İSTANBUL TECHNICAL UNIVERSITY ★ INSTITUTE OF SCIENCE AND TECHNOLOGY

THE NEED FOR EVALUATION IN URBAN OPEN SPACES
A CASE STUDY FROM THE CITY OF VIENNA

M.Sc. Thesis by
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Department : Institute of Science and Technology

Programme : Urban Design

JUNE 2010

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İSTANBUL TEKNİK ÜNİVERSİTESİ ★ FEN BİLİMLERİ ENSTİTÜSÜ

KENTSEL AÇIK ALANLARDA KULLANIM SONRASI DEĞERLENDİRME İHTİYACI – VİYANA ŞEHRİNDEN ÖRNEK ALAN ÇALIŞMASI

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FOREWORD

I would like to express my sincere appreciation to my supervisor Prof. Dr. Orhan Hacıhasanoğlu, who influenced my academic interests and my choice of the topic for this thesis. I also want to express my sincere appreciation to Prof. Dr. Richard Stiles for his guidance. As well, I would like to gratefully acknowledge the support of Hande Sungur.

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ABBREVIATIONS

FFC	: Federal Facilities Council
HABITAT	: United Nations Centre for Human Settlements
OECD	: Organization for Economic Co-operation and Development
POE	: Post-Occupancy Evaluation
PPS	: Project for Public Spaces
QOL	: Quality of Life
UNESCO	: United Nations Educational, Scientific and Cultural Organization

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THE NEED FOR EVALUATION IN URBAN OPEN SPACES – A CASE STUDY FROM THE CITY OF VIENNA

SUMMARY

Urban open spaces are essential to the routines of people's lives in a city. They create space to escape from high-density urban environments that we live in. Many people are looking for a place to spend quality time with family or friends. Public open spaces, especially parks, provide space for movement, relaxation and creating opportunities for social interaction. It is clear that parks are a critical component of urban environment.

The major goal of this research was to investigate the importance of evaluation in designed environments. The benefits of evaluation of public open spaces are often underestimated, due to the lack of focus on effective and sustainable design.

In this study, the importance of evaluation is explored through the review of relevant literature and a Post-Occupancy Evaluation of an urban open space in Vienna.

A post-occupancy evaluation was conducted at a neighborhood park to investigate use patterns of the park and user activities, to identify user preferences and the factors that influence activities. To collect data, site observations, site analysis, survey and behavioral mapping were used.

The results indicated that Rudolf-Bednar-Park received considerable use, served a variety of demographic groups and supported their sport and social activities. The results of this POE study confirmed that the design goals of Rudolf-Bednar-Park were largely met. Park users were generally satisfied with the park, but they also expressed various preferences and needs. As a result, ongoing evaluation of a public open space in a partnership with its users is critical and consequently redesign has to be applied, to keep up with changing needs.

KENTSEL AÇIK ALANLARDA KULLANIM SONRASI DEĞERLENDİRME İHTİYACI – VİYANA ŞEHRİNDEN ÖRNEK ALAN ÇALIŞMASI

ÖZET

Kentsel açık alanlar, günlük rutinimiz içinde oldukça önemli konumda olmakla birlikte kentsel mekânın yoğunluğundan kaçmak için olanak sağlayan alanlardır. Birçok insan ailesi veya arkadaşları ile nitelikli vakit geçirebilmek için şehrin yoğunluğundan biraz da olsun kurtulma çabası eğiliminde olduğundan hareket etmeye, dinlenmeye ve sosyalleşmeye olanak sağlayan parklar kentsel alan içerisinde önemli bileşenlerden biri olarak öne çıkmaktadır.

Bu projenin ana teması, tasarlanmış çevrelerde kullanım sonrası değerlendirme çalışmasının önemini incelemektir. Kullanım sonrası değerlendirme çalışmaları, bu alanda yeterli ilginin olmaması ya da farklı sebeplerden dolayı çoğunlukla görmezden gelinmiştir.

Bu çalışma kapsamında kullanım sonrası değerlendirme çalışmalarının önemi, ilgili literatür taraması ile birlikte Viyana'da yer alan bir kentsel açık alanın kullanım sonrası değerlendirmesi yapılarak ortaya konulmuştur. Kullanım sonrası değerlendirme çalışması, kullanıcı dokusu ve aktivitelerini incelemek, kullanıcıların seçimlerini ve aktivitelerini etkileyen faktörleri ortaya çıkarmak üzere uygulanmıştır.

Sonuçlar Rudolf-Bednar-Park'ın başlangıçtaki tasarım gayelerinin olumlu sonuç gösterdiğini ortaya çıkarmıştır. Parkın kullanıcıları çoğunlukla parktan memnun olduklarını dile getirmişlerdir. Ancak bununla birlikte parktan beklentilerinden ve şikâyetlerinden de bahsetmişlerdir. Sonuç olarak, park her ne kadar kullanıcılarını memnun etse de, kullanım sonrası ortaya çıkan sorunları değerlendirmeyi ihmal etmemelidir. Başka bir deyişle, düzenli bir şekilde tekrar eden kullanım sonrası değerlendirme çalışmaları parkın başarısının sürdürülebilirliği için önemlidir. Yeniden tasarım aşamasında parkın kullanıcılarının çalışmaya ortaklığı oldukça kritik öneme sahiptir. Tasarlanmış kentsel çevreler zaman içerisinde tekrar değerlendirilmeli ve zamanın gereklerine uygun hale getirilmelidir.

1. INTRODUCTION

1.1 Purpose of the Thesis

The major goal of this research was to investigate the importance of evaluation in designed environments. Specifically, help to provide guidelines in developing effective parks through post-occupancy evaluation methods. To this end, a neighborhood park, Rudolf-Bednar-Park, in Vienna was evaluated.

Rudolf-Bednar-Park was designed in 2008 and it is located at the center of a residential area, in a new city expansion district of Vienna, where once there was a train station. The former site of the Vienna North Station (Nordbahnhof) is currently one of the largest inner-city development areas in Vienna. In the 1990s, a team of architects, urban planners, traffic experts, sociologists and ecologists designed a concept for developing the North Station site that will run until 2025.

The overall purpose of the Rudolf-Bednar-Park project was to create a natural landscape at the center of a residential district and ensure further enrichment of the living quality of the residents.

One of the purposes of this research was to investigate whether the initial design intentions were effectively executed, by conducting post-occupancy evaluation methods. A design evaluation would provide the Rudolf-Bednar-Park users and the designer with useful information about how the park functions and how residents value the park. More detailed descriptions of the park were discussed in Part 4.

The specific research goals are;

1. To evaluate the performance, efficiency, and functionality of a neighborhood park.
2. To determine the demographic characteristics of park users and their use patterns.
3. To identify design features and characteristics that encourage users to be more physically active and engage in social interaction among residents.

4. To provide design guidelines and recommendations for future designs based on the empirical findings.

Cooper Marcus and Francis (1998) emphasized the benefits of Post-Occupancy Evaluation (POE), stating, “It is very rare for design teams or their clients to return to the site after a year or two of use to conduct a systematic, objective evaluation. If this kind of feed forward was routinely undertaken, individual designers and clients would learn from their mistakes and success, and – if published – the whole design community would benefit.” By identifying and solving problems of the parks, POE studies will provide information to the communities about the effectiveness of the parks. In this regard, the POE study at Rudolf-Bednar Park will be an opportunity to test whether the park is being used as effectively as intended 2 years before. Additionally, design guidelines and recommendations based on the post-occupancy evaluation, will provide useful and practical information for the planning and design of new parks, and evaluate the effectiveness of existing parks.

1.2 Background

Public open spaces in a city are essential to the routines of work and home life, providing space for movement, creating opportunities for communication, and the grounds for play and relaxation (Carr et al., 1992). Carr et al. (1992) defines the public open space as an essential ingredient (or escape) of our life.

Public open spaces bear so many problems and conflicts inside. Looking at urban spaces, one can see easily, that it is hard to create a successful open space. Some of them work and the others do not. Effective public spaces are extremely difficult to accomplish, because their complexity is rarely understood. As William Whyte (1980) said, “It’s hard to design a space that will not attract people. What is remarkable is how often this has been accomplished.”

To accomplish an effective successful park during the design process a designer has to consider the expectations of different groups of users and the managers. If not, the result can be inevitable that the public spaces are left unused or used in a way that was not intended originally. Public spaces should be the ones that are responsive to the needs of their users; democratic in their accessibility; and meaningful for the

larger community and the society (Carr et al., 1992). If these three conditions are being accomplished, then the public space will be lively and well-used by people.

A deeper understanding of needs and problems can lead designers to create successful public open spaces. Moreover, many problems can be solved or at least reduced through effective programming, designing and management. (Francis, 2003). Past case studies suggest that open spaces – even good ones – cannot just be designed and forgotten. They need to be evaluated and redesigned over time. Thus, designers can only benefit from such evaluations - to learn how to look more critically at well or poorly designed public open spaces.

Additionally, ongoing evaluation and redesign of public spaces are critical to their existence (Cooper et al. 1998). Designed public spaces need to be evaluated and redesigned over time, to keep up with changing needs. A continuously used public space with its many memories can help anchor one's sense of personal continuity in a rapidly changing world (Hester, 1990).

A government department is often responsible for systematic evaluative research. However, this research is mainly related with government budget and in the second place with attention to the research itself. The reason for the greater proliferation of POE research in USA and Western Europe is, that much more government money and attention is being focused on effective design. The literary sources reviewed here, are primarily from the USA and from the UK; needless to say that, these nations have a more mature POE culture than other nations.

1.3 Hypotheses

The followings are the hypotheses to be tested in this study;

1. Cultural differences have an explicit role in frequency of park visits and user satisfaction.
2. Distance to a park is negatively related with frequency of park visits and user satisfaction.
3. Satisfaction with the park (i.e., features, safety, and maintenance) is positively related to perception of benefits of park.

4. Frequency of park visit is positively related with perception of health benefits of people.

The outline of the thesis is organized as follows: A comprehensive review of relevant literature is presented in Part II. In the first part of the literature review, the need for evaluation of public spaces is discussed. In the second part, Post-Occupancy Evaluation is introduced. This part especially reviews its purpose, benefits and barriers. The purpose of the review is to understand the method and the significance of it.

The methodology and procedures utilized in accomplishing this study are illustrated in Part 3. The location and description of the study area is discussed, as are the sampling, methodologies and analyses techniques used. The results of site observations and questionnaire surveys are revealed in Part 4. Part 5 discusses the conclusion and recommendations for future research.

2. LITERATURE REVIEW

This chapter discusses a comprehensive review of relevant literature for this study. In the first part of the literature review, the need for evaluation of public spaces is presented. This part is concerned with the public space – public life relation and following are the user needs from public space. The Second part focuses on Post-Occupancy Evaluation (POE), reviewing the literature regarding purposes, benefits, and barriers of it. The importance of POE studies and methodologies are introduced.

2.1 Need For Evaluation Of Public Spaces

In this chapter of the literature review, the need for evaluation of public spaces is presented in two parts. First part presents the public space and public life and its coherence, the second part introduces the post-occupancy evaluation.

2.1.1 Public Space/Public Life

“A public space of high quality will always be recognized by people interrupting their walk or daily business so they can rest, enjoy the city, the public spaces and be together with other people.” (Jan Gehl, 2002).

2.1.1.1 Public Open Space

A commonly known definition of public space does not exist. One of the most renowned public space researchers, Stephan Carr (1992), defined public space as “the stage upon which the drama of communal life unfolds.” On the other hand, Madanipour (1999) defined public space as those areas within towns, cities and the countryside that are physically accessible to everyone, where strangers and citizens can enter with few restrictions. There are so many definitions about public space with different approaches resulting from different angles of vision. Some define public space as “any place that people use when not at work or at home.” (Shonfield 1998). While others have carried the concept into ‘cyberspace’ (Crang 2000; Holmes 1997).

A review of the Scottish Executive Central Research Unit (Kit Campbell Associates, 2001) defined the open space and suggested a common typology that was absent before (Table 2.1).

Table 2.1: A Typology of Open Space

OPEN SPACE Any unbuilt land within the boundary of a village, town or city that provides, or has the potential to provide, environmental, social and/or economic benefits to communities, whether direct or indirect.	
GREEN SPACE A subset of open space, consisting of any vegetated land or structure, water or geological feature within urban areas.	CIVIC SPACE A subset of open space, consisting of urban squares, market places and other paved or hard landscaped areas with a civic function.
Parks and gardens	Civic squares
Amenity greenspace	Market places
Children's play areas	Pedestrian streets
Sports facilities	Promenades and sea fronts
Green corridors	
Natural/semi-natural greenspace	
Other functional greenspace	

2.1.1.2 Successful Public Space

Characteristics of successful public spaces have been analyzed many times by numerous researchers. A review of relevant literature for "What makes a successful public space?" takes place in this part.

Danish Architect and urban design consultant Jan Gehl (1987) expresses that "The key to establishing lively and safe public spaces is pedestrian traffic and pedestrian activities." He defines three types of activities in public spaces: necessary activities, optional activities and social activities (Figure 2.1). The optional and the social activities are the important keys to city quality. In poor quality city areas people can only find necessary activities i.e. people doing things that they have to do. In good quality city areas people can find not only necessary activities but also a multitude of recreational and social activities that people love to do while in cities. People stay for much longer than really necessary, because they are enjoying themselves.

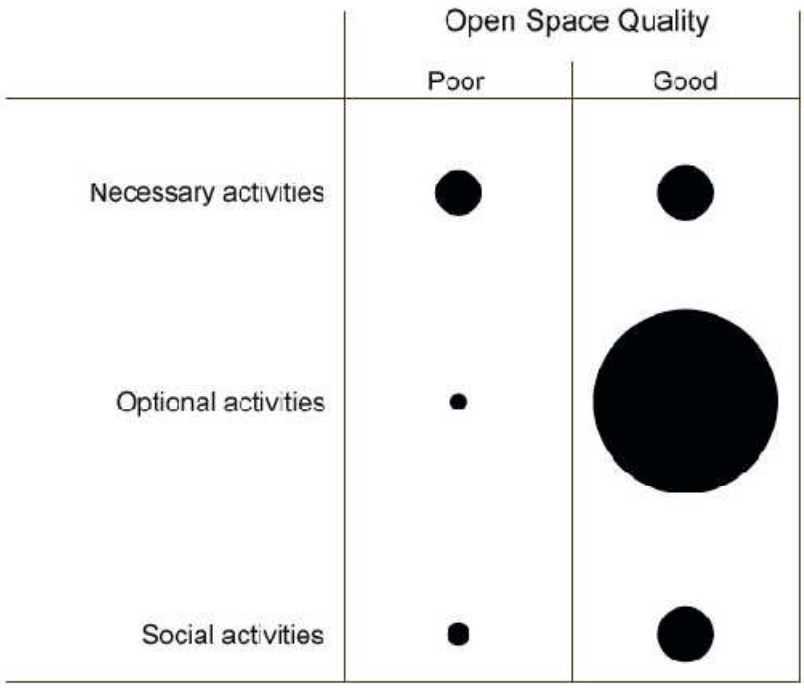

Figure 2.1: Open space quality and pedestrian activities

Necessary Activities: The things that have to be done; going to school, waiting for the bus and going to work. In the short term, these types of activities occur regardless of the quality of the physical environment because people are compelled to carry them out.

Optional Activities: Activities people are tempted to do when climatic conditions, surroundings and the place are generally inviting and attractive. These activities are especially sensitive to quality. They only occur when quality is high.

Social Activities: These activities occur whenever people move around in the same space. Watching, listening, experiencing other people, passive and active participation.

Similarly, Stephen Carr (1992) expresses that activities on public spaces occur not only because of its success**,** it may be accidental and serendipitous as well. For example, stopping in a plaza can happen because of necessity along a route. These incidental users probably make up a minority of the people we find in public places, although they cannot be ignored (Carr, 1992).

