2005

Crime prevention and the perception of safety in campus design

Mary Frances Fernandez
Louisiana State University and Agricultural and Mechanical College

CRIME PREVENTION AND THE PERCEPTION OF SAFETY IN CAMPUS DESIGN

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Landscape Architecture

In

The School of Landscape Architecture

by
Mary Fernandez
B.F.A., Louisiana State University, 2001
May 2005

ACKNOWLEDGEMENTS

There are many people I would like to acknowledge for their assistance and support during my research journey. To Bruce Sharky, committee member, for helping me get a jump-start in the thesis process. Your enthusiasm has inspired me from beginning to end. To Joe Popadic, chair of my thesis committee, many thanks for your guidance and readiness to meet with me. To Dana Brown, committee member, I appreciate your assistance with mapping and challenging me to explore and produce more.

This thesis would not have been possible without the assistance and endless support of Laura Fernandez. Last, but not least, I would like to thank my family for their support over the years. I am eternally indebted to my parents, Bob and Pat, for their patience, love and support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The objectives of this research are to demonstrate the process of applying perception of safety in a campus environment to actual crimes and to use the results to better implement safety improvements within the campus landscape. The focus of the research is the outdoor environment on a college campus. The Louisiana State University campus was selected as a case study.

The survey was developed and tested to better understand how people perceive their surroundings and to incorporate the findings of perception of safety to improve design and planning decisions for the LSU campus.

The criteria for a safe design was developed from research gathered on crime prevention and the psychological reactions of users to exterior site features. Crimes reported on the LSU campus were compiled on a crime map in order to analyze whether student perceptions of unsafe and safe areas were justified.

The hope of this thesis is to enlighten designers on the subject of crime prevention and the perception of safety in the landscape. Further research on the LSU campus that leads to actual improvements of public safety is encouraged for persons involved in campus planning and maintenance.

CHAPTER 1

INTRODUCTION

Each year prospective and returning students flood college campuses all across the United States. From small community colleges to renowned Ivy League schools, students attend higher learning institutions to gain knowledge in various fields in hopes of a better future in the job market when he or she attains a degree. Institutions entice prospective students with glossy brochures that speak highly of the school's academic, social and athletic programs. One topic that might not be mentioned in the brochure is the safety record on campus. Yet, each college in the country has to consider the safety of the persons that inundate the campus by day and night. The college campus is not in an academic bubble that repels potential criminals. It is part of the greater community in which is lies, from large metropolitan areas to small rural communities. Cities across the nation are continually combating crime and so are universities. There is a growing concern among parents and students alike of the rising crime rates on college campuses. Whether students live on campus or off campus in the surrounding area, it is important that university administrators take a progressive role in keeping the campus safe.

Louisiana State University and Agricultural & Mechanical College (LSU) is one such campus located in the southern part of the state capital of Baton Rouge, Louisiana. The university, which began as a seminary college back in the early 1800's, lies along the east side of the winding Mississippi River. Enrollment has grown from 8,923 in 1955, to 23,667 in 1974, to a considerable 31,234 in 2003. LSU is continually expanding to keep pace with an ever-increasing student enrollment. New academic facilities, which are constantly being built, are encroaching on the open space originally

developed for the campus in the 1920's. Also, new student housing is popping up across campus to house the large student population. LSU is continually developing programs that protect people while on campus. In 2000, LSU had 714 crimes reported on campus and the number rose to 819 in 2002 (Web page: www.lsu.edu/police).

Problem Statement

Landscapes designed years ago need to be reevaluated to include today's concern for public safety. The LSU campus is a web of pathways, parking lots and open areas that intertwine. Many of these pathways installed were trails that students have made to get quickly to class.

In recent years, improvements have been made concerning safety for persons on campus. Better lighting has been installed and shrubs have been cut down or removed all together. Adding fences to shield against crime and chopping down shrubs to create a more visible open space are quick fixes that aim to eliminate a crime-ridden area. Areas on campus are safer by cutting azaleas to the ground but it does nothing for the psyche of students that now have to walk pass barren landscapes. An emphasis needs to be on how people perceive their surroundings to develop crime prevention techniques for outdoor spaces.

Objectives

The objectives of this research are to demonstrate the process of applying perception of safety in a campus environment to actual crimes and to use the results to better implement safety improvements within the campus landscape. Urban planners and other university employee's involved in the planning process will achieve their

desired results of a positive perception of a site by incorporating the public's perception of safety into crime prevention improvements of exterior site features.

Scope

The subject matter of crime prevention is immense; the entirety of which is well beyond the scope of this thesis. The thesis will focus on student perceptions of unsafe and safe outdoor space on the LSU campus to better implement crime improvements to the campus environment. The student population was chosen as subjects for the study because many make the campus home for four or more years. The campus is bustling 24 hours a day as it is where students live, study, work and play. Thus, their campus home should be a refuge. Unfortunately, LSU does not feel like a safe refuge at times. In addition, unlike a homeowner who may make safety improvements to their home, a student cannot. They must rely on campus officials to provide adequate safe guards to ensure safe passage while on campus. Students must rely on their gut feeling to keep them from harms way.

Information gathered on the subject of crime prevention and the perception of safety will be applied to selected areas on the LSU campus that are shown by the survey to be perceived as "most unsafe" and "most safe". Although the thesis focuses on campus design, the results of the study can be applied to similar public spaces. The purpose of the thesis is to enlighten professionals on how important perception is in how people move through and interact in an outdoor environment. By combining a well-planned, safe landscape along with understanding the human perception of a space, a landscape architect can create a balanced outdoor environment that creates a positive effect on the human psyche.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter will investigate previous research on crime prevention and the perception of safety of exterior site features in the landscape. The topic of crime prevention is broad and encompasses many different environmental situations. Urban planners have been concerned with crime plaguing urban centers and residential communities; as well as, the affect it has had on the human psyche. This concern for environmental safety for the public has led to extensive research on the subject of crime prevention. Postsecondary educational institutions are within these urban centers and have similar safety concerns in the landscape. Louisiana State University in Baton Rouge, Louisiana, is one such postsecondary institution that has experienced rising crime rates. My thesis will focus on crime prevention and the perception of safety in the landscape at the Louisiana State University campus.

In order to fully understand the connection between crime prevention and the perception of safety on campus, information gathered from prior research of urban cities is incorporated in the review. Also included in the literature review are two case studies that were beneficial in providing methods for assessing student's perception of safety while on campus.

Crime Prevention: Physical Environment

In the mid 20th century, theorists introduced a new way of exploring city planning and rebuilding public and private space. Conventional city planning had created undesirable and unsafe living conditions throughout American cities. Urban planners,

such as Jane Jacobs, *The Death and Life of Great American Cities* (1961) and Oscar Newman, *Defensible Space* (1972), began to introduce new theories that examined existing conditions of successful urban areas and compared them to undesirable locations. These theorists laid the foundation to which 21st century city planners approach and address today's concern for successful thriving city centers and crime prevention.

Jane Jacobs, wrote *The Death and Life of Great American Cities* in 1961. She was appalled at the state of urban cities. Jacobs states that her "book is an attack on current city planning and rebuilding" principles that have dominated the country for decades (Jacobs 1961, p. 1). In a quest to understand the problems that plagued American cities, Jacobs observed the physical environment in order to gain a perspective on crime and the interconnection of the planned city. She investigated how people occupy and behave in the space. The focus was on main urban cities such as Pittsburgh, Philadelphia, Baltimore, and New York City. From her observations, Jacobs determined that in order for a city street to be successful it must have three main qualities:

1. Demarcation:
   First, there must be a clear demarcation between what public space is and what private space is. Public and private spaces cannot ooze into each other as they do typically in suburban settings or in projects.

