Constructed Images of Iguazú National Park (Argentina) Related to Visitors' Origins

Faggi, A.
Conicet, Museo Argentino de Ciencias Naturales, Flores University, Engineer Faculty Pedernera 275, Buenos Aires, Argentina.,
T. Hólzl
Lodron-Paris University, Hellbrunner Strasse 34, 5020 Salzburg, Austria,
N. Madanes
Universidad de Buenos Aires, FCEyN, Ciudad Universitaria,
J. Breuste
Lodron-Paris University, Hellbrunner Strasse 34, 5020 Salzburg, Austria,
P. Perelman
Conicet, Museo Argentino de Ciencias Naturales, Flores University, Engineer Faculty Pedernera 275, Buenos Aires, Argentina.,
Universidad de Buenos Aires, FFYB, UBA, Buenos Aires. Argentina

Abstract

We analyzed the perceptions of tourists visiting the famous waterfalls in Iguazú National Park to define how they envisaged the park with their constructed images. Nine hundred and seventy six questionnaires were completed by personally interviewing visitors in February and April 2011. They were asked to describe the park by choosing between 17 fixed features (tranquility, grandiosity, water, harmony, beauty, horizon, sound of nature, colors, rainforest, extension, green, maintenance, animals, diversity, nature, peace and wilderness) and also an open option.

The constructed images were classified in categories of Beauty, Sublime, Picturesque and Spiritual and explored with SPSS and multivariate analyses.

Results showed that the appeal of the waterfalls is multidimensional, combining different elements of the Picturesque, Sublime, Beauty, and also Spiritual, categories in different proportions. We identified associations between visitors' origins and the constructed images among groups of visitors from North America, Latin-America, Europe, Australia, South Africa and East Asia.

We confirmed the widespread election of picturesque and sublime features as visions with which to describe the national park. Water, beauty and grandiosity were the main features mentioned. Peace, tranquility and horizon

were found as possible explanations for the divergence in visions between the six groups studied, especially segregating East Asians and South Africans from the other groups. The observed similarities and differences in the constructed images of Iguazú National Park of visitors coming from different parts of the world could be explained by both evolutionary and cultural frameworks. Some recommendations for park management and city planning are given.

Keywords: Waterfalls, perception, tourists, culture, picturesque, sublime

Introduction

Waterfalls have long fascinated people in widely different geographical and cultural contexts (Hudson, 2000; 2003). Waterfalls (WFs) have been consistently reported as a preferred touristic destination in a large number of books, travel literature and guides which prominently feature this landform (Hudson, 1998). Some WFs, like Niagara, Victoria and Iguazú, constitute the main attraction of touristic destinations, while many other WFs in different countries, like USA, Switzerland, Iceland, Norway, New Zealand and Venezuela, among others, are important aspects of the scenic attractions.

Inspired by this overwhelming landscape preference some authors have tried to explain the appeal that the WFs have for visitors. As an example Jin (1990) related this attraction to features such as "grandeur", "beauty" and "rareness", in coincidence with Hudson (1998) who discussed how these features have inspired painters and poets historically and they associated the appeal of waterfalls with concepts such as "beautiful", "sublime" and "picturesque". Bulut et al., (2009) showed that the visual preference for waterfalls in a valley in Turkey was significantly related to the semantic parameters of "fascination" and "being interesting" rather than "light and colors", "harmony" between natural and cultural landscape elements, and "naturalness". Hudson (1998) stated that the attraction of overwhelming WFs, such as Niagara and Iguazú, was based principally on sublime features.

Perception of landscapes with waterfalls has been researched through photographic observation or has been based on authors' interpretations of art work (painters or writers). However, few studies have been based on the preferences of people interviewed *in-situ*.

The aim of this study was to explore the constructed images that the Iguazú National Park, with huge and numerous waterfalls as the main tourist attraction, inspired in visitors and to try to explain their image preferences in terms of contemporary theories of landscape preference. The final objective was to derive results that would help to improve management and planning in the park and neighbouring tourist settlements.

In line with prevalent WF preferences in the literature mentioned above, a high degree of agreement between the images of respondents visiting Iguazú falls would be expected. Given these trends, and building on the opinion of Hudson (2000), we wanted to show whether visitors would rate "beautiful" and "sublime" images higher than the others, taking into account that the interviews were carried out during their visits to the national park (1. Hypothesis).