PPS (2000) suggests five indicators of a highly successful public open space. First, a high proportion of people in groups use space. Second, a higher than average proportion of woman use the space, which indicates a higher level of perceived

safety and comfort. Third, different age groups use the space, together and at different times of the day. Fourth, a range of varied activities occurs simultaneously. Fifth, more activities of affection are present, such as smiling, kissing, embracing, and holding hands (PPS 2000). As the cities become home to increasing numbers of people the quality of place for people is important.

Scottish Executive Development Department (Kit Campbell Associates 2001) defines that most successful places as the ones that flourish socially and economically, tend to have certain qualities in common. First, they have a distinct identity. Second, their spaces are safe and pleasant. Third, it's easy to move around in them, especially on foot. Fourth, visitors feel a sense of welcome.

The formulation of successful public open spaces took into account public's view of what constitutes successful public space. This view has often been neglected, but is strongly advocated (Alexander 1977; Lynch 1960). The places that do not respond to human needs cannot be considered as successful spaces. High quality public spaces will always be used by people to rest, enjoy and be together with other people. For example, William Whyte (1980) expresses that the best-used plazas are sociable places, with a higher proportion of couples than you find in less-used places, more people in groups, more people meeting people, or exchanging goodbyes.

2.1.1.3 Universal Principles

There are some universal principles that can be applied to the design and redesign of urban parks and public open spaces, although some principles are unique and can vary from space to space.

The CABE and DETR's report's (2001) common characteristics of successful urban open places are:

- *Character***:** Places should have their own identity, responding to and reinforcing distinctive patterns of development and culture.
- *Continuity and enclosure***:** Public and private spaces should be clearly distinguished, and the continuity of building frontages should be promoted.
- *Quality of the public realm*: Places should have attractive and successful public spaces that work well for all users, including disabled and elderly people.

- *Ease of movement***:** Places should be easy to get to and move through. Places should be inter-connected and put people before traffic while integrating land uses and transport modes.
- *Legibility***:** Places should have a clear image, be easy to understand and easily identify the purpose of the space. They should provide recognizable routes and landmarks to help people find their way around.
- *Adaptability*: Places should be capable of changing in response to economic, social and technological conditions.
- *Diversity***:** Places should have variety and choice. There should be a mix of appropriate developments and uses that meet the local needs of all sectors of society.

Project for Public Spaces (2000), explains these common principles as:

- *Accessibility:* Linkages, walkability, connectedness and convenience.
- *Activities:* Uses, celebration, usefulness and sustainability.
- *Comfort and Image:* Elements such as safety, good places to sit, attractiveness, and cleanliness.
- *Sociability:* Dimensions such as friendliness, interactivity, and diversity.

Table 2.2: Principles of creating great public spaces

UNDERLYING IDEAS
1. The community is the expert
2. You are creating the place – not a design
3. You can't do it alone
4. They always say it can't be done
PLAYING AND OUTREACH TECHNIQUES
5. You can see a lot by just observing
6. Develop a vision
TRANSLATING IDEAS INTO ACTION
7. Form supports function
8. Triangulate
IMPLEMENTATION
9. Start with petunias. Experiment.
10. Money is not the issue
11. You are never finished

PPS outlines these principles to create great public places shown in Table 2.2. Eleven key elements have been identified in transforming public spaces into vibrant community places, whether they are parks, plazas, public squares, streets, sidewalks or other outdoor and indoor spaces that have public uses in common.

Jan Gehl (2002) also expresses essential common qualities to achieve a successful public space. On Figure 2.2, there is a key word list, which concerns the quality of the pedestrian landscape. If an analysis of a public space ends up with a resounding YES to these 12 questions, a "100 percent" place has been achieved.

Figure 2.2: Key word list concerning the quality of the pedestrian landscape

PROTECTION	**1. Protection against Traffic &Accidents** • Traffic accidents • Fear of traffic • Other accidents	**2. Protection against crime & violence (feeling of safety)** • Lived in/ used • Street life • Street watchers • Overlapping functions – in space & time	**3. Protection against unpleasant sense experiences** • Wind/draft • Rain/snow • Cold/heat • Population • Dust, glare, noise
COMFORT	**4. Possibilities for WALKING** • Room for walking • Untiring layout of streets • Interesting facades • No obstacles • Good services	**5. Possibilities for STANDING/STAYING** • Attractive edges "Edge effect" • Defined spots for staying • Supports for staying	**6. Possibilities for SITTING** • Zones for sitting • Maximizing advantages primary and secondary sitting possibilities • Benches for resting
	7. Possibilities to SEE • Seeing-distances • Unhindered views • Interesting views • Lighting (when dark)	**8. Possibilities for HEARING/TALKING** • Low noise level • Bench arrangements "talkscapes"	**9. Possibilities for PLAY/UNFOLDING/ ACTIVITIES** • Invitation to physical activities, play, unfolding & entertainment – day & night and summer & winters
COMFORT	**10. Scale** • Dimensioning of buildings & spaces in observance of the important human dimensions related to senses, movements, size & behavior	**11. Possibilities for enjoying positive aspects of climate** • Sun & shade • Warmth / coolness • Breeze / ventilation	**12. Aesthetic quality/ positive sense-experiences** • Good design & good detailing • View/vistas • Trees, plants, water

Similarly, Steve Carr defines three primary values that guide the development of our perspective: he expresses that public spaces should be *responsive*, *democratic* and *meaningful*. Responsive spaces are those that are designed and managed to serve the needs of their users. Democratic places protect the rights of user groups (Carr et al., 1992). Meaningful spaces are those that allow people to make strong connections between the place, their personal lives, and the larger world. They relate to their physical and social context (Carr et al., 1992).

2.1.1.4 Why public spaces fail

In this part, common design mistakes are discussed. Firstly, many public spaces seem to be intentionally designed to be looked at but not touched. They are mostly neat, clean, and most of the time almost empty. When a public space is empty, vandalized, or used mainly by undesirables, this is generally a sign that something is wrong with its design, or its management, or both.

Overemphasis on art and aesthetics is another commonly known mistake. Places have been designed to be viewed as abstract art forms with few human amenities (Francis, 2003). Sometimes this overemphasis on art is a result of lack of understanding to the user needs. Then, they may rely on the relative certainties of geometry. Designers may easily confuse their desire to make a strong visual statement with good design if they are not well grounded in social understanding.

Whyte (2000) criticizes the common mistakes because of lack of deeper understanding, and points out the public spaces' failures in detail shown in Table 2.3.

Table 2.3: Why Public Spaces Fail

- Lack of good places to sit
- Lack of gathering points
- Poor entrances and visually inaccessible spaces
- Dysfunctional features
- Paths that don't go where people want to go
- Domination of a place by vehicles
- Blank walls or dead zones around the edges of a place
- Inconveniently located transit stops
- Nothing going on

William Whyte (1988) has also criticized the visual identity of contemporary public spaces. He states that designers rely on inappropriate models so often, lacking relevance to American life. Moreover, Mark Chidester (1986) has argued that American designers have intentionally borrowed European plaza designs, especially from Italy. Michael Brill (1989a) has called this ‘’Euro-urbanism’’. “We are not a café society, and we lack the tradition of the evening promenade.” Whether this changing is an interesting question, but there certainly are some spaces based on obvious European prototypes that are not well used. For example, Boston’s City Hall Plaza, modeled after Sienna’s Piazza del Campo, is one of that city’s least used public spaces (Cooper Marcus & Francis, 1998). This places are going unused just because of its designer’s architectural concerns.

2.1.1.5 Community Participation

Community participation is an essential element of making successful public open spaces while still in the development process. When residents are informed and engaged to participate in the process of design, they may feel better connected to their communities. Public open spaces should create a stronger sense of community by connecting residents to one another and to their environment (PPS 2000).

Designers do not commonly utilize community participation, because this phase may take some extra time. Understanding user needs and conflicts during design eventually will save time later by avoiding project delays and the potential for future redesign. However there are also many low cost and effective methods of community participation, such as workshops, surveys, interviews, and observation (Hester 1990).

2.1.1.6 The Role of Professionals

Indeed, participation does have risks and limits that need to be understood. Landscape architect Randy Hester (1999) suggests that participation sometimes leads to what he calls “participatory gridlock” where there is no consensus. He adds that effective participation, needs to been done with “a view” – a clear vision of the desired future; then this phase can be productive and rewarding.

Similarly, Louise Mozingo (1995) notes that asking people what they want, can lead to some problems, because users can sometimes be narrow-minded and selfish. Moreover, sometimes they do not concern themselves with the greater public good.

The community participation is a prerequisite for good public spaces but it has to be implemented adequately, and the designers and city officials need to be proactive in their approach.

2.1.2 The Needs In Public Space

When the topic is the needs of a public space, it is essential to have deeper understanding of human needs. Abraham Maslow (1968) attempted to synthesize a large body of research related to human motivation. Maslow posited a hierarchy of needs represented in the shape of a pyramid, with the largest and lowest levels of needs at the bottom, and the need for self-actualization at the top (Figure 2.3). Maslow's hierarchy-of-needs theory is used to predict development of Quality of Life (QOL) in countries over time.

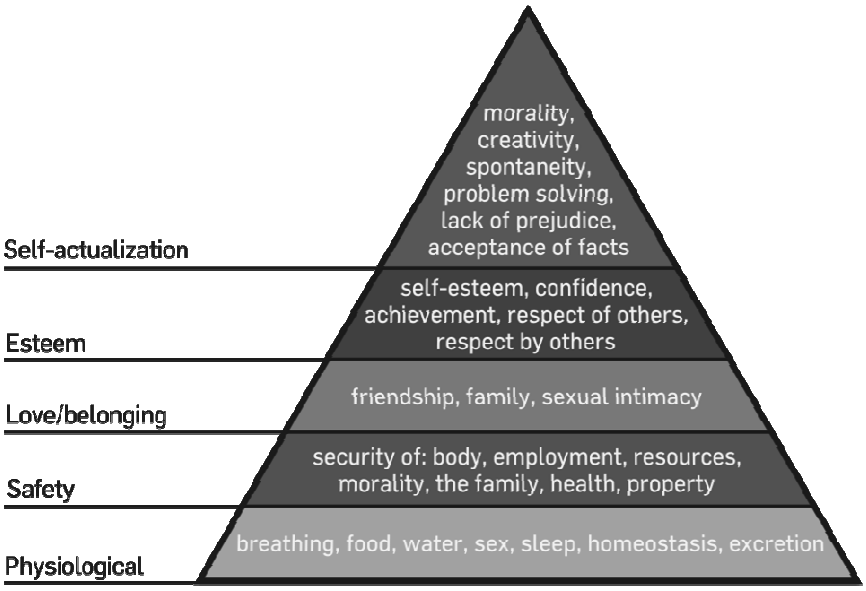

Figure 2.3: Maslow's Hierarchy of Needs

In order to have effective design and management of public spaces it is essential to understand the importance of quality of life indicators existence at a place and its role on people's lives. The success of the public space does not merely depend upon its design decisions.

Based on review of past research and case studies, five types of reasons seem to be used commonly for people's needs in public spaces: comfort, relaxation, passive engagement and active engagement with the environment, and discovery (Carr et al., 1992). Stephen Carr (1992) states "The places that do not meet people's needs or that serve no important functions for people will be underused and unsuccessful."

2.1.2.1 Comfort

Comfort is a basic need from a living space. Without comfort, it is difficult to desire for the other needs (Carr et al., 1992). For an open space to be well used, it needs to be comfortable in the first place.

The various forms of accessibility, including physical and symbolic access, are basic prerequisites to comfort. This also includes the special needs of children, women, elderly, handicapped people as well as the needs of ethnic minorities.

In addition, relief from sun or access to sun is a major factor in the use of specific places (Bosselmann, 1983; Whyte, 1980). Some of the past researches stress the need for some escape from the sun; shade from trees, umbrellas, or some form of shelter (Carr, 1992).

Comfortable and sufficient seating is an important ingredient of nearly any successful open space. In addition to physical comfort, seating should be designed to offer social and psychological comfort. Whyte (1980) calls attention to the need for "sittable space" that is comfortable and properly oriented, spaces that have access to sunlight, trees, water, and food.

Jerold S. Kayden (2000) criticizes that there can be significant conflicts with confusing presentations of comfort elements of a place. For example, a wrong presentation of café's tables may confuse users who think that they must pay the price of a meal or drink to sit at a table and enjoy the space.

Comfort in public open spaces is effected by so many features, but crime can be considered as the most important threat. It is a common concern and a reality in many public places and cannot be ignored. Actual and perceived rates of crime have been proven to have a serious impact on public open space use (Newman, 1972). However, crime is not the only issue. Anti-social behavior is a significant problem as well; and it is difficult to classify and quantify. It can include racial harassment, verbal abuse, noise, unruly behavior, intimidation and violent behavior, littering and graffiti. The *English House Condition Survey 1996* (DETR 1998a), the *Survey of English Housing: Housing in England 1999-2000* (DTLR 2001a) and *2000/01 Survey of English Housing: Preliminary Results* (DTLR 2001b) provide empirical data to prove that problems of anti-social behavior in urban areas are existing (Williams, 2001).

To prevent crime, vandalism and anti-social behavior must be priority for local authorities. In the same way, design principles must provide physical conditions to help resident feel safer.

Across many cultures and times, women have been threatened in public spaces (Carr et al., 1992). Males tend to dominate the use of most public open spaces, especially the use of downtown plazas. For example, Leanne G. Rivlin (1986) noted that women felt safer in local neighborhood sites, where they are surrounded by familiar faces, in a neighborhood they could trust. Women are more discriminating than men as to where they will sit, more sensitive to annoyance. Whyte (1980) notes that when there is a higher than average proportion of women, the public space is probably a good one.

2.1.2.2 Relaxation

Relaxation can be defined as a sense of psychological comfort. Research in a variety of public spaces indicates that residents frequently seek out places for relaxation; especially parks that traditionally have been viewed as places of relaxation (Carr, 1992). This comfort can be provided by natural elements such as water or vegetation, which are essential ingredients for relaxation (Cooper, 1999; Lewis, 1996; Ulrich, 1981).

It can also provide relaxation in specific health and physiological effects such as reduction of stress or decreased blood pressure (Ulrich, 1981). Considerable empirical research has shown the healing power of landscapes (Cooper, 1999). While landscape architects have argued this since Olmsted[1], only in the last decades has significant empirical research proven this conclusively (Francis, M., 2003).

2.1.2.3 Passive Engagement

Passive engagement is the way most people experience open spaces. It can lead to a sense of relaxation but it differs in that it involves the need for an encounter with the setting without becoming actively involved (Carr et al., 1992). Passive activities include sitting, reading, people-watching, daydreaming, sleeping...etc. Public performances often help facilitate this kind of activities (PPS 2000).

[1] Frederick Law Olmsted was an American journalist, landscape designer and father of American landscape architecture. Frederick was famous for designing many well-known urban parks (Adapted from Url-1)

People-watching is a frequently reported activity in small urban spaces. Whyte (1980) indicates that it is the most popular activity in downtown plazas. He states that, "What attracts people most it would appear, is other people." Danish architect and urban designer Jan Gehl (1987) notes that watching people is the number one attraction in any city. In a study of San Francisco plazas, Nancy Linday (1978) found that the favorite sitting places were adjacent to the pedestrian flow, in particular, near street corners. Similarly, Ruth Leeds Love (1973) found that the most frequently mentioned activity at two Portland fountains was "watching other people." Cooper Marcus (1998) also states that observing others is the most popular activity in an urban public space.

Another important attraction of public spaces is the opportunity to observe performers and formal activities. The scheduling of special events has become a popular management approach in many urban plazas and parks (Carr et al., 1992).

Natural elements, particularly vegetation, also attract people in urban places. The opportunity to be close to those elements such as plants, trees, flowers, and water is strongly desired by people. Mainly, water features are a particular focus of interest. In a study of the qualities that people prefer in outdoor spaces, Buker and Montarzino (1983) found that water was the single most desired feature, mentioned by 98 percent of their interviewers.

Public art or a compelling landscape in an urban public space is another type of passive engagement that is related to the physical and aesthetic qualities of a site (Carr et al., 1992).