2. Ownership of Public Space:
   Second, there must be eyes upon the street; eyes belonging to those we might call the natural proprietors of the street.

3. Constant Users:
   And third, the sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce the people in buildings along the street to watch the sidewalks in sufficient numbers (Jacobs 1961, p. 35).

Oscar Newman, *Defensible Space* (1972), also focused on the issue of scale of crime in the city with the ability or lack there of, to being observed by the public. Yet, unlike Jacobs, who focused on the greater city, Newman focused on the architectural layout of individual buildings and the unhealthy effect it was creating for the residents. As Director of the Institute of Planning and Housing at New York University, Newman conducted a thorough 3-year study, which focused on housing developments in major cities. Techniques incorporated into the study were interviews with tenants, project managers and police, and when available, recorded data on crime and vandalism. The focus study yielding the most detailed analysis was in the New York City public housing projects. Newman discovered a relationship between crimes in housing projects to the lack of observation by tenants. He also found that when buildings provided residents with a line of sight to view doorways and other public places, crime was reduced. Newman states, "surveillance has a demonstrable effect in reducing irrational fears and anxieties in inhabitants. This may have some self-fulfilling attributes in that residents, feeling that an area is secure, will make more frequent use of it and so further improve its security by providing the safety which comes with intensive use" (Newman 1972, p. 78). Newman's findings support Jacobs' "eyes upon the street" thinking that when people take ownership of the public space and are able to observe their surroundings, a safer environment is created.

Newman focused on three elements that help create defensible space:

1. Territoriality:
   The capacity of the physical environment to create perceived zones of territorial influences.

2. Natural Surveillance:
   The capacity of physical design to provide natural surveillance opportunities for residents and their agents.

3. Image and Milieu:
   The capacity of design to influence the perception of a project's uniqueness, isolation, and stigma. (Newman 1972 pp. 51, 78,102)

Newman focuses on territorial influences of living units. He states that our western culture is steep in home ownership that "brings with it special rights and responsibilities…and the opportunity to reinforce existing societal values" (Newman 1972, p. 51). As housing developments become much denser such as row houses and high-rise apartments, individual territory becomes difficult to maintain. Dormitories at Sarah Lawrence College in Bronxville, NY are an example of human territoriality behavior. Newman conducted a comparative analysis of two sets of dormitories at the college. The older dormitories, which consist of three detached buildings, were found to have a communal sense according to the students interviewed. Also, the older dormitories were designed as smaller units that had a positive effect on students. Students felt they were members of a house and formed social bonds that aided in good social behavior, which reflected, in the well-kept appearance of the dorms. However, the newer dormitory had negative remarks. It was constructed as one long slab structure, which made students "feel isolated without any sense of community" (Newman 1972, p. 76). This unhealthy environment led to vandalism and disarray. In order to combat the problems of student housing, Sarah Lawrence College decided to convert the newer dormitory into classrooms and construct additional housing on campus with the same layout plan of the older successful dorms.

Newman agreed with Jacobs that it is important to have clear demarcation between public and private space and the ability for residents to naturally survey their surroundings. In addition to these crime prevention elements, Newman furthered the idea that physical design could affect behavior and the human perception.

Crime Prevention: Social Environment

Later theorist have expanded on the topic of crime prevention, coined Crime Prevention Through Environmental Design (CPTED) by Ray Jeffery in his book with the same title in 1977. Jeffery was a professor of criminology at Florida State University and hence his book, *Crime Prevention Through Environmental Design* (1977), focused on criminal psychology and behaviorism rather than the built environment. Jeffery states: "If we are to build a man-environment model, or an environment-organism-environment model, we must have a psychological model of behavior" (1977 p. 186). He examined studies of criminal behavior and concluded that there is a separation between offense areas and offender areas (where criminals live). Meaning, offenders are more likely to commit crimes against persons close to home and commit crimes against property away from their residence. Each type of crime found to have a maximum two-mile mobility radius among offenders.

In *Urban Danger: Life in a Neighborhood of Strangers* (2001), Sally Engle Merry, an anthropologist, writes of an eighteen month participant observation study at Dover Square housing project that found offenders rob or burglarize their own neighbors. Through interviews, Merry discovered residents in the low-income crime prone project, were strangers to one another. In order to protect themselves and their families from being a victim of crime, people often socialized within their own ethnic group and

confined themselves to their place of residence. According to Merry, “the social structure of Dover Square itself contributes to the high crime rate” (Merry 2001, p. 122). This anonymity allows the offender to observe his potential victims and learn their daily habits from the comfort of his living area. As mentioned, offenders typically commit crimes against property away from their residence. But when the social makeup of a neighborhood is of strangers, it allows an offender free range to commit criminal acts. Through the effects of anonymity, the community in which he or she lives will not identify the offender.

In order to deter crime, changes in the physical and social environment must be implemented. Criminal acts can be avoided when the offender feels “potential costs outweigh the potential benefits” (Lab 1988, p. 18). Timothy Crowe, a criminologist and author of *Crime Prevention Through Environmental Design* (1991), has consulted and trained law enforcement as well as provided crime prevention guidance for urban planning, space management and architectural design. Crowe believes the Crime Prevention Through Environmental Design (CPTED) concept is to create positive behavioral effects by manipulating the physical environment, which in turn, diminishes offender activity and the fear of crime. Based on Newman’s defensible space theory, the three primary principles in CPTED are access control, surveillance and territorial reinforcement. Access control is a design concept that limits access of unauthorized users. “Access control strategies are typically classified as: organized (e.g., guards), mechanical (e.g., locks), and natural (e.g., spatial definition)” (Crowe 1991, p. 30).

Surveillance is a design concept that facilitates legitimate users to observe suspicious persons. The result is potential offenders will avoid these areas because of a

perceived high risk of being seen. “Surveillance strategies are typically classified as organized (e.g., police patrol), mechanical (e.g., lighting), and natural (e.g., windows)” (Crowe 1991, p. 30).

Territorial reinforcement is a physical concept that creates a sense of a territorial zone for legitimate users. Offenders perceive the territorial zone as high risk. The combination of access control and surveillance can help to reinforce territorial response for legitimate users “(e.g., more security awareness, reporting, reacting)” (Crowe 1991, p. 31).

Nine major CPTED strategies are compiled as a guide to be applied to many environmental settings that will reduce crime and crime loss:

1. Provide clear border definition of controlled space.
2. Provide clearly marked transitional zones.
3. Relocation of gathering areas.
4. Place safe activities in unsafe locations.
5. Redesignate the use of space to provide natural barriers.
6. Improve scheduling of space.
7. Redesign or revamp space to increase the perception of natural surveillance.
8. Overcome distance and isolation (Crowe 1991, pp. 106-107).

These strategies can be combined in any number of ways depending on the environmental needs. The first and second strategies involve defining borders and transitional zones with fences, shrubbery, signs and color definition. This will clearly display to the user which zones are public, semi-public, semi-private and private. The environmental cues will effect behavior of users and displace persons who do not belong.

The third strategy is appropriating gathering space with natural surveillance and access control. “Gathering areas on campuses may be placed in positions that are out of

the view of undesired users to decrease the magnetic effect, or attraction" (Crowe 1991, p. 106).

Strategy four involves placing safe activities in appropriate locations. For instance, safe activities involve users that exhibit "controlling behaviors (e.g., staring)" which make abnormal users feel they are unsafe (Crowe 1991, p. 106). The fifth strategy involves separating conflicting activities that may be disruptive or fear producing. This can be achieved by natural barriers such as distance between the spaces and use of planting material.