We expected that social experiences based on cultural traits might explain some differences between the constructed images of visitors of different nationalities (Yu, 1995; Zube and Pitt, 1981), because visual aesthetic quality is an emergent of the visible features of landscape interacting with psychological and sociological processes in the observer (Daniel, 2001) (2. Hypothesis).

Background

Landscape visual quality assessment has developed by merging two contrasting approaches: based on expertise or public perception, trying to sustain land management practices or research in the fields of environmental perception and landscape assessment.

Pictures, photographs, videos or computer manipulated images are normally used for studies of landscape visual preference based on public perception, as virtual instruments for the evaluation of the area that is shown to observers for ranking (Jorgensen et al., 2002; Nasar and Li, 2004; Ryan, 2010; Nassauer, 1983; Oh, 1994; Wherrett, 2000, among many others). In such cases the assessment of visual aesthetic quality considers features of the targeted landscape, such as form, line, colour, and their relationships (vividness, harmony and unity) but does not include any sensorial attributes like sound, smell or touch (Daniel, 2001) or spiritual feelings, which are frequently perceived when viewing landscapes *in-situ*.

Visual preferences have been explained by a variety of frameworks supported by the evolutionary theory, arguing that preferred landscapes are those that enhance human survival, such as naturalness, the presence of water, open and safe scenes (Appleton, 1975; Kaplan and Kaplan, 1989; Orians, 1980; Ulrich, 1983). These contemporary approaches are rooted in Kant`s aesthetic theory of beauty, that stated that the preference for beauty is innate in all humans and it is not a response derived from the evaluation of a thought although it may be influenced by culture (Lothian, 1999). Hitchmough and Bonugli, (1997), Kaplan and Herbert, (1987), Kaplan and Talbot, (1988), among other authors, explained that culture ethnicity and also climate are responsible for differences in perception. Several studies using both direct and indirect methods of assessment (Kim and Lee, 2000; Kozak, 2002; Mc Intosh and Goeldner, 1990; Pizam and Jeong, 1996; Pizam and

Sussmann, 1995) have revealed that nationality also influences tourist behaviour, pattern of vacation travel, social interactions, knowledge of destination and preference for different activities.

Many empirical studies have used preference judgments as an indirect means of measuring images of nature (Kaplan, 1985; Kaplan and Kaplan, 1989; Strumse, 1994). Kaplan (1983) defined the images of nature as people's general cognitions of what nature is.

Seminal studies that have discussed the overall appeal of waterfalls included constructed images that refer to the aesthetic preference which can be defined in categories such as "Beautiful", "Picturesque" and "Sublime". According to Burke (1757) "Beautiful" includes smoothness, gradual variation, smallness, lightness and delicacy, whereas "Sublime" is linked to vastness, ruggedness, massiveness, darkness and gloom. "Picturesque" refers to the arrangement, texture and form of landscape features including hills, valleys, trees, rocks and water. Hudson (2000) explained the appeal of waterfalls in the light of theories of landscape aesthetics from picturesque, beautiful and sublime to arousal and prospect-refuge. In so doing he considered that Beautiful comprises qualities like elegant, straight, serene, a gradual variation, sparkling reflected light, graceful rainbows, silver glitter of the spray, etc. Sublime was defined as huge, vast, grandeur, descending abruptly, impetuosity, fury, wild, violence of the torrents and darkness. On the contrary, a picturesque landscape is one which looks as if it was painted, because this style focuses on the arrangement of the texture and forms of landscape features such as hills, water, trees, rocks, etc.

Methods

Study area

The survey was undertaken in the Iguazú National Park, the most visited park in Argentina (25º 31'/25º 43' S and 54º 08'/54º 32' W; 55000 ha) (Garciarena and Almiron, 2009) near two neighboring tourist cities: Puerto Iguazú in Argentina and Foz Iguaçu in Brazil.

