

SUBURBAN LANDMARKS IN NORTH ARLINGTON: PERCEPTIONS  
OF EXPERTS AND NON-EXPERTS

by

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## ABSTRACT

### SUBURBAN LANDMARKS: PERCEPTIONS OF EXPERTS AND NON-EXPERTS

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Each individual perceives the world differently and attains knowledge in distinct ways (Rapoport 1977). With regard to perception about specific places, some individuals function as “insiders.” This means their perceptions are engaged with place through daily experiences familiarizing them with the landscape. Others function as “outsiders,” unconcerned with or unaware of landscape events, thereby perceiving only the surface meaning of such events (Dearden 1984, Craik 1970, Bourassa 1991).

One example of this dichotomy between insiders and outsiders can be found among design experts and non-experts. Design experts, such as landscape architects, architects, and planners, are directly involved with landscape aesthetics (Bourassa, 1991). Non-experts, such as local residents, are immersed in the same setting for a long period and share similar socioeconomic, educational, and occupational backgrounds to one another (Taylor and Bogdan, 1998).

However, a conflict exists between experts’ and non-experts’ views of urban elements because design experts are used to predict their non-expert clients with their own preferences or perceptions (Bourassa 1991). In urban spaces, landmarks have distinctive spatial features of

color, shape, or semantic value, help individuals orient or find their ways and enhance the legibility of spaces. Many researchers have showed that landmarks are the most distinctive urban elements and encourage design experts to improve the legibility of spaces and benefit space users by designing landmarks (Lynch 1960, Lamit, 2004, Sorrows and Hirtle 1999). However, experts and non-experts often have very different perspectives of landmarks because of the different uses, meanings, associations, and preferences attributed to such landmarks by the two groups (Herzog 2000).

This research used interviews to generate data for discovering experts' and non-experts' perceptions of landmarks studied. On prepared maps, participants were asked to indicate their own landmarks and list the reasons they consider these features to be landmarks. The data were analyzed by the constant comparative method to identify respondents' perceptions. The results indicated that groups selected different landmarks, offered different reasons for their choices, and had distinct attitudes towards those landmarks.

Understanding differences and similarities in the perceptions between experts and non-experts, and finding a balance, are beneficial to the future of environmental design because these experts are decision-makers in landmark design (Moughtin, OC and Tiesdel 1995, Krupat 1985). Any disparity between their perceptions of the environment and those of non-experts could cause design problems. Thus this research emphasizes the role of landmarks within urban spaces and examines differing perceptions thereof between experts and non-experts (Bourassa 1991).

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	iii
ABSTRACT .....	v
LIST OF ILLUSTRATIONS.....	iii
LIST OF TABLES .....	iv
Chapter	Page
1. INTRODUCTION.....	1
1.1 Introduction.....	1
1.2 Problem Statements and Significance of the Study.....	2
1.3 Research Objectives .....	3
1.4 Research Site.....	4
1.5 Research Questions.....	7
1.6 Definition of Terms .....	8
1.7 Summary.....	9
2. LITERATURE REVIEW .....	10
2.1 Introduction.....	10
2.2 Expert and Non-Expert Research .....	10
2.2.1 Design experts .....	10
2.2.2 Non-expert residents.....	11
2.2.3 Expert and non-expert research .....	11
2.3 Landmarks.....	13
2.3.1 Definitions of landmarks.....	13
2.3.2 Characteristics of landmarks.....	14
2.3.3 Typologies of landmarks .....	15





4.2.3.2 Characteristics of the landmarks identified by non-experts .....	37
4.2.3.3 Landmarks identified by both groups.....	39
4.2.4 Perceptions about landmarks identified by experts and non-experts .....	40
4.2.4.1 Perceptions of experts and non-experts about Open space landmarks.....	40
4.2.4.2 Perceptions of experts and non-experts about buildings (structures) landmarks.....	42
4.2.4.3 Perceptions of experts and non-experts about Civic furniture landmarks .....	45
4.3 Summary.....	46
5. CONCLUSION.....	48
5.1 Importance of the Findings.....	48
5.1.1 Similarity between results .....	48
5.1.2 Difference between results.....	49
5.2 Relevance to the Landscape Architecture Profession .....	51
5.3 Suggestions for Future Research .....	52
5.4 Summary.....	52
APPENDIX	
A. INTERVIEW NOTES.....	53
REFERENCES.....	72
BIOGRAPHICAL INFORMATION .....	80

## LIST OF ILLUSTRATIONS

Figure	Page
1.1 Location map of Arlington .....	5
1.2 Downtown District.....	5
1.3 Research site .....	6
2.1 Hard open space landmark: Levitt Pavilion .....	16
2.2 Soft open space landmark: Randol Mill park .....	16
2.3 Buildings (Structures) landmark: Rangers Ballpark in Arlington .....	17
2.4 Civic furniture landmark: Sign on Division Street.....	17
3.1 Research Site.....	23
3.2 Interview Map.....	24
4.1 Obelisk on Division and Center streets (Identified by expert group).....	33
4.2 Johnson Creek (Identified by non-expert group).....	34
4.3 Maverick Activities Center (Identified by non-expert group) .....	35
4.4 General Motors (Identified by both groups) .....	38
4.5 Six Flags over Texas (Identified by both groups).....	39
4.2 River Legacy Park.....	42
4.3 Tower in Six Flags over Texas.....	45
4.4 Arlington Theatre.....	45
4.5 Mineral Water Well.....	49

## LIST OF TABLES

Table	Page
2.1 A typological framework of cultural groups and rules .....	12
4.1 Landmarks identified by both experts and non-experts .....	30
4.2 Landmarks identified by experts .....	31
4.3 Landmarks identified by non-experts .....	31
4.4 Characteristics of landmarks identified by the expert group .....	33
4.5 Characteristics of landmarks identified by the non-expert group.....	35
4.6 Comparison of characteristic of landmarks used by experts and non-experts .....	36
4.7 Characteristics of the landmarks identified by experts.....	37
4.8 Characteristics of the landmarks identified by non-experts .....	38
4.9 Comparison of characteristics of landmarks identified by experts and non-experts.....	40
4.10 Comparison of perceptions about open space landmarks.....	41
4.11 Comparison of perceptions about buildings or structures as landmarks .....	43
4.12 Comparison of perceptions about civic furniture landmarks .....	46

CHAPTER 1  
INTRODUCTION  
1.1 Introduction

Design experts tend to evaluate spaces using their design knowledge. However, they are often “outsiders” lacking the practical experience and complex perceptions about spaces possessed by non-expert users (Bourassa 1991). Yet successful design depends partly upon how well designers understand users’ needs (Rapoport 1977, Trancik 1986). Attention to the differing perceptions of experts and non-experts, and to the problems arising from those differences, can help planners and designers to attain a more comprehensive understanding of space, including the uses, meanings, values, and flaws that residents attribute to it (Bourassa 1991).

This research uses face-to-face interviews and questionnaires to locate landscape elements perceived as landmarks in North Arlington, and to generate data from experts and non-experts regarding their perceptions of these suburban landmarks. This research is distinctive and its comparison of expert and non-expert perceptions has the potential to improve planners and designers understanding of the spaces they create and needs of space users.

Again, this study examines differences between experts’ and non-experts’ perceptions of urban landmarks. Because landmarks possess distinctive size, exceptional architecture, or unusual features, they are important in the identification of spaces (Lynch 1960, Moughtin, OC and Tiesdel 1995). Landmarks can act as symbolic images, informing the understanding of a human community’s history and development. Landmarks can also serve as navigation tools improving the legibility of cities (Sorrows and Hirtle 1999). Thus, landmarks are viewed as significant urban elements that inform the designs that experts carry-out in urban spaces (Lynch 1960, Lamit 2004, Sorrows and Hirtle 1999).

In other words, understanding perceptual differences between experts and non-experts regarding landmarks is important because design experts are responsible for designing user-friendly spaces (Trancik 1986). To meet the needs of non-expert users, designers need to understand how non-experts' perceptions of a local space differ from those of their own (Bourassa 1991).

This study takes place in the city of Arlington, Texas, which is roughly midway between Fort Worth and Dallas. The city's prospering economy has recently attracted a large number of new design projects including large-scale public and private developments. North Arlington was selected as the specific site of this study because it contains the oldest area in Arlington's developmental history, and it contains development patterns representing over hundred years of the city's existence. Specifically, North Arlington includes the downtown area, an entertainment district, a recreation park, and The University of Texas at Arlington. The urban pattern and architectural styles of this area provide many potential landmarks. In addition, North Arlington has experienced particularly high economic growth. For example, the recent re-development of the downtown district, the new Dallas Cowboys Stadium, and the "Center Street Station" enhance the possibility for the emergence of some significant landmarks. Moreover, North Arlington contains nodes, activities, and attractions that regularly draw a large number of visitors. All of these conditions increase the likelihood that North Arlington contains an ample array of landmarks.

### 1.2 Problem Statements and Significance of the Study

Discrepancies exist between experts and non-experts perceptions of urban spaces (Kaplan and Talbot 1988). Experts' perceptions of, and attitudes toward, spaces are usually general, diffuse, and future-oriented, while those of non-experts tend to be specific and present-oriented (Peattie 1969, 1987, Bourassa 1991). It appears that design knowledge affects perceptions about urban spaces and it separates environmental decision-makers from non-expert users of those environments (Crail 1970, Rapoport 1977).

In previous research comparing perceptions of experts and non-experts, few studies have been concerned with perceptions about individual city elements. The word “elements” is used here to refer specifically to the five urban elements identified by Lynch, which are nodes, paths, edges, districts, and landmarks (1960 46). The role of landmarks is to create a memorable urban landscape and the use of landmarks offers designers opportunities to embellish human communities with appropriate and regionally critical designs (Moughtin, OC and Tiesdel 1995, Hopman 2007).

Landmarks are viewed as distinctive elements because of their high visibility and their contributions to the legibility of cities. Therefore, landmark designers need to be especially sensitive to the perceptions of future users of landmarks they design, in order to find appropriate design solutions that strengthen the relationships between landmarks and their users (Lynch 1960, Fontaine et al. 2005, Rapoport 1977). If the design of a landmark renders it as not user-friendly, the place of landmark ends-up as part of forgotten spaces or facilities, causing social issues and other problems (Rapoport 1977, Trancik 1986). However, while numerous studies have demonstrated the importance of designing landmarks, few researchers have investigated the relationships between design experts and non-expert users of landmarks. Since user dissatisfaction with urban design projects can be attributed to failure by design experts (Trancik 1986), this research makes an important contribution to the literature by comparing the differences and similarities between experts and non-experts.

### 1.3 Research Objectives

This research helps other researchers understand differing perceptions of experts and non-experts about suburban landmarks. The specific objectives of the study are:

- To determine the difference in how experts and non-experts perceive landmarks; and,
- To determine how expertise impacts experts’ perceptions of local knowledge.

#### 1.4 Research Site

Arlington is a ninety-nine square mile city located between Dallas and Fort Worth. With a population of 356,764 (<http://factfinder.census.gov/servlet>, 2009), it is the seventh largest city in Texas and the fiftieth largest city in the United States. It is a tourist destination community, housing major professional sports teams, the Six Flags over Texas Amusement Park, and the Hurricane Harbor Water Park. It also has eighty-two public parks of various sizes, including the 1,300-acre park River Legacy. It is home to The University of Texas at Arlington, which has a student enrollment of 28,000 (<http://www.uta.edu/uta/overview>, 2009).

Arlington is considered to be the first significant suburb in North Texas having taken-on its suburban condition immediately after World War II. But Arlington's early isolation from Dallas and Fort Worth (meaning it floated in an agricultural "sea" between the two cities during most of its life cycle) meant that Arlington experienced growth during prosperous economic times and slow-downs during economic lulls (<http://www.arlingtontx.gov/history/index.html>) The result was a community checkered with juxtaposed development, some new and some old, some under development and some under re-development, and all in various stages of physical condition

North Arlington contains samples of all of these conditions, and it contains the physical elements of Arlington's development history. Thus, North Arlington is seen as the optimum place to study landmarks because it contains most of the elements that affect landmarks over time.

