, if the park is properly chosen, location of that will attract more people to the park and the social aspect will be improved. As previously mentioned, a suitable site for construction of a park, should have the main criteria of centrality, hierarchy and access to be considered.

- Another noteworthy principles in redesigning of urban parks in semi-mountainous areas, to address the following issues: Due to the expansion of the urban tissue around the park, Many problems such as air pollution and noise pollution, Access to park problems due to the expansion and construction of street and highway construction around it, The loss of the center of Park City due to uncontrolled growth, Noncompliance of the Park's hierarchy of functional structures with spatial mismatch of City. Some of these remedies in order to address the above problems as follows:

  - Conversion some roadway around the site to walkways

  - Planting trees with a dense canopy at the interface between the crowded streets and parks

  - Demolish Slums buildings in the vicinity of the site (buildings that were built without legal permits).

  - Remove unnecessary applications and move them to another location in the vicinity of the site.

  - Designing a green and water routes and minimum width of 3 meters in the area surrounding the park.

  - Parks Interaction with urban public space and attract people into the park.

  - The park should be designed as a limitless and changing some of the paths around the park site to the green path.

Acknowledgments

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