The Argentine park is a World Heritage Site and ranks among the top 10 national parks together with Kruger (South Africa), Sagarmatha (Nepal), Fiordland (New Zealand), Galapagos (Ecuador), Tikal (Guatemala), Yellow Dragon Scenic Area (China), Kakadu (Australia), Swiss (Switzerland) and Machu Picchu (Peru). The name Iguazú comes from the Guarani language and means "great waters". It has 275 waterfalls that are 70 meters high and 1500 meters wide distributed along nearly 3 kilometers and surrounded by wonderful views and a dense forest. The magnificent sequence of the falls finds its peak at the Devil's Throat, where the Iguazú river crashes almost 80 meters downwards, forming a multitude of rainbows (Fig. 1)

The park landscape consists principally of rainforest (Atlantic forests: 62%) on hills and slopes. This forest is the most diverse and functionally complex ecosystem in Argentina and is in a good state of preservation. Other landscape units are lowlands (22%), palm forests (8%), riverine forest (2%), grasslands (0.05%) and hanging cliffs. Above the falls the shallow Iguazú River flows over a wide bed of basalt and has many tributaries. Alternating rapids and pools within the park retain and release the waters.

This park shelters endangered South America fauna and flora and has more than 1000 species of plants and 430 species of birds, over 70 species of mammals and a huge variety of insects. Over one million people visit this park annually, 38% of whom are foreigners.

The park has a single entrance and the guided or free tours are limited and distributed along six principal trails over an area of approximately 400 ha. (San Martín Island, Macuco, Green, Devil`s Throat, Upper and Lower Trail).

Inside the park there are some open spaces with facilities for eating and resting, a visitor centre and an international hotel. An electric train transfers visitors to strategic points for contemplation of the waterfalls. Excursions to the forest, to San Martin Island and by boat along the river are also offered. Full Moon visits along the Upper trail to the famous Devil`s Throat take place once a month by moonlight.

Data sample and statistical analysis

We completed 976 questionnaires by personally interviewing visitors in the national park in February and April 2011. Respondents were randomly selected inside the park, along a route to the diverse amenities and at different specific points. The survey was available in Spanish and English.

The interview included nine questions of which seven collected personal data (gender, age, family status, education level, occupation, place of residence, nationality). One question asked if they were visiting the park for the first time.

One *mixed* question: ("*Which three words of the following list would you choose to define Iguazú National Park*"?) mirrored the visitors' visions and can be used as to indicate their constructed images.

For the purpose of the present study we considered constructed images of the Iguazú National Park as the conscious and unconscious cognitive structures that might be mentioned by people. These words (17 fixed + one free option) were: tranquility, grandiosity, water, harmony, beauty, horizon, sound of nature, colours, rainforest, extension, green, maintenance, animals, diversity, nature, peace, wilderness. Spontaneous options given by the respondents included: touristic attraction, powerful,

conservation area, butterflies, energetic, unique, blessed, waterfall. These words were assigned (if possible) to the fixed options.

Survey data were entered into a standard statistical package SPSS version 15 and initial category means and standard deviations were calculated. We analyzed the data at two levels: a) total sample of interviewed people and b) categorized by visitors`origins.

In addition the percentages of constructed images named by the respondents to describe Iguazú were classified in the categories of Beauty, Sublime, and Picturesque according to Hudson (2000). Two words (peace and tranquillity) could not be assigned to the mentioned categories; therefore a new "Spiritual" category was defined.

An exploratory factor analysis was carried out in order to identify the principal trends in the ordination of the constructed images (Stadistica 6.0).

Then, in order to see if those constructed images were linked to the visitors` origins, we analyzed their answers considering six groups: North America (n: 81), Latin-America (n: 450), Europe (n: 338), Australia (n: 48), South Africa (n: 26) and East Asia (n: 21; Japan, China and Korea) and a cluster analysis (dendrograme) was run to identify similarities among groups of visitors.

A Principal Correspondence Analysis (PCA, Canoco for Windows 4.5) considering a matrix made up of 17 images and six visitor groups was carried out to examine associations between visitors' origins and the constructed images.

Results

The sample of respondents (n=976) was evenly distributed between men (50%) and women (50%); 47 % had university education. Almost eighty percent of the respondents had come to visit the park for the first time. Most visitors came from Latin America (46.68%), followed by Europeans (35%), North Americans (8.4%), Australians (5%), South Africans (2.7%) and East Asians (2.2%).

The 21-30 years old age group prevailed (48%) among the respondents, followed by 30-40 (19%), 15-20 (8.7%), 40-50 (8.4%), 50-60 (8%), more than 60 (6%) and less than 15 (1.2 %).