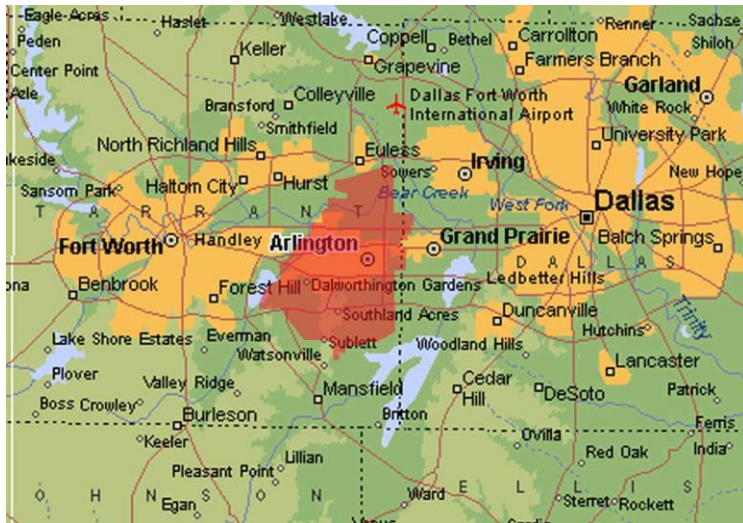


Figure 1.1 Location Map of Arlington



Figure 1.2 Downtown District



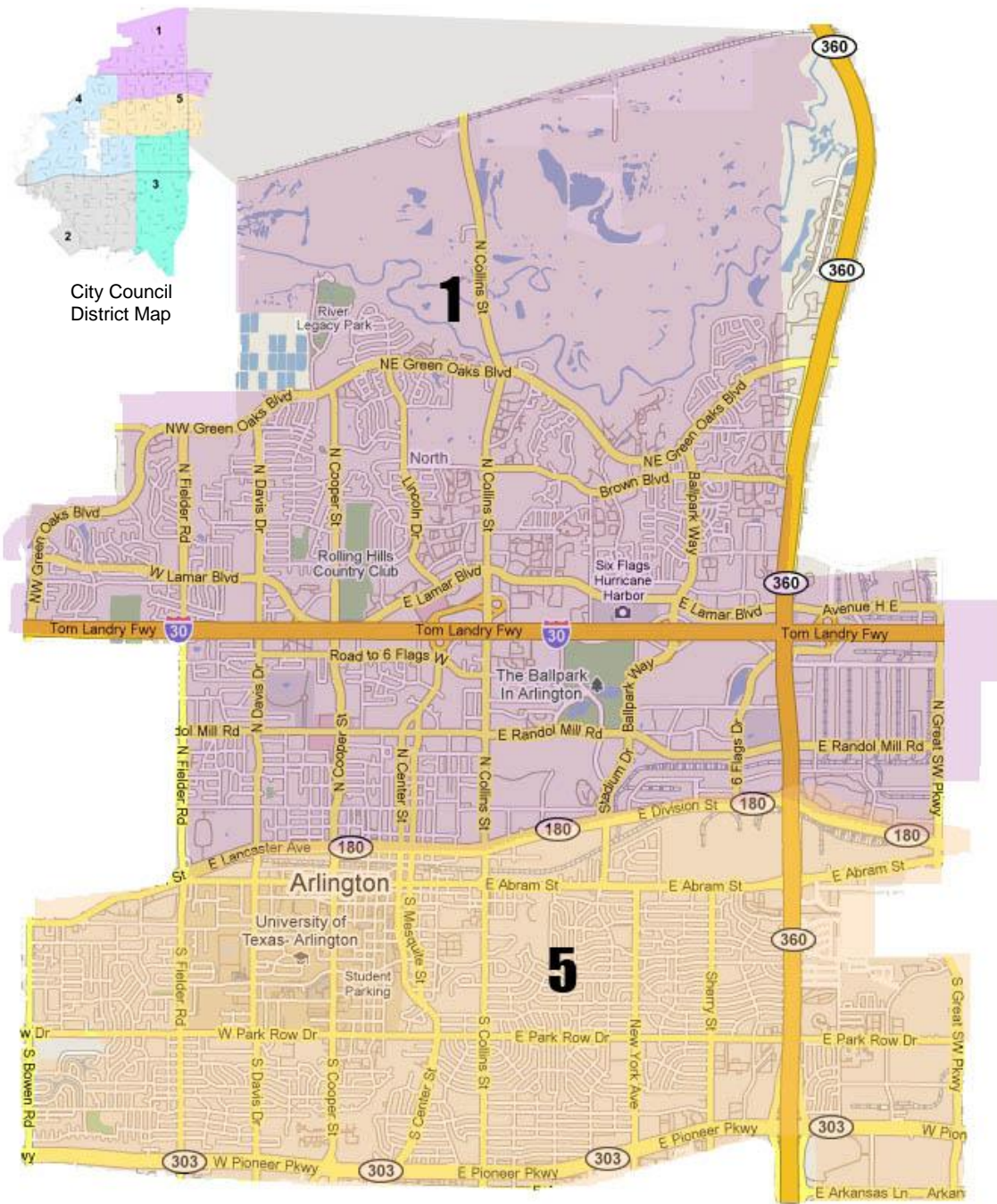


Figure 1.3 Research Site

### 1.5 Research Questions

The primary questions explored in this research are:

1. What landmarks do experts and non-experts use?
2. What are the differences between the landmarks used by experts and non-experts?
3. What are the reasons for any differences in the landmarks used by experts and non-experts?

### 1.6 Definition of Terms

**Additions-to-Base-Maps.** A method of standardized interviewing using a base map on which respondents fill-in answers about their feelings or perceptions of places (Zeisel 1981).

**Design Expert.** Professionals, such as architects, landscape architects, urban planners and resources managers, directly involved in the creation of landscape aesthetics (Bourassa 1991, 104).

**Resident.** Individuals who inhabit, routinely travel to, or are very familiar with, a restricted geographical area (Hay 1998, 6).

**District.** Medium-to-large sections of a human community which are recognizable as having some common, identifying characters (Lynch 1960, 47).

**Edges.** Linear elements are usually the boundaries between two kinds of areas, and not considered as paths (Lynch 1960, 62).

**Expertise .** The capability of a person to perform an operation in a limited domain with exceptional results when compared to others capable of performing the same operation (Zeisel 1981).

**Familiarity.** A product of experience, and experience comes in many forms. For example, one may gain familiarity with a location from many circumstances, such as one's place of residence, frequent visits, study, or from the cultural norms of one's group (Kaplan 1989).

Landmark. Any landscape feature with apparent or inherent attributes that make it physically or spiritually unique, influential, or impressive, or cause it to contrast with its' surroundings.

Urban landmarks encompasses environmental components such as towers, buildings, open spaces and special urban features (Lamit 2004, 75).

Spatial Prominence. A location with spatial prominence that clearly visible from numerous locations or that contrasts with nearby elements (Lynch 1960, 80).

Singularity. Features with a clear form that contrasts with their background (Lynch 1960, 78).

Nodes. Points in a human community. For example, nodes can be primary junctions, places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another (Lynch 1960, 47).

Paths. Channels along which the users customarily, occasionally, or potentially moves such as streets, walkways, transit lines, canals (Lynch 1960, 47).

Perception. The mental process through which incoming sensations are filtered.

This process assigns meaning to sensory data and involves the selection, organization, and interpretation of stimuli (Krupat 1985). The word "perception" also refers to the outcome of this process once it has passed into conscious awareness.

The difference between perception and sensation is that sensation is the physical response to stimulation of human senses without any meaning (Bourassa 1991 22-23), whereas perception assigns meaning to that stimulation.

Imageability. The extent to which a physical object evokes a strong image in the perceptions of observers. Shape, color, and spatial arrangement can all contribute to imageability by creating a vivid, powerfully structured, surprising, or memorable form that leaves a strong mental image. This is also referred to as legibility or visibility. The objects are not only in view but demand attention by producing sharp, intense visual sensations (Lynch 1960, 9).

Mental Map. A system of symbols constructed by the mind to represent and retain information.

It is used to acquire, encode, store, recall, and decode information about the spatial environment such as its elements, relative locations, distances, directions, and overall structure (Down and Stea 1973).

### 1.7 Summary

This research contributes to current understanding of perceptual discrepancies between experts and non-experts regarding environments (or spaces) and their components. This is achieved through collecting self-reported perceptions by experts and non-experts about a number of suburban landmarks. It is anticipated that this research can lead to improved expert understanding of the needs and preferences of non-experts and of the highly complex web of meanings and associations that contribute to non-expert perceptions of familiar spaces.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter defines the terms “expert” and “non-expert” and explores existing research on the two. Definitions and types of landmarks are described and their values and purposes considered. Finally, a brief explanation of the nature of human perceptions clarifies the reasons for differing attitudes between experts and non-experts toward urban landscape issues.

#### 2.2 Expert and Non-Expert Research

##### *2.2.1. Design experts*

Those directly involved in the creation of design are identified as design experts; this includes architects, landscape architects, urban planners, and resource managers (Bourassa 1991. 104). These design experts are informed by their education, training, and background and therefore differ from non-experts who lack this in-depth understanding (Bourassa 1991).

Training of design experts tends to cover the design process itself, providing ordered strategies for the rational and objective development of design concepts. Thus, designers can use their expertise (professional skills) to define and clarify design problems and to resolve problems within existing environments (Zeisel 1981). Bourassa (1991) has discussed the cultural division that exists between experts and non-experts. He indicates that the two groups are likely to have conflicting aesthetic attitudes arising from differing values, and that design experts have direct responsibility for the urban environment (Bourassa 1991, 105). However, if designers draw on their professional knowledge and opinions alone without considering the needs and preferences of residents or users of the created space, problems in legibility and environmental quality can arise.

### *2.2.2. Non-expert residents*

For the purpose of this research, the term “non-experts” is used to refer exclusively to local residents of the areas studied. A resident is an individual who spends a significant amount of time interacting with others in a given environment. In a geographical sense, a resident is any person who has an emotional bond or attachment to a restricted geographical locale which that person routinely travels or has familiar with (Tuan 1977, Hay 1998). When a person resides in a particular place for many years, he or she develops a “sense of place,” and feels at home and secure there. A sense of place is a feeling of belonging and identification with that place (Hay 1988). However, because most modern Western people do not live in one place all their lives (Tuan 1980). Hay (1998) suggests that residential status is the main factor influencing one’s sense of place. Hay interviewed two hundred and seventy residents of the Banks Peninsula of New Zealand in his research. It was found that residents, who had moved to the Banks Peninsula in the last five to ten years including foreign immigrants, usually had less commitment to remaining on the Banks Peninsula than more long-standing residents. Moreover, the same research also revealed that residents with less than ten years a period of residence of was correlated to a less intense sense of place than were longer periods of residence (Hay 1998). Thus, this present research defines long-term residence as a period of ten years or more.

Local residents are also referred to in this study as “natives” (Sonnenfeld 1966). Local residents, or natives, are emotionally engaged with their environment, which is composed of a complex series of settings. In addition, the thoughts of local residents about their surroundings are interwoven with their identity and sense of place (Jakle 1987).

### *2.2.3. Expert and non-expert research*

Table 2.1 classifies the presence or absence of both familiarity and expertise within a typological framework of cultural groups and rules (Bourassa 1991, 109):

Table 2.1 A typological framework of cultural groups and rules

	Professional Status	
Existential Status	<i>Expert</i>	<i>Non-Expert</i>
<i>Insider</i>	Local planners	Local citizen
<i>Outsider</i>	Foreign architects	Most tourists

The terms “insider” and “outsider” and “expert” and “non-expert” distinguish individuals’ relationships to a given environment in terms of their familiarity with the setting and their expertise. Table 2.1 clarifies some methodological and interpretational errors that have appeared in related studies. Attention to existential and professional status encourages planners and designers to notice, and work around, any conflicting perceptions and attitudes between themselves and users of the space that they produce (Bourassa 1991, 109).

The similarities and differences between the attitudes of these experts and their non-expert clients have been well documented. For example, Dearden (1984) compared the preferences of planners with those of urban park users in Victoria, British Columbia. The results suggest that professional training in urban planning has a significant influence on landscape type preference. The effects of such professional training, combined with social and administrative distance, often separate environmental decision-makers from their clients (Craik 1970).

Research further suggests that experts differ from their clients in their perceptions, interpretations, and evaluations of everyday physical environments. For example, Lipman (1969) has observed that because architects often have different educational and social backgrounds than the majority of space users, architects are not always well equipped to interpret their clients’ needs and preferences. A study of users and managers at the University of Washington’s arboretum in Seattle finds that the managers’ perceptions, as revealed by their

objectives and operating plans, focus on the scientific, educational and horticultural functions of the arboretum. However, the majority of users indicate a preference for pleasant landscapes with restful atmospheres over those rich in plants and flowers (Twight and Catton 1975). Thus, while the experts are concerned with the various practical functions of the arboretum, the non-expert outsiders are concerned with its appearance and aesthetic appeal.

Fontaine (2005) compared expert and non-expert knowledge of a familiar but loosely structured spatial environment by asking both groups to draw maps of the domain. The two groups adopted different drawing strategies indicative of different mental representations. This research also revealed that design experts tend to have a better memory for environmental detail than non-experts, suggesting better organization of such information in their mental knowledge base (Fontaine, et al. 2005, de Groot 1966)

## 2.3 Landmarks

### *2.3.1. Definitions of landmarks*

The concepts of “landmarks,” “paths,” “edges,” “districts,” and “nodes” are from Lynch (1960), who suggests that landmarks contribute to the legibility of a city (Lynch 1960). Landmarks can be defined as external physical objects that observers do not enter into and which act as environmental reference points such as buildings, signs, or mountains. Landmarks occupy spaces both symbolically and physically. The symbolic meaning attributed to a landmark is an important factor distinguishing a landmark from other objects (Bartunek 1996). Moughtin, Oc and Tiesdell's (1995) consider a landmark to be an element or group of coherent elements that stand out against a repetitive background within a landscape (Moughtin, OC and Tiesdel 1995). Others have defined landmarks as three-dimensional objects, such as towers, domes, or hilltops, distinctive in their structure, color, shape, or semantic value and with the potential to be used as navigational reference points (Lynch 1960, Tisuka and Wilson 1994, Appleyard 1970; Moughtin, Oc and Tiesdell 1995). However, some urban elements, such as paths and districts,



are based solely on observers' representations, uses, or interpretations of them. Lamit therefore expanded the definition of landmarks to include:

“Any urban landscape feature with manifested or inherent attribute which is physically or spiritually unique, influential, impressive, and generally in contrast with its contextual characteristics which encompasses components such as towers, buildings, open spaces and special urban features” (2004, 75).

### *2.3.2. Characteristics of landmarks*

Four characteristics have been attributed to landmarks by Lynch (1960). While some landmarks have more than one characteristic, all have at least one of the four.

- Singularity

Singularity is the key characteristic of landmarks (Lynch 1960). Features with a clear form and contrast with their background are viewed as landmarks. Singularity makes landmarks more identifiable than other elements and enables them to enhance the legibility of spaces. For example, the Reunion Tower in Dallas is a significant landmark that contributes to Dallas' skyline because of the contrast between its rounded shapes and sharp edges to the surrounding buildings and structures (Lynch 1960).

- Spatial prominence

Features with spatial prominence are visible from many locations or contrast with nearby elements (Lynch 1960).

- Users' familiarity

Some features become landmarks because of users' familiarity with them. Most local features qualify as landmarks because their observers visit them, see them, or pass them often. Signs, store fronts, or other urban details can become local landmarks and usually function as directional guides when local residents give directions to strangers (Moughtin, Oc and Tiesdell 1995).

- Historic meaning

Historic meanings or other associations with the history of a human community are powerful reasons for features to become landmarks. Once a story or historic meaning has become widely associated with an environmental feature, its values as a landmark rises (Lynch 1960). For example, some small obelisks, fountains and sculpture represent important historical information about places, despite being small and indistinct; they are viewed as landmarks because of their meaning (Moughtin, Oc and Tiesdell 1995). Moughtin, Oc and Tiesdell (1995, 104) said, "The city, a largely man-made landscape, while no longer structured by ancient courtyard lore, nevertheless retains... The landmark is possibly the most important of these memories from the past."

### 2.3.3. *Typologies of landmarks*

Due to the varying definitions of landmarks found in the literature, this research has included three different types of landmarks

#### 1. Open space

- Hard, urban open spaces are, fundamentally, manmade enclosures, usually bounded by architectural walls. These spaces often function as major gathering places for social activities (Lamit 2004).
- Soft, urban open spaces, are predominantly made up of natural elements, such as vegetation or bodies of water. Because a city is a large manmade landscape, natural resources are often importance in the perceptions of residents because of their rarity in cities (Moughtin, OC and Tiesdel 1995, Lamit 2004).