In strategy sixth, improved scheduling of space is effective in producing a reduction of risk among users and heightens the perception of risk for abnormal users. The product of scheduling of space creates an environment of controlling behavior among users.

Strategy seven involves redesigning space "to increase the perception of natural surveillance" (Crowe 1991, p. 107). It is more effective to develop clear lines of sight and windows to let the user know he or she is being observed than to use "mechanical or organized (e.g., guards) methods" (Crowe 1991, p. 107). And in strategy eight, it is also important to be aware of problems with distance and isolation of users in an area. An example is to design restrooms and entryways with easy access to increase the perception of natural surveillance and control.

Crowe's CPTED applications to environmental settings are general guidelines that can be adapted to a particular setting. For example, poor design and use of outdoor gathering areas with sitting walls create easy hiding places for offenders and minimize natural surveillance. A terraced sitting area also lessens the ability for natural

surveillance, which makes abnormal users feel safer from being detected. Normal users may avoid these areas because they perceive the spaces as unsafe for lack of natural surveillance. To combat this problem, sitting rails may be used to provide increased natural surveillance. Terraced sitting areas should be oriented toward the street. Offenders will avoid the space, which will lessen vandalism and victimization. Normal users sensing increase natural surveillance will use the space more, and in return, hopefully displace abnormal users.

Natural surveillance also plays an important role in parking lot design. Poor placement of vegetation creates a natural barrier to natural surveillance for the parking attendants, employees and other normal users. An improved design and use is to place the parking attendant's kiosk in a position that allows for surveillance of all parking areas. Abnormal users will feel a greater risk of being detected and normal users will feel safer knowing the area has adequate surveillance. Multiple access points provide potential offenders with many escape routes. Placement of barricades to multiple entrances during low use times will control access to the parking lot.

The use of aesthetic treatments to public spaces will create a more inviting atmosphere to normal users. A well-designed site with coordinated furniture and amenity palette such as benches, litter receptacles, bike racks, bollards, paving surfaces, directional signs and other features will draw people to the site. When an area is poorly planned and maintenance is lacking, the public will avoid the space or move through it quickly. The result is a barren landscape void of human activities except for abnormal users who will claim the space for themselves. Using different paving material to signal a

space as semi-public to semi-private to private will aid the ‘eyes on the street’ to observe abnormal users in that space. The last thing a potential offender wants is to be noticed.

The use and placement of plants in the landscape can support or hinder potential offenders to victimize an area. “The public response to plantings as fear cues often determines whether a plant or other landscape element remains on a site” (Michael 2002, p. 24). Sean E. Michael, Assistant Professor of Landscape Architecture at Washington State University, states in his article *CPTED and Vegetation: A primer on planting design for law enforcement*, that crime is not evenly spread across sites. Yet, plantings in the landscape are equally scrutinized. The result is plants are being excessively left out or removed altogether “due to public and political concern over crime and the use of plants by criminals” (Michael 2002, p. 24). Michael goes on to say that landscape architects lack sufficient knowledge and understanding of “specific principles and techniques that surround crime patterning” which, makes it difficult for them to defend their design and use of planting material. By use of crime patterning, one can determine hot spots, where crime is concentrated, so that crime deterrent measures can be implemented.

Crime Data

Local police departments can provide crime data for planners in order to develop land use policies and standards that support legitimate activities in commercial or residential locations. Kimberly K. Hathaway, who is with the Washington Police Department, suggests preparing impact studies “to better understand the crime conditions in a locale that may affect development” (Zelinka 2001, p. 175). The impact study should include an analysis “of types of calls in the area, temporal distribution of such calls (by hour, day of the week, month, etc.), and a prediction of future crime trends based on

historical patterns" (Zelinka 2001, p. 175). Collection of crime data can be found in the following formats:

> Uniform Crime Reports (UCR): A computation of crimes voluntarily reported to the Federal Bureau of Investigation by city and county law enforcement agencies.
>
> Nation Crime Victimization Survey: A random survey of U.S. citizens available through the Bureau of Justice Statistics. The survey provides details on citizens who have been victims of crime.
>
> Calls for Service / Crime Analysis Information: Contains information available through local police departments on crime trends and of crime hot spots. According to Hathaway, this is "the best information resource for planners and designers as it specifically pertains to local geographic areas" (Zelinka 2001, p. 175).

Campus Security

The information pertaining specifically to campus crimes at postsecondary institutions in the U.S. is required by law to be available to the public. The Student Right to Know and Campus Security Act was signed into law in 1990. The "Act requires institutions participating in the student financial aid programs to disclose information about campus safety policies and procedures and to provide statistics concerning whether certain crimes took place on campus" (Lewis 1997, p. iii).

The crimes specified in the Campus Security Act are *violent crimes* defined by the Federal Bureau of Investigation as murder, forcible rape, robbery and aggravated assault; *nonforcible sex offenses* and *property crimes* which are defined as burglary and motor vehicle theft (Lewis 1997, p. 10).

A survey on campus crime at postsecondary educational institutions was conducted in 1996 by the National Center for Education Statistics (Lewis 1997). Out of a total of 1,303 institutions asked to provide information for the study, 1,218 responded. This included postsecondary institutions of less than 2 years, 2 year and 4-year programs.

The survey examined campus crime reports for 1992, 1993 and 1994 (see Figure 1). Violent crimes were higher in 1992 with 9,850 incidents reported versus only 9,550 in 1994. Nonforcible sex offenses fluctuated each year from 1,100 in 1992 to 1,370 in 1993 and back down to 1,280 in 1994. Property crimes dropped each year from 39,300 in 1992 to 38,510 in 1993 and down to 37,780 in 1994 (Lewis 1997, p. 13).

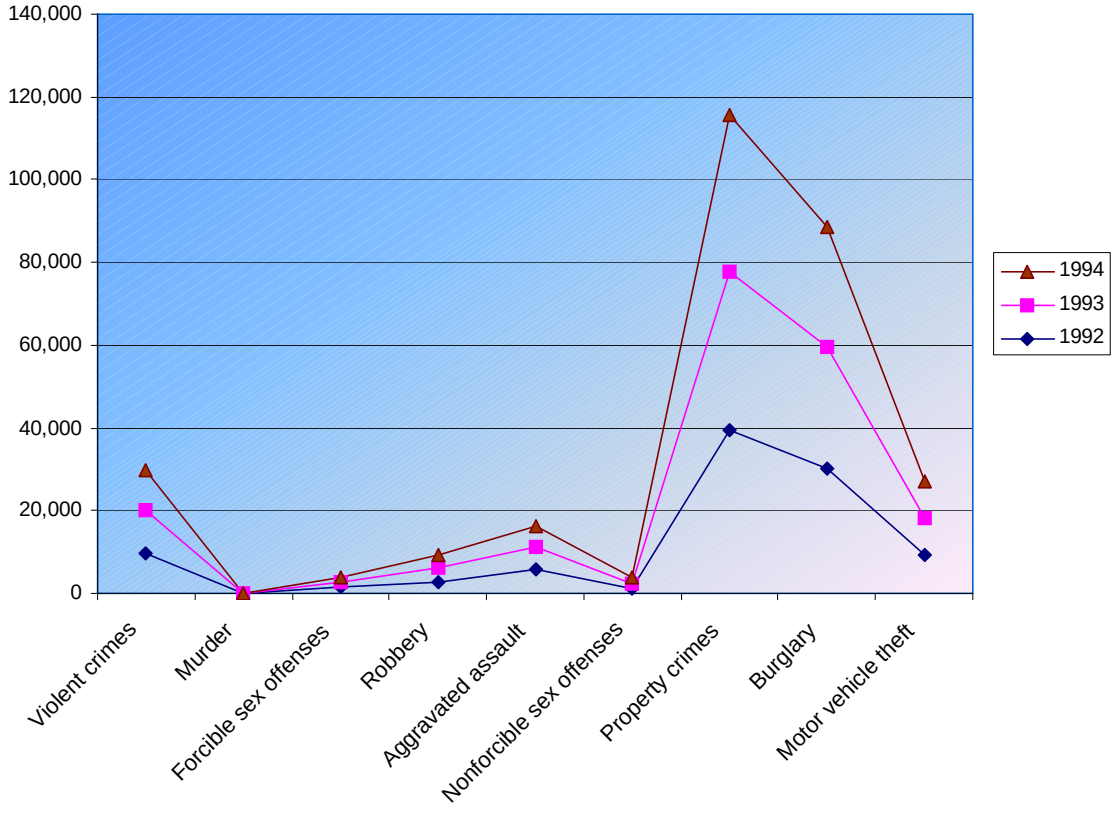


Figure 1. Estimated total number of specified criminal offenses reported by postsecondary institutions for 1992, 1993, and 1994

