

Scenic Landscape Quality and Recreational Activities in Natural Forest Parks, Iran

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ABSTRACT: One of the problems in forest park management, planning, and design is the tendency to consider recreation independent from aesthetic preferences and ecological objectives. This paper presents the findings of an examination of recreational activities in relation to aesthetics and ecological potentials in Siangtan Forest Park in Iran. Although protected areas constitute most of this 591 ha park, it is the most popular forest park in Iran with a high number of visitors annually. The study consists of two main sub-studies: discovering the users' aesthetic preferences based on two different techniques of visual and verbal assessments, and finding users' recreational activities according to a questionnaire and an observation study. The results showed considerable difference between places preferred for activities and those valued for scenic beauty. Moreover concentrated recreational activities often happen in places other than what has been predicted and designed for. The study also reveals that the judgments about forest parks depended on the method of assessment.

Key words: User's preferences, Aesthetics, Recreational activities, Ecological potential, Sisangan Forest Park, Iran

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INTRODUCTION

Over the last three decades, specific policies and action plans have been developed for the management and the protection of the forests in Iran. However, some policy plans were not implemented at all or implemented incompletely. Those performed, were concentrated on more easily quantified ecological and socioeconomic criteria (Majnonian, 1995), neglecting public preferences and acceptance issues. Changing forestry to a more multiple use concept came to attention in the beginning of the 1990s. However, only a small section of forests were designated as natural forest parks (Mosadegh, 1994). The increase in invader species such as hawthorn, and the compacted soils in dense recreational areas reveal the ecological disturbances of forests parks, mostly in the Hyrcanian region. Comprehensive protection planning in these forests should be aware of the main factors that cause environmental damages. It therefore seems necessary to gain the forest park users' support for their protection. People's preferences on the aesthetic quality and the place of recreational activities have been

considered as a means of achieving sustainable forest management in many studies and conferences.

Although the aesthetic criteria of forest landscapes are somewhat clear, they vary according to site conditions and the method of assessment (Daniel, *et al.*, 1977; Benson & Ulrich, 1981; Kellomaki & Savolainen, 1984; Brown & Daniel, 1986; Gobster, 1999). The aesthetic assessment of forest scenery have generally achieved high levels of reliability by the public perception based approaches rather than expert analysis (Ribe, 1989; Kaplan & Kaplan, 1989; Korpela, 1995; Daniel, 2001). Clay and Daniel (2000), for example, showed that two landscape variables of portion of meadow and proportion of road in the scene had important effects on viewer preferences; and that management jurisdiction affected public perceptions of scenic beauty in forests of southern Utah. Many other variables may be involved in the definition of such areas such as the quality and quantity of land use, the way it is managed/ designed, and the contextual variations.

In addition of aesthetic quality, recreation is an important factor in forest park management. It includes among other things, exercise, social contacts, experiences of nature, and aesthetic pleasure (Rydberg, *et al.*, 1999). Some studies show the relation between visual character and the overall quality of a tourist /recreational experience (Daniel and Vining, 1983).

In a forest park, however, the aesthetic quality may not be a key factor in all forms of recreational activities (Pukkala, *et al.*, 1988); for example, a clear-cut area may have a high recreational value even though the scenic beauty is not appreciated. The study conducted by Tahvanainen (2001) addressed the effects of different forest and landscape management measures on scenic beauty and recreational values by using two different evaluation methods of visual and verbal analysis. The study showed that the preconceptions concerning different silvicultural measures did not consistently correspond to visual perceptions. In addition, the result of this study showed that demographic status influenced valuations to a greater extent when preferences were examined through verbal questions rather than visual presentation. This shows that the method of assessment influences the results.

In line with the previously discussed studies, the main objectives of this study are:

- To study people's aesthetics preferences in Sisangan forest park with varying degrees of human influence (wild, designed, intermediate) and to find out whether relative preferences vary between different demographic groups.
- To study people's recreational preferences for wild and designed landscapes and to investigate the relationship between recreational activities and the ecological potential of the park.
- To investigate whether aesthetic and recreational preferences for wild and designed forest landscape are influenced by the way these preferences are assessed (visual vs. textual in aesthetic preferences and stated vs. revealed in recreational preferences).
- To study similarities and differences between aesthetic preferences and recreational activities.

