The Official Journal of the International Association for Landscape Ecology, Chapter Germany (IALE-D)

Landscape Online

International Peer-Review Free-Access Online

Received: 31.01.2007 Received in revision: 28.03.2008 Accepted:25.05.2008 Published:29.09.2008

C. Priego, J.-H. Breuste & J. Rojas 2008
Perception and Value of Nature in Urban Landscapes: a Comparative Analysis of Cities in Germany, Chile and Spain
Landscape Online 7, 1-22. **DOI:10.3097/LO.200807**

Perception and Value of Nature in Urban Landscapes: a Comparative Analysis of Cities in Germany, Chile and Spain

C. Priego[1*], J.-H. Breuste[2] & J. Rojas[3]

[1] Institute for Advanced Social Studies of Andalusia, IESA-CSIC, Campo Santo de los Mártires 7, 14004 Cordova, Spain, cpriego@iesa.csic.es

[2] Paris-Lodron-University Salzburg, Department of Geography, Geology and Mineralogy, Hellbrunnerstrasse 34, 5020 Salzburg. Austria, juergen.breuste@sbg.ac.at

[3] University of Concepción, Department of Sociology and Anthropology, Casilla 160-C., Concepción. Chile, jrojas@udec.cl

* Corresponding author

Abstract

Cities are not socially homogenous, but divided into socially and structurally differentiated sub-units. Likewise, the individuals of a community, city or neighbourhood present specific behavioural patterns and uses with respect to their public green areas. This premise has led us to explore the question of how the perceptions, uses, and behaviours of people from different countries, cultures, and socioeconomic levels in Chile, Germany and Spain differ or coincide as far as urban nature and landscapes are concerned. Due to the comparative nature of the project, research areas with similar characteristics were chosen, thus allowing a comparative analysis of upper and lower middle-class neighbourhoods. People from all six study areas were surveyed using the same questionnaires. The results revealed that people of different social and cultural backgrounds use and perceive urban landscape in different ways. We found that nature of different kind plays an important role in all the urban societies and particularly in the neighbourhoods studied, regardless of social status or nationality. However, the higher the social status, the greater the urban green area dedicated to private uses. The preference for specific types of nature depends not only on social status, but cultural elements, accessibility and tradition as well. Moreover, nature-related outdoor activities are defined by this status, in turn reflecting the individual's cultural status within society.

Keywords

utilization of urban green, social groups and acceptance of urban nature, inter-cultural comparison

1 Introduction - problems of nature in urban landscapes

Urban growth has profoundly transformed the landscapes in recent decades. This has had a significant effect on the ecological systems that make up these landscapes and led to the creation of a special landscape type (Sukopp & Werner 1983; Beer 1994, McDonnell et al. 1997; Breuste & Wohlleber 1998; Baker et al. 2001). Although cities have traditionally been perceived as an aggression against the environment which can have a profound impact on adjacent ecosystems (Douglas 1983), much can be learned and remedied by applying concepts of biodiversity to urban ecosystems (Savard et al. 2000). As evidence suggests, people exposed to nature in their daily lives heighten their perception of environmental problems. To enhance the biodiversity of urban ecosystems it is therefore important to reflect the perception of different parts of the ecosystmes by the urban population (Sebba 1991; Rohde & Kendle 1994). Urban nature consists of different urban environmental elements and settings. Its ecosystem services are improvements of climatic, hydrological and biodiversity functions and often described. An increasing number of articles have been published during the last decade dealing with the interactionof humans with urban nature (Matsuoka & Kaplan 2008). The knowledge about this is necessary to improve the functionality of urban nature and for optimal planning and development.

The pursuit for wellbeing - reflected in the growing interest in urban nature - has awakened environmental awareness about the importance of "urban green space" in ecologists, biologists, geographers and sociologists alike, giving rise to a vast amount of research on the environmental (Jacobs 1961; Akbari et al. 1992; Santibáñez & Uribe 1993; MacDonald 1996; Peck & Callaghan 1999; Nowak et al. 2000), economic (Anderson and Cordell, 1988; Selia & Anderson 1982), and social (Ulrich 1984; Chenoweth & Gobster 1990; Dwyer et al. 1992; Kaplan 1993; Brunson et al. 2001; Kuo & Sullivan 2001) benefits to be gained from these green areas. There is a wide spectrum of human dimensions and issues, or human needs. These can be classified following Matsuoka & Kaplan (2008) into two main groups. The nature needs, directly linked with the physical features of urban nature setting, can be categorized in terms of contact with nature, aesthetic preference, and recreation and play. The role of the environment is less immediate in the human-interaction group, which includes the issues of social interaction, citizen participation in the design process, and community identity.

There is a wide range of ways in which contact with nature contributes to improved quality of life. This includes brief opportunity to relax from the urban bustle and to contemplate and enjoy the time in a natural surrounding. This natural surrounding consists larger areas, such as green corridors and parks (Gobster 1995; Shafer et al. 2000, Chiesura 2004; Jim &Chen 2006; Oguz 2000; Özgüner & Kendle 2006) and urban forests (Coles & Bussey 2000; Simson 2000; Roovers et al. 2002; Kaplan & Austin 2004). The equipment of residential areas with "green" (urban nature) is the most important community feature contributing to inhabitants' appreciation of their neighbourhood (Crow et al. 2006). Scenic beauty, cleanliness, and pleasant sounds can be seen as a category of aesthetic preference. These preferences are expressed by gardens and parks (Oguz 2000; Jim & Chen 2006; Özgüner & Kendle 2006), greenways (Gobster 1995), and neighbourhood green (Dökmeci & Berköz 2000; Berg 2004; Kaplan & Austin 2004; Vogt & Marans 2004; Crow et al. 2006; Ellis et al. 2006).

A third nature needs - category is recreation and play. These opportunities can be satisfied in urban natural contexts. Urban parks, greenways and urban woodlands offer important settings for recreation and play (Gobster 1995; Yabes et al. 1997; Lindsey 1999; Fjørtoft & Sageie 2000; Hörnsten & Fredman 2000; Oguz 2000; Shafer et al. 2000; Gobster 2001; Roovers et al. 2002; Chiesura 2004; Jim & Chen 2006). These studies express the important need for such activities across the age spectrum, socioeconomic groups, and nationalities. Urban nature opens a wide field of human interactions promoted by the natural environments. There is still a great optimism that urban open spaces and urban

 ISSN 1865-1542

nature can improve social interactions between social groups and neighbourhood residents (Owens 1993; Lewis 1996; Berman 1997; Shafer et al. 2000; Barnhart et al. 1998; Gobster 1998; Kuo et al. 1998a; Saleh 1999; Oguz 2000). The sense of community identity is being lost worldwide among urban citizens in residential neighbourhoods. The physical/natural environment can increase the sense of community (Hull et al. 1994; Ulrich 1976; Lucy & Phillips 1997; Kuo et al. 1998b; Stewart et al. 2004).

There is a wide range of possible combinations of these different needs regarding urban nature. Following Matsuoka & Kaplan (2008) the following summarizing statements are possible:

- Urban nature nearby to urban residential areas has worldwide the most important influence to human wellbeing. Concerning the wellbeing of the residents, the distance or ability to reach a natural area is the main factor and more important than the size of the area.
- Remarkable similarities exist concerning people requirements across diverse cultures and political systems.
- Urban residents worldwide express a desire for contact with nature and other places in which to recreate and play.

Oguz (2000, 2004); Sherman et al. (2005); Crow et al. (2006) and Oku & Fukamachi (2006) show that people of different ages, gender, and scoioeconomic status differ greatly in how they use natural urban landscapes. Many of these differences are shared across diverse cultures. Lindsey (1999); Dökmeci & Berköz (2000); Shafer et al. (2000); Roovers et al. (2002); Damigos & Kaliampakos (2003); Vogt & Marans (2004); Balram & Dragicevic (2005) and Crow et al. (2006) show that residents of higher scoioeconomic status use or value urban nature to a greater degree than those of lower means. Hough (1989) explains that exposure to nature in one's place of residence is vital to developing environmental perception. Matsuoka & Kaplan (2008) argue that the scoioeconomic differences, however, may be a reflection of how richer people use their resources rather than an expression of differential preferences, benefits, or desires. A wide variety of spaces can meet the same needs and a particular setting can meet multiples needs. The design of urban landscapes and nature strongly influences the behaviour and wellbeing of users (Pacione 1982; Lewis 1992; Abu-Ghazzeh 1996; Al-Hathloul & Mughal 1999; Saleh 1999). Contrasting, many city governments of the world have cut expenditures for the development, management and maintenance of green space (Tyrvainen & Vaananen 1998).

There are still some open questions regarding the interactions of urban dwellers and urban nature: Are large scaled areas more important than small scaled? How do communities approach this tension? There is more research necessary to identify the individual and community benefits of urban nature. People's needs may also interact with political, cultural, historical, religious, scoioeconomic issues, which are still not much investigated. The geographic, economic and cultural context has an important influence on people's relationship with nature and landscape including urban landscapes. The majority of research in this field has been carried out in developed countries of 'the north', especially in Western, Northern and Central Europe, while much less is known about the conditions in 'the south'. Matsuoka & Kaplan (2008) found in an evaluative study of 90 scientific articles about people needs in the urban landscape (between 1991 and 2006) that 75.6% were studies of "the north" (North America 51%, Europe 17.7%) and only 17.7% are studies from cities of 'the south'. Only 3.3% were from South America. There is a clear lack of knowledge regarding urban green and its utilization in cities of the south, including in Europe.