According to authors Michael Smith and Richard Fossey in *Crime on Campus* (1995), there is a concern for inaccuracies in the total number of crimes. They write the reason is three fold. Firstly, studies by criminologists have found "that only about one

half of the felonies that occur in America are reported to police" (Smith and Fossey 1995, p. 13). Secondly, crime numbers are low because crimes are only reported within the formal campus boundary. Yet, students live and socialize off campus and crimes that are committed in these locations go unreported by the institutions. Thirdly, many question the accuracy of crimes reported by the universities. "Image-conscious authorities" are believed to shade down or intentionally understate crimes (Smith and Fossey 1995, p.13).

Gathering information from local police departments and more specifically, postsecondary institutions on crime data reports will aid planners and others to design safer campuses across the nation. By providing hot spots of offender activities, planners can pinpoint safety measures. To complete a crime analysis of a college, one should take into account the affect of crime on the human psyche. Students who fear attack limit their mobility on campus. Campuses are designed for ease of movement, which makes an ideal environment for offenders to exit quickly. A diverse student population also aids the offender to go unnoticed. Students spend much of their time on campus and may see security problems that the university officials have missed. Whether real or imagined, perceived fear of crime effects the campus environment. Many studies have been conducted on fear of crime in housing projects (Newman 1972) and urban centers (Jacobs 1961) but few studies have focused on student perception of fear on college campus.

Perception of Safety Studies

Two studies that focused on student perception and the campus environment approached the subject of fear of crime in different ways. Kristen Day researched women's fear of sexual assault and Bonnie Fisher and Jack Nasar examined fear of crime by both male and female students "in relation to exterior site features on a college

campus" (Fisher and Nasar 1992, p. 35). Each study explored perceived danger from offenders within exterior locations on campus.

Kristen Day's article, *Strangers in the Night: Women's Fear of Sexual Assault on Urban College Campuses* (1999), studied two urban university campuses in a Midwestern U.S. city. All Saints University (ASU) is a private, religious, liberal arts school comprised of 12,000 graduate and undergraduate students, and City Engineering School (CES) consist of 3,000 students. Female students, about 24% attend CES while more than 50% of female students attend ASU. Each university is located near the same central business district.

According to Day, fear of sexual assault is widespread and detrimental. "Women fear rape more than any other crime except murder" (Brodyaga 1975, quoted in Day 1999, p. 290). Yet, according to the crime reports compiled by All Saints and City Engineering Universities Public Safety Departments (1991), no rapes were reported. This is not to say that sexual assaults did not occur but that "the scope and nature of sexual assault may be intentionally obscured to preserve an image of safety" (Day 1999, p. 290). Reports by the media and women who knew someone personally who has been a victim of sexual assault, heightens the fear women on campus.

Day attempts to understand the "physical and social cues associated with women's fear and absence of fear of sexual assault on and near campus" by conducting a participant photography study, open-ended interviews and a brief questionnaire (Day 1999, p. 290). The participant photography study asked students to photograph exterior spaces they perceived to be safe and unsafe. All Saint student participants were obtained by solicitation at the library, a meeting of resident assistants, and a snowball sampling.

City Engineering participants were gathered by solicitation at student orientation, a snowball sampling, and via mail and telephone. Three primary types of physical and social cues for fear and safety emerged:

1. Fear of stranger assault by surprise or entrapment.
2. Fear of strange people and places.
3. Fear of social and physical incivilities (Day 1999, p. 294).

An All Saints student, who feared stranger assault by surprise or entrapment, worried about an offender hiding behind "huge bushes" at night because a particular area was not lit. Her fear may be warranted because offenders prefer sites that provide a hiding place, which allows them to observe potential victims, and wait for the opportunity to strike. Thus, women fearing an attack will avoid these areas. The more women know about a location layout the safer they feel. "Fear is conveyed by both objective physical design and by one's understanding of it" (Day 1999, p. 299). A clear design layout allows people to travel to their destination without confusion and in turn makes the experience less stressful. The study also revealed women feel safer around other students, faculty and staff, and places where they can be found. This agrees with Jacobs and Newman's findings that natural surveillance ("eyes on the street") creates a safer environment that also makes people feel safer. Negative feelings were expressed by students for people who were different from themselves (i.e. homeless and low-income population in the surrounding area). One student surveyed at All Saints University explained:

> When you come here, you go through an orientation and they stress safety… I think that just left the impression that, boy, you're outside five minutes by yourself, you're gonna get jumped, you're gonna get raped, you're gonna have everything snatched from you. And when you see that it doesn't happen and that

> there aren't gremlins around every corner, and you see the areas that you feel safe in, you just stick to those areas (Day 1999, p. 305).

Kristen Day recommends that school officials must reexamine how sexual assault is depicted. Schools should inform students about date rape rather than focusing on assault by strangers in exterior locations. The goal here is "to prevent those assaults most likely to occur and to increase women's comfort in the outdoors" (Day 1999, p. 308). Developing a highly visible crime prevention strategy that deals with physical design and non-design issues, such as emergency phones and shuttle vans, will lessen the fear factor among students and parents alike. Also, improving race relations will reduce fear of sexual assault among women by low income and ethnic minority men. By developing programs that introduce students to surrounding urban neighborhoods, fear of the unknown minority population will lessen.

In the article, *Fear of Crime in Relation to Three Exterior Site Features: Prospect, Refuge, and Escape* (1992), authors Bonnie Fisher and Jack Nasar examined "fear of crime in relation to exterior site features on a college campus" (Fisher and Nasar 1992, p. 35). The exterior site at the Wexner Center for the Visual Arts at Ohio State University was studied so that the authors could test Appleton's (1975) *prospect* and *refuge* theory. *Prospect* refers to an open view and *refuge* to protection. People feel safest when they can view their surroundings for potential danger (prospect) and also feel safe when hiding spaces are minimized for offenders to wait for their victims (refuge). Together "such places aid survival from animate hazards by offering an observation point to see, to react, and if necessary, to defend; as well as, a protective space to keep oneself from being harmed" (Fisher and Nasar 1992, p. 37). Unfortunately, offenders desire

refuge to hide out of sight from their potential victims. In addition to Appleton's (1975) theory of prospect and refuge, Fisher and Nasar incorporate opportunity for escape into the equation. In order to feel safe, people need to feel they can escape if threatened and find others to help them in their time of need.

Unlike the previous study by Day, Fisher and Nasar developed a hypothesis from the results of eight exterior test areas around the Wexner Center. The hypothesis states that fear of crime in relation to exterior site features is lowest for *low prospect* and *high refuge* areas, highest for *high prospect* and *low refuge* areas, and in the mid range for other areas. It is also hypothesized that women, and victims of previous crimes, fear exterior spaces after dark.