Mazandaran (the area of study) is the biggest province between the three Northern provinces of Iran with a total area estimated at 965,000 ha of broadleaf forests. The 11 forest parks of this area total an area of 5,494 ha. One of the popular forest parks in this area is Sisangan, situated in the Hyrcanian region, west of Mazandaran and about 210 km north of Tehran. The Hyrcanian (Caspian)

forests belong to the broadleaf deciduous biome, and are among the most unique and splendid biomes of the world (Sharifi, 1998).

Sisangan forest park represents a valuable reservoir due to holding rare species. This Caspian forest park has high moisture content, and consists of many well-known communities, the most important *Quercus-buxetum*, which starts from -26 m altitude at sea level and extends up to 125 m towards mountain forests. The flat terrain (0% to 5%) has led to a domination of closed views. Currently, the main human uses of the park consist of different scattered and concentrated recreational activities such as picnicking, camping, walking, and horse riding.

MATERIALS & METHODS

The research consisted of two main sub-studies: users' aesthetic and recreational preferences. Prior to any assessments, an initial field study was carried out by the authors. The purpose of this field study was to facilitate the subsequent assessments. Three different types, classified as type A: the designed landscape; type B: the wild landscape; and type C: the intermediate landscape (Table 1). They were defined based on exploration of human influence on the forest and visual and environmental characteristics such as density, composition, and types of plants; slopes; seasonal changes; open spaces; facilities; park furniture and visibility of the area. To offer valid indications of landscape aesthetic quality, two assessment methods of visual and textual were used. Images, mainly photographs, have been used as visual surrogates of the real landscape (Schuttleworth, 1980; Uzzle, 1991). Computer graphics are also playing an important role in giving lifelike information for estimation of landscapes after finishing large-scale construction projects. However, how to create vivid photo-realistic images based on exact geometry and optical phenomena is still an essential issue (Nakamae, *et al.*, 2001). To predict the impacts of the project, photo-montage is applied before construction of the project. As the evaluation of the actual views and conditions seen in the field was already concerned, and the area for concentrated recreation designed in this research, photographic representation technique was selected in assessing scenic quality. One of the applied techniques in photographs assessment is "quality sorting". In a Q-sort, respondents sort images according to a specific instruction. Zube *et al* (1974, 1975) used this method to assess scenic values.

Table 1. Landscape types of Sisangan Forest Park

Landscape Type	A: Designed Landscape	B: Wild Landscape	C: Intermediate Landscape
Natural Factors	<ul style="list-style-type: none"> - Slope: 0-5 % - Soil type: brown forest - Plant coverage: single - Density: 40-60 %* - Dominant species: Carpinus betulus, Quercus Sp, Acer laetum - Cluster of single old deciduous trees with parallel trunks and wide crowns - No rise and falls 	<ul style="list-style-type: none"> - Slope: 0-5 % - Soil type: brown forest - Plant coverage: multi-level - Density*: 70-100 % - Dominant species : Quercus Sp, Buxus hircana, Rubus persicus, Gleditschia caspica - Cluster of dense plants - Dense under storey - No rise and falls - Seasonal change not sensible due to presence of evergreen plants 	<ul style="list-style-type: none"> - Slope: 5-10 % - Soil type: brown forest - Plant coverage: multi-level - Density*: 20-60 % - Dominant species : Quercus Sp, Zelkova Carpinifolia, Buxus hircana - Semi-dense cluster of various trees - Topographic changes - Signs of recreational use by people - Seasonal changes not sensible due to presence of evergreen plants
Man-made Factors	<ul style="list-style-type: none"> - A collection of different types of facilities (camps, restaurants, etc.) - Physical density: 70 % (approx.) - High human density 	<ul style="list-style-type: none"> - No human made features or human activities 	<ul style="list-style-type: none"> - Items built by the users to provide recreational needs - Physical density: 30 % (approx.) - Low human density
Views	<ul style="list-style-type: none"> - Wide view due to low density of under storey and existence of open spaces 	<ul style="list-style-type: none"> - Limited view due to dense plant coverage 	<ul style="list-style-type: none"> - Ability to see through the semi-dense plant coverage