2 Research targets

The point of departure for this research is the hypothesis that people's perceptions, uses and behaviours regarding the landscape and urban natural spaces in general and different landscape elements in particular are conditioned by their scoioeconomic and educational background. In order to confirm this hypothesis, an empirical study was conducted in three completely different countries: Germany, Chile and Spain.

 ISSN 1865-1542

The research project was carried out jointly by scientists from the three countries selected for this study. The aim of the project was to explore and find answers to particular issues regarding the relation of peoples to urban nature and to support the main hypothesis. These issues included a comparison of nature perception by people having less access to urban nature and peoples having many opportunities to use urban nature. It was questioned if urban nature holds the same importance for different social strata (the local 'rich' and the 'poor'). It should be clarified how and when urban nature is used and perceived by socially different communities within cities and across cultures and countries.

3 Methodology

3.1 Selection of research sites

For the empirical, social and scientific study, and with the aim of examining the behaviour towards exploitation and use of natural resources in sites representing a range of architectural styles and social groups, settlement structures were chosen in countries with different cultural and developmental models. Most of actual studies use interviews and case studies as methods of investigations (Matsuoka & Kaplan 2008).

Germany and Spain were selected as two examples of developed countries with large scoioeconomic and cultural differences, while Chile was chosen to represent a developing country. Selection was based on a criterion of convergence between the existence of and access to urban landscapes by citizens from different social segments. The residential sites of each country were chosen according to the following criteria:

- The research areas (urban neighbourhoods) of each country are located in the same city to ensure that they were influenced by the same local and regional culture.
- All of the research areas have a high population density with social and economic differences regarding settlement structure and standard of living. Both a high-income and a low-income area were chosen in each country.
- All of the cities have settlement structures that can also be found in other cities with similar characteristics (typology).
- One of the two neighbourhoods in each country has clearly poorer natural conditions than the other in terms of both quality and quantity (accessibility to nature and landscape).
- All residents of both neighbourhoods in each city have easy access to an urban park.
- The neighbourhoods are located in outlying districts (at a maximum distance of 10 to 15 minutes) with nearby nature areas that remain practically intact (urban wilderness).

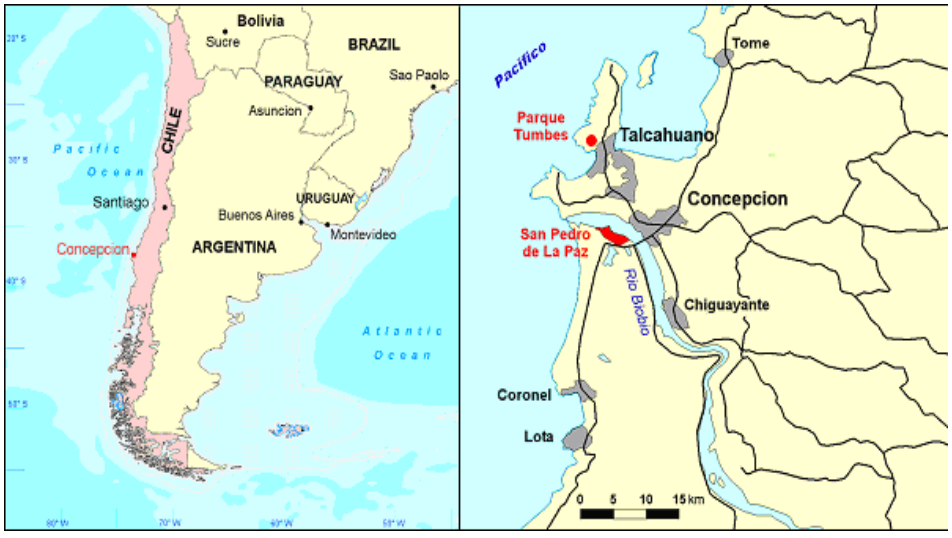

Figure 1: Latin America. Chile. Concepción. Study sites.

 ISSN 1865-1542

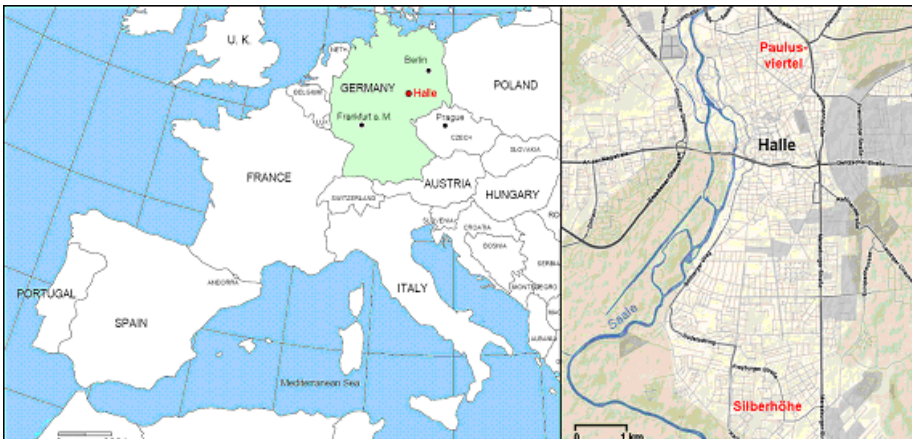

Figure 2: Germany. Halle. Silberhöhe and Paulusviertel neighbourhoods

For the Chilean study sites, Laguna Chica and Laguna Grande are the urban wilderness areas corresponding to the town of San Pedro de la Paz, while Tumbes Park is the wilderness area that corresponds to the town of Talcahuano (Fig. 1). In Germany, the Paulusviertel and Silberhöhe neighbourhoods of the city of Halle-Salle were chosen for this study (Fig. 2). The Galgenberg nature area corresponds to the neighbourhood of Paulusviertel, while the Weissen Elster and Saale meadows correspond to the neighbourhood of Silberhöhe. For the city of Cordova in Spain, Colon Park corresponds to the neighbourhood of Santa Marina, while the Sierra Morena Mountains correspond to the Brillante neighbourhood (Fig. 3).

In Halle (Saale), an important historic industrial city located in the new federal states of Germany, the large housing development of Silberhöhe and the residential neighbourhood of Paulusviertel were chosen for this study. In Chile, the agglomeration of Tumbes/Talcahuano and some urban sectors of the city of San Pedro de la Paz were selected. Both of these areas are located in the conurbations of the city of Concepción, the capital of the VIII Region of Chile. Cordova (Spain), declared as World Heritage City by the UNESCO, is famous for its historical architecture; a legacy left by the different civilisations that have settled in the city over the centuries. The neighbourhoods selected in Cordova include Santa Marina, which is located in the historical city centre, and El Brillante, a residential area undergoing rapid growth.

The high-income settlement structures or "residential communities" studied are the historical district of Paulusviertel (Germany), San Pedro de la Paz (Chile), and El Brillante (Spain). The low-income or "working-class" communities included Silberhöhe (Germany), Tumbes (Chile) and Santa Marina (Spain). These urban

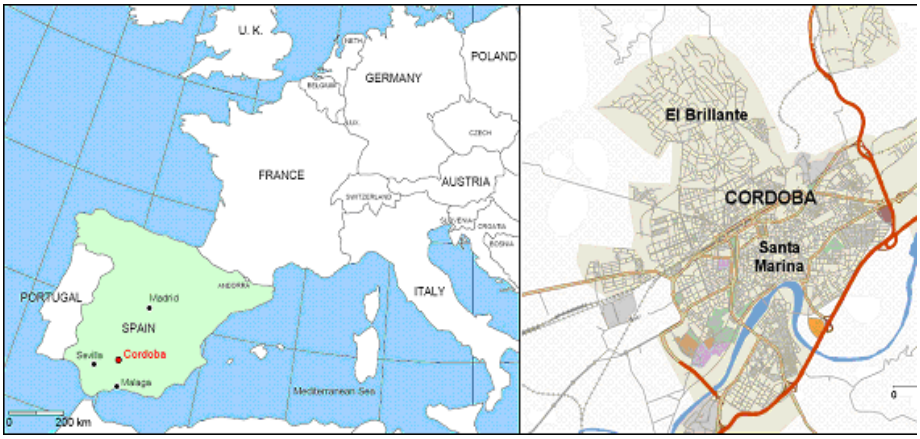

Figure 3: Spain. Cordova. Study sites.

 ISSN 1865-1542

Animation 1: Rathenaus Square and Paulus neighbourhood

Figure 4: Paulus Neighbourhood

areas were intentionally chosen to represent completely different architectural structures with a view to demonstrate the impact of the residential environment on the perception and use of natural resources.

3.2 Characterisation of study areas

Halle/Saale, Germany: The Paulus neighbourhood (middle-high social standard area) is a residential district located in the historical part of town and contains typical dwellings with different building conditions and building densities (Anim. 1, Fig. 4). It was mainly built in 1900 to 1930 and mostly made up of blocks of flats, small buildings on the periphery (4-storey rental units dating from 1900 to 1914), villas and old residences that are rented by the upper middle-class. Approximately 8,600 inhabitants reside in the study area, resulting in the most highly populated district within the city. The Paulus neighbourhood has a population density of 82 inhabitants per hectare (1995), second only to the sectors with large housing developments. Nonetheless, the number of inhabitants and the population density decline.