To obtain a more accurate result to test their hypothesis, three different studies with varying methods were employed at the Wexner Center site. The first study conducted was a written survey that asked randomly selected test subjects (166 students) their feelings of safety, day and night, in eight areas that were presented on a site plan. The results partially supported the proposal that high prospect along with escape, and low refuge produced the safest feelings. The result that differed was the idea that victims of previous crimes would perceive night as less safe than daytime. The thought that women fear night more than men was found to be true in the study.

The second survey was conducted on site to obtain female responses after dark. The survey was intended to reinforce their finding that women fear outdoor areas more after dark. The results yielded some differences between the response to the site plan survey and the second on site survey. "The studies confirm that verbal ratings of safety in

relation to the proximate environment were reduced by areas with refuge, low prospect, and poor escape" (Fisher and Nasar 1992, p. 57).

To test whether night lighting influenced the safety ratings, a study was given to nine graduate students in planning and landscape architecture. They were asked to visit the Wexner Center site after dark and rate "each area on a 5-point bipolar scale (1 = well lit, 5 = dark)" (Fisher and Nasar 1992, p. 57). Comparisons between the darkness scores to the safety ratings suggest lighting was not a significant factor in safety differences. Areas with best-lit ratings were considered least safe. If lighting alone makes people feel safe then the findings would have differed. Yet, the fact that the area was rated as low prospect and moderate refuge played a more important role in how a person perceives his or her surroundings than did lighting alone. Remember, high prospect and low refuge areas were found to have the highest safety rating among participants.

The third and final study employed an observation of behavior survey "to find out whether the survey findings generalize to spatial behavior" (Fisher and Nasar 1992, p. 58). The observations of pedestrian behavior on 87 different occasions confirmed previous findings that people avoided low prospect-high refuge areas. The study also found people avoided walking near these areas for fear of safety especially after dark.

The approach to studying human perception varied greatly in the studies by Fisher and Nasar, *Fear of Crime in Relation to Three Exterior Site Features: Prospect, Refuge, and Escape*, and Day, *Strangers in the Night: Women's Fear of Sexual Assault*. Yet, they had similar results with female participants in regard to their fear of places that allow offenders to hide (refuge). The two studies also found people avoid areas that are perceived as unsafe.

Conclusion

The literature review demonstrates the complexity of understanding perception and combating crime whether in a major urban city or on a college campus. Researchers repeatedly mentioned the importance for the public to perceive a site as being safe; as well as, actually being safe from criminal activities. In order to implement crime prevention techniques, it is imperative to gather information from many sources to fully understand the environmental setting.

Jane Jacobs and Oscar Newman were pioneers in the study of urban planning in relation to issues of safety. One of the main qualities brought forth by Jacobs and Newman that makes a safer outdoor setting is clear demarcation of public and private space. The physical design must also provide “eyes upon the street” which creates a sense of ownership of the public space. The need for constant users also aids to create more effective “eyes upon the street”. An additional idea introduced by Newman was the physical design and placement of a project could be stigmatized by its location and in turn affect the behavior of users.

In order to design safety features for a specific site, it is important to understand the crimes that plague the area. Local police departments can provide crime data reports for planners in order for them to pinpoint hot spots of offender activities and develop safety measures that will deter crime.

Recent planners have added to the knowledge of crime prevention and perception of safety in the landscape with onsite surveys. Kristen Day’s safety study among female college students found that a clear design in the outdoor environment eases the fear among women. The easier it is for students to find their way on campus the safer they

feel. Bonnie Fisher and Jack Nasar also conducted a study on a college campus and found people feel safest when there is *high prospect* along with the ability for escape and *low refuge*.

The literature brought forth has shown that planners and designers can improve the public perception of a particular site by conducting surveys and by honing in on what is creating the fear among users. Whether real or imagined, planners can design or retrofit an area with improved landscape fixtures that will foster positive psychological feeling of safety.

The next chapter introduces the process of evaluating and understanding the perception of safety by students on the Louisiana State University campus in Baton Rouge, Louisiana. An overview of the history of the LSU campus and the surrounding area will be described along with the exterior environmental site features that interconnect to create this southern campus.

CHAPTER 3

METHODOLOGY

A survey was conducted to identify perceived safe and unsafe exterior sites on the LSU campus. The findings were compared to a crime map to see if the perceptions hold true to the threat of actual crime. Next, four determining factors of safe design were applied to the survey results of the two "most unsafe" and two "most safe" areas. The study was conducted to better understand how people perceive their surroundings and to incorporate the findings of perception of safety to improve design and planning decisions for the LSU campus.

Subjects

The survey required subjects to identify perceived "most unsafe" and "most safe" outdoor areas on the LSU campus. Subjects were randomly selected from the LSU student population in front of the Student Union and from the Quadrangle area. Students were selected as test subjects to ensure a reasonable knowledge of the arrangement of the campus in order to obtain an accurate response to the survey.

Site Selection

The LSU campus is located on 2,000 acres in the capital city of Baton Rouge, Louisiana. The Mississippi River flanks the western side of campus; the northern edge is a low-income community mixed with small businesses; and the remainder is surrounded by middle class neighborhoods. There are more than 250 buildings on the LSU campus that are connected by a web of pedestrian pathways and seating areas. The entire campus was incorporated into the survey to obtain an overall perception of safety at LSU.

Survey Instrument

A survey was developed to obtain a reading of student perception of safety on the LSU campus (see Appendix: Survey). The purpose of the survey was to obtain a measurable reading of the most perceived unsafe and safe locations on the campus and to identify attributes that come together for an area to be perceived unsafe or safe.

A consent form, which preceded the survey, explained the purpose of the study and described what would be asked of the subject if they chose to participate in the study. The survey began by asking each subject to circle each of the following:

1. Male, Female
2. Undergraduate, Graduate, PhD
3. On campus housing, Off campus housing
4. Drive to campus, walk or bike to campus, Ride bus to campus

The survey went on to ask each subject to review a LSU map and circle two outdoor areas that they perceived as “most unsafe” and two areas they perceived as “most safe”. To gain more information on why these locations were selected, subjects were asked to name the locations chosen, explain why they considered the locations safe or unsafe and identify changes they would make to improve the unsafe areas.

Four sites repeatedly mentioned by the students surveyed were chosen for further study. The two areas perceived “most safe” by the students were the Student Union and the Quadrangle; and the areas perceived “most unsafe” were the Hart and Kirby Smith parking lots and the campus lake area.

Crime Map

The crime map was created to be compared to student survey results of perceived “most unsafe” and “most safe” areas on the LSU campus. The crime map is a compilation of crimes committed on campus for the Fall 2002 and Spring 2003

semesters. The information contained on the map was collected from LSU's annual security report available online at www.lsu.edu/police. It will be used to analyze whether student perceptions of safe and unsafe areas are justified. The following crimes are noted on the crime map:

Armed Robbery	Simple Assault	Burglary
Sexual Battery	Burglary of Residence	Burglary of Vehicle
Aggravated Battery	Motor Vehicle Theft	Theft
Simple Battery		

Because the exact position within a particular location was not noted in the crime report, the map shows crimes as clusters in the center of buildings and parking lots. Also, if the address of the reported crime could not be located on the map then the crime was not noted. Crime statistics compiled for the year 2002 and 2003 on the LSU campus are as follows:

Table 1. Crime Statistics of criminal offenses reported on the LSU campus for 2002 and 2003

Criminal Offense	2002	2003
Murder/Non-Negligent Homicide	0	0
Forcible Rape/Sexual Assault	1	2
Robbery	11	1
Aggravated Assault	8	11
Burglary	97	85
Motor Vehicle Theft	19	22
Larceny-Theft	655	441
	791	562

Criteria for Safe Space

The literature review has shown the main qualities that have repeatedly emerged in previous research studies. Jane Jacobs and Oscar Newman have similar findings for crime prevention and people's perception of space. Jacobs coined the saying "eyes on the street" to express what now is referred to as natural surveillance by Newman and others.