Figure 2.1 Hard open space landmark: Levitt Pavilion



Figure 2.2 Soft open space landmark: Randol Mill Park

Studies have indicated a preference among residents for open space as landmarks over towers and building (Moughtin, OC and Tiesdel 1995, Salim 1993).

## 2. Buildings

Buildings or parts of buildings, such as a roof or façade, are the most common type of landmarks. As visible objects in urban space, buildings possess distinguishable visual qualities or attributes. Some buildings are viewed as landmarks because they dominate the surroundings by virtue of their ornamentations, size or scale; others because of their contrast with

surrounding features. Some cities are recognized by visitors because particular buildings provide a memorable image (Moughtin, Oc and Tiesdell 1995).



Figure 2.3 Buildings (structures) landmark: Rangers Ballpark in Arlington

### 3. Civic furniture

Civic furniture can be a single feature or repetitive features, such as distinctive street lighting or a particular style and type of sign associated with a space. As built structures, these features possess the same visual qualities as buildings or towers because of their shape, line color, texture, scale or size (Moughtin, Oc and Tiesdell 1995, Lamit 2004). Special civic furniture can be defined as public or environmental art, and these make positive contributions to the image of human communities (Moughtin, Oc and Tiesdell 1995, Lamit 2004).



Figure 2.4 Civic furniture landmark: Sign on Division Street

#### 2.3.4. *Value of landmarks*

Landmarks make an important contribution to human communities, enhancing the legibility of urban spaces and representing or creating a local image (Lynch 1960, Moughtin, Oc and Tiesdell 1999, Taylor 2002). Landmarks can also preserve the history of urban environments. Moreover, spatial information applications, such as GPS systems in automobiles, find landmarks to be effective navigation tools (Sorrows and Hirtle 1999, 2).

##### 2.3.4.1 Contribution to the legibility of urban spaces

Landmarks play a significant role in the creation of memorable urban landscapes. Their characteristic singularity and contrast make them ideal symbols of the uniqueness of their human community and strengthen the legibility of the environment. Landmarks add imageability to the environment, making the human community more visually memorable (Moughtin, Oc and Tiesdell 1999). Highly imageable cities offer vividly identifiable, powerfully structured, and extremely useful mental images of the environment (Lynch 1960; Jakle 1987).

##### 2.3.4.2 Historical preservation of urban landscapes

Landmarks can store evidence of a city's past. Cities are largely manmade landscapes subject to rapid change; landmarks help cities to preserve significant memories when historical meaning is factored-in. Few buildings have sufficient social, political, or religious significance or influence to serve both decorative and functional purposes in a human community. Buildings that function as the chief monuments of cities are usually the main landmarks in that space (Moughtin, OC and Tiesdel 1995).

##### 2.3.4.3 Effective navigation tools

Local landmarks can be useful navigation tools, enabling residents to give directions to strangers using a memorable point of reference (Moughtin, OC and Tiesdel 1995). Landmarks can serve both spatial organizational and navigational purposes during travel. Siegel and White (1975) suggest that landmark recognition is the first step in the acquisition of spatial knowledge about an environment. Paths or routes then develop between landmarks. This theory assumes

that the memory representation of an external environment contains hierarchically organized knowledge including landmarks, paths, and routes. Landmarks are the most obvious elements in this representation and are believed to modulate the main network of paths, provide points of interest en route, and give the necessary structuring clues for navigation (Kuipers 1978, Moughtin, OC and Tiesdel 1995, Golledge and Stimson 1996).

#### 2.4 Understanding Human Perceptions

Perception is the process by which individuals make sense of the world (Bourassa 1991). Each individual perceives the environment differently because people interpret the world based on their unique experiences, education, socialization, and specific environments and spaces (Bourassa, 1991, Bartunek 1996, Moughtin, Oc and Tiesdell 1995). In any given human community, individuals gravitate into groups sharing similar beliefs and values. The shared views develop into internal systems of rules and habits called “culture” (Rapoport 1977). Understanding the cultures that exist within a particular environment allows designers to make sense of the behavior of its inhabitants and the manner in which that community runs (Michelson and Reed 1970, Michelson 1966, Feldman and Tilly 1960, Rapoport 1977). Each smaller subculture within the larger culture of a city contributes different resources according to its particular values and characteristics. These subcultures influence the organization of the human community, resulting in groups of people with various racial, ethnic, religious, class, and income characteristics. Thus, every human community is composed of different cultures and subcultures with different value systems and lifestyles. Many human communities and places come to belong unofficially to particular groups through associations, accumulating symbolic meanings, and representing the social identity of such groups (Rapoport 1977).

Research indicates that preferences and perceptions tend to differ among individuals of different nationalities. Danish and Dutch research participants have demonstrated a preference for flat, open landscapes, while Americans and Swedes were found to prefer forest and mountain landscapes (Buhyoff 1983). These findings lead the researchers to conclude that

cultural influences generate preferences for more familiar environmental features. Research comparing the landscape preferences of Caucasians and African Americans found a greater preference among Caucasians for environments that include built elements and smooth ground textures. In the case of gender, the research has revealed that men prefer rugged, subsistence-oriented landscapes, while women prefer warmer landscapes that are richly vegetated (Sonnenfeld 1966).

### 2.5 Limitation and Summary

This chapter has reviewed relevant literature in order to explain the conflicting perceptions of experts and non-experts regarding landmarks. Previous documents reflect many research studying the relationship between experts' and non-experts' perceptions about spaces. However, few research was found that studied the perceptions of designers (experts) and users (non-experts) about urban elements. Conflicts between the perceptions of designers and users occur because designers make assumptions about their users' requirements based on designers' own perspectives. Understanding the differences and similarities in perceptions about landmarks can improve experts' understanding of the users of spaces the experts create.

Expertise and familiarity are two factors that influence the difference in perceptions between the two groups (Bourassa 1991). In this research, participants from both groups are long-term residents of Arlington; however, the experts have also worked in Arlington for over ten years. This allows researchers to focus on how expertise influences expert and non-expert perceptions, by ensuring that the two groups have comparable levels of familiarity with the environment.

CHAPTER 3  
RESEARCH METHODS

3.1 Introduction

This research uses interviews and questionnaires to generate data. These are both helpful techniques for discovering perceptual differences and similarities within the same set of questions. “Additions-to-base-map” is one method of standardized questionnaires used to collect visual presentation data such as a respondent’s perceptions of and attitudes toward urban landmarks (Zeisel 1981). Using the additions-to-base map technique, participants are provided a base map to fill in answers. The technique is an efficient way to find out how those participants use places and how they feel about them, including names they use for places (Zeisel 1981). Since “additions-to-base map” provides basic pathway maps instead of verbal descriptions, these maps are more reliable and accurate in the process of participant memorization. Two groups of participants were selected to compare their landmarks and perceptions about their landmarks in this study. The data were analyzed by the constant comparison to identify both groups of respondents’ perceptions and compared the differences and similarities between them (Glaser and Strauss 1999).

3.2 Site Selection

Arlington, Texas is located between Dallas and Fort Worth, and its total land area is approximately ninety-nine square miles. Arlington, the seventh largest city in Texas and the fiftieth largest city in the United States, is known as the “entertainment capitol of Texas.” Arlington is also among the “Top Fifty Best Cities for Doing Business” according to a national ranking released by Inc. Magazine in 2009 (<http://www.inc.com/bestcities/2008/bestlimited.html?size=1&year=2008&display=30>). According to the U.S. Census Bureau, the population of Arlington is 367,167 (in 2006), and more than six million guests visit Arlington annually. More



than half of the population is between the ages of eighteen and forty-four (<http://quickfacts.census.gov/qfd/states/48/4804000.html>)

Arlington is a classic suburban city due to its location and economic development, especially as demonstrated in the northern part of the city. Since the construction of State Highway 180 (built in the early 1920s and originally designated as the Bankhead Highway or U.S. 80) and Pacific Railway, North Arlington has experienced high rates of growth, producing a host of services such as motels, bars, cafes, shops, factories, and facilities to support the requirements of commuters between Dallas and Fort Worth ([http://www.ci.arlington.tx.us/history/historic\\_buildings.html](http://www.ci.arlington.tx.us/history/historic_buildings.html); <http://www.texaspacificroailway.org/structures/tx/arlington>). In addition, Six Flags over Texas, the Texas Rangers Ballpark, Hurricane Harbor, and Lincoln Square compose most of the entertainment district. North Arlington is also the location of The University of Texas at Arlington, which contains more than 28,000 students. In 2009 the new Dallas Cowboys Stadium opened affecting more economic development projects as well as utility and roadway improvements throughout the area. All of these projects are located in North Arlington (<http://www.arlingtontx.com/arts-entertainment>).

North Arlington is composed of Districts One and Five from the city council district map (Figure 3.1). This area is bounded by Pioneer Parkway to the south and by the city limits to the north. It is also bounded by the Great Southwest Parkway and SH 360 to the east and by Fielder Road and the city limits to the west. North Arlington incorporates large residential neighborhoods as well as commercial, entertainment, and business projects. These developments help participants to remember landmarks and their locations more easily because of their spatial prominence or singularity. Arlington also has many historic elements including special motel signs, historical monuments, and museums that symbolize Arlington's past; many of these elements are viewed as landmarks.

Finally, Arlington has been developed with the expertise of experienced landscape architects (<http://www.ci.arlington.tx.us/business/index.html>). This study provides an opportunity to investigate how these experts view Arlington and the differences between their views and those of non-experts.