The Silberhöhe housing development (low social standard area, 35,000 inhabitants, Anim. 2, Fig. 5) is located in the south of the city and is the most recent construction of the GDR (1978-1989). With a population density of 74 inhabitants per hectare Silberhöhe is the most densely populated neighbourhood in Halle. Although there are numerous open spaces, they are insufficient given the high population density and not very functional. The green spaces include relatively large lawns, grass roadside verges and a few green areas with trees.

Figure 5: Silberhöhe neighbourhood

Animation 2: Green Corridors in Silberhöhe

 ISSN 1865-1542

The survey was conducted in the 8 WK (GDR-time prefabricated housing estates) housing development. Built in the eighties, this is one of the most recent developments of its kind. A green corridor covers only a few hectares, the park barely satisfies the needs of the neighbourhood residents. It has lawn areas and bushes, is crossed by a pathway and is equipped with a playground. Adjacent to the housing development there are extensive flood plain meadows along the Weisse Elster and Saale rivers. This is a mostly uncultivated landscape that is easy accessable for urban wilderness recreation. The meadow is mainly composed of perennials on wasteland, small cultivated surfaces and woodlands and forms part of the Saale Valley protected landscape. Owing to the variety and wealth of bird species that can be found here, it is particularly good for observing nature.

Figure 6: San Pedro de la Paz neighbourhood

Conurbation Concepción-Talcahuano, Chile: The town of **San Pedro de la Paz** (middle-high social standard area) originally belonged to the city of Concepción until its independence in 1995 (Fig. 6, Anim. 3). The town currently has 80,284 inhabitants (2002 Census) and is 99.4% urbanised. The town is chiefly residential and commercial and services industry oriented. The residents in this sector are, on the whole, median income professionals, teachers, public service employees, independent workers, shopkeepers and retirees. The large residential communities are located close to natural resources and areas of high ecological value which

Animation 3: Laguna Grande

fulfil important urban functions. The most notable of these are Laguna Chica, Laguna Grande, the lake basins and the Los Batros wetlands. The lagoon basins have forest plantations, remnant native brush land and new housing developments. Private residences and clubs, public spas, sports facilities and other buildings can be found on the margins of the lagoons and have modified the coastline.

Talcahuano is considered the most important military, industrial, fishing and commercial port in Chile (Anim. 4) . The study area is located in census districts No. 5 and No. 8. The entire area is known as Tumbes (low-income area). The neighbourhoods studied include Los Copihues, Nueva Los Lobos, Bandarán and Centinela

Animation 4: Port of San Vicente. Talcahuano

 ISSN 1865-1542

Sur with a total population of some 12,000 inhabitants. The area is comprised of multi-storey blocks of flats which were built in the eighties and nineties. These settlements are of recent construction and characterised by their high population density (300 - 500 inhabitants per ha). The concentration of a low-income population constitutes a serious problem as it leads to social conflicts and has an adverse affect on the green areas, including Tumbes Park. The majority of the working population of Talcahuano is engaged in activities connected to the informal sector of the economy and lack stable, well-paid employment. Due to their low educational level and lack of skills, the residents in this area cannot aspire to better jobs. 90 % of the people of Talcahuano live in houses, many of which are small, shanty-like structures. These dwellings measure 34m² in size and are constructed of light materials (wood and sheet metal) on 70m² plots of land, leading to overcrowding and social conflicts. The area lacks community facilities and green spaces. Tumbes Park is the natural urban wilderness nearest the residential sector. It consists of woodlands, open grass tableland and rough coastline.

Figure 7: View of Sierra Morena

Cordova, Spain: El Brillante (middle-high class area), covering a total of 560 hectares, is the most extensive residential district in the city (Anim. 5). The enormous growth the neighbourhood has undergone in recent decades can be explained by the pursuit for new modern lifestyles and the desire to escape from degraded urban environments with a high population density and deficient services; features which characterise the traditional neighbourhoods of Cordova. This lack of urban planning has prevented the creation of a unified landscape that is integrated into its natural environment (García, 1993). The population of El Brillante has grown exponentially from 2,010 inhabitants in 1960 to 10,879 in 2003 (Municipal Census). In spite of this growth, El Brillante continues to have the lowest density (10 inhabitants per ha.) and youngest population in Cordova. Although 73% of the population is between 15 and 65 years of age, the majority is under 50. The neighbourhood residents are mainly middle-class liberal professionals, civil servants and trained or business professionals. Given the individualistic and possession-oriented cultural models of this sector of the population, the residents tend to have a more private vision regarding green spaces and access to and enjoyment of nature. The neighbourhood is known as the "green lung" of Cordova. The largest public green space is the "Circuito del Tablero" or Tablero Track, which is mainly used for sports. However, the park is not adapted for use by pedestrians as it lacks rest areas or playgrounds. Due to its location in the foothills of the Sierra Morena mountain range (Fig. 7), much natural urban wildlife can be found in the areas surrounding El Brillante; areas with native vegetation and patches of reforestation that can be observed from any point of the neighbourhood. The entire area is currently protected by the PGOU, the General Plan for the Regulation of Urban Areas.

Animation 5: El Brillante

 ISSN 1865-1542

Santa Marina (working class area) is one of the most traditional neighbourhoods in Cordova (Anim. 6, 7). Located in the core of the most easterly part of the historical district of the city, Santa Marina contains many buildings and spaces that are an important element of the city's architectural and cultural heritage. Built during the Islamic period and the early Middle Ages, Santa Marina lacks in a structured urban plan. The neighbourhood is comprised of a complex network of narrow, winding streets which occasionally open out onto small squares. Although most of the houses are built following a similar architectural style, a large number of homes or public housing developments for the working classes can be found alongside palatial homes in which the wealthier peoples of the city live (García, 1993).

While most of the dwellings have courtyards, their function in the lower-income dwellings is not aesthetic but social, creating common ties and providing a space in which residents can carry out household-related tasks. Although the population of Santa Marina has risen slightly in recent years (from 4,671 inhabitants in 1996 to 4,676 in 2003), the population growth in the neighbourhood remains practically at a standstill today. Little over 22% of the population is under 20, while the large elderly population (16.46% of the population is over 65) is growing. The urban features of this neighbourhood such as the lack of space and social services (hospitals, centres for adult education, green spaces, etc.) has led many of its residents to migrate to other areas of the city that are currently experiencing growth. Santa Marina has ten public squares of varying sizes, all of which are of diverse origin and designed in the traditional manner. The majority of these squares are not fit for the recreational needs of the local residents. Colon Park is the green area that is closest to the Santa Marina neighbourhood. It is equipped with a variety of amenities for recreational use such as large trees, benches, dog parks and playgrounds.

Animation 6: View of historical quarter

Animation 7: Streets of Santa Marina

3.3 Design and implementation of survey

The survey was designed taking into account the social criteria that best represent the aims of this study, namely those having to do with the interactions of different socioeconomic classes with nature such as "Quality of Life", "Community and Local Identity" and "Recreational Activities" (see Table 1). The survey consisted of interviews of selected samples of the population residing in all the six research areas of the three cities. The survey was conducted using questionnaires that included closed questions on the following topics:

1. Free time activities.
2. General interactions with nature, behaviour towards nature, daily perception and assessment of nature.
3. Nature in the residential environment.
4. Observation of nature.

 ISSN 1865-1542

Table 1 Green spaces and quality of urban life

CRITERION	DESCRIPTION	GROUPS OF QUESTIONS ON SURVEY	ROLE
Daily recreational needs	Interaction with urban green spaces should be available as an everyday occurrence. Citizens should be free to choose when to visit the spaces, throughout the week or throughout the year, without undue hindrance.	- Availability of free time on Weekdays - Availability of free time on weekends - Car owner - Use of car - Free time activities - Holiday destination - Owner of garden, plot or kitchen garden	To observe if all members of the population have equal opportunities for recreation and use of nature.
Optimal use of green spaces	Access to urban green spaces should not be compromised by factors that reduce their accessibility. The quality, type, and quantity of vegetation and uses of the site will determine if use is optimal or not.	- Enjoyment of nature - Visits to urban green spaces - Frequency of visits to urban green spaces - Time spent in green spaces - Problems in green spaces - Assessment of green spaces	To determine the quality of nature and what aspects users value most in green spaces.
Location and accessibility	The most crucial factor for access is that spaces be located within easy walking distance of user communities, ideally 5 minutes walking time.	- Place where nature is observed - Time spent travelling to site	To determine whether or not the location of urban green spaces permits equal access by all members of the community.
Local identity with green spaces and quality of life	Local identity can often be defined by a certain landscape character which people cherish and which reinforce a sense of belonging due to cultural, historical or other ties.	- Meaning of nature - Protection of nature - Investment in nature - Participation in protecting nature - Name of park normally visited - Nature in the neighbourhood	To ascertain the importance given to urban green spaces and the environmental awareness of users. Determine if differences exist between users with different social backgrounds.
Landscape equity and social inclusion	Those who wish to access urban green spaces should be able to do so regardless of age, gender, status, background or income. Adherence to con siderations of access, location, site quality and management ensures that users feel satisfied with use. To ensure full social inclusion, it may be necessary to provide measures to	- Age - Employment situation - Level of schooling - Neighbourhood where user lives	To determine if the use of nature is conditioned by social status or other factors.