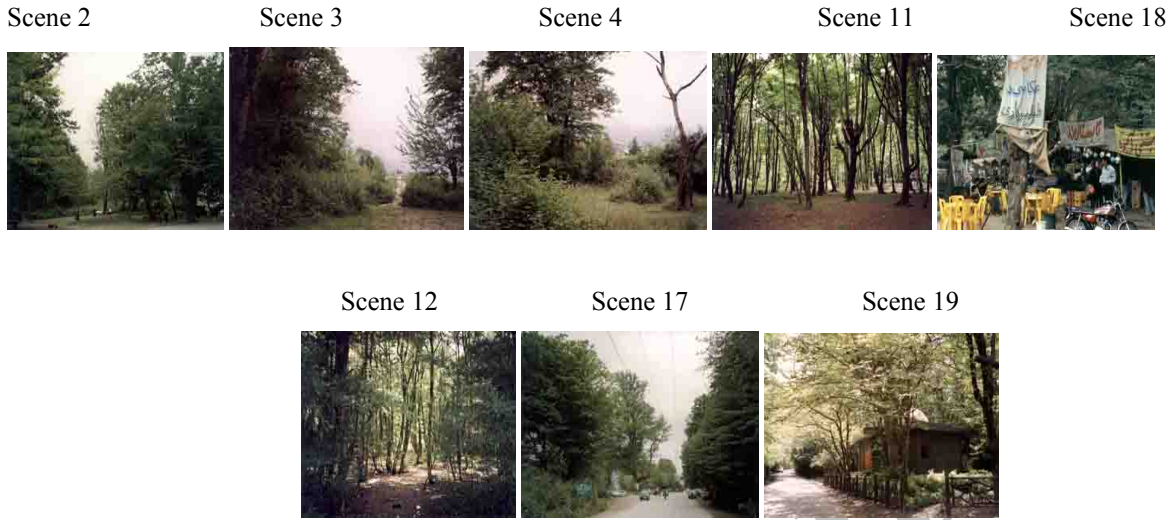
* Mean density of upper levels (crown coverage)

The method consisted of providing photos for each type of landscape; selecting sample photos; presenting them to observers for scoring; and interviewing observers to figure out the aesthetic criteria. Respondents' demographic characteristics were demonstrated by asking them to fill out a questionnaire and their perceptions about forest scenic beauty. This method was applied for the assessment of the aesthetic quality of the Sisangan forest park. All photos were taken during the fourth week of May 2004 to be at summertime and with moderate density of visitors, using a digital camera with a lens set on 50 mm, vertical view, and proper angle. All photos were taken level with the eye of the observer. The resulting photo collection was reviewed to remove the out of focus or similar photos. Following these procedures finally 23 of the photos were chosen and arranged randomly to form the final visual test. The criteria for selecting the photos are background and foreground scenes, soil visibility, slope, forest stand, tree species, the

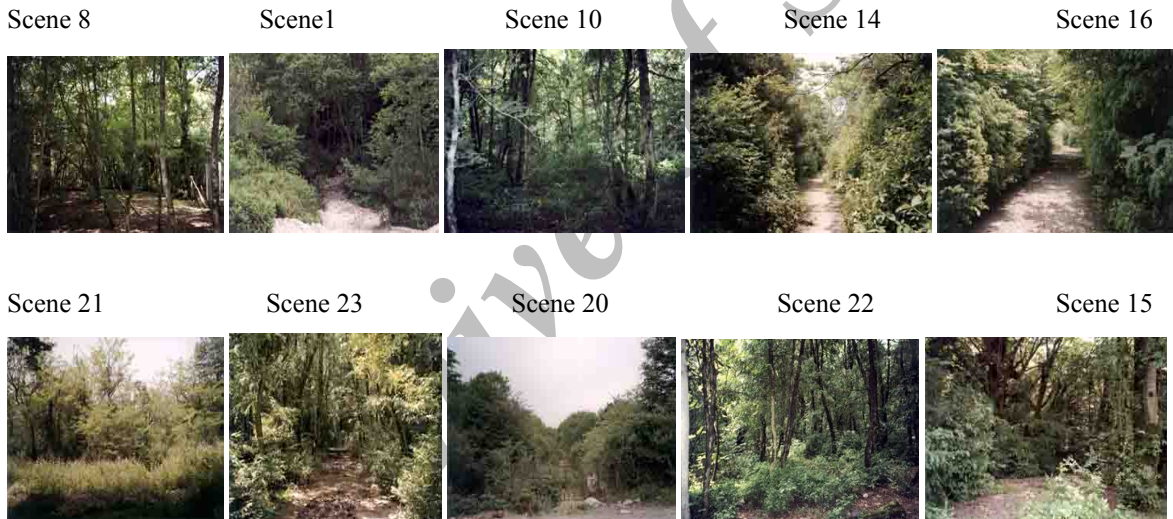
presence of people, building's density, road, facilities, fences, lighting, and trash (Fig. 1).