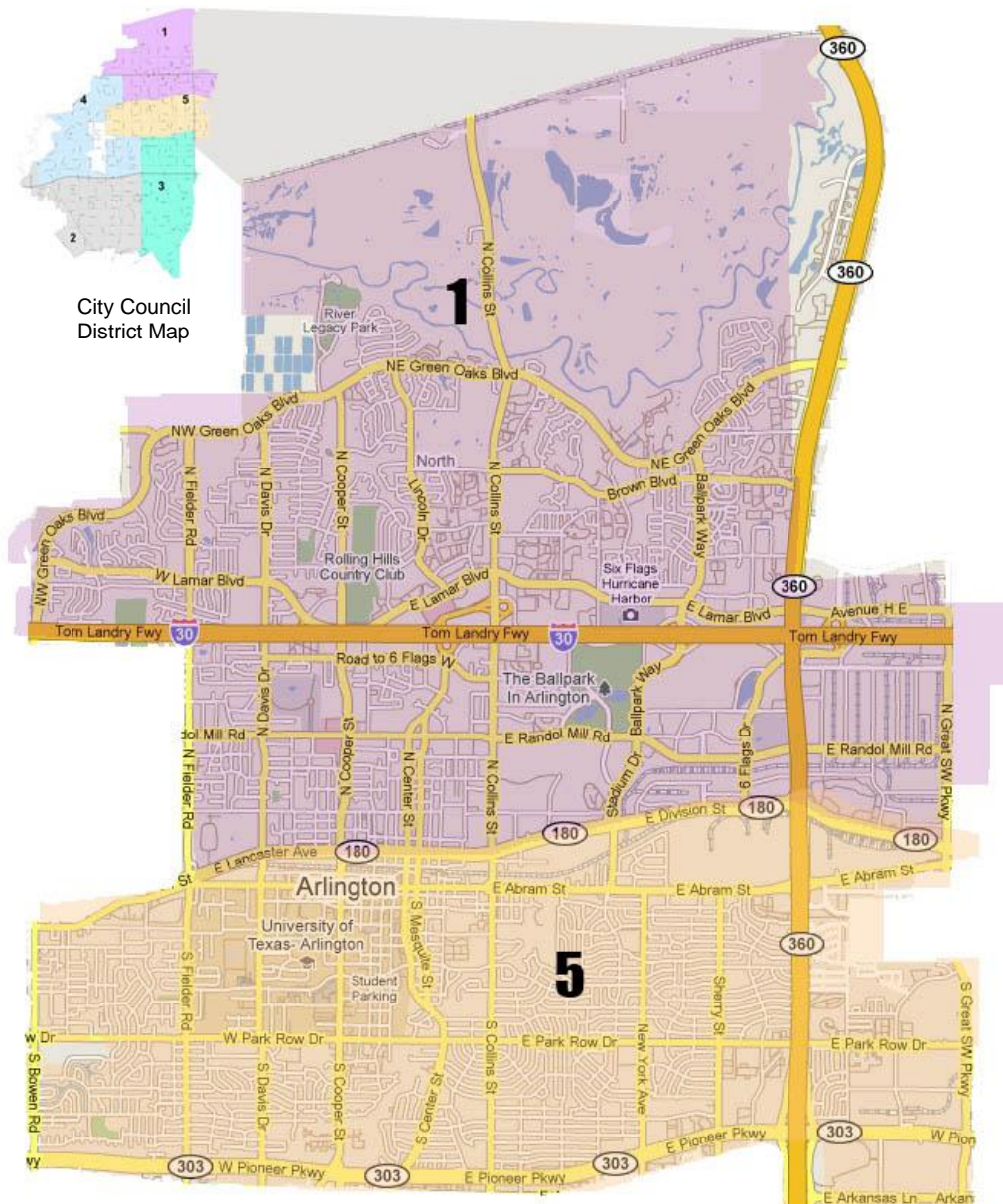


Figure 3.1 Research Site

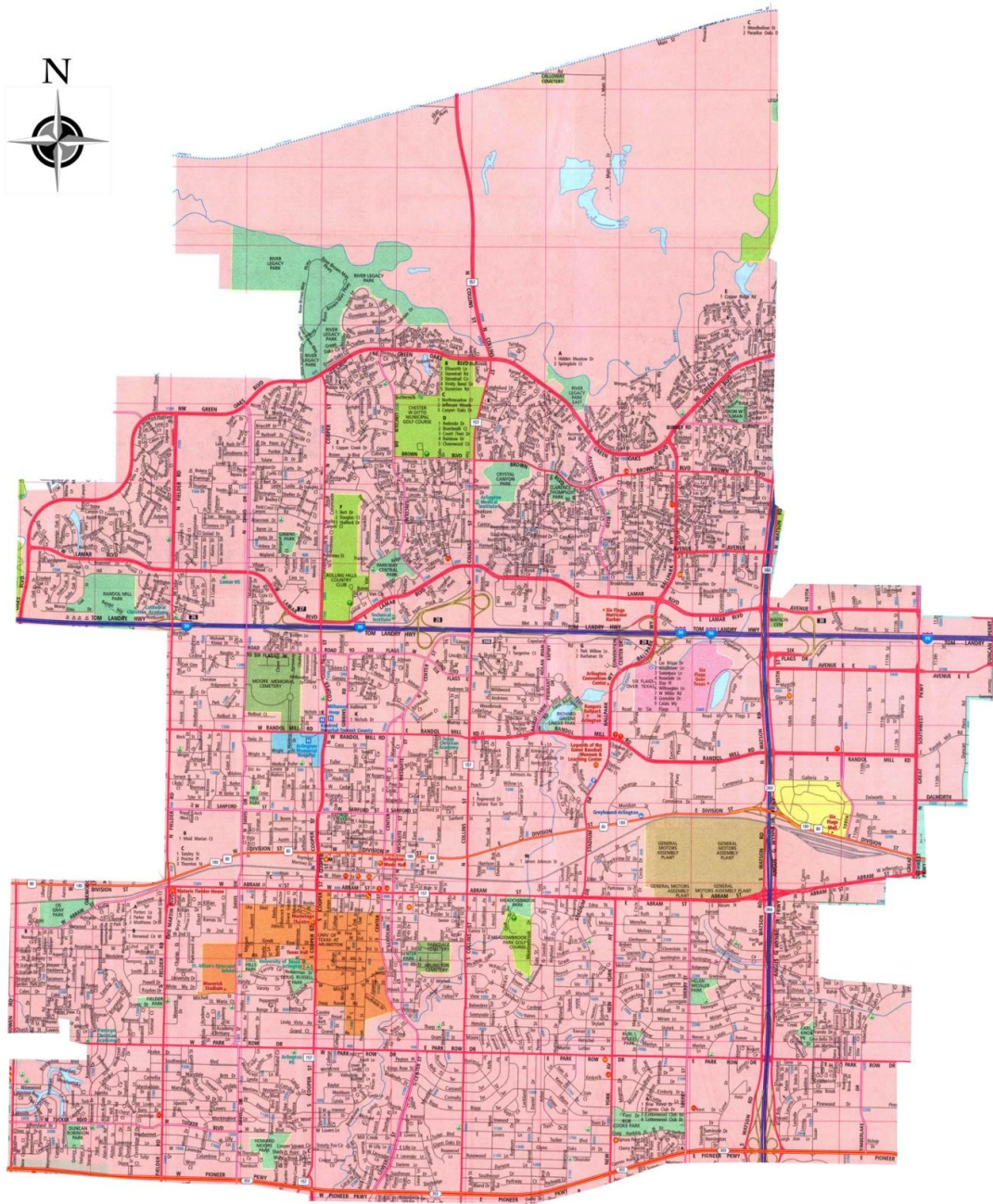


Figure 3.2 Interview Map

### 3.3 Research Design

#### *3.3.1. "Additions-to-Base-Maps"*

This research uses one-on-one interviews in order to generate data. Data from these interviews are then used to discover regularities among groups of people by comparing answers to the same set of questions asked of a large number of participants. This study applies standardized questionnaires and scheduled interviews to generate data. The standardized questionnaire technique is suitable for environment-behavior topics such as perceptions, aspirations, knowledge, attitudes, and intentions (Zeisel 1981). In this research project, questionnaires are collected in-person by the interviewer who asks questions in basically the same way.

However, some data, particularly visual data for assessing respondents' "cognitive maps," are difficult to collect. Zeisel (1981) uses several response categories for such data including freehand maps, additions-to-base-maps, drawings, photographs, and games. The "additions-to-base-map" is the method providing a base map for respondents to fill-in answers about their feelings or perceptions of places. Using additions-to-base-maps to solicit data is an efficient method for determining how participants feel about landmarks within specific places. By providing a basic map instead of verbal descriptions, data are more reliable, more accurate, and more expressive of the research (Zeisel 1981).

#### *3.3.2. Interview Questions*

For each landmark identified by an individual, these questions are asked:

1. What is the name of this landmark?
2. Why it is a landmark to you?
3. How would you describe this landmark to others?

### 3.4 Research Participants

Two groups participated in this experiment. The expert group was composed of experienced landscape architects from Arlington, Texas, who had worked and lived in Arlington

for over ten years. Because a length of residence less than ten years has a lower average intensity of sense of place than longer residences (Hay 1998), in this research, ten years was applied to the criteria for both groups. After identifying the qualified registered landscape architects for this group and gathering their contact information, appointments were scheduled to conduct interviews with the group members.

The group of non-experts was composed of local residents who had lived in Arlington for more than ten years. Participants from this group were selected randomly from users of the Arlington Public Library in downtown Arlington. Seven registered landscape architects and eleven non-expert residents expressed interest in participating. Though the two groups were not equal in number, all those who expressed interest in participating were included to obtain as many respondents as possible since both groups were small. Ten years of residency was a criterion for both groups, because after about ten years residents begin to feel committed to their spaces, having developed such attributes as local knowledge, a social network within the spaces, and a degree of community standing there (Hay 1998).

### 3.5 Research Procedure

The study commenced by asking participants about their understanding of landmarks. After identifying these basic understandings, a color map with a transparent overlay was prepared. Using markers, participants indicated the locations of their landmarks on the transparency, in addition to giving a verbal description of each landmark. The respondents were then asked to explain the meaning of each landmark they had identified. These verbal descriptions were video-recorded.

### 3.6 Summary

Expertise and familiarity are the two main influences on variations in perceptions between cultural groups (Bourassa 1991). Participants from expert and non-expert groups are required to have the same familiarity to Arlington.



This research focuses on expertise because of the need for experts (designers, in this case) to understand user requirements. If experts' perceptions conflict with those of residents, the designs developed are not comprehensible to users. This causes problems such as abandonment of spaces perceived as non-functional. In other words, users are apt to seek out places that have more preferable landmarks or other imageable elements. Thus this research concentrates on the expertise criterion and examines perceptual differences between experts and non-experts regarding landmarks.

During the interviews, the participants recall the landmarks based on their driving experience because most residents of Arlington use the automobiles as their main transportation. In addition, people have their own perceptions which affect the way they name, define, or use landmarks. In order to collect objective data, the definition of landmarks is not provided to participants (Lamit 2004).

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Introduction

Interviews were conducted with expert and non-experts groups to ascertain their perceptions about landmarks in North Arlington. Seven landscape architects who had worked in and lived in Arlington for over ten years comprised the expert group. The non-expert group was composed of eleven local residents who had lived in Arlington for over ten years. Notes were taken by the researcher when interviewing the participants. After the interviews were completed, the notes were analyzed using the constant comparison method to explore the differences and similarities in the data (Glaser and Strauss 1999).

A comparison of the characteristics of landmarks used by experts and non-experts found that both groups used singularity and spatial prominence most often to identify their landmarks. However, non-experts were found to use familiarity to identify landmarks more often than did experts. This means that non-experts chose landmarks not only because of their significant characteristics or distinctive location but because they were familiar with those landmarks.

Comparisons of perceptions about landmarks between expert and non-expert groups indicated that experts were able to provide more accurate details about landmarks than were non-experts. Since both groups had lived in Arlington for over ten years levels of familiarity with the place were assumed to be similar. However, because of experts' design knowledge (expertise), experts identified their own landmarks differently. The results of this research verified that design knowledge affects experts' perceptions of landmarks and this gap in the knowledge base separates design experts from non-expert residents.

## 4.2 Analysis of the interviews

As mentioned, notes were taken by the researcher while interviews were being conducted. A digital camera also was used to record all interviews. In order to minimize the interviewer's impact on interview data, a definition of landmarks was not provided to participants. This tactic was in-keeping with a valuable trait of qualitative inquiry which is based on understanding an actor's experience with the topic under discussion (Bogdan and Taylor 1998, Goffman 1974).

After each interview, the researcher reviewed the notes and referred to the interview videos and maps, charting each participant's responses (See Appendix A). Each chart included the respondent's answers to three questions asked about each landmark in the interview:

1. What is the name for this landmark?
2. Why is it a landmark to you?
3. How will you describe this landmark?

Each chart included the respondent's landmarks, their reasons for selecting those landmarks, and any detailed descriptions given of the landmarks. A table was created to compare the landmarks identified by the two groups in this research. However, some landmarks were identified in-common by both groups; some were identified only by the expert group; and some were identified only by the non-expert group. Thus, the results were ordered into group categories, and the differences and similarities between experts and non-experts were established using these categories.

### *4.2.1 Summary of landmarks identified in this research*

Forty-seven landmarks in North Arlington in all were identified by the expert and non-expert groups. Eighteen landmarks were identified by both groups. Fifteen landmarks were identified only by the expert group, and fourteen landmarks were identified only by the non-expert group (see Table 4.1, 4.2, 4.3).



In the responses to the first question, made without the provision of a definition of landmarks, both experts and non-experts described their concepts of landmarks differently than Lynch's definition (1960). Of the landmarks identified by both groups (see Table 4.1, 4.2, 4.3), some, such as Wachovia bank and the Rangers Ballpark, were single buildings with significant characteristics that contributed to their being selected as landmarks. However, the railroad and I-30 were identified by both experts and non-experts in this research as landmarks. According to Lynch, both of these features would be classified as "paths". Respondents selected these paths as landmarks because they had contributed to Arlington history and because they connected Dallas and Fort Worth (Lamit 2004).

This finding revealed that some features are viewed as landmarks not only for their distinctive physical characteristics but also for their significant symbolic meaning. When features symbolize parts of a city's history or development, they are not limited by Lynch's definitions of landmarks. They can be paths, districts, or nodes, depending on how users view them or use them (Lamit 2004).

Table 4.1 Landmarks identified by both experts and non-experts

	<b>Places of Landmarks or Landmarks</b>	<b>Experts</b>	<b>Non-Experts</b>	<b>Total</b>
Identified by both groups	Arlington Theatre	1	1	2
	Cowboys Stadium	6	7	13
	Fielder Museum	2	2	4
	General Motors	5	4	9
	Original Arlington High School	1	3	4
	Interstate 30	1	1	2
	Meadowbrook Park	1	2	3
	Mineral Water Well	2	1	3
	Randol Mill Park	2	1	3
	River Legacy Park	4	5	9
	Railroad	2	2	4
	Randol Mill Memorial Hospital	1	3	4
	Rangers Ballpark in Arlington	2	5	7
	Six Flags Hurricane Harbor	1	4	5
	Six Flags Over Texas	6	8	14
	Stone Monuments	1	1	2
	The University of Texas at Arlington (UTA)	6	4	10
Wachovia Bank	1	2	3	

Table 4.2 Landmarks identified by experts

	<b>Name of Landmark</b>	<b>Experts</b>	<b>Non-Experts</b>	<b>Total</b>
Identified by expert group	Bird Fort Site	1	-	1
	Crystal Canyon Park	2	-	2
	Johnson Creek	1	-	1
	Moore Memorial Park	1	-	1
	Trinity River	1	-	1
	Arlington High School	1	-	1
	Cowboys Arlington (Bar)	1	-	1
	Levitt Pavilion	2	-	2
	Vandergriff Chevrolet Showroom	2	-	2
	St. Albans Episcopal	1	-	1
	Obelisks at Center and Division streets	3	-	3
	Center Street Bridge	2	-	2
	Train Station Depot	1	-	1
	Division Street	1	-	1
	Highway 360	1	-	1

Table 4.3 Landmarks identified by non-experts

	<b>Name of Landmark</b>	<b>Experts</b>	<b>Non-Experts</b>	<b>Total</b>
Identified by non-expert group	Berachan Home	-	1	1
	Catfish Sam's	-	1	1
	Gray's Nursery Park	-	1	1
	House at Main and Center streets	-	1	1
	Lincoln Square Shopping Center	-	4	4
	Rolling Hills Country Club	-	1	1
	Senter Park	-	1	1
	Maverick Activities Center (MAC)	-	2	2
	First Elementary School at Mary Street	-	1	1
	First United Methodist Church of Arlington	-	2	2
	Grace Lutheran Church	-	1	1
	St. Maria Goretti Catholic Community	-	1	1
	Radio Tower in Downtown Arlington	-	1	1
	"V" Sign in Old Vandergriff Showroom at Division and Collins streets	-	2	2

#### *4.2.2 Landmarks identified by experts and non-experts*

The second interview question was designed to determine how respondents identified the landmarks they selected. Four characteristics of landmarks- -singularity, spatial prominence, historic meaning, and user's familiarity--were used by respondents to classify landmarks. These characteristics were viewed as important contributors to landmarks in other research as well (Moughtin, Oc and Tiesdell 1995, Lynch 1960, Lamit, 2004).

##### *4.2.2.1 Landmarks identified by experts*

Singularity is an environmental characteristic distinctive for its form, color, scale, or its contrast to its surrounding. Most experts identified their landmarks using this characteristic (Lynch 1960). For, example, expert number seven stated that, "The Obelisks at Center and Division streets are more significant elements than other elements in the downtown area." This explanation suggests that the obelisks have strong characteristics and that they contrast with their surroundings (see Table 4.4). Therefore, experts defined the obelisks as landmarks partly because experts understand the characteristics of landmarks. However, none of the non-experts perceived the obelisks as landmarks. Johnson Creek and Crystal Canyon Park also were the only landmarks mentioned by the expert group. Both of these landmarks contain rich natural resources; however, they failed to impress themselves upon the non-expert group. In other words, the experts' and non-experts' perceptions about some natural resources such as creeks and green space were different. The difference might be caused by the location or visibility of landmarks. Without design expertise, non-experts might be less likely to encounter or notice these landmarks (Moughtin, Oc and Tiesdell 1995).

Some landmarks identified by experts do not qualify as landmarks using Lynch's definition. For example, Highway 360, is defined as a path according to Lynch's definition. However, expert four identified it as a landmark because it connects DFW airport and south Arlington, contributing to the economy of Arlington both in the past and at present. This

suggests that experts agree that some features are viewed as landmarks based on peoples' perceptions and use of them.