 ISSN 1865-1542

5. Use of nature and natural amenities in the residential area and in the city in general: Type of nature, reasons for use, amount of time spent in nature, and aesthetic assessments of nature.
6. Use of natural landscapes in the residential environment: Type of area, frequency of use, reasons for use, time, means of transport, proposals, notions, requests and preferences.
7. Social background of respondents.

This complex set of topics was chosen with a view to determining if and how the public green areas studied are perceived, used and exploited in recreational terms. A further aim was to study the ecological characteristics of the natural landscape components in the residential environment and analyse the main attitudes towards nature and social values attached to nature (Friedrichs 1985; Kromrey 1991). Although the questionnaire was adapted to the particular features of each country, the general structure and questions remained much the same across countries. The survey included a total of 50 equal questions for all sites, and additional three for Halle (Saale) and six for Cordova, reflecting only local conditions. The questions were verified by means of a trial survey of 20 people who were selected at random from each of the study sites.

The six research sites contain the same type of natural elements, although their layout and number vary in each area studied. The communities of San Pedro de la Paz (Chile) and El Brillante (Spain), both of which have detached houses, stand out for their variety of natural elements (household gardens, trees, wilderness), which far surpass the other study areas. There is a much greater abundance of "patches" of natural vegetation in the areas surrounding the residential neighbourhoods of Chile and Spain than in most of the study areas in Germany, thus enhancing the sample neighbourhoods. In contrast, there is a notable lack of natural spaces in the working-class neighbourhoods around Tumbes Park; a fact which appears to go hand in hand with the underprivileged situation of the residents who live there. In the neighbourhood of Santa Marina in Cordova urban vegetation is also scarce, although this is most likely due to historical, social and cultural factors.

Prior to conducting the survey, the interviewers visited the sample households to request the residents to take part in the survey. A sheet was then left at the entrance to the building with information on the institutions conducting the study, the interviewers and the objectives, contents and duration of the survey. The survey was conducted using standardised questionnaires and the stratified random probabilistic sampling technique. The sample population was made up of residents over 18 years of age in each of the sample study sites. The survey was conducted in a different manner in each of the countries depending on the participation culture of the population, application time and available budget (Table 2). Only complete questionnaires where used for the evaluation. The questionnaires were distributed and later collected in Germany and Spain. The investigation in Spain are based on personal interviews.

Table 2 Relation between distributed and collected questionnaires in the reach areas

Research Areas	Year of investigation	Distributed questionnaires	Collected questionnaires
Paulusviertel	1989	402	258 (=64,2%)
Silberhöhe	1989	610	233 (=38,1%)
San Pedro de la Paz	2001	200	200 (= 100%)
Tumbes	2002	200	200 (= 100%)
El Brillante	2004	375	120 (= 32%)
Santa Marina	2004	392	111 (= 28,3%)

 ISSN 1865-1542

The survey in Germany was conducted in 1998. Participation was voluntary and anonymous. Before distributing the questionnaires, the interviewers visited all of the households to ask the residents to participate in the survey. The survey, accompanied by an explanatory letter, was then left on bulletin boards located at the entrance to each of the buildings in the sample. The questionnaires were distributed in person and collected by the interviewers at the agreed time. Upon submission, questions were answered and help was given to complete the survey. The survey was conducted in Chile between 2001 and 2002. The study areas selected in Chile were: Laguna Grande, Los Arrayanes and Las Acacias of the town of San Pedro de la Paz and the neighbourhoods of Los Copihues, Nueva Los Lobos, Villa Badarán and Centinela Sur of the town of Talcahuano. The questionnaire was conducted in person by the interviewers. A group of interviewers with previous experience in survey methodology were trained in the use of a system to control and validate the surveys. The interviewers went door to door - according to a stratified sample by neighbourhood and household - in order to aid the respondents in completing the surveys.

The survey was conducted in Spain in 2004. The surveys were delivered personally to the sample households. They were then collected at the time and date agreed upon by the respondents. In order to ensure that a greater number of surveys were submitted, the interviewers had to visit some households up to three times. The population of the six study areas was represented proportionally in the sample by age (Table 2).

The study was chiefly exploratory in nature. Greatest emphasis was placed on the analysis of data in order to qualitatively examine the interaction between nature and citizens through their perceptions (Puddifoot, 1996). The methodology was largely based on the work of Austin (2004) and Stewart et al. (2004) in which data is analysed in a fundamentally interpretive manner.

4 Results of the survey and comparative discussion

4.1 Urban nature in the residential areas

The quantity, quality and location of urban green spaces form part of the natural heritage of the city or neighbourhood in which they are found. These spaces are of high importance for their users. When we asked the question: *"Are you satisfied with the natural amenities of your neighbourhood?"*, the most frequent response in the six areas studied, regardless of the presence or absence of vegetation was: *"I am satisfied"* (Tumbes 49.5%, San Pedro de la Paz 51.5%, Silberhöhe 45.9%, Paulusviertel 55.8%, Santa Marina 51.3% and El Brillante 49.1%, Fig. 8). Inhabitants' level of satisfaction or dissatisfaction regarding the natural elements of their community is not wholly conditioned by the scarcity or abundance of green areas. Indeed, those who live in communities with little or no vegetation feel just as satisfied as those who reside in neighbourhoods well equiped with green. The El Brillante (Spain) and Santa Marina (Spain) neighbourhoods stand out from the neighbourhoods in the other countries studied for the larger number of respondents who stated that they are *"very satisfied"* with their natural surroundings. The large percentage of *"satisfied"* or *"very satisfied"* residents of El Brillante (Spain) is to be expected given that this is the neighbourhood contending most green areas of all those studied, even though nature is only present here in form of private gardens. In contrast, due to its historical architecture, Santa Marina (Spain) is the neighbourhood with the least amount of public or street vegetation. However, many of the households have interior courtyards with abundant trees and plants, providing homeowners with numerous benefits on a par with those gained from public vegetation.

 ISSN 1865-1542

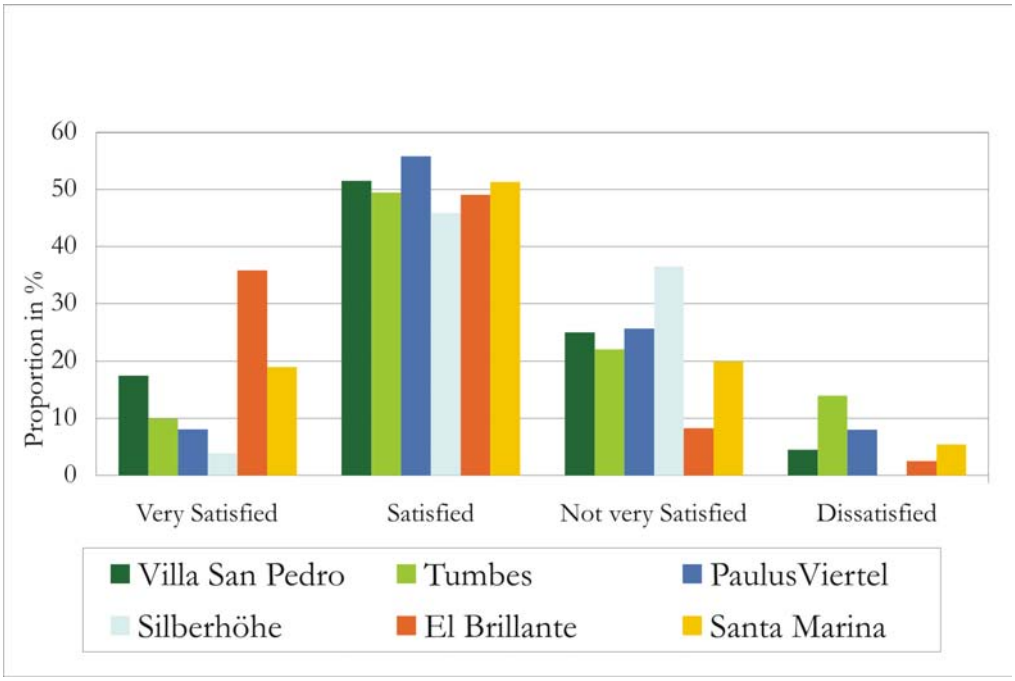

Figure 8: Satisfaction with natural amenities in the neighbourhood

4.2 General attitudes towards nature.

Along with the questionnaire a general explanation of the understanding of 'nature' was given to the questioned persons so that a common understanding about 'urban nature' could be reached to compare later results of different countries and cultural background. A positive attitude towards nature was found across the six study sites. In the German neighbourhoods, 68.2% of the sample population declared that *'nature is important'*, while 56.8% did so in Chile and 55.4% in Spain. Those who declared themselves to be *'nature lovers'* or felt themselves to be *'very connected'* to nature accounted for 27.9% of the population in Germany, 39.8% in Chile and 39% in Spain. This suggests that the level of appreciation of nature (people who think that nature is important to them in addition to those who feel a close tie with it) is high in these countries (San Pedro de la Paz (Chile) 95.6%, Tumbes (Chile) 97.5%, Paulusviertel 94.4% (Germany), Silberhöhe (Germany) 97.7%, El Brillante (Spain) 92.5% and Santa Marina (Spain) 96.3%). This attitude is quite surprising as it suggests that nature is subject to a personal scale of values, which is in turn influenced by the problems and social background of each neighbourhood. All neighbourhoods that value nature, are also those which suffer from greater social problems and where urban vegetation is scarce (Tumbes (Chile) , Silberhöhe (Germany) and Santa Marina (Spain)).