A total number of 50 on-site users visiting Sisangan forest completed a Q-sort of the 23 images and they were interviewed. They were randomly selected to arrange the photos in five categories from very beautiful to ugly according to their visual qualities. The Q-sort distribution consisted of 5 piles of photographs. The number of photographs in each pile followed a sequence, which approximated a normal distribution of 3, 5, 7, 5, 3, with scores of -2, -1, 0, +1, +2. The right-hand end of the distribution consisted of the beautiful photographs and given positive score. The left-hand end contained ugly photographs and given a negative score. The middle piles contained images neither strongly beautiful nor ugly. Preference rating for the 23 photos ranged from a maximum of 1.92 to a minimum of -0.79. The respondents were also interviewed about why they arranged the photos, the way they did and the

Type A: the designed landscape



Type B: the wild landscape



Type C: the intermediate landscape



Fig 1. Selected Scenes of different types of Sisangan landscape

reasons for their sorting. Interviews were conducted face to face. Each respondent also filled out a questionnaire including demographic characteristics such as age, gender, marital status, residence, and education. In addition to this part,

the questionnaire included two other parts to fulfill other data necessary for the textual assessment and recreational activities of the users discussed later. The first part of the questionnaires shows that 48% of the respondents were women and 52% men.

Four age classes were identified: age \leq 18 (age class 1), 18<age \leq 34 (age class 2), 34<age \leq 59 (age class 3), age>59 (age class 4). The age groups consisted 20%, 56%, 22% and 2% of total respectively. 52% were married and 48% single. The users represented two main groups of natives (residence of near-by towns and cities) 18% and non-natives (tourists from cities outside the province) 82%. In line with previous studies that show the differences between visual and verbal assessments, the same respondents were also asked to fill out the second part of the mentioned questionnaire, which consisted of questions regarding their preferences about beautiful forest landscape. Each question consisted of four alternatives; the respondents were asked to select the one which they preferred as a beautiful forest landscape. Variables include density of trees; topography; depth of scene; crowdedness; groundcover; lighting. These questions concluded with an open-ended question: What characteristics does a beautiful forest landscape have in your opinion?

Two techniques are used to find out the people's recreational preferences. By asking them to state their likes and dislikes about the type and place of activities, and what and how they think about recreation in a forest and their preferences; and by looking at their actual activities and site selection the study further explored the preferences for recreational sites as a function of many attributes including the practical opportunities/constraints. The details of these methods are described below. The information gathered about activities was based on part three of the questionnaire which mentioned before. The questionnaire consisted of following main items: the reasons for choosing this park, activities during the visit, visit length, average time of stay, frequency of visitation, and preferences in relation to recreational activities such as places for picnicking, camping, and walking. An observation study was carried out to find out the way people used the forest park. Another purpose of the observation study was to recognize the wide range of users and activities taking place in the forest. The observation study resulted in a map of the place and type of activities (Fig. 2). The area for recording activities was limited to the northern edge of the forest to 150 m south of the east–west route inside the forest, and the time from 7 am to 12pm when different activities took place.