2.1.2.4 Active Engagement

Active engagement represents a more direct experience with a place and the people within it. Although some people find satisfaction in people-watching, others desire more direct contact with people (Carr et al., 1992). William Whyte (1980) notes that unusual features or occurrences in a plaza, such as an entertainer or a fine sculpture, provides a linkage between people and motivates strangers to talk to each other. Similarly, Christopher Alexander (1977) has pointed out the importance of the interaction between strangers in small public spaces where people are able to “make out the faces and half hear the talk.” Only with few exceptions such as Venice's

Piazza San Marco and London's Trafalgar Square, the small size of the plaza can be an advantage that encourages a sense of social connection.

Therefore, public spaces play a crucial role as a setting for socializing with relatives, neighbors, acquaintances, and friends. According to Jane Jacobs (1961), public spaces that play the most important social function in many older, working-class, and low-income neighborhoods, are mostly the streets and sidewalks, neither plazas nor public parks. She notes that public space activities such as picnics and Sunday outings cut across class, less affluent people, particularly in cities, are clearly more dependent upon outdoor spaces close to home.

In addition to social interaction, some people seek to satisfy physical involvement needs by various types of sport or physical activity opportunities of a place (Cranz, 1982). Public open spaces ought to enable participants to exercise both their bodies and their competitive desires (Carr et al., 1992). People need to be able to test themselves, both intellectually and physically, or they lose interest. Especially children need to develop their cognitive abilities and their sense of competence (White, 1959).

In addition, it is important to respect the needs of people with physical disabilities, public places could, and should, promote disabled people’s activities as well, but this is something lacking in most present-day designs (Carr, 1992).

Ceremonies, celebrations and festivals are other qualities that people often seek in urban public places. Public places can become the stage of gatherings, special events and performances (Brower, 1977). Ritual celebrations are another kind of gathering activities, common to public spaces (Carr et al., 1992) such as New Year celebrations, Easter Celebrations…etc. People require these kinds of gathering activities to refresh their lives.

2.1.2.5 Discovery

Public open spaces should also provide important opportunities for discovery-based learning and education (Stine, 1997). Exploration is a human need. Discovery represents the desire for stimulation (Lynch, 1963). For children, being deprived of stimulation can stunt their development both intellectually and socially.

An important and often overlooked user need according to Mark Francis (2003) is the desire for fun or excitement in public spaces. Examples of such public spaces that address those desires are adventure playgrounds, skateboard parks and theme parks such as Disney Corporation.

2.1.3 The Need for Evaluation of Public Spaces

The relevant literature regarding the public space public life coherence is reviewed in the previous parts. In this part, the literature reviewed is concerned with the question, why there is a need for evaluation in public open spaces.

The Project for Public Spaces, a non-profit organization, has evaluated hundreds of spaces in North America and abroad. PPS (2000) states that places should be created, not just designed. Furthermore, they stress that a design is “never finished.” Past case studies suggest that ongoing evaluation and redesign of public spaces are critical to their life (Cooper et al. 1998). It is important to evaluate the performance, efficiency, and functionality of the park over time.

In addition to this, designed public spaces also need to be evaluated and redesigned over time to keep up changing needs. A continuously used public space with its many memories can help anchor one’s sense of personal continuity in a rapidly changing world (Hester, 1990).

There are several methods that are commonly used to evaluate the use, needs and conflicts in public open spaces. Perhaps the most significant one is the Post-Occupancy Evaluation (POE) method. POE method in the form of case studies should become an integral part of all built open spaces. Public park agencies, non-profit organizations, citizen groups, and landscape architects should form partnerships to support this kind of ongoing evaluation and redesign in their communities (Francis, 2003).

In most cases, designers and their clients would learn from such evaluations, but there may be some who find this approach - which may reveal mistakes or oversights - somewhat threatening. (Cooper et al., 1998).

One of the reasons commonly used by designers for not addressing the people needs in design is lack of time and budget (Francis, 2003). However, professional urban designers have proven that while it may take some extra time to address user needs

and conflicts early in the design process, this will save time later by avoiding project delays and the potential for future redesign.

Often, there seems to have been less concern by the clients to evaluate the performance of what is often a one-time building or outdoor space complex. When the client is unlikely to sponsor another similar project, there is less motivation to look back and evaluate pros and cons of the original scheme (Cooper at al., 1998). Obviously, if this kind of feed forward was routinely undertaken, individual designers and clients would learn from their mistakes and successes, and—if published—the whole design community would benefit.

The results of POE studies that could benefit the design community are often not published, and only in academic journals (for example the Environmental Design Research Association, Environment and Behavior, Journal of Environmental Psychology, Journal of Architectural and Planning Research) that are rarely read by designers. Professional magazines serving the design community do not encourage critical articles (Cooper et al., 1998).

On the contrary, it is extremely important that designers learn from such evaluations to be able to look more critically at well or poorly designed public open spaces.

2.2 Post-Occupancy Evaluation

There have been significant methods to evaluate the public open spaces. Madden and Lowe's evaluation method is still one of the most comprehensive and useful (Francis, 2003). Zeisel's method is also one of the basic methods in this field.

Presumably, the most significant is the use of the Post-Occupancy Evaluation (POE) method as a way to assess if the design is effective. POE is defined as "a process of systematically evaluating the performance of buildings after they have been built and occupied for some time (FFC, 2002).

POE is primarily focused on buildings and indoor environments, while the application to parks or outdoor areas is relatively limited. Some POE studies attempted to evaluate the utilization and user satisfaction of outdoor areas such as an urban park (Kaplan, 1980), healing gardens (Whitehouse et al., 2001; Heath & Gifford, 2001; Sherman et al, 2005), and outdoor spaces in healthcare facilities (Cooper Marcus & Barnes, 1999; Shepley & Wilson, 1999). Although a standardized

method or structured process to conduct a POE has not been developed (Cooper Marcus & Francis, 1998). Cooper Marcus & Francis (1998) valued the benefits of POE application on outdoor spaces, saying that a POE can be very informative and useful in improving and designing a park, playground, or open space, and enriching design knowledge and skills.

2.2.1 Definition

A definition of POE was offered by Preiser et al. (1988): "Post-occupancy evaluation is the process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time." Friedmann et al. (1978) introduces an anthropological approach when defining POE as "an appraisal of the degree to which a designed setting satisfies and supports explicit and implicitly human needs and values of those for whom a building is designed." In addition to this, Zimring and Reizenstein (1980) simply define POE as "examinations of the effectiveness for human users of occupied design environments."

When defining POE, it is evident that there is no definitive understanding or standard as to what POE actually is. From the definitions cited it is clear that POE is a process that involves a rigorous approach to the assessment of both the technological and anthropological elements of a building in use. It is a systematic process guided by research covering human needs, building performance and facility management. An explanation for this mutability is most likely due to the complex and dynamic relationship between humans and their built environment. From a research perspective, POE can be considered in architecture manner, although it may also be considered within the realms of psychology and sociology.

2.2.2 Methods

There are numerous methods and approaches to outline a POE process, depending on the contextual agenda and the required outcomes.

Preiser et al. (1998) discussed three key elements to be considered in a POE study:

1. Technical elements related to health, safety and security performance
2. Functional elements that deal with "the fit between the building (or outdoor space) and the clients' activities" such as efficiency and work flow

3. Behavioral elements including “psychological, social, cultural, and aesthetic aspects of user satisfaction and general well-being”

Shepley (1997) discussed four categories of POE techniques;

1. Indirect measures e.g. archives, physical erosion, demographic data
2. Instrumented recording e.g., physiological recording, image recording, movement measuring devices
3. Systematic observation, e.g., behavioral mapping
4. Self-report methods, e.g., interview, questionnaire

Cooper Marcus & Francis (1998) presented an example of POE procedure in a park setting in detail;

1) *Participant observation*: without particular formula for recording; to experience and sense the essence of a place is important in this step;

2) *Sketch plan an initial site observation*: draw a sketch site plan including all features of the site and materials and identify surrounding land use, access, views, and social context of the site;

3) *Functional subareas of the site*: draw a bubble diagram showing different functional areas and analyze their relationship, conflict, confusion, or misuse;

4) *Messages from administration*: identify park regulations or signs on the site;

5) *Behavior traces*: the authors suggested that most common traces to observe are accretion of material or debris (cigarette butts, dog waste, etc.), erosion (footpath through lawn or shrubs, the paint off a bench, etc.), and the absence of traces where one would expect to find them;

6) *Activity mapping*: observation at least four separate half-hour periods on different days at different times of the day is suggested to record in detail how the park is being used. It is important to record all types of activity, location, as well as user’s age, sex, and ethnicity.

7) *Interviews:* informally interviews two or three typical users on each visit to the site and conduct a questionnaire survey for a large amount of data;

8) *Data summary & Use analysis*: describe and analyze the collected data using proper statistical analysis techniques and probe correlations; and

9) *Problem definition and redesign & Final report*: document and report the findings clearly and accurately, and provide recommendation.

The review of relevant literature on the research methods of POE will be explored more detailed in Part 3.

2.2.3 History of POE

POE grew out of the interests among researchers in the field of environmental design in the 1960s, which focused on the relationships between human behavior and environmental design. They were interested in evaluating how a building performs and how satisfied building users are with the environment. POE has evolved over the past 40 years and now it is becoming recognized as an important feedback to improve the quality of environments (FFC, 2002).

A State-of-the Practice Summary of Post-Occupancy Evaluation project by the Federal Facilities Council (FFC) in 2000 is one of the reasons that increased POE activity in federal agencies (Preiser, 2002). The FFC, a cooperative association of federal agencies has made an effort to improve the POE process to serve better for public and private sector organizations.

Indeed, the evolution of POE has formed primarily from the USA and in the second place from UK. Consequently, these nations have a more mature POE culture than the other nations.

2.2.4 Purpose of POE

After reviewing the literature regarding the purpose of POE, it can be stated that its purpose, in general terms, is to provide a knowledge base of “lessons learned” from users in completed projects. Then this knowledge can be utilized to either improve existing designed places or form a programming platform for future places (Zimmerman and Martin, 2001).

In similar terms, Whyte and Gann (2001) suggest a number of benefits for conducting a POE. These include:

- applying design skills more effectively;
- improving commissioning process;
- improving user requirements;

- improving management procedures;
- providing knowledge for design guides and regulatory processes;
- targeting of refurbishment.

2.2.5 Benefits of POE

There is a wide variety of benefits of POEs and there are numerous approaches to deliver these. For example, Cooper Marcus & Francis (1998) states that POE can be very informative and useful in both educational and professional setting. In an educational setting, where students of landscape architecture, architecture, or urban design can both learn a method of research and gain a much deeper understanding of how people and places interact. This perspective can enrich their design skills. In a professional setting, where the job at hand is to redesign, say, an existing park, playground, or open space that apparently is not in keeping with today's needs Therefore, the POE research utilizes a variety of research methods, allowing students or professionals to develop familiarity with and competence in their use and enabling creation of a multidimensional picture of patterns of use, misuse, and non-use within the studied setting (Cooper Marcus & Francis, 1998). A systematic but inexpensive evaluation can provide information on how the space functions, which in turn will enrich participatory design workshops and the eventual design program.

In addition to this, Zimring (2001) summarized the benefits of POE as the following;

- aids communications among stakeholders including investors, owners, operators, designers, contractors, maintenance personnel, and users or occupants;
- creates mechanisms for quality monitoring, where decision-makers are notified when a building does not reach a given standard;
- supports fine-tuning, settling-in, and renovation of existing settings;
- provides data that inform specific future decisions;
- supports the improvement of building delivery and facility management processes;
- supports development of policy as reflected in design and planning guides; and

- accelerates organizational learning by allowing decision-makers to build on successes and not repeat failures.

2.2.6 Barriers of POE

The reasons why POEs are not carried out with any regularity are well documented by a number of literary sources.

Perhaps the most important barrier is lack of time and budget (Cooper Marcus & Francis, 1998). There seems to have been less concern to evaluate the performance of what is often a one-time building or outdoor space complex. When the client is unlikely to sponsor another similar project, there is less motivation to look back and evaluate pros and cons of the finished project.

A government department is often responsible for systematic evaluative research. When limited government budgets are involved there is, naturally, more concern with how the money was spent. The reason for the greater proliferation of POE research in USA and Western Europe is that much more government money and attention is focused on the effective design.

An additional barrier to POE is the simple fact that POE is not regarded as part of an architect's "normal services" to their client. Thus, organizations are unlikely to pay for POE research unless the benefits of such evaluations are both evident and substantial in value (Bordass et al., 2001). In fact, from their perspective, the client and the designer both have the potential to benefit or to be harmed by POE. Thus, with no clear single beneficiary, there appears to be reluctance, on both sides, to fund the feedback process (Cooper, 2001).

The results of POE studies that could benefit the design community are often not published, only in academic journals (for example; the Environmental Design Research Association, Environment and Behavior, Journal of Environmental Psychology, Journal of Architectural and Planning Research), that are rarely read by designers. Professional magazines serving the design community do not encourage critical articles (Cooper Marcus & Francis, 1998).

Moreover, the absence of adequate POE experiences brings another obstacle that should be resolved. During the evaluation process there can be redundant information collected. Cohen et al. (2001) discuss that "many such surveys suffer

from “data bloat” where there is too much data and not enough time (or skills) to process the information for meaningful analysis.” As a result, cost, time, skills, and fear of exposing problems or failures are the major barriers to conduct POE effectively.

3. RESEARCH METHODS

The post-occupancy evaluation of a neighborhood park contained multiple data collection techniques including visual documentation, behavioral mapping, observation and survey. The study consisted of five phases. The first phase represents the review of relevant literature on the concepts and research methods to establish a conceptual framework and a practical research strategy. The second phase included the selection of the site to be used in this study as well as the gathering of general information regarding the selected park. The third phase involved site visits and visual documentation of the design features and then site observation and behavioral mapping of users of the park were conducted. The fourth phase consisted of distributing a questionnaire survey to park users to investigate their satisfaction and perception regarding the park environment. The fifth phase included analyzing and interpreting the data and furthermore, based on the analysis of the collected data, design recommendations for the selected park and for other existing or future parks as well.

3.1 Site Selection

To study the use of a neighborhood park, Rudolf-Bednar-Park was chosen, because it receives considerable use, serves a variety of demographic groups and supports a number of activities. In addition, it differs with its design, size, site layout and park features from the other existing parks.

Neighborhood parks, generally, serve as social and recreational focal points for neighborhoods. Rudolf-Bednar-Park was a good example as a neighborhood park.

The purpose of this evaluation was to investigate whether the initial design intentions were effectively executed, how the park functions, and how the residents value this park. It has been two years since the park is sited within a residential context. After a year or two of use, it is time to return to the site to conduct a systematic, objective evaluation.

3.2 Data Collection

3.2.1 Visual and Written Documentation of the Site

Visual physical analysis of the site was conducted to explore and understand physical and social contexts and to visually document design features of it. A layout plan of the park, its access, fences, furniture placement, and any other important design features, was drawn. The visual analysis included: (1) the features of the park; (2) views into and out of the park; (3) microclimates within the park; and (4) opportunities for social interaction in the park.

A design features checklist was developed to record the people and activities that take place in the park. The design features of the park were noted, as well as the ability to walk from the neighborhood, and any other site considerations that were notable. Photography was one form of visual documentation used in this study.

3.2.2 Observation and Behavioral Mapping

Observation is the most fun of any of the methods in environmental behavior research. This is because of human nature, finding entertainment in watching others. Behavioral mapping is a common observation tool for "identifying kinds and frequencies of behavior, and to demonstrate their association with a particular design feature" (Bechtel et al., 1987). The environmental context and its relationship with behaviors are considered important elements in environment-behavior research. Behavior must always be seen within an environmental context (Bechtel et al., 1987), and designers must know how the contexts of observed activities affect the activities, because in different socio-cultural and physical settings the same behavior can have different design implication (Zeisel, 1981).