It became clear that neighbourhoods with social problems in Chile value beside ornamental green especially nature areas from the point of economic benefit. When inhabitants were asked *"With respect to the investments made to protect nature, do you think that...?"*, the most frequent response was *"Nature has a high cost but it is worth investing in it"* (San Pedro de la Paz (Chile) 84%, Tumbes (Chile) 77%, Paulusviertel (Germany) 57.8%, Silberhöhe (Germany) 54.9%, El Brillante (Spain) 65% and Santa Marina (Spain) 69%). Inhabitants of the Chilean study sites are more aware of the importance of protecting nature, even when this involves large investments. The statements made by the Chilean residents are striking given that Chile is the least developed country of those studied and has greater social problems and a lower per capita income.

This environmental perception is also reflected in the level of participation by citizens in protecting nature. Twenty-seven percent of the citizens in San Pedro de la Paz , 21.5% in Tumbes (both Chile) , 24.4% in Paulusviertel, 16.3% in Silberhöhe (both Germany),

 ISSN 1865-1542

31.6% in El Brillante and 44.1% in Santa Marina (both Spain) have, at some time, participated in activities to conserve nature. The Spanish study sites far surpass those of Germany and Chile in this regard, with the lower middle-class neighbourhood of Santa Marina standing out most for its participation. On the other hand, the mid to high-income neighbourhoods of Chile and Germany participate more in protecting nature than in the low-income areas, perhaps due to the fact that they are in closer contact with nature and have more money and time to do it.

4.3 Use of green spaces: different views

Urban green spaces are used differently in each country depending on their availability and accessibility and the culture of use in that country. In almost all of the study sites, private green spaces (household gardens, land for weekend getaways) are the preferred choice for spending free time (San Pedro de la Paz 51.5%, Tumbes 28.5% (both Chile), Paulusviertel 44.5%, Silberhöhe 41.7% (both Germany), El Brillante 64.1% and Santa Marina 33.3% (both Spain), Fig. 9). It should come as no surprise, that the residents of the neighbourhood with the largest number of private gardens, El Brillante (Spain), spend their free time in these spaces. Likewise, the residents of Tumbes (Chile) and Santa Marina (Spain), having the least amount of private space, prefer other green areas to spend their free time. Private gardens (with what only some areas were equipped) have a big importance for neighbourhoods but don't replace public green.

In the study areas of Germany, the use of natural landscapes is significantly higher than in the neighbourhoods of the other countries (San Pedro de la Paz 19%, Tumbes 27.5% (both Chile), Paulusviertel 58%, Silberhöhe 44.2% (both Germany), El Brillante 7.5% and Santa Marina 4.5%(both Spain)). These results shed some light on the land owning culture in the countries studied, although they are not conclusive given the easy access to the small social gardens in Germany known as 'allotment gardens'. These social green areas permit almost all of the inhabitants of Germany, regardless of their socioeconomic status, to have access to some type of green space either within or outside the city; a situation that does not occur in Chile or Spain. This may explain why the urban green areas in Germany are used as a last resort for enjoying nature, unlike Spain or Chile where this is the second option chosen for engaging in free-time activities.

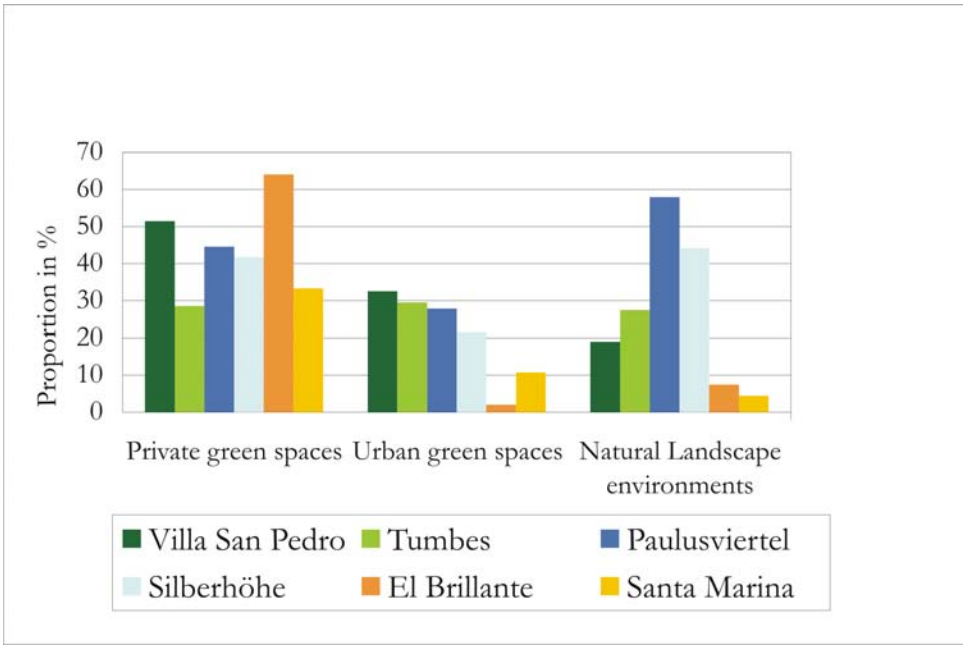

Fig. 9 Use of green spaces in free time

 ISSN 1865-1542

When people have free time and choose to go out, the Germans and Chileans in particular prefer to *"take a walk in the parks or public gardens near home"* (San Pedro de la Paz 54%, Tumbes 61.5% (both Chile), Paulusviertel 52.3%, Silberhöhe 49.8% (both Germany), El Brillante 15% and Santa Marina 23.4% (both Spain), Fig. 10). In Spain, however, the most frequent response was to *"take walks along streets with trees"* (El Brillante 36.6% and Santa Marina 38.7%, Fig. 10), followed by taking walks in nearby public parks. The second option chosen by the well-to-do in Chile and Germany was to *"take walks along streets with trees"* (San Pedro de la Paz 47% (Chile) and Paulusviertel 47.3% (Germany), while the underprivileged classes prefer to *"take walks along any street in the neighbourhood"* (Tumbes 32.5% (Chile), Silberhöhe 26.3% (Germany)). This could be due to the absence of urban trees in these neighbourhoods. Very few respondents gave answers such as *"Go bike riding"*, *"Walk the dog"*, *"Travel by car to parks"* or *"Other activities"*. A large percentage of the people in the study areas spend their free time in contact with nature. Given the absence of private gardens, urban green spaces such as parks or tree-lined streets are of great importance. In some cases, these public areas are used by more than half of the local residents. The first choice of Germans and Chileans is to spend their free time in public spaces, while the Spanish prefer to take walks along tree-lined streets.

In both Chile and Germany, nature is largely observed in passing *"when walking through the city to run errands"* (San Pedro de la Paz 66%, Tumbes 32% (both Chile), Paulusviertel 77.1%, Silberhöhe 64.8% (both), Fig. 11). Vegetation in the city or neighbourhood is perceived to be important solely in San Pedro de la Paz, where 51.5% of the population observes nature when walking through the city and 41.5% when taking a walk through the neighbourhood. In Germany, the second option for observing nature is while *"on holiday"* (Paulusviertel 42.6%, Silberhöhe 32.6%) and in natural environments far from the city, *"I observe nature in landscapes outside the city"* (Paulusviertel 50%, Silberhöhe 38.6%). The Spanish behave differently from the Germans and Chileans. In the areas surveyed, residents largely observe nature when walking on the outskirts of the city (El Brillante 55.8%, Santa Marina 52.25%), followed