Results showed that water (18%), beauty (16.68%), grandiosity (14.4%) and nature (10.86%) were the most cited words out of the 25 features mentioned (Table 1), followed by tranquillity (7.95%), horizon (6.40%) and the sound of nature (5.73).

"Picturesque" (39.17%) and then Sublime" (27%) were the semantic features most named by respondents, while "Beauty" (22.9%) and "Spiritual" (11%) were the categories ranked in third and fourth places, respectively (Fig 2).

Figure 3 shows that these categories were selected in diverse proportions by visitors of different origins. Although the Picturesque category was ranked first by all groups, Sublime was more important for the Eastern Asians and Beauty and Spiritual feelings for Latin Americans and South Africans.

The clustering among vistors' origins (Fig. 4) is due to similarities in category preferences. Cluster A included Latin and North Americans, Europeans and Australians, cluster B South Africans and cluster C East Asians, according to different constructed images among the groups, clearly explained by the following PCA analysis (Fig 5).

The Principal Correspondence Analysis (PCA) showed (Fig 5) a spatial distribution of the seventeen constructed images and the six visitor groups by origin. The first two axes explained 85.7% of the total variance between the variable sets. (Axis 1, eigenvalue: 0.637; Axis 2, eigenvalue: 0.220). These results suggested firstly that horizon and water, and secondly spiritual features, such as peace, tranquillity together with beauty, were the constructed images that appeared to be more related to the East Asians (horizon) and to the South Africans (peace and tranquility) rather than to the other groups. The other groups included Latin and North Americans, Europeans and Australians who showed more similarity in their visions (colour, grandiosity, wilderness, animals, rainforest, etc.).

Discussion

Visitors envisaged the Iguazú National Park as an environment imprinted with water and exuberant nature. The view of spectacular natural scenes, the sound and spiritual atmosphere generated by the waterfalls imbedded in a subtropical forest evokes different constructed images of nature in its various expressions of mixed feelings of admiration, grandiosity, beauty, calm and fear. The basic findings of this study showed that the park`s appeal is multidimensional (1. Hypothesis), as it combines different proportions of elements of the Picturesque, Sublime, Beauty and also Spiritual categories, in different proportions according to the origins of the visitors (2. Hypothesis). These findings indicated that it is dangerous to consider a widespread consensus in the field of landscape perception, as illustrated by Bourassa (1991).

Our first hypothesis that visitors would envisage the park as "beautiful" and "sublime" could only partially be confirmed. The appeal of Iguazú was dominated by picturesque features such as water, nature, wilderness, rainforest and green. The arrangement of these elements, their different textures, irregularities and forms made a "satisfactory picture" (Hudson, 2000). The Sublime category, defined as the delightful horror that we experience at the prospect of danger while in fact being protected

(Schama, 1995), which includes grandiosity, the sound of nature, horizon and extension ranked second. This fearful feeling is a common sentiment when approaching the falls with tons of falling water; the fear of falling, disappearing into the waters, deafened or running out of breath, looking at the roaring falls from the balconies.

As expected, water as the constructed vision of the park was the word most frequently mentioned. Water in its multiple facets, forms and colours, moves at diverse speeds, from falling furiously and sharply from above into the tranquillity of the river below. The moving water changes in color, creates sounds and at the same time fools the eye, seeming to fall as dust in some places or sometimes as forming crystals or as an almost visually imperceptible but refreshing mist. This multiplicity of effects, especially the flowing and sound of water, has been shown to influence human perceptions (Burmil et al., 1999). Our findings agreed with the evolutionary theory developed by Appleton, 1975; Kaplan and Kaplan,1982; Orians, 1980; Ulrich, 1983, suggesting that environments which satisfy human biological needs are found attractive.

Another explanation of visitors' predilection for water could be related to a feeling of surprise when they reach the falls, which can be associated with Kaplan´s concept of mystery as a predictor for landscape preference. Pleasant landscapes are those that anticipate new opportunities and discoveries if only one ventures more deeply into the scene (Kaplan, 1992). Visitors to the national park reach the falls by taking first an electric train and then by a long walk on walkovers along winding paths through the forest that suggest mystery and favour inferential exploration before reaching the falls. As suggested by Unwin (1975) the response to the landscape will be more favourable for some sequences than others, depending on the capacity for producing surprise and contrast.