"Constant users" was mention by Jacobs as one of the main qualities needed to have a successful city street. A more recent planner, Kristen Day, has discovered through her research of college campuses that a "clear design" promotes positive feelings because people can find their way through the landscape and are not left confused and uncertain of their surroundings. Urban planners, Bonnie Fisher and Jack Nasar, have contributed their findings that people feel safest when there is *high prospect* along with the ability for escape and *low refuge*.

From these researchers, four determining factors were identified to promote a safe design and positive perception of safety. These factors were:

1. Natural Surveillance:
   The physical design must provide the ability for the public to survey their surroundings.

2. Constant Users:
   The outdoor site must have at least 5 or more constant users to add to the natural surveillance of an area and to make the site seem user friendly.

3. Clear Design:
   The area must have good circulation with well-designed pedestrian pathways and seating space. The site must have clear way finding features so that users can easily find their way around the vicinity.

4. *High Prospect* (line of sight), *Low Refuge* (hiding place for offenders), and Escape (for users):
   Fear of crime in relation to exterior site features is highest for *low prospect* and *high refuge* areas, and lowest for *high prospect* and *low refuge* areas.

The methodology used to study perception of safety in the campus environment is a step-by-step process that aims to pinpoint the attributes that lead students to perceive an area as unsafe or safe. The findings of the perception of safety survey, along with the comparison to the crime map, and the qualities of safe landscape will be presented in the following chapter.

CHAPTER 4

RESULTS

Survey Results

The survey was used to analyze student perception of safety on the LSU campus. From the student population, 38 subjects were randomly sampled, out of which 20 were female and 18 male. Only seven students, six being female, were found to live in campus housing, while the remaining 31 students live off campus. A large number of students, 25 of the 38 surveyed, commute to LSU by car. The rest were split between using the public transit system and walking or riding a bike to campus.

Subjects participating in the survey were asked to circle two outdoor areas on campus they perceive as "most unsafe" and "most safe." The results dramatically illustrated the perceived unsafe and safe areas on campus. The perceived "most unsafe" locations (see Figure 2,4) were scattered across the LSU campus while the perceived "most safe" locations (see Figure 3,5) were concentrated in two areas. The areas perceived "most unsafe" on campus chosen by male and female students were:

1. Kirby Smith and Hart parking lots
2. Campus Lake area
3. Student Recreational Sports Complex parking lots
4. Alex Box lot
5. ATM's at the Union
6. Greek Theatre/Enchanted Forest
7. N. of Stadium
8. S. Stadium Lot

The areas perceived "most safe" on campus were:

1. Quadrangle
2. Union
3. Parade Ground

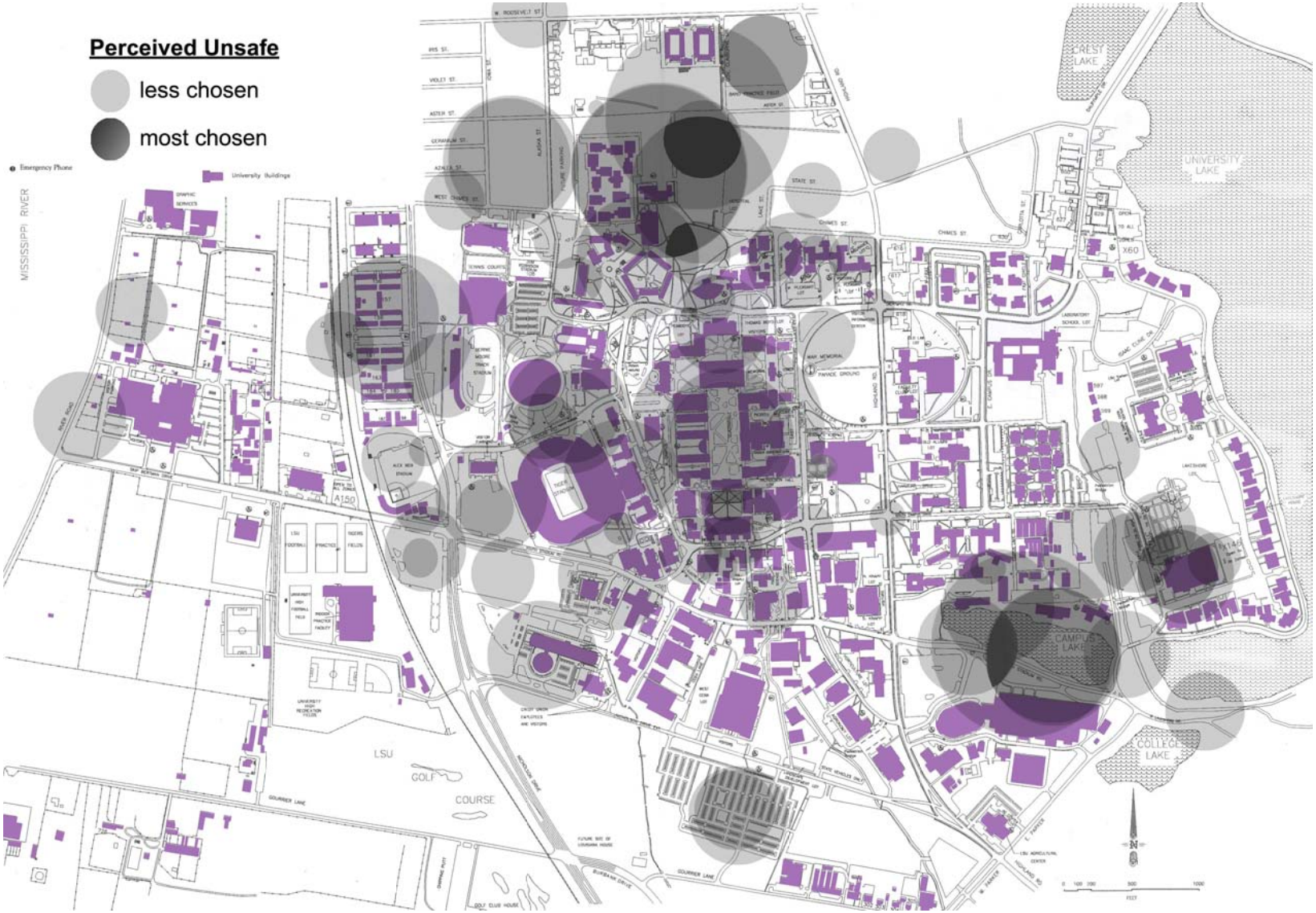


Figure 2. Perceived "most unsafe" areas circled by subjects on the LSU campus

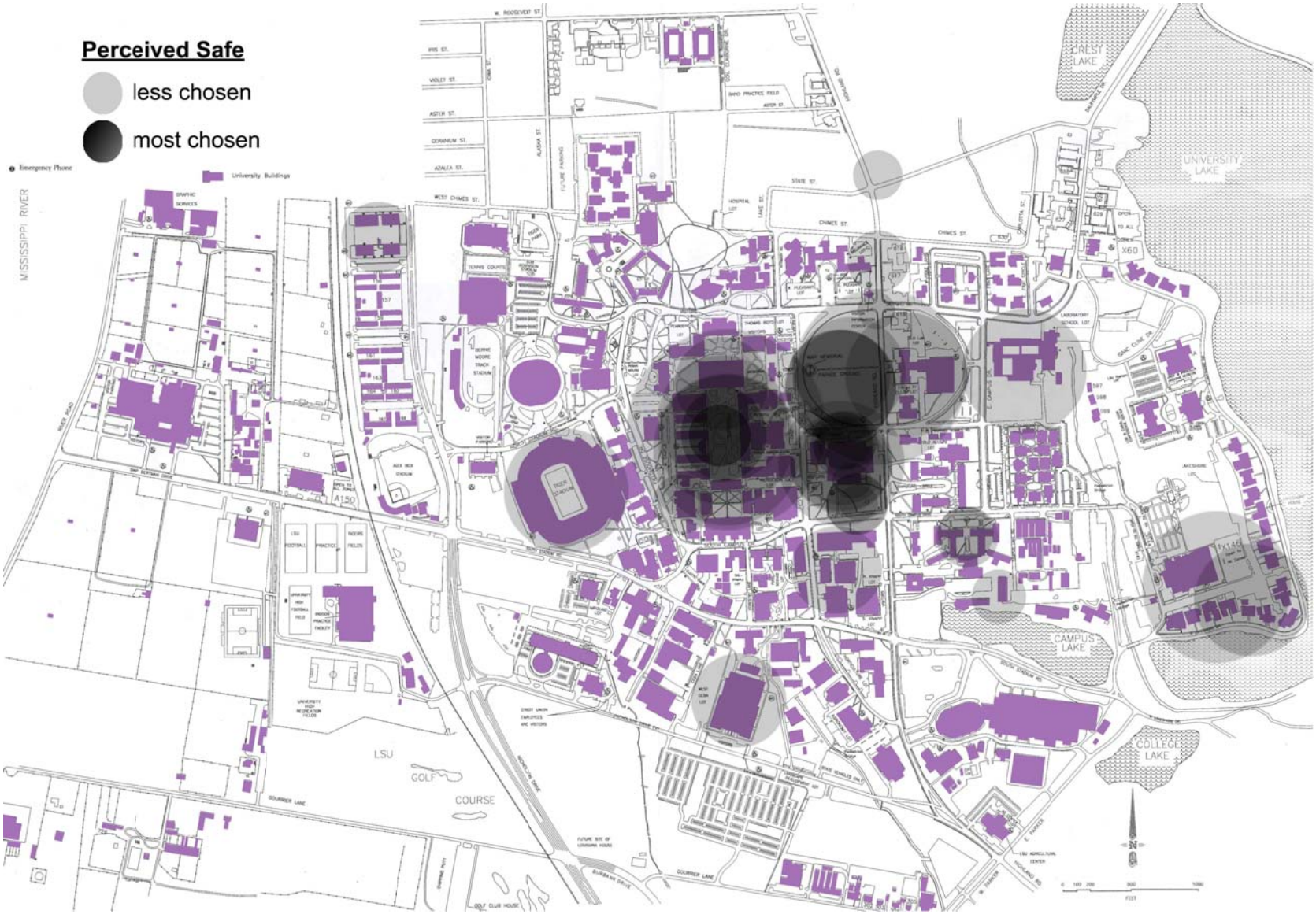
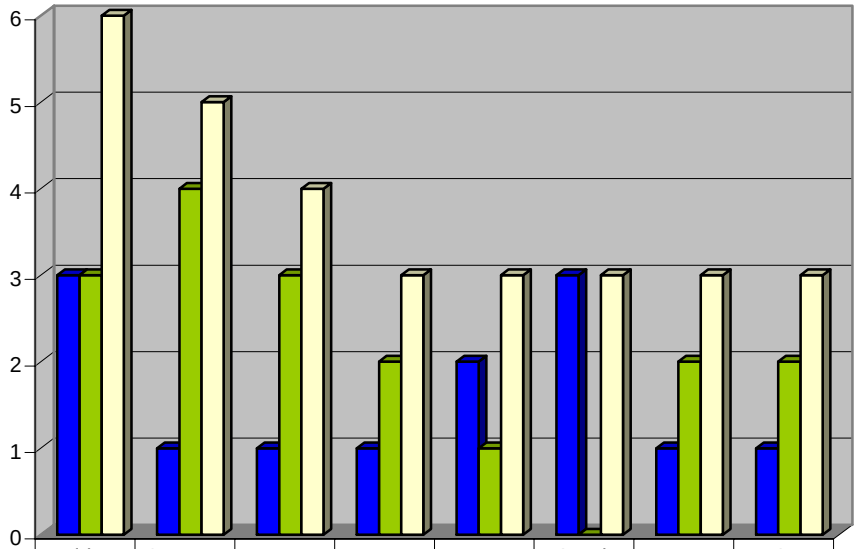
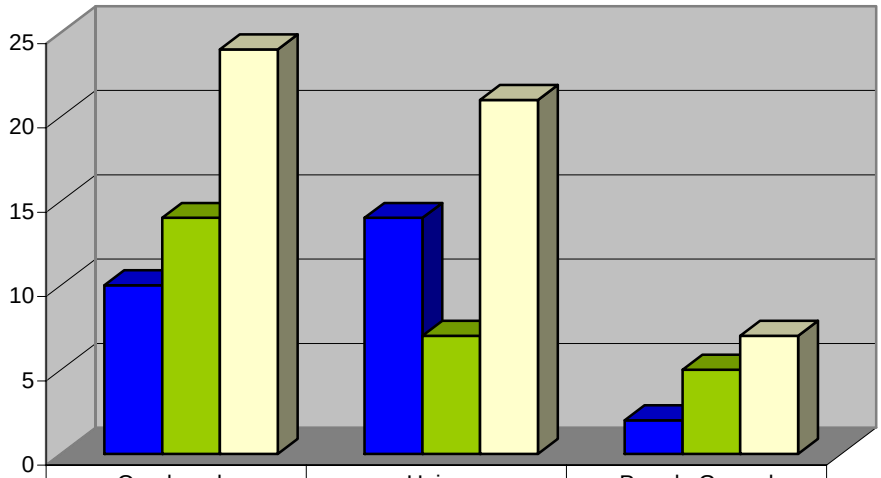


Figure 3. Perceived "most safe" areas circled by subjects on the LSU campus



	Kirby Smith/ Hart lots	Campus Lake Area	Rec Center	Alex Box Lot	ATMs @ Union	Greek Th/Enchanted For.	N. of Stadium	S. Stadium Lot
Male / Unsafe	3	1	1	1	2	3	1	1
Female / Unsafe	3	4	3	2	1	0	2	2
total	6	5	4	3	3	3	3	3

Figure 4. Perceived "Most Unsafe"



	Quadrangle	Union	Parade Ground
Male / Safe	10	14	2
Female / Safe	14	7	5
Total	24	21	7

Figure 5. Perceived "Most Safe"

The two areas perceived by the subjects to be “most unsafe” were the Kirby Smith and Hart parking lots and the Campus Lake area. The parking facilities are adjacent to one another and are on the northern edge of campus. Kirby Smith parking lot (zone 3-Resident) is reserved for students living in Kirby Smith Hall, which is an all male dormitory with a capacity of 702 residents. Adjacent to the Kirby Smith parking lot is the Hart parking lot (zone 1-Commuter), which is reserved for students who commute to campus each day. Students overwhelmingly mentioned these areas as unsafe for lack of lighting at night and lack of users within the space.