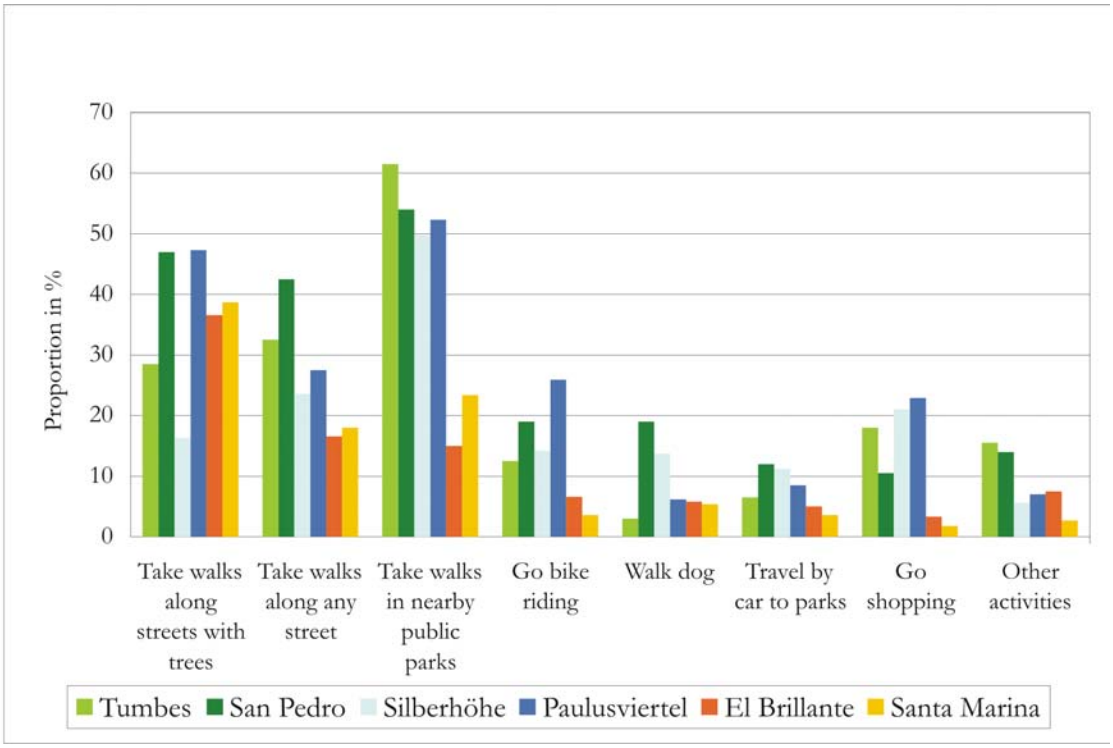

Fig. 10 Preferred free-time outdoor activities

 ISSN 1865-1542

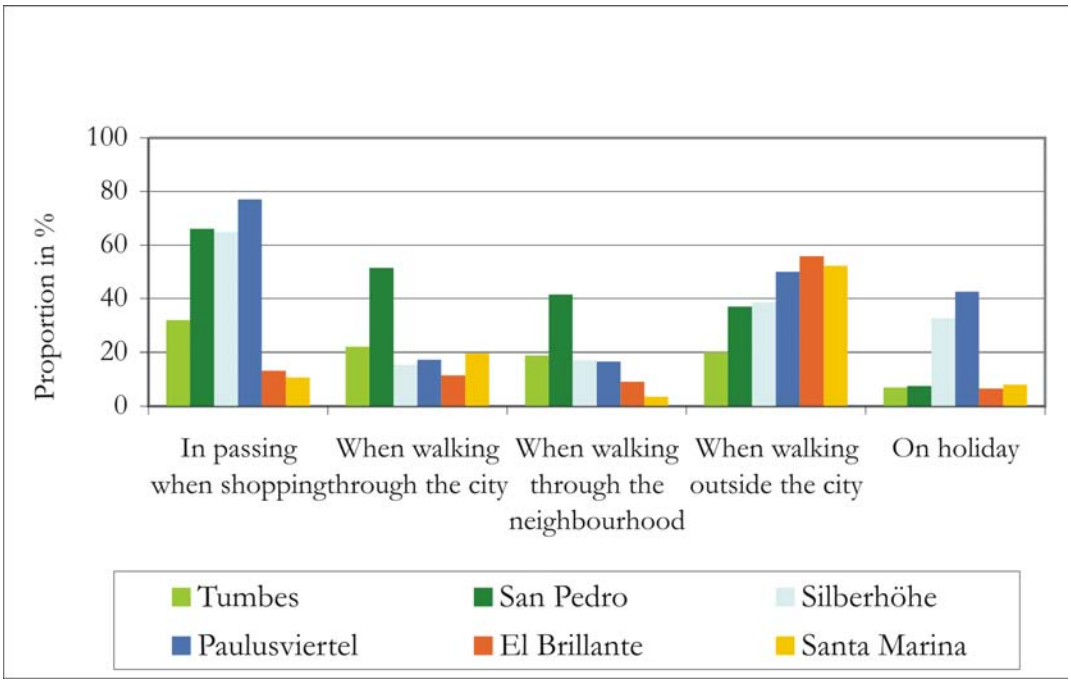

Fig. 11 Observation of nature

at a great distance by observing nature in the city. The Spanish have a different concept of nature than the Chileans or Germans. Given that the Spanish do not associate nature with urban settings, more than 50% stated that they observe nature outside the city and did not relate nature with urban parks or trees. It should be noted that only 11.6% of the residents of El Brillante observe nature when taking walks through their neighbourhood, in spite of the fact that this is the with green best equipped area of all those studied.

As regards the frequency of use of urban parks, the most common response in the three countries was *"once or twice a month"* (Villa San Pedro 55%, Tumbes 49% (both Chile), Paulusviertel 58.5%, Silberhöhe 59.2% (both Germany), El Brillante 42.5% and Santa Marina 53.15% (both Spain)), followed by *"I go frequently"* (Villa San Pedro 38%, Tumbes 35% (both Chile), Paulusviertel 22.5%, Silberhöhe 10.3% (both Germany), El Brillante 35% and Santa Marina 42% (both Spain)).

The proximity of natural areas with respect to the study sites was reflected in the question *"Time spent travelling to natural areas"*. The majority responded that they spent *"less than ten minutes"* (Villa San Pedro 62.5%, Tumbes 67% (both Chile), Paulusviertel 32.2%, Silberhöhe 42.9% (both Germany), El Brillante 45.2% and Santa Marina 45.6% (both Spain)). On the other hand, the majority spends *"more than an hour"* in these spaces at each visit (Villa San Pedro 55%, Tumbes 47.5%, Paulusviertel 46.9%, Silberhöhe 42.9%, El Brillante 45.2% and Santa Marina 45.6%).

5 Discussion

The study supports the position that urban nature and urban forests are of high importance for urban dwellers (Gobster 1995; Coles & Bussey 2000; Oguz 2000; Shafer et al. 2000; Simson 2000; Roovers et al. 2002; Chiesura 2004; Jim &Chen 2006; Kaplan & Austin 2004; Özgüner & Kendle 2006). Nature is not perceived in the same way by individuals from different socio-cultural backgrounds or from different countries. This was already expressed by Oguz (2000), Chiesura (2004), Sherman et al. (2005), Crow et al. (2006) and Oku & Fukamachi (2006). Nevertheless, there is a manifest need to have contact with and access to green areas both inside and outside the urban setting in order to achieve full personal development, mostly not depending on social or cultural status. To be in contact

 ISSN 1865-1542

with nature is an important need of all people, also in the cities.

Although large environmental and social differences exist between the study areas, more than 90% of the Chilean, German and Spanish population sample declared that nature is important or very important in their lives. This demonstrates that contact with nature, in any of its many manifestations, is a fundamental pillar of individuals' wellbeing, regardless of their geographical, cultural or socioeconomic background. Marked differences do not exist between low, mid or high-income neighbourhoods with different natural amenities in terms of the inhabitants' behaviour to nature and the importance given to it . These results contradict the studies by Hough (1998), who affirms that people who are frequently exposed to natural spaces are more environmentally aware than those who have little contact with nature.

Socioeconomic status was shown to be a determining factor in the use of and preference for green spaces. Members of the higher income groups, regardless of the area studied, often opt for other alternatives when using nature; alternatives that are less accessible to the inhabitants of low-income neighbourhoods. These can be private gardens or nature sites only reachable by car. Most people prefer to use private rather than public green spaces. In both Germany and Spain little difference was found between areas with varying social backgrounds. In Germany this difference is offset by social policies which facilitate access by low-income people to small gardens known as 'Allotment Gardens' within the city. In Spain, low-income people have access to green areas due to easy accessibility to areas on which illegal homes can be built. Neither of these situations occurs in Chile.

Less nature in cities and urban neighbourhoods can be estimated as the reasons why a large number of people spend time in natural landscapes outside the cities. This especially happens in the densely built-up European cities with limited nature attractions. But it can also be influenced by the accessibility, long distances, entrance and traffic costs and other reasons. This has to be further investigated (Matsuoka & Kaplan 2008). Beside all cultural and social differences it could be shown that the neighbourhoods have an enormous importance for all nature related activities (observations, aesthetic preferences, recreational activities). This could be expected based on results of former studies (Dökmeci & Berköz 2000; Berg 2004; Kaplan & Austin 2004; Vogt & Marans 2004; Crow et al. 2006; Ellis et al., 2006).

Private green spaces (e.g. private gardens), including land used for recreational purposes, rather than public gardens or parks, is the first choice of Chilean, Spanish and German citizens who prefer to spend their free time in contact with nature. The second most preferred option in Germany is to spend free time in natural spaces outside the city, while the citizens of Chile and Spain prefer to spend their free time in urban parks. This supports the assumption that people demand different types of nature. There are differences in the valuation of private and open spaces between the studied Spanish and German cities. These could be cultural based, which has to be investigated further.

Cultural differences and differences in urban settings and nature implementation in it can be assumed when we register that questioned persons in Spain observe nature and recreate in natural conditions more outside cities. In Spain nature is not preferable associate with city parks, tree-lined streets or other areas with patches of vegetation. Here a different idea of "nature" can be found and realised in the people's behaviour.

For the majority of questioned middle-class people in Chile, Germany, and Spain, urban trees have a high importance. Urban trees are a determining factor when choosing where to go for a walk. However, trees are only important in neighbourhoods which have a large number of them. Indeed, residents from low-income neighbourhoods, where the absence of trees is notorious, cannot express this behaviour. This goes along with aesthetic preferences and needs of greenways (Gobster 1995; Oguz 2000; Jim & Chen 2006; Özgüner & Kendle 2006).

