



## Water as an appreciated feature in the landscape: a comparison of residents' and visitors' preferences in Buenos Aires



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### ABSTRACT

In the Buenos Aires metropolis we analyzed the preferences for water as a landscape feature, interviewing **visitors** to waterfronts and **residents** who live near the river coast in urban and suburban areas. Seven hundred and thirty one questionnaires were completed through personal interviews with visitors to waterfronts and with coastal residents in April and June 2009. We considered urban and suburban waterfronts located in five urban reserves. Respondents were stratified in urban and suburban coastal residents. In line with the widespread water preferences mentioned in comparable studies, and following evolutionary theories - water as one of the most important elements for life - no gender influence on preference could be found.

On the contrary we found that individual experiences based on cultural traits, such as familiarity with a place, explained the discrepancy between urban and suburban coastal residents, while surprise and induced water scarcity account for the differences between visitors to urban and suburban waterfronts.

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### 1. Introduction

Since the beginning of the last century architects, designers, planners, psychologists and researchers interested in environmental behavior have consistently reported the presence of water as one of the most important and attractive visual elements of a natural or built landscape (Hubbard and Hubbard, 1917; Wright, 1928; Bachelard, 1983; Pitt, 1989; Kaplan and Kaplan, 1989; Carr et al., 1992; Ulrich, 1983; Nasar, 2000; Wherrett, 2000; Kaltenborn and Bjerke, 2002).

Human preference for water is ancient; settlements have always been located near water because of the resources that water offers for life. "Hydrophilia" is the preference for water as a visible feature (Herzog, 1985) and historically the aesthetic importance of water in the landscape was known as early as the Mesopotamian and Egyptian gardens, and continues to be recognized by contemporary landscape planners and designers (Burmil et al., 1999). Early studies

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(Hubbard and Hubbard, 1917, Wright, 1928) discussed the refreshing and beautifying aesthetic value of water for landscape compositions. Bachelard (1983) hypothesized that the aesthetic value of water rested in its naturalness, in coincidence with the psychological theory that naturalness increases well-being and activates social and exploratory behavior (Kaplan and Kaplan, 1989; Pitt, 1989; Nasar, 2000; White et al., 2010).

Possible explanations of landscape preferences have been equally well explained by evolutionary theories of aesthetics (Appleton, 1975; Ulrich, 1993; Kaplan and Kaplan, 1989) and by cultural and individual learning experiences (Lyons, 1983, Van den Berg et al., 1998). The first theory stated that attraction for a landscape is related to the instinct of survival, while the second considers that differences in preference are greatly influenced by socio-cultural behavior constraints (Kaplan and Kaplan, 1989). In line with this last assumption, many authors pointed out that landscape preference may be related to differences between socio-demographic groups, their personalities, previous experiences and the influence of culture (Zube and Pitt, 1981; Zube et al., 1982; Herzog et al., 2000). Moreover, many studies on landscape preferences compared perception differences considering diverse groups of people, including residents (Coeterier, 2002; Nassauer, 2004; Xu et al., 2006; Soini et al., 2011.) visitors (Roovers et al., 2002;

Steinwender et al., 2008), tourists (Fairweather and Swaffield, 2001) and experts (Vouligny et al., 2009). As an example, Yu (1995) showed that living in an urban or rural environment influenced landscape preferences of Chinese respondents; Van den Berg et al. (1998) demonstrated how beauty ratings of wetness of Dutch farmers were negatively related and differed from the ratings of visitors and non-farming residents.

The preference for water as a landscape feature can also be explained through both the above mentioned evolutionary and cultural approaches. Concerning the cultural context, to the best of our knowledge only a few studies have analyzed the connections between water preferences in the landscape and its scarcity. Noemdoe et al. (2006) and Aguilera-Klink et al. (2000) explored the perceptions of scarcity in South Africa and Tenerife, concluding that water scarcity was primarily a social construct.

Goods are scarce when they are available in limited finite quantities and when there are alternative competing uses for the resource (Perman et al., 1999; Edwards-Jones et al., 2000). A new type of scarcity has emerged in the latter part of the 20th century, especially in urban habitats: a healthy environment in which to live and work (Goede et al., 2001).

The aim of this study was to define the perception of water as an urban landscape feature by visitors to waterfronts and coastal residents and to try to explain their environmental perceptions in terms of contemporary theories of preference. We personally interviewed **visitors** to waterfronts and **residents** living near the river coast in urban and suburban areas of the Buenos Aires metropolis. The reason for choosing these groups of people was to evaluate whether they differ in terms of perceiving and appreciating water in the urban landscape.