Table 4.4 Characteristics of landmarks identified by the expert group

<b>Category</b>	<b>Historic Meaning</b>	<b>Familiarity</b>	<b>Singularity</b>	<b>Spatial Prominence</b>
Name				
Bird Fort Site	1			
Trinity River	1		1	
Vandergriff Chevrolet Showroom	2			
Highway 360	1			
Arlington High School		1		
St. Albans Episcopal		1		
Train Station Depot		1		
Division Street	1		1	
Obelisks at Center and Division Street			3	
Levitt Pavilion			2	
Moore Memorial Park		1	1	
Cowboys Arlington (Bar)			1	1
Crystal Canyon Park			2	
Johnson Creek			1	
Center Street Bridge				2
<b>Total</b>	<b>6 (24%)</b>	<b>4 (16%)</b>	<b>12 (48%)</b>	<b>3(12%)</b>



Figure 4.1 Obelisk on Division and Center streets(Identified by expert group)



Figure 4.2 Johnson Creek (Identified by expert group)

#### 4.2.2.2 Landmarks identified by non-experts

“Familiarity” was a characteristic used by the non-expert group to identify features such as landmarks. For example, Catfish Sam’s was a landmark to non-expert number four. She commented, “I visit the landmark frequently and it has been here for long time.” Non-expert number five also used familiarity in identifying the First United Methodist Church of Arlington as a landmark. She said, “I have a lot of memories with this church.” The result revealed that non-experts tend to identify landmarks based on familiarity more than any other characteristics that non-experts used for landmarks (see Table 4.5). Some landmarks (for example, the Maverick Activities Center and the house at Center and Main streets) were personal landmarks that were only remembered by local residents, but by no one from the expert group. The non-expert respondents came from varying backgrounds and had varying perceptions. Even though both non-experts and experts had lived in Arlington for more than ten years, experts still appeared to experience spaces and identify landmarks in different ways than did non-experts (Rapoport 1977).

Table 4.5 Characteristics of landmarks identified by the non-expert group

<b>Category</b> Name	<b>Historic Meaning</b>	<b>Familiarity</b>	<b>Singularity</b>	<b>Spatial Prominence</b>
Gray's Nursery Park	1			
First United Methodist Church of Arlington		2		
Grace Lutheran Church		1		
Senter Park		1		
Radio Tower in Downtown Arlington		1	1	
Maverick Activities Center		2	1	
Berachan Home		1		
House in Main and Center streets		1		
Old Elementary School on Mary Street		1		
Catfish Sam's		1		
Big "V" sign in old Vandergriff showroom		2	2	
Lincoln Square Shopping Center		4	4	
Rolling Hills Country Club		1		1
St. Maria Goretti Catholic Community				1
<b>Total</b>	<b>1 (3%)</b>	<b>18 (63%)</b>	<b>8 (27%)</b>	<b>2 (7%)</b>



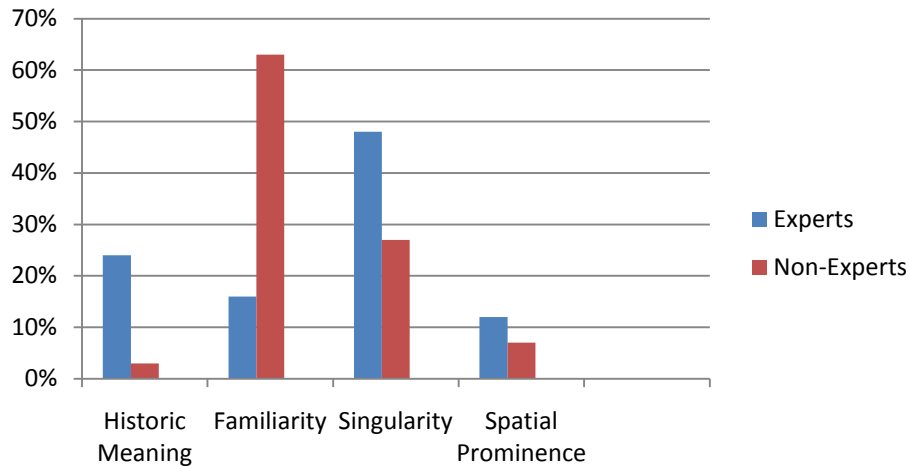
Figure 4.3 Maverick Activities Center (Identified by non-expert group)

#### 4.2.2.3 Landmarks identified by either experts or non-experts

A comparison of the characteristics used to identify landmarks by experts and non-experts found that the most significant difference between the two groups was in the use of the

familiarity as an identifier. The finding reveals that non-experts used familiarity to select their landmarks more than did experts. However, experts preferred to use singularity to choose their landmarks.

Table 4.6 Comparison of characteristics of landmarks used by experts and non-experts



Without being provided with the definition of landmarks, the participants of both groups identified landmarks according to their own definitions. The landmarks identified by the two groups indicated that experts were inclined to use singularity to select their landmarks while non-experts tended to use familiarity to select their landmarks. This implied that experts focused on the special shape, form, or color of a feature or design objects, while non-experts selected landmarks according to their familiarity with a feature’s characteristics.

#### 4.2.3 Landmarks identified by experts and non-experts

Eighteen landmarks were identified by both the expert and non-expert groups. Since both groups selected these landmarks, this section examines not only the characteristics used by both groups, but compares the two groups’ perceptions of each of these landmarks.

##### 4.2.3.1 Characteristics of the landmarks identified by experts

According to the respondents’ description charts (see Appendix A), most landmarks were identified using more than one characteristic. For example, expert number two mentioned

that “General Motors is big and is adjacent to the 360.” From this simple description, singularity and spatial prominence can be seen as the primary characteristics of General Motors. Table 4.7 reveals the number of characteristics used to define each landmark by the expert group. The results show that experts used singularity and spatial prominence most frequently to identify their landmarks; historic meaning was used the next most often, and familiarity was used the least.

Table 4.7 Characteristics of the landmarks identified by experts

<b>Category</b> Name	<b>Historic Meaning</b>	<b>Familiarity</b>	<b>Singularity</b>	<b>Spatial Prominence</b>
Cowboys Stadium			6	6
Six Flags Over Texas	3	1	6	6
General Motors	4		5	5
River Legacy Park		1	4	
Rangers Ballpark in Arlington	1		3	3
UTA	1	1	2	5
Fielder Museum	1	1		
Six Flags Hurricane Harbor			1	1
Railroad	2		2	
Original Arlington High School		1		
Randol Mill Memorial Hospital	1			1
Meadowbrook Park	1			
Randol Mill Park			1	
Mineral Water Well	1			
Wachovia Bank			1	1
Theatre Arlington	1			
Stone Monuments	1		1	
Interstate 30	1			1
<b>Total</b>	<b>18 (21.6%)</b>	<b>5(6%)</b>	<b>31(37.3%)</b>	<b>29(34.9%)</b>

#### 4.2.3.2 Characteristics of the landmarks identified by non-experts

The results indicate that non-experts used spatial prominence and singularity the most to identify landmarks; familiarity was used the next most frequently, and historic meaning was used the least. For example, non-expert number three selected Six Flags over Texas as a landmark and said, “I visit Six Flags over Texas frequently. It is a famous attraction in the DFW



area and it is very obvious from I-30.” This description reveals that familiarity, singularity, and spatial prominence contributed to Six Flags over Texas being a landmark.

Table 4.8 Characteristics of the landmarks identified by non-experts

	<b>Historic Meaning</b>	<b>Familiarity</b>	<b>Singularity</b>	<b>Spatial Prominence</b>
Cowboys Stadium			6	4
Six Flags Over Texas	1	3	7	8
General Motors	4		3	4
River Legacy Park		3	5	1
Rangers Ballpark in Arlington		2	4	2
UTA	1	3		1
Fielder Museum		1	2	2
Six Flags Hurricane Harbor		3	4	3
Railroad	2			2
Original Arlington High School	1	2		1
Randol Mill Memorial Hospital	1		1	2
Meadowbrook Park	1	1	5	1
Randol Mill Park		1		
Mineral Water Well	1			
Wachovia Bank			2	2
Theatre Arlington	1	1		
Stone Monuments		1	1	
Interstate 30	1			
<b>Total</b>	<b>14(13%)</b>	<b>21(19.6%)</b>	<b>39(36%)</b>	<b>33(30.8%)</b>



Figure 4.4 General Motors (Identified by both groups)

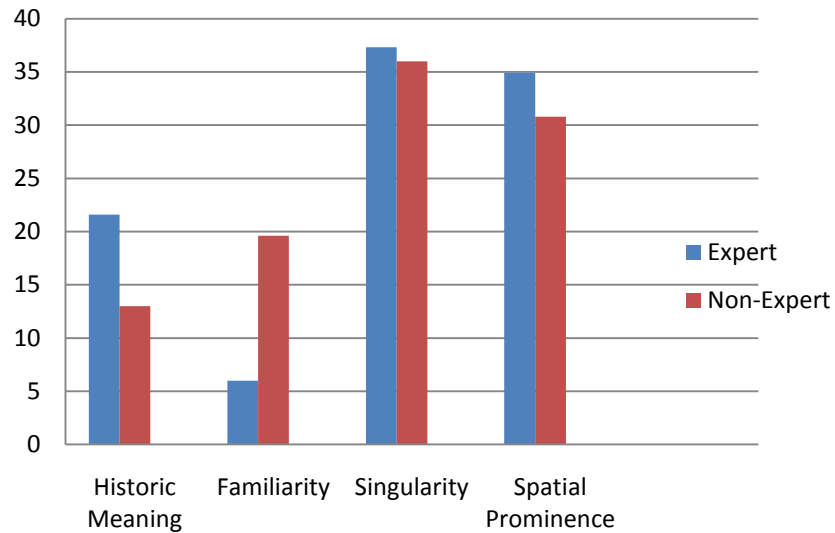


Figure 4.5 Six Flags over Texas (Identified by both groups)

#### 4.2.3.3 Landmarks identified by both groups

A comparison of the reasons given by both groups for identification of landmarks selected by both indicates that singularity and spatial prominence were two characteristics used most by both groups to identify their landmarks. However, there was a significant difference between experts and non-experts regarding the category of familiarity. Table 4.8 shows that experts used familiarity to choose their landmarks less than those in the non-expert group. Most of the landmarks identified by non-experts had special memories associated with them or were particularly familiar to the respondents. This suggests that, even though both groups were equally familiar with North Arlington, experts still tend to evaluate or identify landmarks based on their design knowledge (expertise) rather than familiarity (see Table 4.9).

Table 4.9 Comparison of characteristics of landmarks identified by experts and non-experts



4.2.4 Perceptions about landmarks identified by experts and non-experts

Eighteen landmarks were identified by both experts and non-experts. The results indicate that both groups use singularity and spatial prominence most frequently to identify landmarks. However, non-experts tend to use familiarity to identify landmarks more than experts do. In this section, these eighteen landmarks were compared based on the different typologies of landmarks: open space; buildings (structures); and civic furniture (Lamit 2004; Moughtin, Oc and Tiesdell, 1995).

4.2.4.1 Perceptions of experts and non-experts about open space landmarks

This research identified parks as soft urban open space and I-30 as hard open space according to the definition of the two types. Three parks were identified by both groups. Most non-experts described the natural landscape of the park; for example, the forest, the green open space and the river. Some provided details of the facilities and activities available in parks; for example, a swimming pool and trails. However, in experts' descriptions of River Legacy Park, most indicated the Learning Center was the most significant landmark. The water feature around the center building also attracted their attention. Some also pointed out facilities

in the park, such as pavilions and trails. This comparison revealed higher interest in the design of structures and facilities of soft urban open space among experts than among non-expert. In their descriptions of Interstate 30, both groups depicted the routes' geographical characteristics, but the expert group indicated that I-30 is important because it connects Arlington's visible attractions. This verifies that open space, either with or without distinguishing details or structures, can be viewed as landmarks because of their strategic location, historic meaning or types of activities they contain (Lamit 2004).

Table 4.10 Comparison of perceptions about open space landmarks

	<b>Experts</b>	<b>Non-Experts</b>
<b>River Legacy Park</b>	The learning center is a good-looking building. The building is upside down with a water feature around it.	Big open area with river and forest.
	It has several long trails and pavilions.	It is beautiful, well maintained and a nice place to ride a bike and have picnics with friends.
	It has a well-designed entrance and learning center.	It is a good park to bring kids and friends.
	It has dramatic architecture with a special roof. The water feature is significant.	It is an open green space with several long trails.
		Huge open green space with several trails.
<b>Meadowbrook Park</b>	It used to have a small zoo with monkeys and swimming pool inside.	The park has a swimming pool and all kinds of facilities for activities.
		It is an old park.
<b>Randol Mill Park</b>	It has a lake with white ducks.	It is a water park with a lake and different activities.
	A large green space.	
<b>I-30</b>	It is a major east-west interstate highway. Visitors can see the most attractions from I-30.	It is a six-lane interstate highway.



Figure 4.6 River Legacy Park

#### 4.2.4.2 Perceptions of experts and non-experts about buildings (structures) landmarks

Among the building (structures) landmarks identified by both groups, (Table 4.10) experts pointed out the architectural style, structural details, and urban elements of the landmarks. For example, an expert description of Rangers Ballpark in Arlington said, “Rangers Ballpark is a nice looking building, built of brick and limestone. The historical murals attract people’s eyes.” In addition, experts mentioned exterior features and visibility more than did non-experts. An expert description of the Fielder Museum said, “It is a red brick building with a nice garden,” and “It was built in 1920, and was very unique in that area.” However, a non-expert said, “It is a single building with a garden,” and “It looks nice.” The difference reveals that experts distinguished more details about the exterior of the museum than did non-experts. A description of the Arlington Theatre from non-experts also mentioned details about the interior; however, the expert also mentioned a detail about the external sign.

In addition, experts and non-experts both selected the vertical observation tower of Six Flags over Texas. Both groups mentioned the color and function of the tower. However, two descriptions by non-experts provided the wrong color for the tower. Thus, the expert group’s descriptions provided more information about landmarks with greater accuracy.