The purpose of behavioral mapping in this study was to understand by whom the selected park was being used, what user activities take place in the park and how park features support these activities. Behavioral mapping and observation methods were used in this study by addressing real behaviors within the moment of observation. Thus, the observation data may enhance the validity of the research. The observation focused on the following data: (1) Users – gender, approximate age, number of companions, (2) Activities, (3) Preferred park features and areas - which areas and facilities of the park are used and which are not used.

A behavioral mapping recording form was designed to document the activities of park users and to collect detailed information (See Appendix A.1). The instrument was pre-tested at the park and refined according to input from observations, in order to make it more reliable and easier to use.

The observations in Rudolf-Bednar-Park were conducted for two weeks in April during good weather.

3.2.3 Behavior Traces and Administrative Messages

Behavior traces or clues in the environment help in understanding what goes on in the park, when behavior is not observed directly. The traces tell about the use, non-use or misuse of the space and provide clues about needs that are not being met in the site (Cooper Marcus & Francis, 1998). On the other hand, there are traces from administrative bodies such as messages that appear in the area to potential users (Cooper Marcus & Francis, 1998). These could be actual written messages, such as "Keep off the grass!" or symbolic messages, such as fencing around the bushes means "Keep out!"

The observation of behavior traces and administrative messages was conducted through photographs in April during good weather.

3.2.4 Questionnaire Survey

A questionnaire survey was used to collect information regarding user satisfaction and perception of Rudolf-Bednar-Park (See Appendix A.1). The survey instrument consisted of three data collection sections containing multiple choices, short answer, and ranking type question. The first section asked respondents about the use of the park, actual recreational experiences and activities in the park. The second part was developed to get the users' satisfaction level with park features. The third part was designed to elicit users' perceptions concerning the physical and social health benefits. The final section of the questionnaire was developed to obtain demographic data such as age, country of origin and education. In the beginning of the survey, a short informational text explained the purpose of this study, confidentiality of participation, response anonymity, and contact person. In order to ensure that the survey instrument was working correctly and that the questions were clearly understood by respondents, a pre-test of the questionnaire by five park users was

conducted before implementing the full-scale survey. Pre-tests allowed refinement of the survey format and rewording of the questions.

Hand delivery method was used for the survey. The surveys were conducted in April 2010 in Rudolf-Bednar-Park. The survey population was the park users who visited the park at the time the questionnaires were applied. The questionnaires were handed out to park users at two weekends and 3 weekdays in good weather. People were approached at random in various parts of the park and asked whether they would be willing to participate in the survey. If so, they were asked to fill out the questionnaire during their visit on the site. The surveys were prepared in different languages (German, English and Turkish) and the preferred language was chosen.

4. RESULTS

This chapter contains the results of the data analysis based on the methodologies described in Part 3. In the first section, site description and physical analysis are discussed. The results from behavioral mapping and observations are included in the following section. In the last section, the survey results are presented.

4.1 Description Of The Study Site

The site analysis focused on the background of the site and the park, location, design process, accessibility, park design features, and microclimate of the site. The Park Facilities checklist describing specific details of the physical characteristics is provided at the end of this section.

4.1.1 Rudolf-Bednar-Park

4.1.1.1 Background

In the 18th century, many arms of the Danube were creating floodplain forests outside of the city walls of Vienna (Figure 4.4). However, floodplain forests were threatening because of the impact of the floods. Urbanization in Vienna started to spread to the north and the floodplain forests transformed into a recreation area and became an urbanized area due to its peripheral location. At 19th century the Danube was increasingly canalized and the city was increasingly constructed. Today (Figure 4.5), over a hundred years later, the city is trying to take back its natural landscape. As a result, a new city expansion district is now created as a residential area with Rudolf-Bednar-Park in its centre. The new residential places and its park were constructed on an area where there was a train station before.

The former site of the Nordbahnhof (Vienna North Station) in the second district is currently one of the largest inner-city development areas in Vienna. In the 1990s, a team of architects, urban planners, traffic experts, sociologists and ecologists designed a concept for developing the North Station site, that will run until 2025.

This long-term urban development process gives fresh impetus to the entire city, but especially to the second district, due to its location on the urban axis Vienna city centre - Donaucity development project (in the North of Vienna).

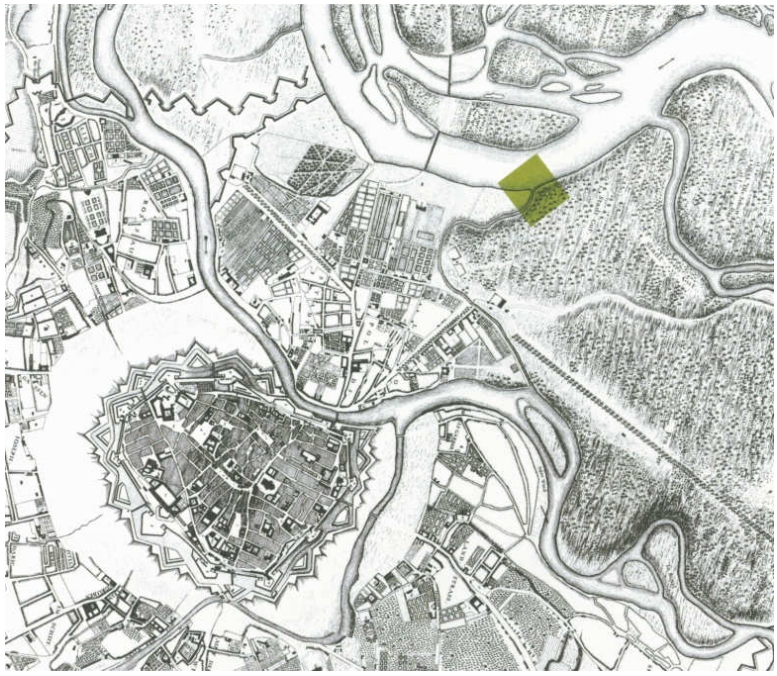

Figure 4.4: Rudolf-Bednar-Park's Current Location on Historical Map 1706

Figure 4.5: Rudolf-Bednar-Park's Current Location on Aerial Image 2004

Vienna's Municipal Department of Parks and Gardens is currently responsible for 850 parks that range in size from 1000 m² to 20 million square meters. In Vienna,

numerous existing parks are remodeled and new ones built every year. With Rudolf-Bednar-Park, the City of Vienna has constructed the largest new park since 1974. The director of Vienna's Municipal Department of Parks and Gardens states that the Rudolf-Bednar-Park is sure to further enrich the high living quality of the city of over a million inhabitants (Hager, 2008) (Figure 4.7).

In 2005, a Europe-wide park design competition subsidized by the European Union was issued. From among the projects submitted by renowned landscape architects from Austria, Switzerland and the Netherlands, a jury headed by the Swiss landscape architect Professor Günther Vogt unanimously chose the project of Hager Landschaftsarchitektur AG Zürich (Switzerland) as the winner in May 2006 (Figure 4.6).

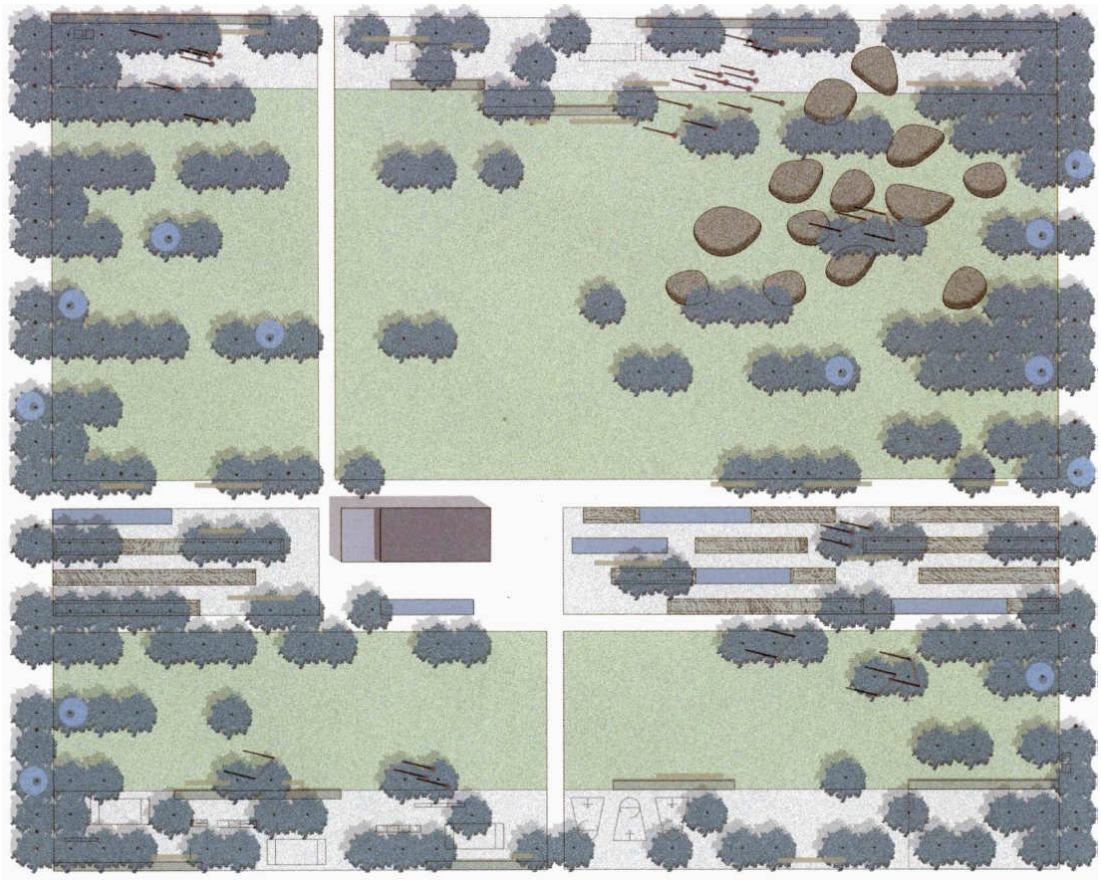

Figure 4.6: The winning project of Hager Landschaftsarchitektur AG Zürich

Later, the planning phase started in August 2006 until March 2007 and the design strategies developed for the competition were evaluated for functionality and feasibility. Finally, the park was constructed based on the refined plan and the opening took place in September 2008.

Figure 4.7: The Illustration of the park view with mature trees.

The park is named after Rudolf Bednar, who was the district chairman of the second district from 1977 to 1984. The construction of the Rudolf-Bednar-Park was subsidized by an EU program (Hager, 2008).

4.1.1.2 Site Analysis

The park is situated at the centre of a residential district, which is still under construction at some areas. The park is easily walkable from the surrounding residential area.In addition, the Vorgartenstraße station of the metro (U-Bahn) is close to the site (Figure 4.8).

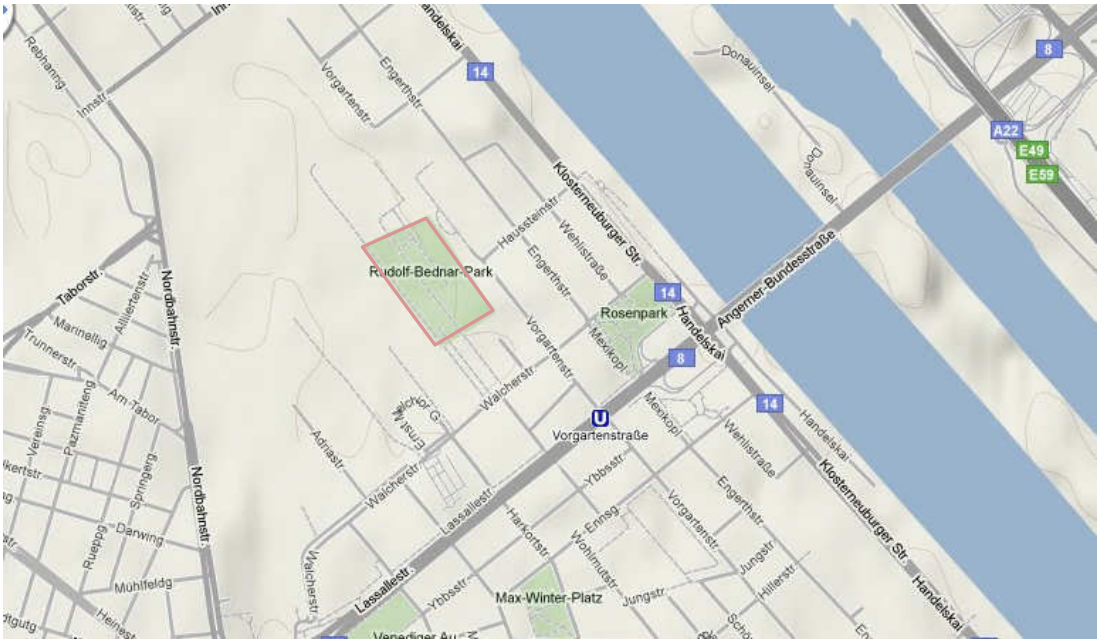

Figure 4.8: The location of Rudolf-Bednar-Park

The park comprises 31.721 m², approximately 3.2 hectares. It differs with its size from the other existing neighborhood parks.

Figure 4.9: The site plan of Rudolf-Bednar-Park

Residential buildings and a school building surround the park. The structure of the park is clear - made up of paths and lawns which link different areas of the park to each other (Figure 4.9).

Guido Hager, the architect of the project, states (2008) that the main element in the creation of the park is the tree. After the project group's extensive study of the positioning of trees, the decision was made for a so-called veil of trees (Figure 4.10). The veil is oriented on the larger spatial features of the area: the Danube and the former North Station.

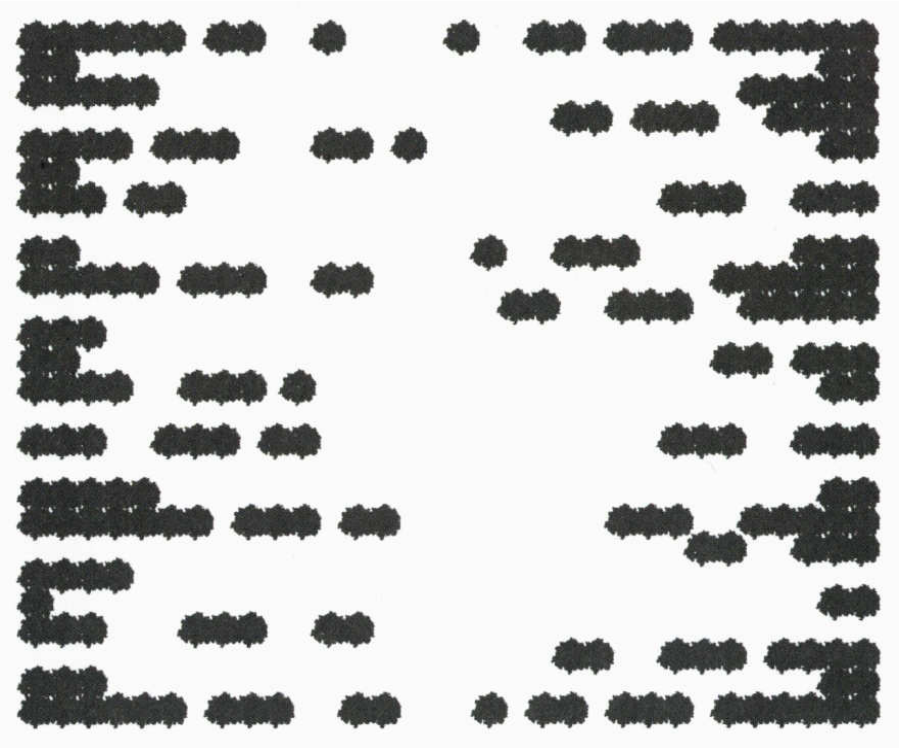

Figure 4.10: The structure of veil of trees

The trees were placed homogeneously in the area (Figure 4.11). The framework of the veil of trees is composed of linden, which, are typical street trees. In the interior of the park, various types of trees were selected, such as honey locust, ash, catalpa and the dawn redwood tree.