Another interesting finding was the mention of spiritual images. These features are almost without citation in the literature of landscape preferences as a consequence of the methodology used to investigate public perception. As above mentioned, most of the theory derived is based on responses from observers looking at pictures, photos, videos or computer manipulated images in a virtual way. Much less work has been undertaken by interviewing observers *in situ*, where feelings such as tranquility and peace might be more often mentioned or differently detected. Although virtual experiences also can arouse feelings, real-life situations such as visiting the park allow people to connect with new feelings. As Foster (2008) stated, looking at images of landscapes is not the same as looking at the landscape itself; visitors experience the landscape through thoughts, feelings and emotions (Chenoweth and Gobster, 1990; Clay and Smidt, 2004).

Some results obtained from the multivariate analysis allowed us to confirm our second hypothesis. In the introduction, we mentioned that preferred visions of a landscape have been equally well explained in the literature by evolutionary theories as by cultural and individual learning experiences. Our findings showed that visitors from East Asia (Japan, China and Korea) were more likely to define the park with the images of "horizon" and "water". In line with Kaur et al., (2004), dissimilar valuation among different groups of respondents could be explained by their interests in the landscape.

Many authors have demonstrated that East Asians are likely to see visual images contextually, attending more to background and to relations, whereas Westerners focus on the most salient objects and their properties (Ji et al., 2000; Masuda et al., 2008). Our results seem to confirm the findings of Masuda et al., (2008) demonstrating that East Asians placed the horizon higher than the horizons appearing in photos or drawings made by Western people, repeating the same tendency recognized by East Asian landscape paintings. This cultural variation of the East Asian vision preferring horizon has been explained as anchored in socio-cognitive processes influenced by religions such as Buddhism, Taoism, and Confucianism (Masuda and Nisbett, 2001), contrasting with the heritage of ancient Greece, which predisposed Western culture.

Other interesting results were that spiritual features like peace and tranquillity as visions of the park were significantly mentioned by visitors from South Africa, but also by Latin Americans. In this case, it is likely that those visitors put more emphasis on a romantic and solitary consumption of nature, bringing privacy and a personal, semi-spiritual relationship with undisturbed nature (Urry, 1990; Urry, 2005). As such they could be categorized as "Escapists" following Beh and Bruyere (2007), which analyzed tourists' motivations for visiting three national reserves in Kenya. The escapist group consisted of those people who were motivated by experiencing tranquility and physical relaxation, being away from the demands of their homes.

The Iguazú waterfalls are, and will remain, one of the most preferred tourist destinations in Latin-American. Therefore our results, as an understanding of visitors' preferences and constructed images, might help local authorities and managers of tourist branches to envisage strategies that are targeted to different visitor groups. Although the park is well organised and satisfying to visitors, the development of more opportunities for contemplation and rest while watching the waterfalls is recommended, considering that, at least for some groups, the visitor's stay might be more for spiritual rather than aesthetic satisfaction. Significant and generalized water and nature preferences could also be considered in the two

neighbouring cities, Puerto Iguazú (Argentina) and Foz Iguaçu (Brasil) where all visitors stay while visiting the park. This preference should be a call to maintain the natural environment. Both cities, but very especially Foz Iguaçu, are being starkly urbanised in a way that the local character of a subtropical environment is being lost. As urban sprawl in touristic settlements is almost unavoidable, urban planning and private development projects should encourage the use of elements of water and native vegetation in the design and beautifying of the built environment, making their presence a source of city revitalization that would be valued by their guests.

Conclusion

The similarities and differences observed in the constructed images of Iguazú National Park among visitors coming from different parts of the world could be explained by both evolutionary and cultural frameworks.

In the Iguazú falls we could confirm the widespread election of picturesque and sublime features as visions with which to describe the national park. Water, beauty and grandiosity were the major components mentioned but there were group differences depending on their origins. Peace, tranquillity and horizon were found as possible explanations for the divergence in visions between the six studied groups, segregating especially East Asians and South Africans from the other groups. These results, as an understanding of visitors' preferences and constructed images, might help local authorities and managers of tourist branches to envisage strategies that are targeted to different visitor groups.

Acknowledgements

We are very much in debt to the National Park Administration and its officers for their valuable help and contributions. Our special thanks to all the visitors, who took time to kindly respond to the survey. The field work was funded by a grant from the Lodron-Paris Salzburg University and by a research project of the Flores University.

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