Table 4.11 Comparison of perceptions about buildings or structures as landmarks

	<b>Experts</b>	<b>Non-Experts</b>
<b>Arlington Theatre</b>	It has a special sign with light bulbs around it.	The historical pictures inside the theater impressed me.
<b>Cowboys Stadium</b>	It is nice looking with glass windows around it. Landscape Design is good, too.	It is a home for the Cowboys team.
	A giant building with glass exterior.	It is a huge and big single building.
	It looks like a giant spaceship.	A huge single building.
	It rebuilt the Arlington skyline. It is a modern style and huge structure. It draws a lot of attention.	It looks like a spaceship with a unique shape.
	It is a modern style building with glass windows. The interior design is amazing, too.	The building is futuristic style and has a very shiny exterior façade.
	It has a white roof that is obvious from the distance. It is also surrounded by huge parking lots.	It has the largest flat screen in the U.S.A. It is an open-roof stadium.
<b>Fielder Museum</b>	It is a red brick building with a nice garden.	It is a single building with a garden.
	It was built in 1920, and is unique in that neighborhood.	Looks nice
<b>General Motors</b>	It is an industry style space. It has many parking lots.	Big tall factory produces many cars.
	It is a large industrial complex.	It is a car factory and is adjacent to the 360.
	It is industrial looking and very large.	It is a huge factory space with some buildings and a lot of parking space.
	It is an industrial style space. A single building with parking lots around.	It is a giant building surrounded by parking lots.
	It is an automobile factory. Very big and obvious is that neighborhood.	
<b>Original Arlington High School</b>	It has a two-story building with basketball court. One of the buildings is for teaching girls to do housework.	It has become a part of UTA now.
		A brick building
		A yellow brick building
<b>Randol Mill Memorial Hospital</b>	It has a group of buildings.	The main building looks like an institutional building.
		It has a pedestrian bridge.
		It has a courtyard surrounded by buildings. The pedestrian bridge on the Randol Mill Road is obvious.
<b>Rangers Ballpark in Arlington</b>	It is a nice-looking building, built of brick and limestone. The historical murals impressed me.	It is a home for the Texas Rangers.
	It is a single building with many details to define the architecture style in	It is a beautiful brick building and it does not look like a typical baseball

Table 4.11 – *Continued*

	Arlington. It has a nice brick façade with high details. It is next to the Cowboys Stadium.	stadium. The surrounding spaces are very nice with water features and green open space. Historical murals impress me a lot.
	<b>Experts</b>	<b>Non-Experts</b>
<b>Six Flags Over Texas</b>	It has a tall vertical tower and different rides.	It has a tall red tower and various structures.
	It has a large orange tower and many roller coasters.	One of the famous attractions in Arlington.
	It has a vertical orange tower and several roller coasters.	It has various roller coasters.
	It has an orange tower and several roller coasters.	A big tall orange tower is obvious.
	Texas Giant and different roller coasters	It is an amusement park. A big red tower impresses me the most.
	The superman sign and roller coasters.	It has a big orange tower and wood-made roller coaster.
		There are many hotels around Six Flags.
		It is next to I-30 and it has roller coasters.
<b>Six Flags Hurricane Harbor</b>	It has a many big slides.	It has a black slide structure.
		Many slides
		Many slides
		A tube
<b>UTA</b>	It has several buildings with urban style.	It used to be an open-space campus without the walls on the sides of Cooper St.
	It is a residential style campus.	The three pedestrian bridges.
	It used to be an open-space campus. Three overhead pedestrian bridges are obvious.	The walls on the side of Cooper Street are covered by green vine in the summer. The pedestrian bridge is also obvious.
	The three pedestrian bridges.	Many buildings
	The architecture style is different from other typical colleges. A courtyard in the Architecture Building is a nice place to relax.	
	UTA is composed of several consistent style architecture buildings. The three pedestrian bridges are the icon of UTA.	
<b>Wachovia Bank</b>	The pyramid roof	It has a pyramid roof and is adjacent to I-20
		Pyramid Roof



Figure 4.7 Tower in Six Flags over Texas



Figure 4.8 Arlington Theatre

#### 4.2.4.3 Perceptions of experts and non-experts about civic furniture Landmarks

Within the civic furniture typology, experts provided the most information and details about the mineral water well in old downtown Arlington. The descriptions of the well by the expert group indicated its dimensions and construction details. For example, "It is an up-ground



water feature, and it is about three feet to four feet tall.” However, descriptions by the non-expert group mentioned only the exterior cover. The railroad was categorized as civic furniture because it had continuous, special urban elements. Both groups mentioned the railroad’s noise and structure.

Table 4.12 Comparison of perceptions about civic furniture landmarks

	<b>Experts</b>	<b>Non-Experts</b>
<b>Mineral Water Well</b>	An up-ground water feature about 3'-4' tall.	A gazebo covers the well.
	It changed shape several times. It is an up-ground well.	
<b>Stone Monuments</b>	They re-locate to North Arlington now where there is a park that has Johnson Creek passing by.	Big, huge and several of them.
<b>Railroad</b>	It is a typical railroad with loud noise.	It has been a railroad since 1800.
	It has been an industrial connection since 1800.	It has a railroad track and noise.

#### 4.3 Summary

Forty-seven landmarks were identified in total by the combined groups. Eighteen landmarks were identified by both groups. Fifteen landmarks were chosen by the expert group, and fourteen landmarks were chosen by the non-expert group (see Tables 4.1, 4.2, 4.3). Singularity and spatial prominence were the characteristics affecting both groups identification of landmarks. In fact, most participants used these two characteristics to identify landmarks in North Arlington.

However, the landmark characteristics identified by experts were different than the characteristics identified by non-experts. The findings revealed that non-experts were more inclined to use familiarity to select their landmarks than were experts. Some restaurants or shops were viewed as landmarks by non-experts because they were visited often or because the individuals had special memories associated with them. Conversely, some landmarks were noticed by experts because of obvious design characteristics that attract experts’ attention. However, those designed landmarks did not make as great an impression on non-experts and were identified as landmarks less often by that group.

In identifying landmarks, both groups preferred to use singularity and spatial prominence. However, the findings indicate that non-experts select landmarks based on familiarity more than experts do. The results verify that non-experts' perceptions are affected by their familiarity with a space more than experts' perceptions are. Experts are more inclined than non-experts to use singularity and spatial prominence to determine their landmarks. This means that experts tend to be attracted by structures with distinctive shape, color or scale. Since both of the groups have lived in Arlington over ten years, the difference between experts and non-experts reveals that experts' design knowledge causes them to make different decisions about landmarks than are made by the non-expert group.

The perceptions of the expert and non-expert groups also verify that experts can provide more information about landmarks, including identification of materials, dimensions, or decoration. However, non-experts were only able to provide general descriptions of the same landmarks. This difference also reveals that, because of their design knowledge, experts can perceive more correct details about landmarks than can non-experts.

Both groups identified certain paths as landmarks suggesting that Lynch's definition (1960) needs re-working. Later researchers have made similar points (Trancik 1986, Moughtin, Oc and Tiesdell 1995, Lamit 2004). These authors note that paths have the capacity to be points of concentrated activity and can be used as reference points, as can nodes and districts.

## CHAPTER 5

### CONCLUSION

#### 5.1 Importance of the Findings

##### *5.1.1 Similarity between results*

Forty-seven landmarks were identified in total by the expert and non-expert groups. Some of the features of identified landmarks (see Table 4.1, 4.2, 4.3) converged on Lynch's definition (1960). The data reveal that features can be viewed as landmarks not only because of their physical characteristics but also because of their historical meaning (Lamit 2004). The findings suggest that paths, open spaces, and districts can be viewed as landmarks if they contain historical information about an environment (Moughtin, Oc and Tiesdell 1995, Lamit 2004). For example, both groups selected the railroad and I-30 as landmarks and both groups selected these two paths because they contributed to the history of Arlington and because they helped the local economy in the past.

Another similarity between results was that both groups use singularity and spatial prominence the most to identify landmarks. This means that both groups were most likely to identify a feature as a landmark because it had a distinctive color, form or shape, or an important location. For example, the Rangers Ballpark was selected by both groups because it had both a distinctive architectural style and was visible from numerous locations. Some landmarks, however, had neither significant structures nor important locations, but were identified because of their significant historic meaning (Lamit 2004). For example, both groups selected the mineral water well as a landmark. Even though the well no longer exists, the participants remembered it, were able to point out its original location, and could describe it. This was because the mineral water well symbolizes the history of downtown Arlington and many people had childhood memories of it.

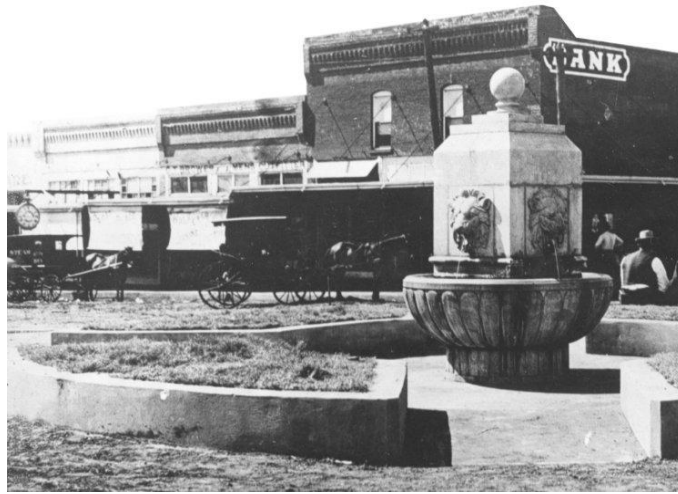


Figure 5.1 Mineral Water Well

#### *5.1.2 Difference between results*

Of the forty-seven identified landmarks, fifteen were identified only by the expert group. Fourteen landmarks were identified only by non-experts. Analyzing the characteristics of the experts' landmarks confirmed that their landmarks were identified using singularity. Moreover, the results indicate that non-experts tend to use familiarity to select their landmarks. This means that non-experts are inclined to choose landmarks that are not recognized as such by experts because of their familiarity with them.

Non-experts also chose their landmarks regardless of whether they have a significant form. For example, the Levitt Pavilion was identified by experts because it is a well-designed outdoor performance facility with a large lawn space and water features. However, none of the non-experts selected the Levitt Pavilion. One reason for this was that the eleven non-experts were not familiar with it. Even though the Levitt Pavilion is a nicely designed space, it is so new that fewer non-experts were aware of it. Therefore, none of the non-experts selected it as a North Arlington landmark.

Eighteen landmarks were commonly identified by both groups. Both experts and non-experts used singularity and spatial prominence the most to identify landmarks. For example, the Cowboys Stadium was seen a new landmark which opened in 2009. It was selected as a

landmark because of its singularity and spatial prominence. Although it is new, its shape, significant roof, and location still draw a great deal of attention. The result reveals that familiarity affects non-experts' choices even though they agree that a feature needs singularity or spatial prominence to be classified as a landmark.

The University of Texas at Arlington was identified by experts and non-experts using different characteristics. Most non-experts selected UTA as a landmark because of their familiarity with it. However, most experts selected UTA as a landmark because of its spatial prominence.

This finding explains why some expert's landmarks were not recognized by non-experts because familiarity significantly affected non-experts' selection of landmarks. Specifically, both groups had lived in Arlington for more than ten years and therefore had equivalent levels of familiarity with the urban features and spaces in Arlington. However, experts' design knowledge affected their identification of landmarks, causing them to draw on this familiarity far less than non-experts. This finding verifies that design knowledge separates design experts from their non-expert clients.

Another difference found was between experts' and non-experts' descriptions of landmarks. The descriptions of landmarks identified indicate that experts are more aware of physical such details such as shape, material and color, but few non-experts could provide detailed information. Some non-experts responded with general information based on their memory or experience. For example, some non-experts selected Rangers Ballpark as a landmark and described it as "a home for the Texas Rangers." That also suggests that designers' expertise improves their memory about urban features due to better organization of information in their knowledge base (Groot 1966, Fontaine 2005)

We can conclude from these findings that non-experts depend on their life experience and familiarity to identify landmarks more than experts do. Non-experts' perceptions of

landmarks incorporate not only the landmarks' physical characteristics but also their own relationships with the landmarks.

When non-experts describe landmarks they tend to provide general information about them. However, experts are inclined to identify landmarks in more detail using their design knowledge and experience (expertise). Experts tend to identify landmarks by singularity and spatial prominence more often because experts utilize their design knowledge to examine a feature for evidence of prominent details or important location. Since both groups have been residents of Arlington for over ten years, the differences in the findings can be attributed to expertise that causes experts to view environmental features differently than non-experts. This verifies that design knowledge causes experts to differ from non-experts in their identification of landmarks.

#### 5.2 Relevance to the Landscape Architecture Profession

To understand how people experience human communities and give meaning to what they perceive, designers must know how designed environments reflect ideal images. This can contribute to the success of design decisions made by experts (Rapoport 1977, Trancik 1986). This research contributes to the current understanding of perceptual discrepancies between experts and non-experts of environments (or spaces) and their components. In this study, both the experts and the non-experts are long-term residents of Arlington having resided in the community for over ten years. Therefore, the differences between experts' and non-experts' perceptions of landmarks could be attributed solely to expertise. However, in reality most designers (experts) are not long-term residents of the spaces they design. That is, in most cases designers are like outsiders, with the spaces they work with being more extensive than intensive. Thus, an understanding of the differences between experts and non-experts in the landscape architecture profession can help experts to improve their ability to realize the needs of their non-expert users of the features they create.

### 5.3 Suggestions for Future Research

The findings of this study revealed several opportunities for further investigation of landmarks and expertise:

- Solidify research results by interviewing more participants from expert and non-expert groups.
- Provide design recommendations which can contribute to the design of future landmarks.
- Explore reasons for different selections of landmarks between experts and non-experts.
- Carry out research using other subject-matter experts such as architects and urban planners.
- Conduct research on the intensity of residents' familiarity with their space as it affects their perceptions of landmarks.
- Test the affects of other critical Lynchian elements including edges, districts, nodes and paths to also enhance experts' understanding of non-experts' perceptions.

### 5.4 Summary

The results of this research verify that expertise affects the perceptions of expert groups more than it affects non-expert groups. Moreover, the definition of landmarks is undergoing modifications; that is, both groups identify other Lynchian elements, such as paths or districts, as landmarks. This research provides an understanding of how the gap between experts and non-experts in the landscape architecture profession can help experts improve their ability to realize the needs of non-expert users. Thus, understanding differences in perceptions between experts and non-experts increases a designer's empathy for the ways a non-expert perceives his or her world. This understanding provides a basis for design decisions and for later evaluating the success of those decisions.

APPENDIX A  
INTERVIEW NOTES



Expert #1

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Mineral Water Well	It has important historic meaning and connection to my childhood memories.	An up-ground water feature about 3'-4' tall.
2	Train Station Depot	It has connection to my childhood memories. I used to spend time at the depot watching the trains going by.	It is just a neat old building.
3	Original Arlington High School	This was my parents' school, and I have my own memories in relation to this place.	It has a two-story building with basketball court. One of the buildings is for teaching girls to do housework.
4	Randol Mill Park	I have a lot of memories from time spent at this park.	It has a lake with white ducks.
5	Moore Memorial Cemetery	I pass by on occasion and sometimes visit the cemetery. I am always impressed by how well maintained the landscape is.	It has some nice status and a beautiful entrance.
6	Fielder Museum	It has an important historical meaning.	It is a red brick building with a nice garden.
7	Arlington High School (at Park Row Street )	I had many memories of Arlington High School. I graduated from here.	I used to spend a great deal of time in a half-circle space close to the building. It has an interior courtyard.
8	Vandergriff Chevrolet Showroom	I bought my first car here. It has important historic meaning.	The building is made of stone and brick, with huge glass windows.