Figure 4.11: The veil of trees

There is a Reed Garden (Schilfgärten) along the main pathway of the park (Figure 4.12).

Figure 4.12: The Reed Garden (Schilfgärten)

Figure 4.13: Sport playgrounds and Skate Park

In the southwest area, more louder and more action-oriented features are placed. There is a table tennis playground, a volleyball court, streetball playgrounds and a skate park (Figure 4.13).

The northeast of the park, next to the residential buildings, is intended for quieter uses like playgrounds for small children and an exercise area for grownups (Figure 4.14).

At the center of the park, there is broad lawn (Figure 4.15), which is intented for sunbathing, soccer and Tai Chi (Hager, 2008). The grounds, generally, have a clean and tidy appearance with well-mowed grass.

Figure 4.14: Playgrounds

Figure 4.15: Broad Lawn

Table 4.4: Summary of the park features

	Rudolf-Bednar-Park
Opening of the Park	September 2008
Park Size	31.721 m² or nearly 3,2 hectares
Costs	ca. € 5.550.000
Site Context	Residential neighborhoods, walkable distance from most of the resident's home
Surface Materials	14.900 m² lawn area, 5.500 m² pathways and places in asphalt
Shade Structure	Pavilion, one existing tree
Seating	175 seating benches, 6 round benches
Drinking Fountains	4 drinking fountains
Maintenance	Clean; well mowed grass, well maintained; no drainage issues
Playgrounds	1000 m²
Sport Zone	2600 m²
Water Elements	2600 m²
Lightning	77 lighting candelabras
Trees/Landscaping	1 existing tree, 238 new trees and 500 m hornbeam hedges
WC	urinal, unisex toilet and toilet for disabled people
Cafe	n/a

4.1.1.2.1 Microclimate of the site

A microclimate is the distinctive climate of an area. The term may refer to areas as small as a few square feet (for example a garden bed) or as large as many square miles (for example a valley). The weather variables in a microclimate, such as temperature, rainfall, wind or humidity, may be subtly different from the conditions prevailing over the area as a whole.

In Rudolf-Bednar-Park, the time of park visit during the day and duration in the park vary mostly depending on weather condition because of the microclimate of the site. On a sunny day, approximately 90% of the park is in the sun almost all day, which causes an unhealthy condition for park users. The newly planted trees create very little shade. Therefore, the table under the pavilion is the only shaded seating area in the park. The other benches are under the sun most of the time, as well as the playgrounds.

Figure 4.16: Pictures from the park

4.2 Observation and Behavioral Mapping Results

In this study the purpose of behavioral mapping was to understand how Rudolf-Bednar-Park is being used, who uses it and how are the design features supporting the activities. Using systematic observation during randomly chosen time periods, park use was investigated during good weather in April. The observation focused on the following data: (1) Users – gender, approximate age, number of companions, (2) Activities, (3) Preferred park features and areas - which areas and facilities of the park are used and which are not used.

Rudolf-Bednar-Park-Park was observed for at least 15 hours at various times of the day, during the week, and the weekends to better understand the full range of users and activities.

Observations took place on eight weekdays and four days of the weekend in the spring of 2010. Each observation period was at least one hour long. The behavioral mapping schedule was based on the results of a pilot behavioral mapping study. The pilot study revealed that peak visitation of the park occurred in the afternoon, especially on weekends. Thus, more observation sessions were arranged in the peak hours as shown in the Table 4.5. All observations were conducted by the author. The researcher maintained an unobtrusive presence in order to minimize influence on park user behaviors. Number of people were categorized by demographic characteristics and user activities have been recorded on a behavioral mapping form.

Table 4.5: Behavioral mapping schedule

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**
Week 1	Afternoon	Morning	Afternoon	Morning Evening	Morning Afternoon	Morning	Afternoon
Week 2			Evening	Afternoon	Afternoon	Afternoon	Afternoon Evening

A behavioral mapping form with a site plan of the park (See Appendix B.1 and Appendix B.2) was used to record the date, time of day and weather conditions such as temperature, wind and micro- climate in each observation session. The user activity was recorded on the form and the physical locations of them were marked on the site plan. The observer counted the number of users in the park during the observation session, along with detailed information including gender, approximate age group, and group types. The age group was categorized into children, teenager, 20-30, 30-40, 40-50, 50-65 and the elderly, and the group types into single visitor, couple, single parent with children, parents and children, and mixed or friends group. A new behavioral mapping recording form was used for each observation session. A total of 15 hours of behavioral mapping was completed on the behavior of 763 users.

4.2.1 Summary of Behavioral Mapping

4.2.1.1 Demographic characteristics of park users

The park users are a diverse group in terms of age groups, group size and group types. Of the users observed in the park, 61 % were male, 39 % were female (Table 4.6). The most common age groups were children (31,2%) and teenager (31,6 %).

Table 4.6: Demographic characteristics of park users

		n	Percentage
Gender	Male	321	61%
	Female	204	39%
Age Group	Child (0-6)	238	31,2%
	Teenager (7-18)	241	31,6%
	20-30	92	12,1%
	30-40	136	17,8%
	40-50	20	2,6%
	50-60	6	0,8%
	Elderly (>60)	30	3,9%
Group Type	Single Visitor	46	18,6%
	Couple	13	5,3%
	Single parent with children	35	14,2%
	Parents and children	38	15,4%
	Mixed/friends group	115	46,6%

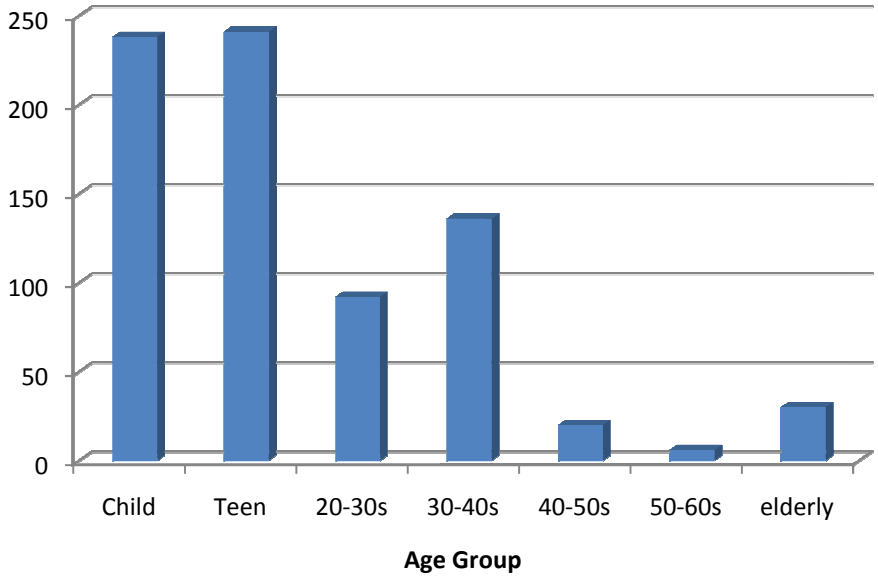

Figure 4.17: Use of park by age groups

It was observed that 62,8 percent of park users were under 20 years of age, and 17,8 percent were 30-40 age group as identified. In addition, 20-30 age group were observed with 12.1 percent, followed by the seniors with 3,9%. For the comparison with the statistics in Vienna and 2nd District the table can be seen in Table 4.7.

In addition, regarding group types, mixed/friends group were the most frequent group type observed in Rudolf-Bednar-Park with 46,6%, followed by the single visitors with 18,6%.

Table 4.7: Profile of general statistics: 2009 census

		Vienna	2nd District	Observed park users
Total Population*		1.687.271	94.595	
Population Density *		4.049/km²	4.871/km²	
Gender	Male	47,8%	49,3%	61%
	Female	52,2%	50,7%	39%
Age	Teenager	19,4%	19,5%	31,2%
	20-29	14,5%	15,9%	31,6%
	30-39	15,3%	16,2%	12,1%
	40-49	16,3%	16,0%	17,8%
	50-64	17,7%	16,8%	2,6%
	Elderly	16,7%	15,5%	0,8%

*Adapted from Url-4

4.2.1.2 Temporal pattern of park use

Park use was found to vary considerably by day of week, time of day, and, particularly with weather conditions (Table 4.8).

Behavioral mapping revealed that temporal and spatial patterns of park use were closely related with weather conditions.

Table 4.8: Park use by time and weekday/weekend

Users	Morning	Afternoon	Evening	Total
Weekend	14,7%	42,2%	43,1%	57,6%
Weekday	22,0%	36,7%	41,3%	42,4%
Total	18,0%	39,9%	42,1%	100.0%

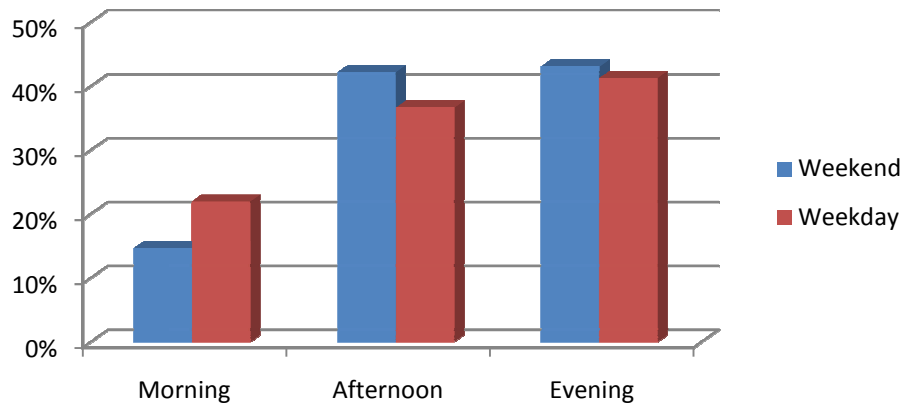

Figure 4.18: Park use by time of day

Behavioral mapping is designed to record users' activities into four types: social/ nonsocial activities and mobile/stationary activities. Social activities include talking

or walking with another, eating/drinking together, playing together …etc. Nonsocial activities include watching children or others playing, reading, or talking on the phone while sitting, walking, or standing alone…etc. Stationary behaviors include sitting or standing; and mobile behaviors include walking around the park, playing with children or doing sports.

Rudolf-Bednar-Park users typically do some sports in a group, relax and talk while watching the environment, others or their child playing. The most common types of activities (Figure 4.19) were mobile/social activities (63,9%), followed by stationary/social activities (30%), nonsocial/mobile activities (3,3%), and nonsocial/stationary activities (2,7%). The typical mobile/social activities were doing sports (soccer, basketball, volleyball, baseball, table tennis, and badminton), children playing together or with their parents, and riding a bicycle or scooter. Stationary/social behaviors included standing or watching in a group, eating/drinking and sitting in a group.

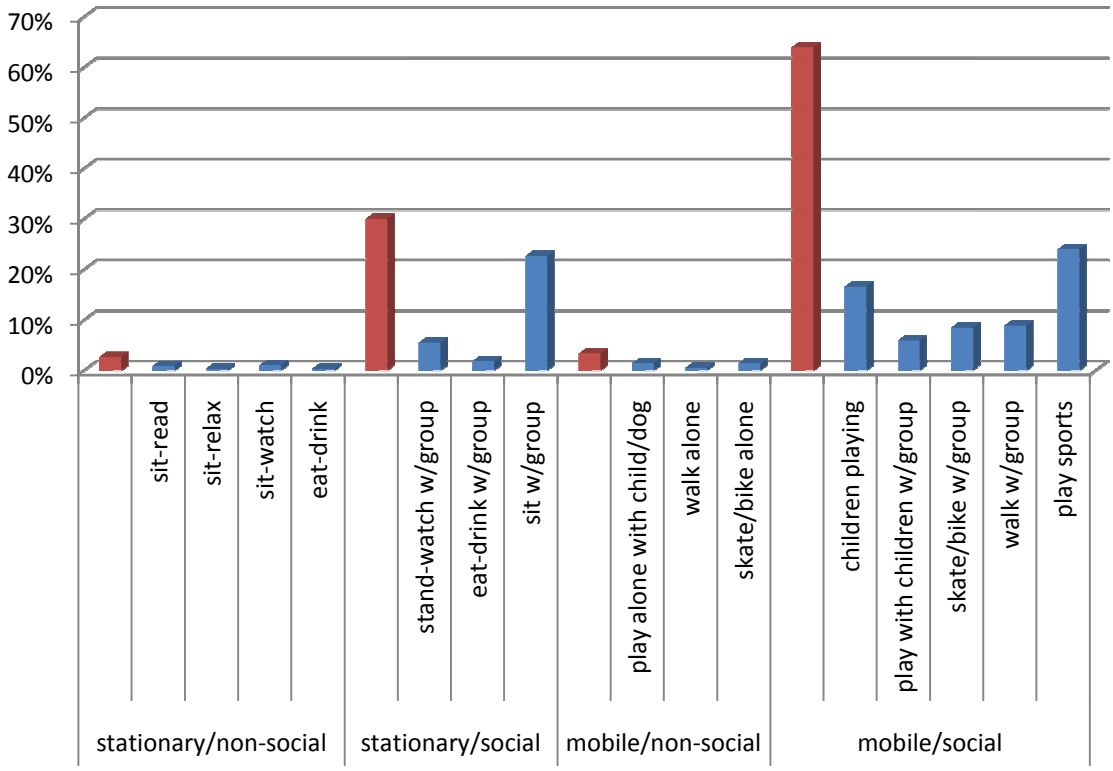

Figure 4.19: Activities at park

A large percentage of social behaviors was observed in skate pool and streetball playgrounds. Hammocks were the most popular seats in the park. Figure 4.20 shows the popular areas of Rudolf-Bednar-Park. The broad lawn area was usually occupied

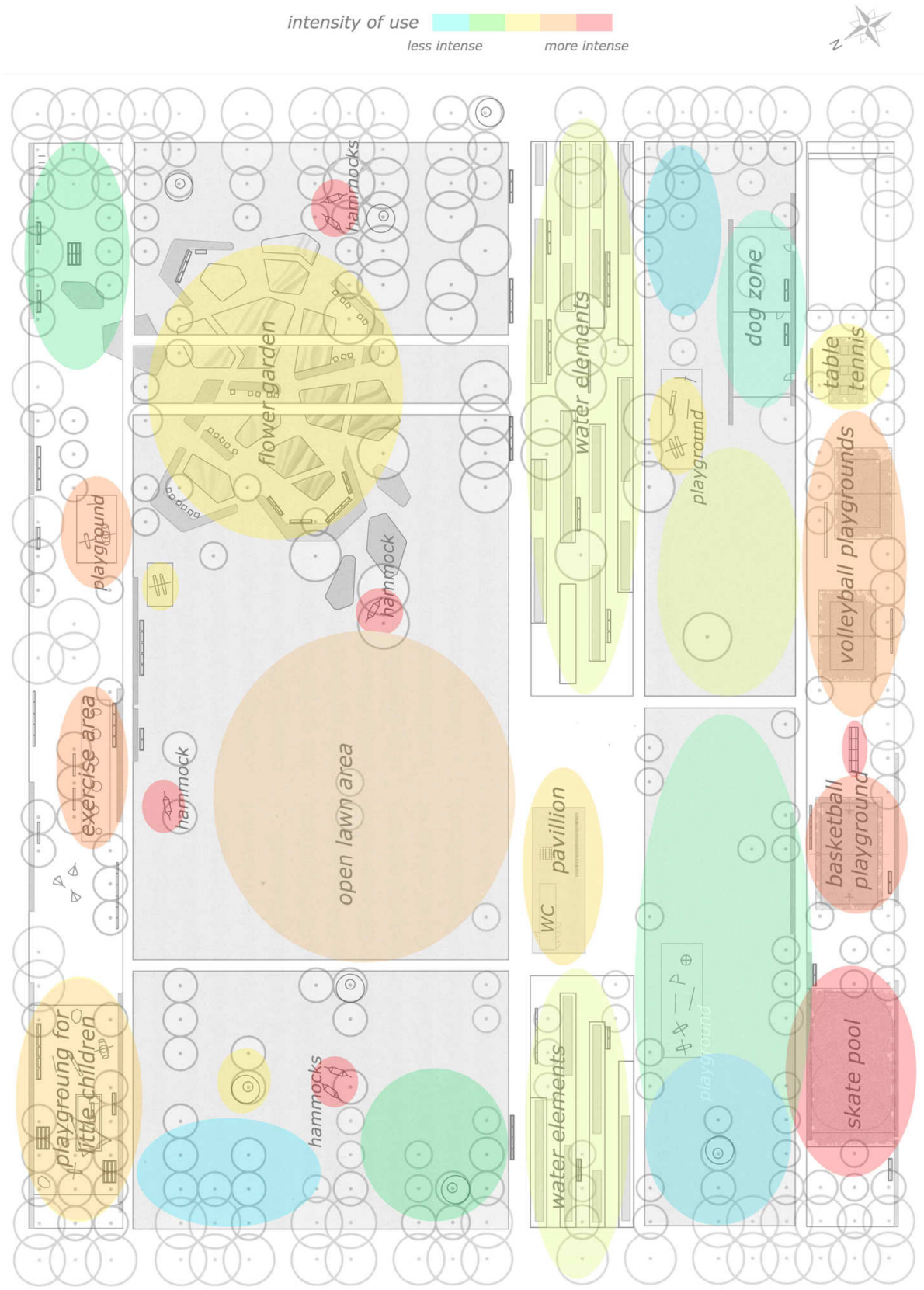

Figure 4.20: Spatial pattern of use

by soccer, baseball and badminton players or Frisbee players. Trees provided too little shade and most of the park area was exposed to the sunlight.