RESULTS & DISCUSSIONS

The two sub-studies yielded information on

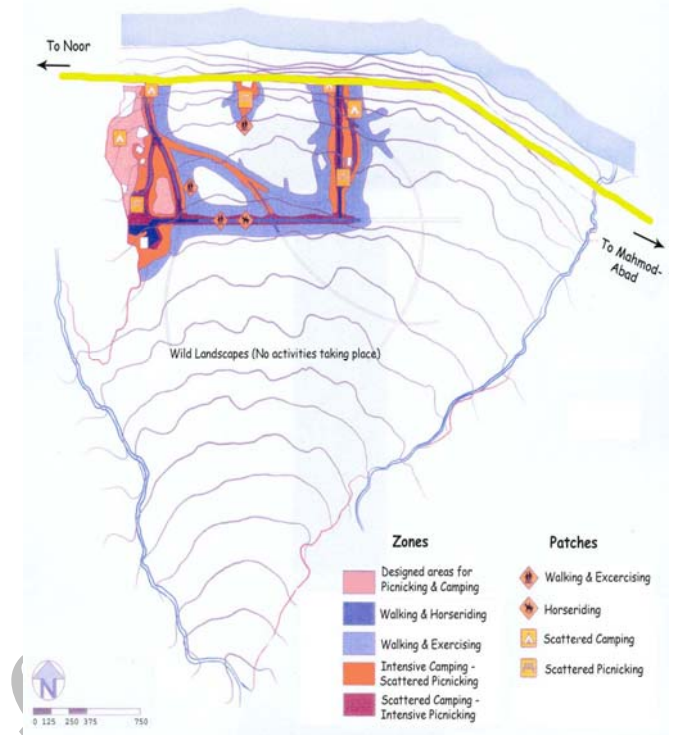


Fig 2. Place and the type of activities in Sisangan Forest Park
(based on observation study)

people's aesthetic and recreational preferences, assessed in various ways. Each will discuss in turn. Scenes taken within landscape C ranked higher in terms of viewer preference (mean of 1.03) than the other two landscapes (mean for type A: 0.75, and for landscape B: -0.2), revealing landscape type C as the most beautiful scene and landscape type B as the worst. Also analyzed were the most and least preferred scenes. According to the mean score for each scene, the most and least beautiful landscapes selected by respondents were scene no.16 (mean 1.92) and no.18 (mean 0.79) respectively. The criteria stated by those who preferred scene no.16 as the best was based on the existence of a sandy road, multi-level plant covering, and pure plants. The criteria stated by those who selected scene no.18 was having a poor visual quality, crowding, existence of man-made structures and furniture, and high density of trees in the background.

The relation between demographic characteristics and landscape type preferences are calculated by application of two statistic tests: Man-Whitney and Kruskal Wallis. According to the statistical findings, there are some differences between demographic characteristics and the landscape types preferences. All three types were appreciated more among women than men, and among the married than singles, but this was of no

significance (p . value > 0.05 , Man-Whitney test). This is also true of the relation of age groups with landscape preferences; generally all three type of forest landscapes were more preferred by class 3 ($34 < \text{age} \leq 59$) and less by class 1 ($\text{age} \leq 18$). The relation of education degree with landscape preferences demonstrated that there is a positive relation between the two, so that the higher educated have higher preferences to landscape; yet no significant difference existed (p . value > 0.05 , Kruskal Wallis test). Concerning the living area, although the native preferred type A and B respectively and non-natives type C, it did not show to have a significant effect on users' preferences (p . value > 0.05 , Man-Whitney test). The result of the regression analysis shows little relationship between demographic characteristics and aesthetic preferences of the forest landscape.

The analysis based on part two of the questionnaire is shown in Fig 3. It shows that people enjoy the beauty of the inner forest landscapes especially the dense parts. Calm places lacking the presence of others are more preferable.

Sunlight was one of the visual stimuli that enhanced the pleasant experience of forests. Analysis of the contents of the open-ended question, repeatedly show words such as high density of plants especially in the background, evergreen landscape, limited view due to dense plant coverage, no indication of man made features or human activities. Most of respondents (64%) described the beauty of forest landscapes with features that matched the characteristics defined in landscape type B, corresponding to landscape type C and A which were 22% and 14% respectively.

The results showed that the general attitude towards designed areas was very negative. The study also indicates that preconceptions of forests differed greatly from visual perceptions when considering scenic beauty; people preferred landscapes type B (the wild) landscape textually, but type C (the intermediate) visually. This suggests that without illustrations, people may have different mental images about the visual quality of forest landscapes.