Expert #2

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Six Flags Over Texas	It is very obvious and is visible from I-30.	It has a tall vertical tower and different rides.
2	Cowboys Stadium	It is very obvious from I-30. It is oriented and visible from far away.	It is nice looking with glass windows around it. Landscape design is good, too
3	Rangers Ballpark in Arlington	It is visible from a great distance.	It is a nice-looking building, built of brick and limestone. The historical murals impressed me.
4	University of Texas at Arlington (UTA)	It is adjacent to Cooper Street.	It has several buildings with urban style.
5	General Motors	It is very big and is adjacent to the 360.	It is an industry style space. It has many parking spaces.
6	Division Street	It looks awful.	This street is full of used car dealerships.
7	Vandergriff Chevrolet Showroom	It has important historical meaning.	This is an old house that used to be a car showroom.
8	Obelisks at Center and Division streets	It defines the entrance to downtown Arlington.	These monuments are built using high quality materials.
9	River Legacy Park	This is the biggest natural park in Arlington.	The learning center is a good-looking building. The building is upside down with a water feature around it.

Expert #3

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	General Motors	It is very obvious from 360 and has historical significance.	It is a large industrial complex.
2	Six Flags Over Texas	I visit Six Flags over Texas frequently and have several memories associated with it. It is visible from I-30.	It has a large orange tower and many roller coasters.
3	Crystal Canyon Park	I have many memories of the park. It has special natural resources.	An open space with several trails. Small crystals can be found in the dirt.
4	Cowboys Stadium	It is very obvious and visible from I-30.	A giant building with glass exterior.
5	University of Texas at Arlington (UTA)	It has been here for long time and I visit often.	It is a residential style campus.
6	Cowboys, Arlington (Bar)	A popular bar in Arlington and visible from 360.	This used to be a K-Mart. Now it is a typical western country bar.
7	Levitt Pavilion	It is a well-designed public space. A new attraction in Arlington.	A free outdoor space for performances.
8	Railroad	An important part of Arlington's history with a strong identity.	It has been an industrial connection since 1800.
9	St. Albans Episcopal Church	I have many memories of it.	Nothing special.
10	River Legacy Park	I visit here a great deal and have many memories of it. It has very rich natural resources and facilities.	It has several long trails and pavilions.

Expert #4

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Randol Mill Memorial Hospital	The hospital has occupied this space for a long time and is a well-known public building.	It has a group of buildings.
2	Cowboys Stadium	It has high identity in Arlington and is visible from I-30.	It looks like a giant spaceship.
3	Six Flags Over Texas	It has high visibility from I-30 and it also has historic meaning.	It has a vertical orange tower and several roller coasters.
4	General Motors	It is a major element of Arlington, and has an historic significance.	It is industrial look and very large.
5	Randol Mill Park	It is one of the Arlington park systems that provide green spaces to residents of the area.	A large green space.
6	University of Texas at Arlington (UTA)	It is visible from Cooper Street.	It used to be an open-space. Three overhead pedestrian bridges are obvious.
7	Fielder Museum	I visit this landmark frequently.	It was built in 1920, and is unique in that neighborhood.
8	Railroad	It has historical significance. It is very obvious in Cooper Street.	It is a typical railroad with loud noise.
9	Highway I-30	It has historic meaning and it connects the DFW area.	It is a major east-west interstate highway. Visitors can see the most attractions from I-30.
10	Highway 360	It has historical significance. It also connects Arlington to DFW airport.	It is a north-south highway.

Expert #5

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	General Motors	It is very large and is visible from 360. It also has a unique history in Arlington.	It is an industrial space. A single building surrounded by parking lots.
2	Six Flags Over Texas	It is a central destination for visitors to Arlington as one of the famous Arlington attractions. It is visible from I-30.	It has an orange tower and several roller coasters.
3	Cowboys Stadium	It is visible from I-30.	It rebuilt the Arlington skyline. It is a modern style and huge structure. It draws a lot of attention.
4	Rangers Ballpark in Arlington	It has a unique style, and it is one of Arlington's attractions. It also has historical significance.	It is a single building with many details to define the architecture style in Arlington.
5	Six Flags Hurricane Harbor	It is visible from I-30. It is also one of the Arlington attractions.	It has many large slides.
6	Center Street Bridge	It is obvious from I-30 and Center Street.	It has nice qualities.
7	University of Texas at Arlington (UTA)	It is located on Cooper Street and has a high identity.	Three pedestrian bridges
8	Trinity River	The most significant river in the DFW area. It has historical and geographical significance.	A natural feature
9	Wachovia Bank	It is very obvious from I-30.	The pyramid roof
10	Obelisks at Center and Division streets	It defines the entrance to the downtown area.	Well designed and esthetically enhances the space it occupies.

**Expert #6**

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Birds Fort Site	It has important meaning in Arlington history.	It is an open site with few trees. A club house is down there.
2	Crystal Canyon Park	It has rich natural resources.	The park has huge post oak woodlands and crystal in the dirt. Needs more development.
3	Meadowbrook Park	It was the first park of Arlington in 1928.	It used to have a small zoo with monkeys and swimming pool inside.
4	University of Texas at Arlington (UTA)	It has an important historic meaning.	The architecture style is different from other typical colleges. A courtyard in the Architecture building is a nice place to relax.
5	General Motors	It impacts the development of Arlington.	It is an automobile factory. Very big and obvious is that neighborhood.
6	Johnson Creek	It impacts the city development.	Part of the creek is designed to promote nature and environmentally friendly flooding space.
7	Six Flags Over Texas	It is the first attraction in the Arlington Entertainment district.	Texas Giant and different roller coasters.
8	Cowboys Stadium	It is the icon of Arlington now and it can be seen from far away.	It a modern style building with glass windows. The interiors design is amazing, too.
9	Mineral Water Well	It has an important historical meaning.	It changed shape several times. It is an up-round well.
10	Stone Monuments	They were located in I-20 which represented the history of I-20. Now they have been move to the park near the Ballpark.	They re-locate to North Arlington now where there is a park that has Johnson Creek passing by.
11	River Legacy Park	It is the best known and biggest park in Arlington.	It has a well-designed entrance with a special roof. The water feature is significant.

**Expert #7**

	<b>What is the name if this landmark</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Center Street Bridge	It is on the main highway between Dallas and Fort Worth. Because it has vertical columns, people find it hard to miss it.	It has some vertical details to attract people. The combination of brick and steel has nice balance.
2	Six Flags Over Texas	It contributes to the Arlington skyline. It is so obvious that people can't miss it.	The superman vertical sign and roller coasters.
3	Cowboys Stadium	It can be seen from far away. It is also a significant architecture work.	It has a white roof that is obvious from the distance. It is also surrounded by huge parking lots.
4	Rangers Ballpark in Arlington	It is a distinctive architecture building, and is next to the Cowboys Stadium.	It has a nice brick façade with high detailed. It is next to the Cowboys Stadium.
5	Obelisks at Center and Division streets	They are different elements than others in the downtown area.	It has timeless style, built of limestone.
6	Levitt Pavilion	It is a dramatic open space.	It has a big lawn area, and high quality of architecture.
7	River Legacy Park	The learning center is designed great. The roof and entrance are impressive.	The water feature around the learning center is impressive.
8	University of Texas at Arlington (UTA)	It is composed of several consistent buildings.	UTA is composed of several consistent style architecture buildings. The three pedestrian bridges are the icon of UTA.

**Non-Expert #1**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
<b>1</b>	Maverick Activities Center (MAC)	I visit the MAC frequently.	It is a building in which many activities take place.
<b>2</b>	Rangers Ballpark in Arlington	It is a city attraction and the Texas Rangers are a famous baseball team. I visit the stadium frequently.	It is a home for the Texas Rangers.
<b>3</b>	Cowboys Stadium	The Cowboys is a famous football team.	It is a home of the Cowboys team.
<b>4</b>	Six Flags Over Texas	It has been here for a long time and is an attraction unique to the DFW area. It is very obvious and visible from I-20.	It has a tall red towers and various structures.
<b>5</b>	Six Flags Hurricane Harbor	It has been in Arlington for a long time and is an attraction unique to the DFW area. The interesting shape and structure contrast with the surroundings.	It has black slide structure.
<b>6</b>	Santa Maria Goretti Catholic Community	It is on the corner of an intersection, and on my way home.	It has a tall clock tower.
<b>7</b>	River Legacy Park	It is the biggest park in Arlington and I visit frequently. It is also a unique area in Arlington because it has so many natural resources in one park.	Big open area with river and forest.



**Non-Expert #2**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Six Flags Over Texas	It has been here for a long time and I have many special memories of it.	One of the famous attractions in Arlington.
2	Railroad	It is an important symbol in Arlington's history, connecting Dallas and Fort Worth.	It has been a railroad since 1800.
3	Cowboys Stadium	It is a famous building in Arlington.	It is a huge and big single building.
4	River Legacy Park	I visit the park frequently and have special memories related to it.	It is beautiful, well maintained, and a nice place to ride a bike and have picnics with friends.
5	Arlington Theatre	I visit this landmark frequently and have had good experiences there.	The historical pictures inside the theater impressed me.
6	Six Flags Hurricane Harbor	It is one of Arlington's attractions and I visit this landmark frequently.	Many slides.

**Non-Expert #3**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
<b>1</b>	Six Flags Over Texas	I visit Six Flags Over Texas frequently. It is a famous attraction in the DFW area. It is very obvious from I-30	It has various roller coasters.
<b>2</b>	Cowboys Stadium	This Arlington attraction contributes to the local economy. It also brings a great deal of traffic. It can be seen all over the town.	A huge single building
<b>3</b>	General Motors	General Motors has an important historical meaning in Arlington. It has been here for a long time.	Big tall factory produces many cars.
<b>4</b>	Six Flags Hurricane Harbor	I visit the landmark frequently and have many memories of it. It is very obvious when driving I-30.	Many slides.
<b>5</b>	Rangers Ballpark in Arlington	A famous attraction in the Arlington area.	It is a beautiful brick building that does not look like a typical baseball stadium.
<b>6</b>	Railroad	It has important historical meaning and connects Dallas and Fort Worth.	It has a railroad track and noise.
<b>7</b>	Highway I-30	It was the old turnpike and connects most of Arlington's attractions.	It is a six-lane interstate highway.

**Non-Expert #4**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
<b>1</b>	Stone Monuments	I have memories associated with the monuments.	Big, huge and several of them.
<b>2</b>	Catfish Sam's (Restaurant)	I visit this landmark frequently and it has been here for a long time.	A restaurant my family visits often.
<b>3</b>	Original Arlington High School	It is famous and has been here for a long time.	It has become a part of UTA now.
<b>4</b>	Fielder Museum	It has been here for a long time and I visit frequently. I have great memories connected to this landmark.	It is a single building with a garden.
<b>5</b>	Randol Mill Park	I visit this landmark frequently.	It is a water park with a lake and different activities.
<b>6</b>	Lincoln Square Shopping Center	I visit this landmark frequently.	It is an open shopping center.
<b>7</b>	River Legacy Park	I visit this landmark frequently.	It is a good park to bring kids and friends.
<b>8</b>	Grace Lutheran Church	I visit this landmark frequently.	It has a nice entrance.
<b>9</b>	"V" Sign in Old Vandergriff Showroom (Division and Collins streets)	It used to be a very obvious sign in that area.	It is very tall and big.

**Non-Expert #5**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
<b>1</b>	Berachan Home	I have many memories of Berachan Home and it used to be on my way home.	A large brick building
<b>2</b>	Original Arlington High School	I graduated from this school and have good memories of it.	A brick building
<b>3</b>	My Old House (Main and Center streets)	I lived there from the age of 13 until I was 21. I have many memories associated with it.	Within walking distance of everywhere I need to go; for example, school or the theater.
<b>4</b>	Mineral Water Well	I used to visit the well frequently and have childhood memories of it.	A gazebo covers the well.
<b>5</b>	My Elementary School	I graduated from this school.	It has a red brick building with a fire escape.
<b>6</b>	First United Methodist Church of Arlington	I have many memories of it.	A collection of yellow brick buildings with stained glass windows.
<b>7</b>	Meadowbrook Park	The first park in Arlington and therefore an important part of Arlington's history.	The park has a swimming pool and facilities for activities.

**Non-Expert #6**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
<b>1</b>	Gary's Nursery Park	Has historical meaning in Arlington. Has memories connected to it.	Famous wood company that produced a lot of pecan tree products.
<b>2</b>	Fielder Museum	Very obvious in that area. Stood alone with no other buildings around it when first built.	Looks nice
<b>3</b>	Original Arlington High School	I graduated from there.	A yellow brick building
<b>4</b>	First United Methodist Church of Arlington	I have many memories of it.	It has stained glass windows.

**Non-Expert #7**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	General Motors	A very significant contributor to Arlington's economy. It also has historical meaning.	It is a car factory and is adjacent to the 360.
2	Meadowbrook Park	I visit this park frequently and have many memories of it.	It is an old park.
3	Six Flags Over Texas	It is very visible and can be seen from everywhere in the town. It is one of the Arlington Attractions.	A big tall orange tower is obvious.
4	University of Texas at Arlington (UTA)	I graduated from UTA.	It used to be an open-space campus without the walls on the side of Cooper Street.
5	Senter Park	I visit this park often and have good memories of it.	It has a small baseball field.
6	Randol Mill Memorial Hospital	The first hospital in Arlington. Has been here for a long time.	The main building looks like an institutional building.
7	Rangers Ballpark in Arlington	It can be seen from everywhere.	The surrounding spaces are very nice with water features and green open spaces.
8	Cowboys Stadium	It is very noticeable and can be seen from I-30.	It looks like a spaceship with a unique shape.
9	Radio Tower	It is huge and obvious. It is also close to my office.	A huge radio station in the center of downtown Arlington.