It appeared that the most popular areas in Rudolf-Bednar-Park were the hammocks, skate pool and streetball areas (Figure 4.20). In addition, the broad lawn was usually occupied by soccer players. The benches close to playgrounds were occupied by the parents to look after their children. The dog area was rarely used by dog owners. Several children were observed playing with water at the Reed Garden (Schilfgarten). Considerable amount of users were observed riding bicycle however it is forbidden to ride a bike in the park.

Observation revealed that Rudolf-Bednar-Park often appeared to be full for long periods of time during afternoon and late afternoons till the sun went down. During morning, most users sat and relaxed in the park. One kindergarten group and one pensioner group came to the park regularly in the morning hours. The most popular time for using the park was about 2 o'clock in the afternoon until 7 o'clock in the evening, when it began to cool down. On the weekend, about 80-100 people were observed at afternoon and late afternoon. During these times, the park looked so lively and a range of varied activities could be observed.

4.3 Behavior Traces and Administrative Messages Results

Behavior traces or in the environment help in understanding what goes on in the park when behavior is not observed directly. The traces tell about the use, non-use or misuse of the space and provide clues about needs that are not being met in the site (Cooper Marcus & Francis, 1998).

The most common traces to observe are accretion of material or debris (cigarette butts, dog waste, etc.) and erosion (footpath through lawn or shrubs, the paint off a bench, etc.). In Rudolf-Bednar-Park both trace types were observed (Figure 4.21).

In addition, some markings such as graffiti were observed in the park (Figure 4.21). In most countries, defacing property with graffiti is considered vandalism. Sometimes graffiti is a way to communicate social and political messages. To some, it is an art form; to others it is merely vandalism. The controversies that surround graffiti create disagreement amongst city officials / law enforcement and public. On the other hand, there are traces from administrative bodies such as messages that

Figure 4.21: Behavior Traces

appear in the area to potential users (Cooper Marcus & Francis, 1998). These could be actual written messages such as park regulations, signs or symbolic messages, such as fencing around a place, which can be dangerous for small children (Figure 4.22).

Figure 4.22: Administrative Messages

4.4 Questionnaire Survey Results

This section summarizes the data obtained from the questionnaire survey; presents the analyses performed, and interpreting the results. The survey was designed to identify the general use pattern of the park, to understand users' satisfaction and perception. In this section, the results are presented in sequence. The overall survey profile is discussed first, followed by a description of the respondents' demographic and socioeconomic characteristics (e.g., gender, age, education, etc). The last section discusses the park users' satisfaction and their perception of the park.

4.4.1 Survey Profile

The hand delivery method was used to conduct the survey. The response to the request was usually positive. The participants expressed their interests in the survey and often provided comments on the park. As a result, a total of 90 surveys were conducted.

4.4.2 Residents' Socioeconomic Characteristics

The socioeconomic and demographic characteristics of the residents are presented in Table 4.9. A majority of the survey respondents was female (56,7%). The average age of respondents was 32 years and 29,9% of the respondents fell between the ages of 30-39. The majority (35,6 %) had no children under the age of 18 living in their household and 43,3 percentage were married. 32,2% of the respondents held a vocational education degree and 38,9% was full time employed. It can be expected that the annual household incomes would be at medium level.

Table 4.9: Socioeconomic profile of respondents

		n	**%**
Gender	Male	39	43,3%
	Female	51	56,7%
Age	Teenager	17	18,9%
	20 – 29	24	26,7%
	30 –39	26	28,9%
	40 – 49	14	15,6%
	50 – 64	6	6,7%
	Elderly	3	3,3%
Country of Origin	Austria	35	38,9%
	Turkey	27	30,0%

Table 4.9: (Continue)

		n	%
	Germany	3	3,3%
	Croatia	3	3,3%
	Bulgaria	3	3,3%
	Serbia	3	3,3%
	Poland	2	2,2%
	Iraq	2	2,2%
	Russia	2	2,2%
	Finland	1	1,1%
	Israel	1	1,1%
	Macedonia	1	1,1%
	Mongolia	1	1,1%
	Pakistan	1	1,1%
	Bosnia	1	1,1%
	India	1	1,1%
	Romania	1	1,1%
	Slovakia	1	1,1%
	Tunisia	1	1,1%
Marital Status	Single	30	33,3%
	Married	39	43,3%
	In a relationship	14	15,6%
	Others	2	2,2%
Number of children in the family (under 18)	None	32	35,6%
	1	19	21,1%
	2	24	26,7%
	3	12	13,3%
	4	3	3,3%
Level of education	Vocational School	29	32,2%
	Professional School	12	13,3%
	High School	22	24,4%
	Bachelor Degree	5	5,6%
	Master Degree	12	13,3%
Job	Employed full time	35	38,9%
	Employed part time	5	5,6%
	Self-employed	6	6,7%
	Retired	3	3,3%
	A student	20	22,2%
	Unemployed	21	23,3%

In summary, the participants of this study were in most cases between 20 and 39 years old, married, full time employed and averagely educated. It was expected that the park would be used diversely by users from different nationalities. However, the

respondents of the survey consisted of a wide range of nationalities, it was not possible to see different use of the park by different cultures.

4.4.3 Park Usage

4.4.3.1 Frequency of park visit

Among the 90 park users, 33,3% visited the park 2-3 times per week and 23,3% visited it daily (Table 4.10). As a result, 80% of the respondents were visiting the park at least once a week. In addition, "groups" were the most frequent group type observed in the park (Table 4.6).

Table 4.10: Frequency of park visits

	n	%
daily	21	23,3
4-5 times per week	14	15,6
2-3 times per week	30	33,3
once a week	11	12,2
2-3 times per month	5	5,6
once a month	3	3,3
less often	6	6,7
Total	**90**	**100**

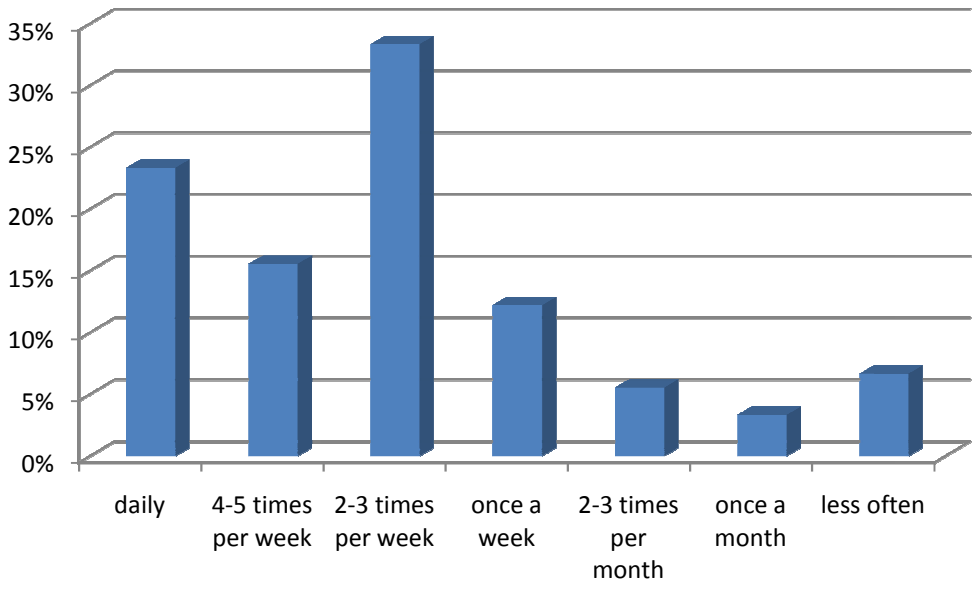

Figure 4.23: Frequency of park visits

4.4.3.2 Access mode and travel time

When asked how they travel to the park, the majority of park users (87%) walked to the park and only 13% used public transport to visit the park. Most residents live in the same district within a walkable distance. Over 90% answered that it takes them less than ten minutes to access the park from their home. The average travel time to the park by foot is 7 minutes.

The first hypothesis attempted to find a relationship between the distance to a park and frequency of visits. The results of the correlation analysis showed that the correlation between travel time (distance) and use frequency is significant. It was concluded that proximity to a park promotes frequent visits.

4.4.3.3 Days of visits and length of stay

Popular days of visits among park users were during weekday afternoons (33,5%), weekend afternoons (25,8%) and weekend evenings (15,4%). Most park users (32,2%) stay more than 2 hours and 50 percent usually stay in the park between half an hour and two hours, during their visits (Figure 4.24).

In Rudolf-Bednar-Park, the time of visits during the day and duration spent in the park, vary depending on the microclimate of the site which in return is strongly influenced by the weather condition.

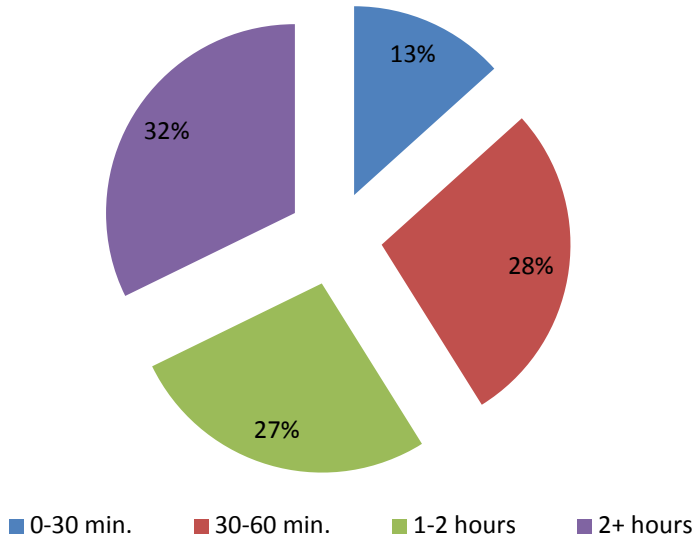

Figure 4.24: Length of stay

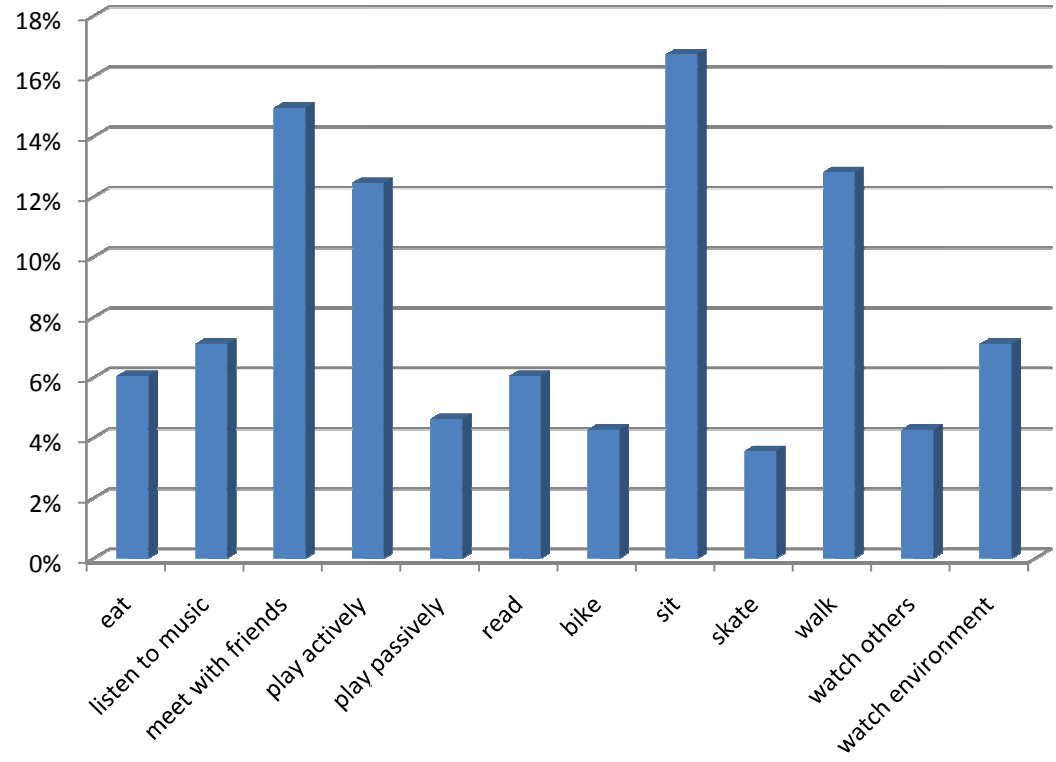

Figure 4.25: Stated Park Activities

4.4.3.4 Activities and reasons of visiting park

According to the survey, the types of activities, that park users engage in (Figure 4.25), were "sitting" (16,7%), followed by "meeting with friends" (14,9%) and "walking" (12,8%). The results showed that the park provides people with a place to freely play with their children and interact with others. The main reasons people visit the park are to play with their child (17,1%), to meet with friends (14,9%) and to sit and relax (16,7%). The park also appeared to provide a place where people can play freely.