This study doesn't support the hypothesis expressed by Lindsey (1999), Dökmeci & Berköz (2000), Shafer et al. (2000), Roovers et al. (2002), Damigos & Kaliampakos (2003), Chiesura (2004), Vogt & Marans (2004), Balram & Dragicevic (2005), and Crow et al. (2006) that

 ISSN 1865-1542

residents of higher scoioeconomic status use or value urban nature to a greater degree than those of lower means. Both groups use nature as it is existing, accessible and near to their homes. The only socioeconomic difference in the utilization of nature consists of those nature parts in and outside cities which are not easy reachable and therefore connected with costs and time. Such areas are prefered by higher income groups and often exclude lower income groups. Further investigations are necessary, too. There are good arguments to follow Matsuoka & Kaplan (2008) which argued that richer people using their resources rather than register differences are an expression of differential preferences, benefits, or desires. The possible differences in gender and age, following Oguz (2000, 2004), Sherman et al. (2005), Crow et al. (2006), and Oku & Fukamachi (2006) had not been investigated yet.

Nature elements of neighbourhood supports the community identity. This is not primarily a question of large or small scale but of usability and accessibility (Chiesura 2004). The expected benefits of such nature elements (greenways, neighbourhood parks, street trees) cannot be easily identified separately. It is a 'package' of benefits which improves the quality of life as well as peoples' health, which gives space for recreation and enables to consume aesthetic quality. All this supports the community identity. It can be stated that this result goes along with Ulrich (1976), Hull et al. (1994), Lucy & Phillips (1997), Kuo et al. (1998b), and Stewart et al. (2004). The promi fact is, that there are no significant differences between the investigated communities with very different social and cultural backgrounds.

It can be stated that the political, cultural, historical, religious, scoioeconomic issues interact for sure with peoples' behaviour to urban nature, but there is a broad common basis of nature perception independent from social conditions. This could clearly be found because there is a common cultural linkage between the investigated cities in Europe and Chile. The social dimension is less influencing than may be expected.

6 Conclusion

This is the first study connecting nature perception of 'the north' with 'the south' and including more than two countries (most stdies are located in only one!). Due to the small size of the sample used in the survey, the study results are purely exploratory in nature. However, this does not detract from the worthiness of the research results considering that they are interpreted in an appropriate manner and empirical generalisations are not made. Although the objective of the study was neither to conduct a statistical analysis nor to identify group-dependent variables between users and nature, it enabled us to quantitatively explore the relationship between citizens and the urban nature they use and draw the following conclusions:

To conclude, nature and open urban spaces as elements of the urban landscape are keys to improve the quality of life of urban dwellers regardless of their cultural or social status. Natural landscape elements in urban surroundings must be taken into account in urban planning policies to reflect the needs, economic possibilities and customs of the city's inhabitants. Urban nature is important in all of its manifestations, from private gardens, tree plantations and city parks to land used for recreational purposes in or near the city. This wide range of options permits users to select what is best for them and make nature a part of their daily lives.

Nature plays an important role in all the urban societies studied, regardless of social status and nationality (Gobster 1995). Both Europeans and Latin Americans consider urban green areas to be an important aspect of urban culture. There is an important need of cross-social and cross cultural studies in the field of nature perception (Chiesura 2004; Jim & Chen 2006). This study can only be a support of further hypothesis which have to be investigated. There is a clear lack of knowledge regarding urban green and its utilization in cities of the south, including in Europe (Matsuoka & Kaplan 2008). This study showed that people from all the study areas are highly interested in nature in gene-

 ISSN 1865-1542

ral and the nature in their neighbourhood in particular. The higher the social status, the larger the amount of private urban green areas. Lower-income areas in particular need to be compensated for this lack of private green space by making green areas more accessible to the population. Unfortunately, this is seldom the case (e. g. Crow et al. 2006).

On the whole, urban dwellers use different kinds of nature in their cities. The preference for specific types of nature depends on cultural background, accessibility and tradition, although social status can also play an important role. Multifunctional urban nature spaces and different kinds of nature elements, especially in the neighbourhood are necessary to develop (e.g. Chiesura 2004). Although the socioeconomic status of urban dwellers plays a role in their general free-time behaviour, there are certain nature-related outdoor activities that are independend from this status. Instead it reflects peoples' cultural status within society. Thus, peoples' relationship to nature depend on the culture shared by all the members of the society.

It is important that urban landscapes include green spaces in order to satisfy urban dwellers' need to be in contact with nature. This need must be reflected much more clearly and categorically in urban planning policies to ensure that cities are liveable and urban landscapes are attractive for people. The results of this study can help local planners to improve their urban green planning. In example, social functions of urban green in neighbourhoods should be emphasised in all three countries, reflecting the needs of the people. All countries have to develop a special strategic planning to include their natural green spaces in the outskirts and at the edges of the cities into their urban green planning concepts. This will add more nature offers to the mostly small ornamental green of the inner cities. The strategic planning have to include also more environmental education to value all kind of urban and peri-urban nature, and to ultilize the nature for the urban dwellers.

7 Acknowledgements

The authors would like to thank all the institutions involved in this research project, especially the Centre for Environmental Research UFZ-Umweltforschungszentrum Leipzig-Halle (Germany), the Centre for Environmental Sciences EULA-Chile and the Environmental-ENRESA Chair of the University of Cordova (Spain), for helping to contact the residents of the communities studied, sharing their knowledge on the regional culture and providing economic support. Special thanks to Jorge Rojas, Director of the Sociology and Anthropology Department at the University of Concepción (Chile) for his incalculable support, and all of those who also have worked on this project for their magnificent interdisciplinary contributions.

8 References

Abu-Ghazzeh, T.M., 1996. Reclaiming public space: the ecology of neighborhood open spaces in the town of Abu-Nuseir, Jordan. Landscape and Urban Planing 36, 197-216.

Akbari, N.; S. Davis; S. Dorsano.; J. Huang; & S. Winnett 1992. Cooling our communities: a guidebook on tree planting and light-coloured surfacing. USEPA ; Washington, DC.

Al-Hathloul, S. & M. A. Mughal 1999. Creating identity in new communities: case studies from Saudi Arabia. Landscape and Urban Planing 44, 199-218.

Anderson, L.-M. & H.-K. Cordell 1988. Influence of trees on residential property values in Athens, Georgia (USA): A survey based on actual sales prices. Landscape and Urban Planning 15, 153-164. doi:10.1016/0169-2046(88)90023-0

Austin, M.-E. 2004. Resident perspectives of the open space conservation subdivision in Hamburg Township. Landscape and Urban Planning 69, 245-253. doi:10.1016/j.landurbplan.2003.09.007

Baker, L.; D. Hope.; Y. Xu; J. Edmonds & L. Lauver 2001. Nitrogen Balanced for the Central Arizona-Phoenix (CAP) Ecosystem. Ecosystems 4, 582-602. doi:10.1007/s10021-001-0031-2

Balram, S. & S. Dragicevic 2005. Attitudes toward urban green spaces: integrating questionnaire survey and collaborative GIS techniques to improve attitude measurements. Landscape and Urban Planing 71, 147-162.

Barnhart, S.K.; N. H. Perkins & J Fitzsimonds 1998. Behaviour and outdoor setting preferences at a psychiatric hospital. Landscape and Urban Planing 42, 147-156.

Beer, A.-R. 1994. Urban greenspace and sustainability. In: H. van der Vecht et al. (eds.): Sustainable urban development: research and experiments. University Press, Delft, 69-88.

Berman, L. 1997. How does our garden grow? A guide to community garden success. Food Share Metro Toronto.

Berg, P.G. 2004. Sustainability resources in Swedish townscape neighbourhoods: results from the model project Hagaby and comparisons with three common residential areas. Landscape and Urban Planing 68, 29-52.

Breuste, J. & S. Wohlleber 1998. Naturschutz und Landschaftspflege in urbanen Kulturlandschaften Leipzigs. Zeitschrift für den Erdkundeunterricht, 50 , 215-225.

Breuste, J.; J. Rojas Hernandez; H. D. Kasperidus & C. Priego (2003) (eds.): Utilización y Maneja de la Naturaleza y del Pajsaje en Aglomeraciones Urbanas (Nutzung und Management von Natur und Landschaft in Stadtregionen). Leipzig; UFZ-Bericht 17, Stadtökologische Forschungen 36, 194 pp.

Brunson, L.; F.-E. Kuo & W.-C. Sullivan 2001. Resident appropriation of defensible space in urban public housing: Implications for safety and community. Environment & Behavior, 33, 626-652.

Chenoweth, R.-E. & P.-H. Gobster 1990. The nature and ecology of aesthetic experiences in the landscape. Landscape Journal. 9, 1-18.

Chiesura, A. 2004. The role of urban parks for the sustainable city. Landscape and Urban Planning 68, 129-138. doi:10.1016/j.landurbplan.2003.08.003

Coles, R.W. & S. C. Bussey 2000. Urban forest landscapes in the UK—progressing the social agenda. Landscape and Urban Planing 52, 181-188.

Crow, T.; T. Brown & R. DeYoung 2006. The Riverside and Berwyn experience: contrasts in landscape structure, perceptions of the urban landscape, and their effects on people. Landscape and Urban Planing 75, 282-299.

Damigos,D. & D. Kaliampakos, 2003.Assessing the benefits of reclaiming urban quarries: a CVM analysis. Landscape and Urban Planing 64, 249-258.

Douglas, I. 1983. The urban Environment. E. Arnold Publishers, Baltimore.

Dökmeci, V. & L. Berköoz 2000. Residential-location preferences according to demographic characteristics in Istanbul. Landscape and Urban Planing 48, 45-55.