**Non-Expert #8**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Wachovia Bank	It has a unique roof and has been here for a long time. It is very visible on I-30.	It has a pyramid roof and is adjacent to I-30.
2	Six Flags Over Texas	Large and visible on I-30	It is an amusement park. A big red tower impresses me the most.
3	Rangers Ballpark in Arlington	I visit this landmark often and the Texas Rangers are a famous baseball team.	Historical murals impress me a lot.
4	River Legacy Park	It has been here for a long time and is the largest park in Arlington.	Huge open green space with several long trails.
5	University of Texas at Arlington (UTA)	It has been here for a long time. I graduated from this school. It is also adjacent to Cooper Street.	The three pedestrian bridges.
6	Cowboys Stadium	It is so big and obvious and can be seen from a distance. It generates large amounts of traffic.	The building is futuristic style and has a shiny exterior façade.
7	Rolling Hills Country Club	It is on my way home and is also a huge green space.	Huge open green space
8	“V” sign in Old Vandergriff Showroom (Division and Collins streets)	Huge and very visible sign.	A giant blue “V” thirty feet or more in height.
9	Randol Mill Memorial Hospital	I pass the landmark a lot and it is big on Cooper Street.	It has a pedestrian bridge.
10	Lincoln Square Shopping Center	It has been there for a long time and I visit frequently.	Open shopping area with a chain of buildings. It also has a small plaza inside.
11	General Motors	A huge space and is adjacent to 360. It has been here for a long time.	It is a huge factory space with some buildings and a lot of parking space.

**Non-Expert #9**

	<b>What is the name if this landmark?</b>	<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Cowboys Stadium	One of the world's largest stadiums. It is very large and visible in North Arlington.	It is the largest stadium in the U.S.A., and it has the largest flat screen, too.
2	Six Flags Over Texas	The first Six Flags of the U.S.A. This has been here for long time.	It has a big orange tower and wood-made roller coaster.
3	Rangers Ballpark in Arlington	The Texas Rangers are a famous baseball team and this was named the best stadium in 1995.	Texas-style architecture
4	Maverick Activities Center (MAC)	I visit this landmark frequently.	A modern style building and landscape, especially in comparison to UTA's other building.
5	Lincoln Square Shopping Center	It has been here for a long time.	It has lots of bars, shops, and restaurant. It is a very comfortable and relaxed place.
6	Wachovia Bank	It is very big and noticeable and can be seen from far away.	Pyramid roof
7	River Legacy Park	It has the best natural resources in Arlington.	Huge open green space, with several trails.



**Non-Expert #10**

		<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	Six Flags Over Texas	It is next to I-30.	There are many hotels around the Six Flags.
2	University of Texas at Arlington (UTA)	The only university in Arlington	Many buildings
3	Cowboys Stadium		

**Non-Expert #11**

		<b>Why is it a landmark to you?</b>	<b>How would you describe this landmark to others?</b>
1	University of Texas at Arlington (UTA)	It is connected to my childhood memory.	The walls on the side of Cooper Street are covered by green vine in the summer. The pedestrian bridge is also obvious.
2	Randol Mill Memorial Hospital	I have memories with my father here.	It has a courtyard surrounded by buildings. The pedestrian bridge on Randol Mill Road is obvious.
3	Six Flags Over Texas	It is an amusement park and it is a very popular place for parents to bring kids.	It is next to I-30 and it has roller coasters.
4	Six Flags Hurricane Harbor	Because it has different kinds of structures.	The tube
5	General Motors	It has been there for long time.	Giant building surrounded by huge parking lots
6	Lincoln Square Shopping Center	It is an outside shopping center	The water fountain really impresses me.

## REFERENCES

- Alexander, Christopher. *Notes on the Synthesis of Form*. Cambridge: Harvard University Press, 1964.
- Allen, Gary L. "Spatial Abilities, Cognitive Maps and Wayfinding-Bases for Individual Differences in Spatial Cognition and Behavior." In *Wayfinding Behavior-Cognitive Mapping and Other Spatial Process*, by Gary L. Allen, 46-80. Baltimore: Johns Hopkins University Press, 1999.
- Allen, Lawrence R., Patrick T. Long, Richard R. Perdue, and Scott Kieselbach. "The Impact of Tourism Development on Residents' Perceptions of Community Life." *Journal of Travel Research* 27, 1988: 16-21.
- Appleton, Jay. *Landscape in the Arts and the Sciences*. London: University of Hull, 1980.
- Appleton, Jay. *The Experience of Landscape*. London: John Wiley and Sons Inc., 1996.
- Appleyard, Donald. "Styles and Methods of Structuring a City." *Environment & Behavior* 2, 1970.
- Appleyard, Donald. "The Environment as a Social Symbol: Within a Theory of Environment Action and Perception." *Journal of the American Planning Association* 45 (2), 1979: 145-153.
- Arida, Ayssar. *A Quantum City*. Oxford: Architectural Press, 2002.
- Arnheim, Rudolf. "The Gestalt Theory of Expression 56 (3)." *Psychological Review*, 1949: 156-71.
- Bartunek, Jean, and Meryl Reis Louis. *Insider/Outside Team Research*. Thousand Oaks: Sage

- Publicationa Inc., 1996.
- Bonnes, Mirilia, Terence Lee, and Marino Bonaiuto. *Psychological Theories for Environmental Issues*. Burlington : Ashgate Publishing Company, 2003.
- Bourassa, Steven C. *The Aesthetic of Landscape*. London: Belhaven Press, 1991.
- Bruner, Jerome S., and Cecile Goodman. "Value and Need as Organizing Factors in Perception." *Journal of Abnormal and Social Psychology* 42, 1947: 33-44.
- Brunt, Paul, and Paul Courtney. "Host Perceptions of Sociocultural Impacts." *Annals of tourism research* 26 (3), 1999: 491-515.
- Crail, Kenneth H. "The Environmental Dispositions of Environmental Decision-Makers." *Annals of the American Academy of Political and Social Science* 389 (5), 1970: 87-94.
- de Groot, Adriaan D. "Perception and Memory Versus Thought: Some Old Ideas and Recent Findings ." *Problem Solving*, 1966: 19-50.
- Dearden, Philip. "Factors Influencing Landscape Preferences: An Empirical Investigation ." *Landscape Planning*, 1984.
- Dewey, John. "Aesthetic Experience as a Primary Phase and as an Artistic Development." *Journal of Aesthetics and Art Criticism* 9(1), 1950: 56-58.
- Dewey, John. *Experience and Nature*. London: George Allen and Unwin, 1929.
- Dieke, Peter U.C. "Cross-National Comparison of Tourism Development: Lessons from Kenya and the Gambia." *The Journal of Tourism Studies* 4(1), 1993: 3-18.
- Down, Roger M., and David Stea. "From the Outside Looking in at the Inside Looking out." *Environment and Behavior* 2(1), 1970: 3-12.

Down, Roger M., and David Stea. *Image and Environment: Cognitive Mapping and Spatial Behavior*. Chicago: Aldine, 1973.

Down, Roger M., and David Stea. *Maps in Minds: Reflection on Cognitive Mapping*. New York: Harper and Row, 1977.

Evans, Gary, David G. Marrero, and Patricia A. Butler. "Environmental Learning and Cognitive Mapping." *Environment and Behavior* 13 (1), 1981: 83-104.

Fontaine, Sylvie, Geoffrey Edwards, Barbara Tversky, and Michel Denis. "Expert and Non-Expert Knowledge of Loosely Structural Environments." *Springer*, 2005.

Gans, Herbert J. "The potential Environment and the Effective Environment." In *People and Place*. New York: Basic Book, 1968.

Gans, Herbert J. *The Urban Villagers*. New York: Free Press, 1965.

Garling, Tommy, and Gary W. Evans. *Environment, Cognition and Action- An Integrated Approach*. New York: Oxford University Press, 1991.

Gehl, Julie. *Life Between Building: Using Public Space*. New York: Van Nostrand Reinhold, 1987.

Getz, Donald Philip. "Residents' attitudes towards tourism: A longitudinal Study in Spey Valley." *Tourism Management* 15 (4), 1994: 247-258.

Glaser, Barney G., and Strauss, Anseim L. *The discovery of grounded theory: strategies for qualitative research*. New Jersey: Aldine Transaction, 1999

Glenn, Bernice T., and Mark H. Chignell. "Hypermedia: Design for Browsing ." *Advances in Human-Computer Interaction* (3), 1992.

Goffman, Erving. *Frame Analysis: An Essay on the Organization of Experience*. Cambridge: Harvard University Press, 1974.

Golledge, Reginald. *Eye and Brain: The Psychology of Seeing*. Birmingham : University of Birmingham, 1971.

Golledge, Reginald, and Robert John Stimson. *Spatial Behavior: A Geographic Perspective* . Guilford Press, 1996.

Hall, Edward T. *The Hidden Dimension*. New York: Doubleday and Company Inc. , 1966.

Hallowell, A Irving. *Culture and Experience*. Philadelphia: University of Pennsylvania Press, 1955.

Harrill, Rich. "Residents' Attitudes Toward Tourism Development: A literature Review with Implications for Tourism Planning." *Journal of Planning Literature* 18, 2004: 251-266.

Hay, Robert. "Sense of Place in Developmental Context." *Journal of Environmental Psychology* 18, 1998: 5-29.

Herzog, Thomas R. "Cultural and Developmental Comparison of Landscape Perceptions and Preference." *Environment and Behavior* 32 (3), 2000: 323-346.

Jakle, John A. *The Visual Elements of Landscape*. Cambridge: MIT Press, 1987.

Kant, Immanuel, and John T. Goldswait. *Observations on the Feeling of the Beautiful and Sublime* . Berkeley: University of California Press, 1960.

- Kaplan, Stephen. *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press, 1989.
- Kaplan, Stephen, and Janet Talbot. "Ethnicity and Preference for Natural Settings: A review and Recent Findings." *Landscape and Urban Planning* 15, 1988: 107-117.
- Kitchin, Robert. "Cognitive Maps: Which are they and why study them." *Journal of Environmental Psychology* 14, 1994: 1-19.
- Korca, Perver. "Residents Attitudes Toward Tourism Impacts." *Annals of Tourism Research* 23 (3), 1996: 695-726.
- Krupat, Edward. *People in Cities: The Urban Environment and Its Effects*. Cambridge: MIT Press, 1985.
- Kuipers, Benjamin. "Modeling Spatial Knowledge." *Cognitive Science* 2(2), 1978: 129-153.
- Lamit, Hassnuddin. "Redefining Landmarks." *Jurnal Alam Bina* 6 (1), 2004.
- Lang, Jon. *Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design*. New York: Van Nostrand Reinhold, 1987.
- Lawson, Bryan. *The Language of Space*. Great Britain : British Library Cataloguing in Publication Data, 2001.'
- Lee, Terence. "Urban Neighborhood as Socio-Spatial Schema." *Human Relations* 21, 1968: 241-67.

Lipman, Alan. "The Architectural Belief System and Social Behavior." *British Journal of Sociology* 20 (2), 1969: 190-204.

Lynch, Kevin. *Site Planning*. Cambridge: MIT Press, 1971.

Lynch, Kevin. *The Image of the City*. Cambridge : MIT Press, 1960.

Michelson, William. "An Empirical Analysis of Urban Space Preferences." *AIP Journal* 32 (6), 1966: 78-96.

Michelson, William, and Paul Reed. "The theoretical Status and Operational Usage of Lifestyle." *Environment Research* 36, 1970.

Moughtin, Cliff, Tuner OC, and Steven Tiesdel. *Urban Design: Ornament and Decoration*. Oxford: Butterworth Architecture, 1995.

Nasar, Jack L. "Adult Viewers' Preferences in Residential Scenes: A study of the Relationship of Environmental Attributes to Preference." *Environment and Behaviour* 15, 1983: 589-614.

Nasar, Jack L. "Influence if Familiarity on Responses to Visual Qualities of Neighborhood." *Perceptual and Motos Skills* 51 (2), 1980: 635-42.

Nasar, Jack L. *Perception, Cognition and Evaluation of Urban Places*. Altman, 1989.

Pahl, Raymond Edward. *Pattern of Urban Life*. London: Longmans, 1971.



Peattie, Lisa. *Planning, Rethinking Ciudad Guayana*. Ann Arbor: University of Michigan, 1987.

Peattie, Lisa. *The Experience of the Guayana Program of Venezuela*. Cambridge: MIT Press, 1969.

Rapoport, Amos. *Human Aspects of Urban Form*. Oxford: Pergamon Press, 1977.

Salim, Mahbob Bin. "Aspects of Urban Design with Special Reference to Image and Identify in Built Form: Case Study of Kuala Lumpur." *University of Wales*, 1993.

Siegel, Alexander, and Sheldon White. "The Development of Spatial Representations of Large-Scale Environments." *Advances in Child Development and Behavior* 10, 1975.

Sonnenfeld, Jeffery. "Variable Values in Space and Landscape: An Inquiry into the Nature of Environmental Necessity." *Journal of Social Issues* 22 (4), 1966: 71-82.

Sorrows, Molly, and Stephen C. Hirtle. "The Nature of Landmarks for Real and Electronic Spaces." Springer Berlin, 1999.

Stehr, Nico Grundmann, Reiner. *Knowledge Critical Concepts*. Abingdon: OXON, 2005.

Taylor, Pat D. "Urban Design Seminar." *Class Lecture*, 10 9, 2003.

Taylor, Steven, and Robert Bogdan. *Introduction to Qualitative Research Methods*. Hoboken: John Wiley & Sons Inc. , 1998.

Tsuka, Michael, and Paul Wilson. "The effects of Landmarks on Route-Learning in a Computer-Simulated Environment." *Journal of Environment Psychology* 14, 1994: 305-313.

- Tolman, Edward. "Cognitive Maps in Rats and Men." *Psychology* 55, 1948: 189-208.
- Trancik, Roger. *Finding Lost Space*. Hoboken: Wiley & Sons Inc., 1986.
- Tuan, Yi-Fu. "Rootedness and Sense of Place." *Landscape* 24, 1980: 3-8.
- Tuan, Yi-Fu. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press, 1977.
- Twight, Ben W., and William R. Catton. "The Politics of Images: Forest Managers VS. Recreation Publics." *Natural Resource Journal* 15 (2), 1975: 297-306.
- Zeisel, John. *Inquiry by Design*. Los Angeles: Brooks and Cole Publishing Company, 1981.
- Zube, Erin, and David Pitt. "Cross-Cultural Perception and Prediction of Scenic and Heritage Landscapes." *Landscape Planning* 8 (1), 1981: 67-87.

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