In line with the widespread water preferences in the literature mentioned above, and following evolutionary theories – water as one of the most important elements for life – a high degree of agreement between respondents would be expected in the preference surveys. Therefore we expected that women or men, who visited waterfronts, or coastal residents in urban or suburban areas, would rate “water” in the same way as a preferred landscape feature.

On the contrary, we estimated that individual experiences based on cultural traits might explain differences among visitors and residents of urban and suburban coastal areas.

We analyzed 3 hypotheses:

H1 = compared with other landscape features the preference for water has priority and is independent of gender.

H2 = the preference for water as a landscape feature is dependent of people **visiting** an urban or suburban waterfront.

H3 = coastal **residents'** water preference is dependent of living in the city or in the suburbs.

## 2. Methods

### 2.1. Study area

This study is part of a project to examine perceptions and evaluations of different landscapes in Argentina. Our present study area is placed in the Buenos Aires metropolis, in South America. As one of the world's great metropolises it includes the capital city and 32 municipalities. Its 12 million inhabitants make up almost a third of the population of Argentina (Atlas Ambiental de Buenos Aires, Reboratti, 2011).

There are three main water courses in the metropolis and 14 other smaller rivers and streams that drain into the Rio de la Plata estuary, most of which have been greatly modified; there are no fluvial water courses that do not show a certain degree of anthropogenic influence. Nowadays the majority of smaller rivers and streams are culverted, flowing under the city's streets.

The water for the metropolis comes from the Buenos Aires estuary. With conventional water purification treatment the water quality is adequate for human consumption according to the national standards set out. However, without treatment it is of restricted use for the development of aquatic life, especially as the urban and industrial runoff has no prior treatment and it deteriorates the quality of the water.

In the suburban areas rivers are very much appreciated for recreation and tourism (boating, fishing, rowing, and wind-surfing). The river banks are covered with spontaneous vegetation and the landscape has a wild appearance. However in the capital city of Buenos Aires the use of the coast as a leisure space is affected by contamination and by restricted access to the water. A common saying “Buenos Aires grew turning its back to the river” describes the peculiar historical and conflicting relationship between the capital city and its riverside physically and metaphorically (Faggi and Ignatieva, 2009). During the last decade the government and the local community have discussed ways to redevelop and restore the waterfront, especially as a suitable habitat for biodiversity. A recurring issue in this discussion was to decide what constitutes an attractive landscape for the local people.

### 2.2. Data sample and statistical analysis

We completed 731 questionnaires through personal interviews with visitors to waterfronts and coastal residents in April and June 2009 in order to measure public perception associated with preferences of landscape features. We considered two types of waterfronts located in four urban reserves in the metropolitan area of Buenos Aires: a) urban (“Costanera Sur” Reserve), b) suburban (Reserves: “Otamendi”, “Ribera Norte” and “Los Robles”) (Fig. 1). The reserves have similar landscapes, including dry and riverine forests, grasslands, lagoons, wetlands and waterfront. The frequency of preferences for landscape features was classified in ten categories following Vouligny et al. (2009), based on the premise that experience of a landscape is multidimensional and goes beyond the sole visual component of a landscape (Dakin, 2003). Categories included: water, emotion, color, maintenance, extension/horizon, animals, wilderness, nature, sounds of nature and vegetation (Fig. 2).

Visitors ( $n = 489$ ) were randomly selected inside the reserves, over a route within the selected areas and at different specific points.

Two different groups of coastal residents (urban dwellers living near to waterfronts or up to 3 km from the coastline) ( $n = 242$ ) were selected: those living in a) downtown Buenos Aires (urban area), or b) suburban areas.

The interview included seven questions of which six collected personal data (gender, age, family status, education level, occupation, place of residence). One *open ended* question: (“What do you like about this landscape?”) explored the cognitive basis for scenic judgments more deeply.

For the data analysis we grouped the respondents' answers by: a) gender, b) visitors: people visiting an urban vs. suburban waterfront c) coastal residents: people living near the coast in urban vs. suburban areas. We used  $\chi^2$  analyses to compare the respondents' preferences regarding landscape features and their profile in each of the defined groups. When differences were found, a partitioned  $\chi^2$  analysis was performed to analyze which answers differed from the expected  $\chi^2$  (Pearson). We used Fischer's one tailed exact probe for low frequencies.

## 3. Results

For visitors ( $n = 489$ ) the sample of respondents was more or less evenly distributed between men (54%) and women (46%) and

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