Table 4.11: Reasons for Visiting Park

	n	%
For exercise	40	20,1
To enjoy green space	31	15,6
To meet others and socialize	36	18,1
To relax and rest	22	11,1
To enjoy playground	27	13,6
To play with my child	43	21,6

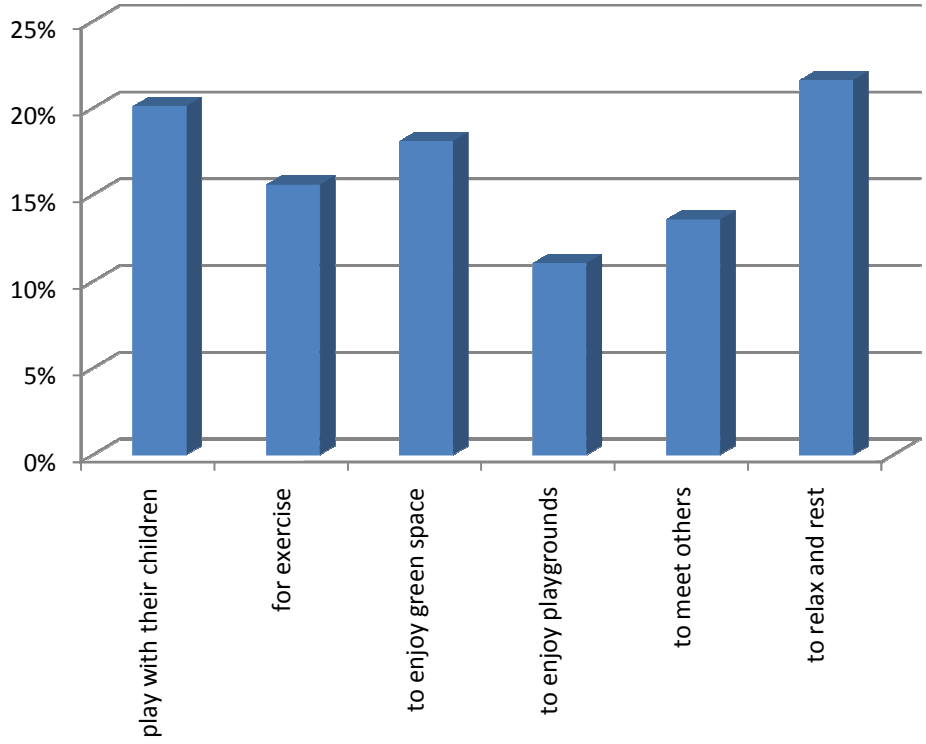

Figure 4.26: Reasons for Visiting Park

4.4.3.5 Constraints to park visits

Besides the constraints given in the survey to visiting the park (Table 4.12), the weather was recognized as the dominant factor that keeps users from using the park. The most given reasons for not visiting the park were lack of time (42,5%) and lack of shade (23,0%). While lack of time does not play a major role in this study, the lack of shade already gives clues for the redesign of the park.

Table 4.12: Constraints to Visiting Park

	n	**%**
Lack of time	37	42,5
Lack of interest	7	8,0
Lack of shade from sun	20	23,0
Park is far away from my home	6	6,9
Concern about other's behavior	7	8,0
Park is too noisy	4	4,6
Poor maintenance	3	3,4
Dogs and dog owners' behaviors	2	2,3
Wind	1	1,1

4.4.4 Park Satisfaction

Park satisfaction was measured using twenty questions regarding park design and amenities. The items included were park size, location, site layout, recreational facilities, maintenance, and safety.

Table 4.13: Park user satisfaction

	mean ratings	very unsatisfactory (5)	unsatisfactory (4)	neutral/don't know (3)	satisfactory (2)	very satisfactory (1)
Overall satisfaction	1,9				**X**	
Park size	1,4					**X**
Park location	1,4					**X**
Park design	1,8				**X**	
Access to park	1,5				**X**	
Atmosphere	1,7				**X**	
Maintenance	1,7				**X**	
Safety of park	2,0				**X**	
Environmental noise	2,0				**X**	
Seating	1,7				**X**	
Tables	2,5			**X**		
Playgrounds	1,9				**X**	
Safety of playground elements	1,9				**X**	
Lightning	1,7				**X**	
Greenery	1,4					**X**
Flowers	1,6				**X**	
Water ponds	2,1				**X**	
Shade (protection from sun)	2,8			**X**		
Dog park	2,5			**X**		
Pergola	2,3				**X**	
WC/Toilet	2,4				**X**	

Table 4.13 presents the level of satisfaction among the respondents. The overall satisfaction showed that the users were satisfied with a mean rating 1.9 (lower is better). Over 96 percent of the users were satisfied or very satisfied with the park; three percent were somewhat dissatisfied. The mean ratings of the park size, location and the greenery were high (1.4, 1.4 and 1.4) and park design, access to the park, atmosphere, maintenance, flower garden, seating and lightning also received

comfortably high scores. Shade, Dog Park and tables received lowest ratings (2.8, 2.5, and 2.2).

Table 4.14: Likes/Dislikes, Improvement/ Modification of the Park

Likes of the park	
greenery	17,3%
the size of the park	17,3%
playgrounds	16,4%
exercise area	10,9%
hammocks	5,5%
the location of the park	5,5%
atmosphere	4,5%
open lawn area	4,5%
accessibility	3,6%
skate pool	3,6%
cleanliness	1,8%
flower garden	2,7%
water ponds	2,7%
calmness	1,8%
streetball and volleyball courts	1,8%
Dislikes of the park	
construction area	31,7%
poor maintenance (WC, water ponds)	14,6%
dogs outside the dog zone	22,0%
design	22,0%
shade problem	9,8%
Features need to be improved or included	
more tables	22,0%
cafe	17,5%
more maintenance	14,1%
more seats	10,2%
public art	7,9%
dog zone (modification)	7,3%
more safety	6,8%
more green	4,5%
protection from sun	3,4%
soccer court	1,7%
pavilion (modification)	1,1%
more trash bins	1,1%
more hammocks	1,1%
better lightning at night	1,1%

Besides collecting the numeral satisfaction level of the twenty design features, respondents were also given the opportunity to comment on their likes / dislikes, important design components and desired improvements for the park (Table 4.14). When asked what they liked about the park, 17,3% users responded that they liked the greenery and the size of the park (17,3%), followed by the location of the park

(5,5%). With regard to the components of the park, respondents generally expressed that the park size, the playgrounds for children and teenagers, the exercise elements, hammocks and water ponds are important features (Table 4.14).

The survey also asked respondents about the design features to be improved or to be added to the park (Table 4.14). More tables (22%) were ranked first, followed by a café (17,5%). Other features the respondents wanted to be included are public art elements, more seats, more hammocks and more trash bins. The modification of the dog zone also received strong support.

4.4.5 Park Perception

The respondents were asked about their perception of parks in order to identify the users' perceived benefits of the park. A total of eight items was designed to find how people perceive the benefits of parks to personal and public health and to their socialize life.

Table 4.15: Park user perception

	mean ratings	strongly disagree	disagree	neutral	agree	strongly agree
Overall Perception	1,7				**X**	
Parks help promote my physical health.	1,8				**X**	
Parks help me socialize with others (e.g. creating opportunities to meet other neighbors).	1,7				**X**	
Parks help build a sense of community.	2,0				**X**	
Parks help promote my child's physical and psychological health. (If you don't have a child, please, leave it empty)	1,3					**X**
Parks help promote my dog's physical and psychological health. (If you don't have a dog, please, leave it empty)	1,9				**X**	
Parks enhance public safety by creating community feeling.	2,2				**X**	
Parks help improve quality of life.	1,4					**X**
If I were to move to another place, I would prefer an area close to a park.	1,5				**X**	

The survey results found that people believe parks are beneficial to their quality of life, their children's or dog's physical health, and socialization with neighbors (Table

4.15). Most respondents (71,1%) “strongly” agreed that parks help improve the quality of life. Over 80 percent of the respondents expressed, the view that parks help promote their child or dog’s physical and psychological health. Almost 50% of the respondents “strongly” agreed that parks help to build a sense of community. Almost 60% of the respondents “strongly agreed” or “agreed” that a park provides opportunities to meet neighbors and build a sense of community by socializing with others.

Unfortunately, almost 40% of the respondents disagreed or somewhat disagreed that parks enhance public safety by creating a community feeling. The results also showed that over 85% of the residents want to live closer to a park.

Hypothesis 3 was intended to examine whether satisfaction with the park is positively related with perception of park benefits. Results showed that users who tend to perceive the park benefits, have a high overall satisfaction with the park and features of it.

Hypothesis 4 was set to examine whether the frequency of park visits is positively related with perception of health benefits. A positive relationship was found between frequency of park visits and perception of health benefits.

4.4.6 Summary of Behavioral Mapping and Survey Results

This study revealed that Rudolf-Bednar-Park receives considerable use, serves a variety of demographic groups, and supports sports and social activities. Park use varies considerably depending on the weekday, the time of day, and the weather conditions.

Nearly 2/3 of park users were children and teenager. Moreover, the results showed that they are satisfied with the park and its facilities, such as the skate park and streetball courts. Among the 90 survey respondents, 23,3% visited the park on a daily basis and nearly 50% came to the site 2 to 5 times per week. Over 70% of the users visit the park at least once a week. The most frequent users are people who live within a walkable distance to the park. Therefore, it appears that distance to a park plays an important role on frequency of visits. The middle-aged group uses the park mostly because of their children and to meet with other families.

The results of the survey and behavioral mapping revealed that a significant proportion of users use the park on both weekdays and weekends, mostly afternoons and late afternoons until the sun goes down. A small number of the respondents visit the park in the morning or at nights. Park use times depend on the weather condition because of the specific microclimate of the area.

Among users who visit the park less often, the commonly cited constraints to visiting included weather, lack of time, and lack of shade. Other reasons expressed by the respondents included concern for other's behavior.

Observations were conducted during April, thus, unstable weather conditions caused two missing days of conducting the surveys and behavioral mapping. On the other hand, when the weather was good and sunny, a substantial amount of people used the park in desire for spring. Further observations will be required during other seasons to obtain a more complete use pattern.

4.5 Results of The Hypothesis Tests

The followings were the hypotheses to be tested in this study;

1. *Cultural differences have an explicit role in frequency of park visits and user satisfaction.*

It was expected that the park would be used differently by users from different nationalities. In order to compare the relationship between users from different nationalities and their frequency of visits, there has to be a significant amount of each

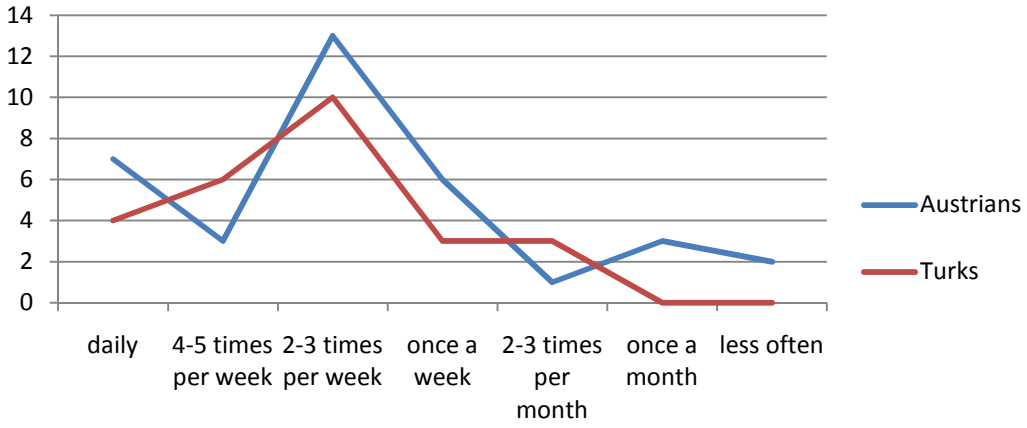

Figure 4.27: Comparison of frequency of park visits between Austrian and Turkish groups

group. However, the respondents of the survey were from a wide range of nationalities. There were only two groups which had enough respondents for a comparison, the other 17 groups consisted of two or one person each. Therefore, Austrian and Turkish groups were compared (Figure 4.27). As seen in the figure, the frequency of visits of these two groups is quite similar therefore, the hypothesis cannot be confirmed.

2. *Distance to a park is negatively related with frequency of park visits and user satisfaction.*

There is a significant negative correlation between distance (travel time) and frequency of park visits [r=–-.327, n=90, p<.002]. Therefore, it appears that the proximity to a park promotes frequent visits.

However, no significant relation was found between distance and user satisfaction. People who live closer to the park are more likely satisfied, but the relationship was not found significant [r=–-.001, n=90, p<.969].

3. *Satisfaction with the park (i.e., features, safety, and maintenance) is positively related to perception of benefits of park.*

Correlation tests indicated that the users who are satisfied with Rudolf-Bednar-Park tend to more likely perceive parks as more benefic. Test results showed that there is a positive significant correlation between satisfaction with the park and perception of benefits of parks [r=.395, n=90, p<.001].

4. *Frequency of park visit is positively related with perception of parks' health benefits.*

It was hypothesized that frequent park users perceive that parks help people to be physically active and healthy. A positive relationship was found between frequency of park visits and perception of health benefits of parks [r=.199, n=90, p<.01].

Results showed that the distance to a park affects the frequency of visits with a strong significance level. In addition, there is a positive relation between frequency of visits and perception of health benefits of parks. As a result, if the health benefits of parks are considered as an important factor on people's physical and psychological health, then it appears that the location of parks in walkable distance in residential areas is substantial.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The present study used POE methods to collect data from different park users, in order to investigate the use patterns of Rudolf-Bednar-Park, user activities, user perception, and satisfaction. In this chapter, the findings of this study are listed, as well as the design recommendations of Rudolf-Bednar-Park.

With cities becoming more and more crowded, many people are looking for a place to spend quality time with families or friends. It is clear from this study, that parks are a critical component of urban environment.

The results confirmed that the design goals of the Rudolf-Bednar-Park were largely met. The majority of survey respondents expressed their satisfaction about the park features and opportunities provided. Nevertheless, many users also expressed their complaints and/or recommendations for the park. The park serves very diverse users and they have differing preferences and needs. To this ends, ongoing evaluation of an urban space with a partnership of their users and redesign are critical. However, unfortunately, neither design group nor Vienna's Municipal Department of Parks and Gardens currently are not responsible for an evaluation of Rudolf-Bednar-Park.

The present study has demonstrated the importance of evaluation even if it the design was made carefully and foreseeing. Designed public spaces need to be evaluated and redesigned over time, to keep up with changing needs.

Considering local conditions and identification of the specific needs of users are very critical to developing a successful park. One design standard cannot be applied to all parks and specific design standards should be developed to reflect different physical, social, cultural, and environmental characteristics. For the creation of a park, developers, planners, designers, landscape architects and municipality, their association, are indispensable components, but a partnership with users is more crucial to the sustainable success of the designed environment. To this ends, POE has to become a part of their normal services.

In addition, a government department must be responsible for pushing evaluative research periodically. Unfortunately, the municipality of the city of Vienna This kind of easy-to-use, inexpensive and systematic evaluation can be very useful to understand users better and to create sustainable successful parks.

5.2 Design Recommendations

The evaluation of Rudolf-Bednar-Park through survey and observations provided insights into important park features and environmental factors influencing users' activities and satisfaction.

The successful features of the park included sufficient size, accessibility and suitability for people from different ages. The survey results indicated that both, functional and aesthetic components of the park should be considered in the design phase, to satisfy the needs of park users. In this section, the design features are discussed and design recommendations are suggested (Figure 4.28).