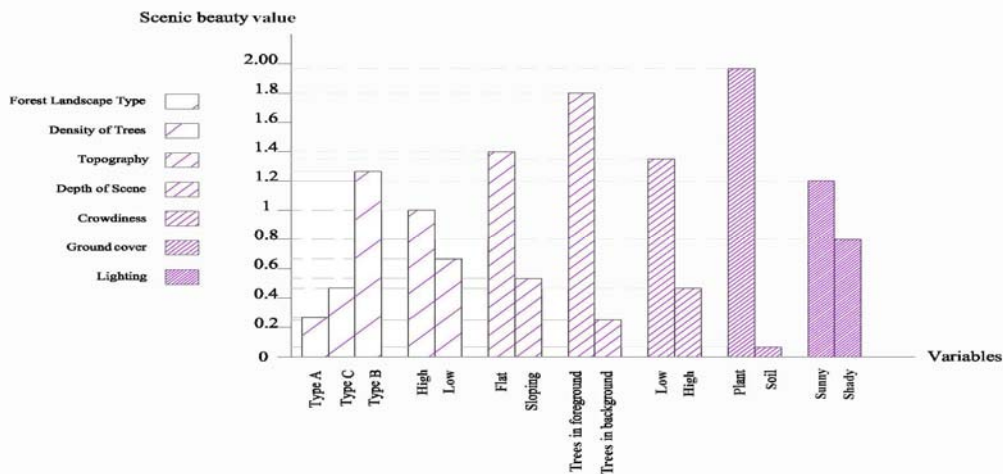


Fig. 3. Effects of different variables on scenic beauty (based on Questionnaires).

Value (1) stands for 50% of respondents valuing the variable as affecting the beauty of forest. Higher/lower values show higher/lower percents

Data collected from part three of the questionnaire shows that the most preferable days for recreation were Friday (69%), the formal holiday in Iran, and other holidays, and the most preferred visit length was a couple of hours (58%), thus showing high pressure on the area in a limited time. People are more interested in using places they have been to in previous visits (82%). Fig. 4 shows that the most popular recreational activities included enjoying the beautiful forest landscapes (66%). The favorite place for picnicking was in

inner parts of the forest (76%). Only 2% of the respondents were satisfied with the existing camping area, and the place most preferred for camping was tenting in the areas that have been designated for picnicking (58%). Despite variations in the recreational activities and site section, it is interesting that enjoying beautiful scenes is the most popular activity and also an important factor when selecting a route for walking or a place for exercising. The observation study will show whether this practically happens.

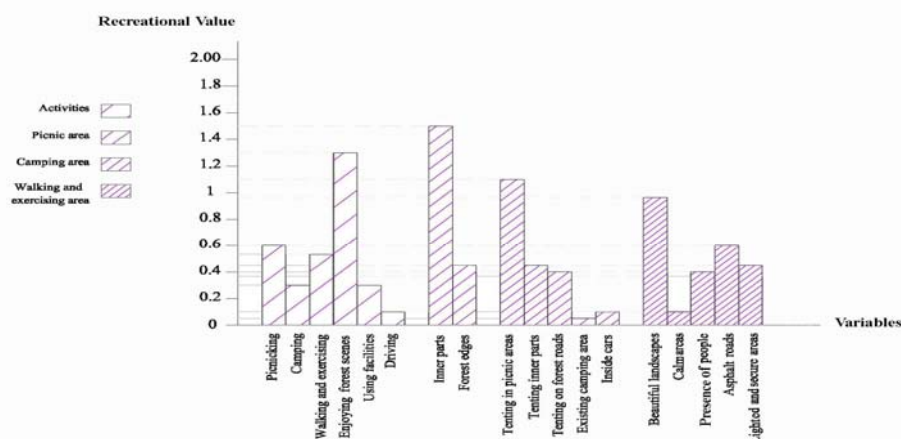


Fig. 4. Effects of different variables in relation to recreational preferences (activities and site selection).

Value (1) stands for 50% of respondents valuing the variable as having positive effect on recreational preferences. Higher/lower values show higher/lower percents.

The result of the observation study shows that the three defined areas set aside for picnicking, have been extended to other sites by users. Close to the designated areas for recreation, the protected area covered by *Quercus-buxetum* is also used for picnicking. Picnicking on the ground is a popular tradition in Iran where people find some place in the inner parts of forest that happen to be mostly in nondesigned parts, and thus chairs and tables are rarely used. Tenting by people in this forest park is not in the place designed for such activity but in shaded areas designated for picknicking, and near and along the main road leading to the northern entrance which is more secure. Existing camps are rarely used due to security issues. People also tend to camp in groups, but the existing place for camping does not provide that.