Dwyer, J.-F.; E.-G. McPherson; H.-W. Schoeder & R.-A. Rowntree 1992. Assessing the benefits and costs of the urban forest. Journal of Arboriculture. 18, 227-234.

Dwyer, J.-F. & H.-W. Schroeder 1995. The human dimensions of urban forestry. Journal for Forestry. 92, 12-15.

Ellis, C.D; S. W. Lee & B. Kweon 2006. Retail land use, neighborhood satisfaction and the urban forest: an investigation into the moderating and mediating effects of trees and shrubs. Landscape and Urban Planing 74, 70-78.

Fjørtoft, I. & J. Sageie 2000. The natural environment as a playground for children: landscape description and analyses of a natural playscape. Landscape and Urban Planing 48, 83-97.

Friedrichs, W. 1985. Methoden der empirischen Sozial-

 ISSN 1865-1542

forschung. 13th edition, Opladen.

García, F. 1993. Barrios de Córdoba I, II. El Pregonero 93, 94. Córdoba, 1-25.

Gobster, P.H. 1995. Perception and use of a metropolitan greenway system for recreation. Landscape and Urban Planing 33, 401-413.

Gobster, P.H. 1998. Urban parks as green walls or green magnets? Interracial relations in neighborhood boundary parks. Landscape and Urban Planing 41, 43-55.

Gobster, P.H. 2001. Visions of nature: conflict and compatibility in urban park restoration. Landscape and Urban Planing 56, 35-51.

Hough, M. 1989. City Form and Natural Process. Routledge, London.

Hörnsten, L & P. Fredman 2000. On the distance to recreational forests in Sweden. Landscape and Urban Planing 51, 1-10.

Jacobs, J. 1961. Death and Life of Great American Cities. Random House, Toronto.

Jim, C.Y. & W. Y. Chen 2006. Recreation-amenity use and contingent valuation of urban greenspaces in Guangzhou. China. Landscape and Urban Planing 75, 81-96.

Kaplan, R. 1993. Urban forestry and the workplace. In: Gobster, P. H (ed.): Managing urban and high use recreation setting: Selected Papers from the Urban Forestry and Ethnic Minorities and the Environment Paper Sessions, International Symposium on Society and Natural Resources, 41-45. USDA Forest Service, St Paul.

Kaplan, R. & M. E. Austin 2004. Out in the country: sprawl and the quest for nature nearby. Landscape and Urban Planing 69, 235-243.

Kromrey, H. 1991. Empirische Sozialforschung: Modelle und Methoden der Datenerhebung und Datenauswertung. 5th edition, Opladen (=UNI-Taschenbücher 1040).

Kuo, F.-E.; W. -C. Sullivan; R.-L. Coley & L. Brunson 1998a. Fertile Ground for community: Inner-City Neighbourhood Common Spaces. American Journal of Community Psychology, 26, 823-851. doi:10.1023/A:1022294028903

Kuo, F.-E.; M. Bacaicoa & W.-C. Sullivan 1998b. Transforming inner city landscapes: trees, sense of safety, and preferences. Environment & Behavior. 30, 28-59. doi:10.1177/0013916598301002

Kuo, F.-E. & W.-C. Sullivan 2001. Environment and Crime in the inner city: Does Vegetation Reduce Crime? Environment & Behavior. 33, 343-367. doi:10.1177/0013916501333002

Lindsey, G., 1999. Use of urban greenways: insights from Indianapolis. Landscape and Urban Planing 45, 145-157.

Lewis, C.-A. 1992. Effects of Plants and Gardening in Creating Interpersonal and Community Well-Being. In: Relf, D. (eds.): The Role of Horticulture in Human Well-Being and Social Development: A National Symposium, 55-65. Timber Press, Portland,.

Lewis, C.-A. 1996. Green Nature, Human Nature: The Meaning of Plants in Our Lives. University of Illinois Press, Chicago.

Lucy, W.H. & D. L. Phillips 1997. The post-suburban era comes to Richmond: city decline, suburban transition, and exurban growth. Landscape and Urban Planing 36, 259-275.

MacDonald, L. 1996. Global problems, local solutions: measuring the value of the urban forest. American Forests 103, 26-29.

Matusoka, R. H. & R. Kaplan 2008. People needs in the urban landscape: Analysis of Landscape and Urban Planning contributions. Landscape and Urban Planning 84, 7-19

McDonnell, M.-J.; S. Pickett.; R.-V. Pouyat ; W.-C. Zipperer.;R.-W. Parmelee; M.-M. Carreiro & K. Medley 1997. Ecosystem processes along an urban-to-rural gradient. Urban Ecosystems 1, 21-36. doi:10.1023/A:1014359024275

Nowak, D.-J.; K.-L. Civerolo; S.-T. Rao; S. Sistla; C.-J. Luley & D.-E. Crane 2000. A modelling study of the impact of urban trees on ozone. Atmospheric Environment. 34, 1601-1613. doi:10.1016/S1352-2310(99)00394-5

Oguz, D. 2000. User surveys of Ankara's urban parks.

 ISSN 1865-1542

Landscape and Urban Planing 52, 165-171.

Oku, H. & Fukamachi, K. 2006. The differences in scenic perception of forest visitors through their attributes and recreational activity. Landscape and Urban Planing 75, 34-42.

Owens, P.M. 1993.Neighborhood form and pedestrian life: taking a closer look. Landscape and Urban Planing 26, 115-135.

Özgüuner, H., A. D. Kendle 2006. Public attitudes towards naturalistic versus designed landscapes in the city of Sheffield (UK). Landscape and Urban Planing 74, 139-157.

Pacione, M. 1982. The use of objective and subjective measures of quality of life in human geography. Progress in Human Geography 6, 495-514.

Peck, S.-W. & C. Callaghan 1999. Greenbacks from Green Roofs: Forging a New Industry in Canada. Canadian Mortgage and Housing Corporation, Ottawa.

Puddifoot, J. 1996. Some initial considerations in the measurement of community identity. J. Community Psych 24, 327-336. doi:10.1002/(SICI)1520-6629-(199610)24:4<327::AID-JCOP3>3.3.CO;2-L

Rohde, C.-L. & A.-D. Kendle 1994. Report to English Nature - Human Well-being, Natural Landscapes and Wildlife in Urban Areas: A Review. University of Reading, Bath.

Roovers, P., M. Hermy & H. Gulinck, H. 2002. Visitor profile, perceptions and expectations in forests from a gradient of increasing urbanisation in central Belgium. Landscape and Urban Planing 59, 129-145.

Saleh, M.A.E. 1999. Reviving traditional design in modern Saudi Arabia for social cohesion and crime prevention purposes. Landscape and Urban Planing 44, 43-62.

Santibáñez, F. & J.-M. Uribe 1993. Atlas Agroclimático de Chile. Regiones Sexta, Séptima, Octava y Novena. Universidad de Chile, Ministerio de Agricultura, Fondo de Investigación Agro-pecuaria. Corporación Nacional de Fomento; Santiago de Chile.

Savard, J.-P.; P. Clergeau & G. Mennechez 2000. Biodiversity concepts and urban ecosystems. Landscape and Urban Planning 48, 131-142. doi:10.1016/S0169-2046(00)00037-2

Sebba, R. 1991. The landscape of childhood: the reflection childhood's environment in adult memories and in children's attitudes. Environment & Behavior. 23, 395-422. doi:10.1177/0013916591234001

Selia, A.-F. & L.-M. Anderson 1982. Estimating costs of tree preservation on residential lots. Journal of Arboriculture. 8, 182-185.

Shafer, C.S.; B. K. Lee & S. Turner 2000. A tale of three greenway trails: user perceptions related to quality of life. Landscape and Urban Planing 49, 163-178.

Sherman, S.A., J. W. Varni; R. S. Ulrich & V. L. Malcarne 2005. Post-occupancy evaluation of healing gardens in a pediatric cancer center. Landscape and Urban Planing 73, 167-183.

Simson, A.J. 2000. The post-romantic landscape of Telford New Town. Landscape and Urban Planing 52, 189-197.

Stewart, W.-P.; D. Liebert & K.-W. Larkin 2004. Community identities as visions for landscape change. Landscape and Urban Planning 69, 315-334. doi:10.1016/j.landurbplan.2003.07.005

Sukopp, H. & P. Werner 1983. Urban environments and vegetation. In: Holzner, W.; Werger, M. J. A & I. Ikusima (eds.): Man's impact on vegetation, 247-260. Geobotany 5, Dr. W. Junk Publishers, The Hague..

Tyrvainen, L. & H. Vaananen 1998. The economic value of urban forest amenities: an application of the contingent valuation methods. Urban Planning 43, 105-118. doi:10.1016/S0169-2046(98)00103-0

Ulrich, R.-S. 1976. Visual landscape and psychological well-being. Landscape Research 4, 17-23.

Ulrich, R.-S. 1984. View through a window may influence recovery from surgery. Science. 224, 420-421. doi:10.1126/science.6143402

Vogt, C.A. & R. W. Marans 2004.Natural resources and open space in the residential decision process: a study of recentmovers to fringe counties in southeast Michigan. Landscape and Urban Planing 69, 255-269.

Yabes, R.; K. Shetter & J. Schneeman 1997. Urban waterways: changing historical uses and users in a southwestern desert city. Landscape and Urban Planing 39, 167-185.

 ISSN 1865-1542