1. The study indicates that shade has an important impact on the use of a park, especially in hot and humid weather. Trees in Rudolf-Bednar-Park are too young to provide shade and other shade structures are limited. Temporary shade elements added to provide protection from the sun, until the trees get more mature to create enough shade.
2. Observation data showed that the majority of park users engage in playing actively / passively or sitting and socializing with others. Plenty of seating and their proper arrangements must be provided to support social interaction. Movable chairs for self-structured social environments enhance social interaction, in addition to allowing users to have more control over their own comfort. More tables have added to provide settings suitable for socializing, as well as for meeting in groups.
3. Many users had a high satisfaction level with the water ponds (The Reed Garden), because of the cooling and relaxing effect of water. However, considerable amount of respondents mentioned about the poor maintenance. The water of the ponds does not refresh itself sufficiently. In time, naturally, it gets full of algae. Either there should be regular - intense – maintenance of

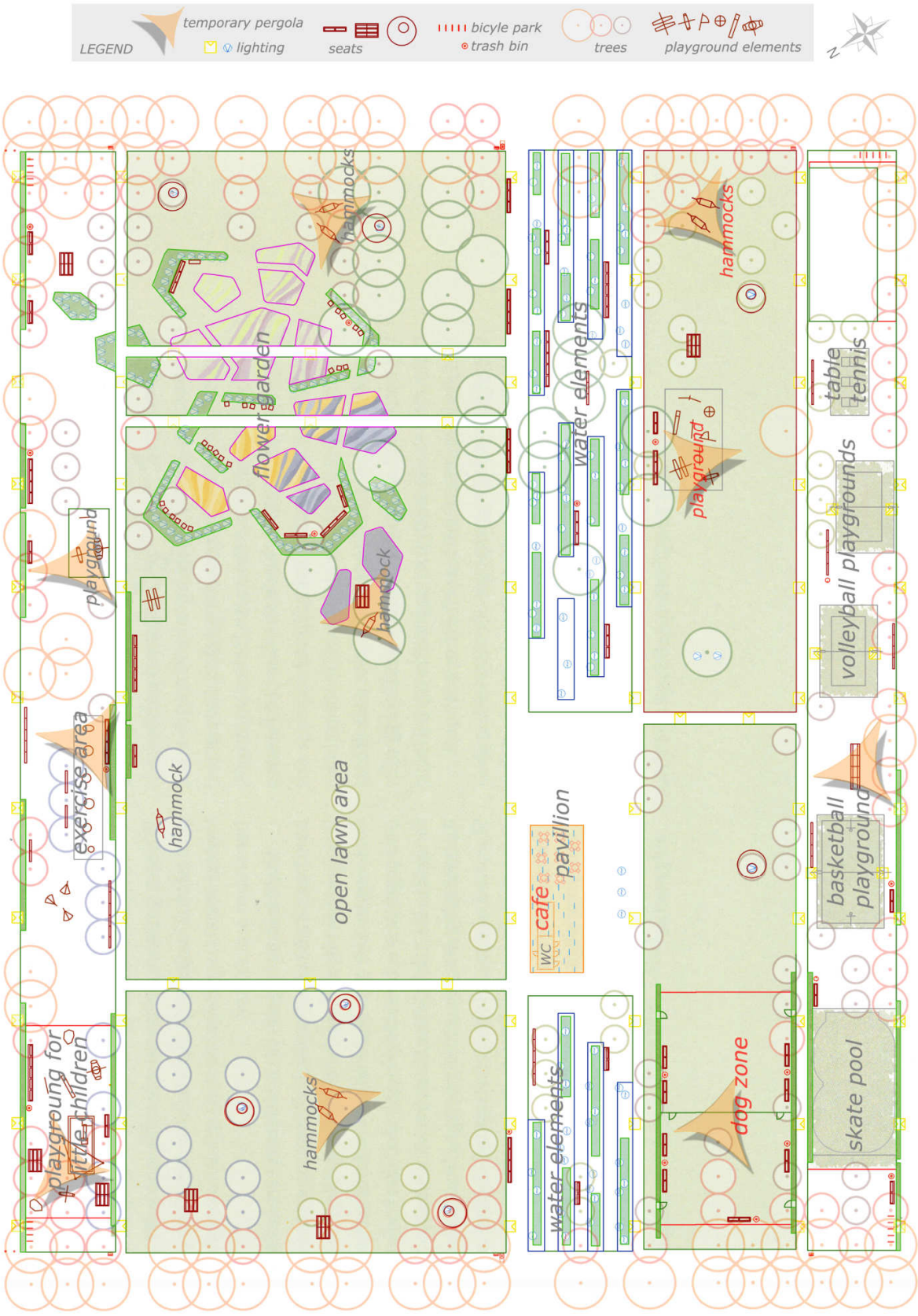

Figure 4.28: Redesign of Rudolf-Bednar-Park

the ponds or a technical solution should be considered to provide a sustainable solution for this problem.

4. Many users expressed that a café should be added to the park. Duration of visits was mostly two hours or more, resulting in the need for food and drinks. In addition, for a considerable amount of people, the reason to come to the park was expressed as to meet with their friends and socialize. Thus in the redesign plan of the park, a café has added under the pavilion.
5. Many dog owners expressed complaints about the size of the dog area. The existing dog park is not suitable for bigger dogs to play unhindered and have fun with their owners. Most of the time dog owners were observed playing with their dogs outside the dog zone. On the other hand, a substantial number of users complained about the dogs playing freely around them. Thus, the location of the dog zone has changed to the place that was in less intense use, and the size has increased.

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Url-4 < http://en.wikipedia.org/wiki/Vienna/ > last access to site: 22.04.2010

APPENDICES

APPENDIX A: Survey Instrument

Date: Survey No:

This questionnaire is part of a study being conducted by a master student Burcu Akıncı.
The purpose of this study is to learn more about how Rudolf-Bednar-Park is used and how its users and residents perceive it.

We would like to assure you that these answers will remain completely confidential. They will not be used for specific policy or pricing decisions, but will help in understanding your needs and interests.

You don't have to answer any questions that you feel uncomfortable with. You can contact the principal investigator, Burcu Akıncı at akinciburcu@gmail.com, or the supervisor of Investigator, Prof. Dr. Orhan Hacıhasanoğlu at hacihasa@itu.edu.tr with any questions about this study.

I appreciate your help.

1. How often do you visit Rudolf-Bednar-Park?

☐ Daily	☐ 4-5 times per week	☐ 2-3 times per week	☐ Once a week	☐ 2-3 times per month	☐ Once a month	☐ Less often

2. How do you get to here?

☐ Walk ☐ Public transport (metro, bus…etc.) ☐ Bicycle ☐ other .....

3. How long does it take to come here? ..... minutes travel time.

4. How long do you usually stay in the park during your visits?

☐ 0-30 minutes ☐ 30-60 minutes ☐ 1-2 hours ☐ 2+ hours

5. At what time of a day do you usually visit the park? Check all times that apply.

☐ Weekday mornings (**6 am – 12 pm**)
☐ Weekday afternoons (**12 pm – 6 pm**)
☐ Weekday evenings (**6 pm – 9pm**)
☐ Weekday night (**after 9pm**)
☐ Weekend mornings (**6 am – 12 pm**)
☐ Weekend afternoons (**12 pm – 6pm**)
☐ Weekend evenings (**6 pm – 9pm**)
☐ Weekend night (**after 9pm**)

6. Typically, why do you visit Rudolf-Bednar-Park? Check all that apply.

☐ for exercise ☐ to enjoy green space ☐ to meet others and socialize
☐ to relax and rest ☐ to enjoy playground ☐ because of the playgrounds for my child
☐ other.....

7. What type of activity(s) do you do most times while visiting Rudolf-Bednar-Park? Check all that apply.

☐ Listen to music ☐ Watch other people, children…etc. ☐ Watch the environment
☐ Meet with friends ☐ Relax ☐ Walk ☐ Play (Basketball, table tennis …etc.)
☐ Read ☐ Skate ☐ Eat (lunch, snacks…etc.) ☐ Sit (on a bench or a hammock…etc.)
☐ Play with my dog ☐ Ride a bike ☐ other.....

8. What factors, if any, keep you from using this park more often? Check all that apply.

☐ lack of interest ☐ lack of shade from sun ☐ park is too far from my home
☐ lack of time ☐ concern about other's behavior ☐ park is too noisy
☐ poor maintenance ☐ other.....

---

9. Generally, how satisfactory do you personally consider Rudolf-Bednar-Park?

☐ very satisfactory ☐ satisfactory ☐ don't know ☐ unsatisfactory ☐ very unsatisfactory

10. How much are you satisfied with the following characters of Rudolf-Bednar-Park?

	very unsatisfactory		don't know		very satisfactory	comments
a. Park size	5	4	3	2	1	
b. Park location	5	4	3	2	1	
c. Park design	5	4	3	2	1	
d. Access to park	5	4	3	2	1	
e. Atmosphere	5	4	3	2	1	
f. Maintenance	5	4	3	2	1	
g. Safety of the park	5	4	3	2	1	
h. Environmental noise	5	4	3	2	1	
i. Seating	5	4	3	2	1	
j. Tables	5	4	3	2	1	
k. Playgrounds	5	4	3	2	1	
l. Safety of the playground elements	5	4	3	2	1	
m. Lighting	5	4	3	2	1	
n. Greenery	5	4	3	2	1	
o. Flowers	5	4	3	2	1	
p. Water ponds	5	4	3	2	1	
q. Shade (protection from sun)	5	4	3	2	1	
r. Dog Park	5	4	3	2	1	
s. Pergola	5	4	3	2	1	
t. WC/Toilet	5	4	3	2	1	

Others, please specify.....

11. What do you like most about Rudolf-Bednar-Park?

.....

.....

12. What do you dislike most about Rudolf-Bednar-Park?

.....

.....

Thank you for your participation.

13. How much do you agree with the following statements?

	strongly disagree				strongly agree
a. Parks help promote my physical health.	5	4	3	2	1
b. Parks help me socialize with others (e.g. creating opportunities to meet other neighbors).	5	4	3	2	1
c. Parks help build a sense of community.	5	4	3	2	1
d. Parks help promote my child's physical and psychological health. (If you don't have a child, please, leave it empty)	5	4	3	2	1
e. Parks help promote my dog's physical and psychological health. (If you don't have a dog, please, leave it empty)	5	4	3	2	1
f. Parks enhance public safety by creating community feeling.	5	4	3	2	1
g. Parks help improve quality of life.	5	4	3	2	1
h. If I were to move to another place, I would prefer an area close to a park.	5	4	3	2	1

14. How would you like to modify or change Rudolf-Bednar-Park?

Please specify features you think should be improved or, if not included in the park, needs to be included.

☐ more seats ☐ more greenery ☐ a café with take-out food ☐ more safety
☐ public art ☐ more light at night ☐ more maintenance ☐ more table
☐ other.....

Please answer the following questions about yourself and your household, so that we may better categorize and analyze the responses to this survey. All of your answers will remain confidential and you will never be identified in reporting results of the study.

1. What is your gender? ☐ Female ☐ Male
2. What is your age? .....
3. Where are you from? Country of origin .....
4. Where do you live? ..... District.
5. What is your marital status?
   ☐ Single ☐ Married ☐ in a relationship ☐ other
6. How many children (age under 18) live in your family? .....
7. Do you have a dog? ☐ Yes ☐ No
8. What is your education level?
   ☐ Grade School ☐ Vocational School ☐ Professional School ☐ High School
   ☐ Bachelor Degree ☐ Master Degree
9. Are you? ☐ Employed full time ☐ Employed part time ☐ Self-employed
   ☐ Retired ☐ A student ☐ Unemployed
   ☐ other .....

Thank you for your participation.

APPENDIX B.1: Behavioral Mapping Recording Form

BEHAVIORAL MAPPING RECORDING FORM

DATE: TIME: WEATHER:

	GENDER	AGE	DESCRIPTION OF PEOPLE	ACTIVITY TAKING PLACE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
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APPENDIX B.2: Behavioral Mapping Recording Map

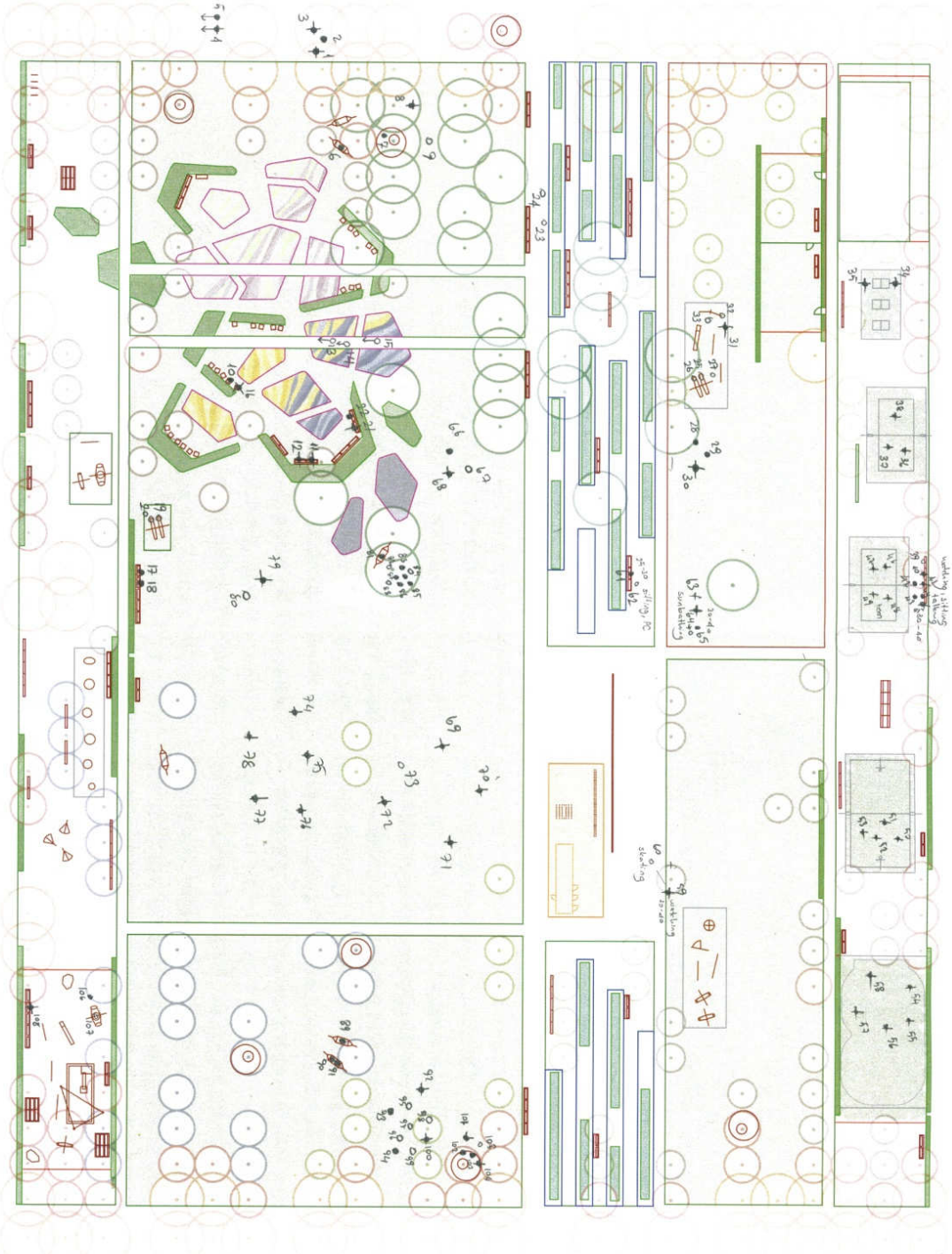
APPENDIX B.3: Sample of Behavioral Mapping Recording From

BEHAVIORAL MAPPING RECORDING FORM

DATE: 25.04.2010 TIME: 13:00 – 14:00 WEATHER: Sunny 25°C

	GENDER	AGE	DESCRIPTION OF PEOPLE	ACTIVITY TAKING PLACE
1	m	40-45	group 1	standing, talking
2	F	40-45	〃	〃 〃
3	m	25-30	〃	〃 〃
4	m	30-35	group 2	riding bicycle
5	F	30-35	〃	〃 〃
6	F	30-35	alone 1	sleeping on hammock
7	F	30-35	family 1	sunbathing
8	m	30-35	〃	playing with his child
9	C	C	〃	playing
10	F	25-30	couple 1	reading, sitting
11	m	30-35	group 3	sitting, talking
12	m	30-35	〃	〃 〃
13	C	C	group 4	riding bicycle
14	C	C	〃	〃
15	C	C	〃	〃
16	m	35-40	couple 1	sitting, reading
17	F	30-35	family 2	sitting, talking, watching
18	F	30-35	family 3	〃 〃 〃
19	C	C	family 2	playing
20	C	C	family 3	playing
21	m	25-30	couple 2	sitting, talking
22	F	25-30	couple 2	S 〃 〃
23	C	C	group 5	playing with water
24	C	C	〃	〃
25	C	C	family 4	playing on swing
26	C	C	〃	〃
27	C	C	〃	watching
28	F	30-35	〃	sitting, talking, watching
29	F	30-35	〃	〃 on grass
30	m	30-35	〃	〃
31	m	30-35	family 5	playing with children
32	C	C	〃	Playing
33	C	C	〃	Playing
34	m	30-40	group 6	playing table tennis
35	m	30-40	〃	〃
36	m	teen	group 7	playing volleyball
37	m	〃	〃	〃
38	m	〃	〃	〃
39	C	child	group 8	watching, sitting
40	m	30-40	〃	〃 〃

APPENDIX B.4: Sample of Behavioral Mapping Recording Map



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