Comparison between "stated preferences" and "revealed preferences" shows that people prefer type B (the wild landscape) for their recreational activities like picnicking, and camping verbally, due to landscape structural diversity, plant species richness and wilderness. The revealed preferences shows that the most used area for recreational activities is type A (the designed landscape). This is due to the concentration of all facilities and services accessibility and security in this area. The present design of this type of landscape (type A) is not compatible with the needs of users because most recreational activities are concentrated around the main north access and the east-south route, leading to environmental damages such as compacted soil, damages to plants, destruction of

trees, and the creation of open spaces. Table 2 presents an overview of the results of the aesthetic and recreational analysis. The analysis reveals that different methods of assessments produce different results evidenced by findings on visual vs. textual in aesthetic preferences and stated vs. revealed in recreational ones. Stated preferences for recreational activities are more likely to be similar to aesthetic preferences rather than revealed ones, because revealed preferences are more influenced by practical opportunities/constraints. The same preferred zoning types for textual preferences of aesthetics and stated preferences of recreational activities show that people have the same perception of wild landscape as having both scenic quality and recreational value, and a negative attitude towards human influence (the more beautiful, the more preferred both in terms of aesthetics and recreation).

The wild landscape is the most preferred landscape both for recreational activities and in people's preconception of beautiful forest landscapes. However, people do not choose this kind of area for their recreational activities and do not select it as the most beautiful landscape. This matter confirms the studies done by Marry Carmen Rose (1976) and Devin Willard (1980) who insist on the importance of the pre-mental picture of one's preferences of landscape. In fact, the minimum score of the designed landscape in relation to aesthetic preferences reveals the difference between what people prefer visually and what they have in mind.

Table 2. User's preferences in Sisangan park in relation to defined zones

Method Preferences	Aesthetics		Recreation	
	Visual Preferences (Q-sort)	Textual Preferences	Stated Preferences	Revealed Preferences
First priority	C	B	B	A
Second priority	A	C	C	C
Third priority	B	A	A	B

A: Designed Landscape
B: Wild Landscape
C: Intermediate Landscape

The intermediate landscape (type C) is the most preferred aesthetic landscape visually but the main recreational activities largely take place in the designed landscape (type A). This implies that while the aesthetic criteria of a landscape seem to be an important factor in selecting the place for recreational activities, one cannot ignore the recreational facilities in this respect.

CONCLUSION

The experience of Sisangan forest park shows that since design has not satisfied their needs and preferences, people themselves design or re-design a place to their desire. This brings about damages to the natural and ecological resources of the park. Assessing people's preferences according to recreational activities, aesthetic preferences, textual description, and what they choose practically shows that a multi-technique assessment should be regarded in finding people's preferences; merely verbal or textual descriptions (questionnaires or interviews) are insufficient in identifying actual preferences. The result supports use of visual presentation methods in future aesthetic studies, and observation in revealing activity types and patterns. As people generally displayed high agreements in their perception of the degree of human influences on natural forest parks, pre-zoning based on the degree of wilderness/human influences will help make the assessment more practical and facilitates analysis. The contributions of this research can be summarized in four conclusions. They could be applied in theory, practice and future research:

The first conclusion is related to the method of assessment. This study explored that the judgments about the forest depend more on the method of assessment. The study shows that while people were found to differ in their appreciation of natural forest parks based on a questionnaire, their preferences depended on the degree of

human influence no matter whether they valued it for scenic beauty or recreational activities.

The second conclusion is that the landscapes people use for recreational activities or prefer for their scenic beauty is different to the one they have in mind. Table 2 shows that there is a difference between how people think about the forest, as revealed by the textual and stated preferences, and what they actually select, as traced by visual and revealed preferences. The wild landscape has got the higher preference when data is collected verbally; but practically people do not use this type of landscape much for recreational activities or choose it as having beautiful scenes when data is collected visually.

The third conclusion is that demographic characteristics such as gender, age and socioeconomic status slightly influence landscape preferences and do not have much influence on the visual quality of forest parks. This result confirms Foster's studies (1992) who believe that forest landscapes produce a surrounding widespread environment that does not allow the demographic characteristics of the observer to influence aesthetic preferences.

The fourth conclusion is related to the most preferred landscape for both recreation and scenic beauty. The intermediate landscape has obtained a relatively better score (first or second priority) in relation to both recreation and aesthetics. Through this type of landscape, the communication between human and nature is enhanced. It has the potential for recreation, a medium of wild and designed landscapes which presents both characters, with encouraging different choices.

To generalize the outcome of this research about the desirability of intermediate landscape in forest parks, further studies should be done. Also there is a need to focus in future studies on this type of landscape, its characteristics and its implications in the planning and design of forest parks.

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