Another location students perceived as “most unsafe,” was the Campus Lake area. The vicinity north of the lake is lined with three residential halls: Blake Hall, Herget Hall and Julian Miller Hall. McVoy Hall and Acadian Hall are also located in this area but are not directly on the lake. Students are allowed to park alongside the southern edge of Campus Lake and South Stadium Road. From that location, they walk along the newly constructed pathway that leads to the dormitories. A female subject living on campus named the Campus Lake area as unsafe stating, “Parking by the [Campus] lake and having to walk to the dorm is very unsafe, especially at night.” Another female subject mentioned lack of lighting “and not many people around” as contributing factors for the unsafe environment.

In contrast to the perceived “most unsafe” outdoor areas on campus, the perceived “most safe” locations were concentrated in two areas, the Quadrangle and the Union. These sites are located in the heart of campus and are relatively close to one another. Both male and female subjects felt safe in the Quadrangle because many people congregate in this area, and it is well lit at night. A male subject’s reason for perceiving

the Quadrangle as "most safe" said, "people seem to always be there and it seems less threatening."

The Union is constantly bustling with activity. Many people on campus are drawn to the Union each day to shop at the LSU Bookstore, visit the Art Gallery and get a meal. The newly remodeled main entrance to the Union is well designed and inviting to visitors. Adequate space is provided for people to gather at concrete benches along the pathways and the area has sufficient light at night.

Crime Map Comparison Results

The crime map is a compilation of crimes reported on the LSU campus for the Fall 2002 and Spring 2003 semesters (see Figure 6). (The crime reports for 2004 were not published at the time of this study). The crime data was collected from LSU's online annual security report. Symbols were created for each type of crime and noted on the crime map. The purpose of this is to compare and analyze survey results of the two perceived "most unsafe" and the two "most safe" areas on campus to actual crimes that have occurred in previous semesters.

Kirby Smith and Hart parking lots were perceived as "most unsafe" by subjects and had more than 10 reported crimes of vehicle burglaries each. One armed robbery was reported to have taken place in the Hart parking lot in the Fall 2002. Subjects in the survey complained the area was poorly lit at night and some mentioned the lack of people in the area. One student stated, "Kirby Smith is close to [a] neighborhood where I and several people have experienced both thefts and assault." Student perception of the lack of safety is justified in this location when compared to the crime map.

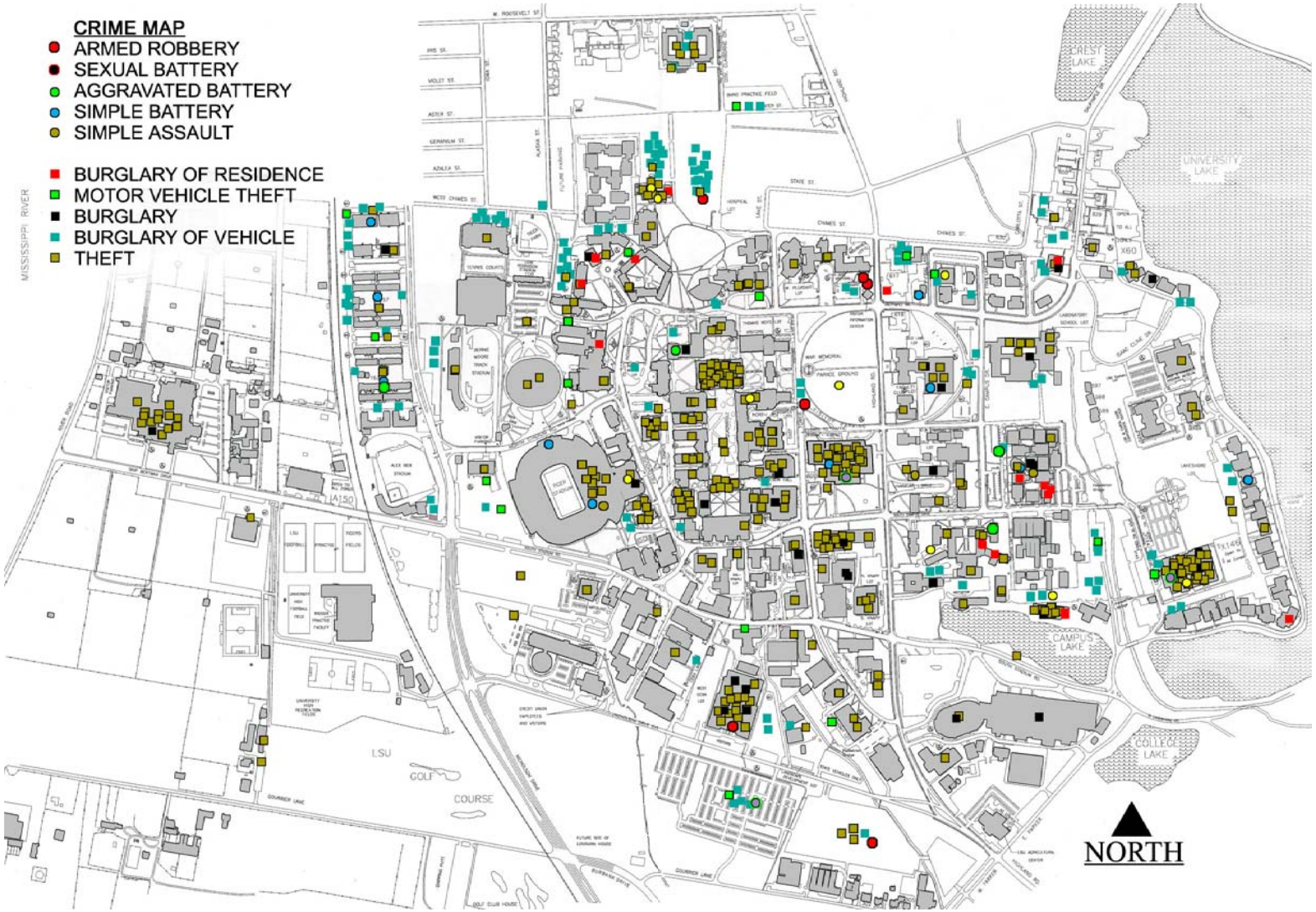


Figure 6. Crime Map of the LSU campus for Fall 2002 & Spring 2003 semester

The Campus Lake area was perceived unsafe, coming in second to Kirby Smith and Hart parking lots. This is not in line with actual crimes reported at exterior areas immediately adjacent to the lake. Only one theft was reported on the south side of Campus Lake along S. Stadium Road. Yet, Herget Hall, a coed dormitory located along the north edge of the lake with a capacity of 457, had eight crimes reported within the building. Two were burglary of residence; one burglary and the remaining were thefts. The rest of the resident halls faired much better with only one crime reported in each of the buildings.

The majority of crimes occurring outdoors are located in the resident parking area north of the resident halls. There were 11 burglary of vehicles reported in resident parking and one motor vehicle theft in the Julian Miller Extension parking lot, which is farthest away from the buildings. The resident parking area is not immediately adjacent to the Campus Lake; yet, the parking area to the north might influence the student perception of the area as being unsafe.

When commenting on the Union, most subjects mentioned “constant users” and illumination at night as the reasons they considered it safe. As the crime map indicates, the area around the Union is virtually crime free while many thefts were reported from within the Union. However, this did not deter subjects in the survey from finding the area around the Union safe. This inconsistency could be because merchants from within the Union are the ones affected by crime rather than students. Thus, those persons on campus are unaware of crimes reported in the Union.

The Middleton Library, located at the northern edge of the Quadrangle, also had many thefts reported inside the building. Yet, the Quadrangle was perceived as “most

safe." The exterior sites for each location had very few crimes. This could be the result of constant use, which provides the ability for natural surveillance by users, and well-placed lighting.

One male subject who commented on both the Quadrangle and the Union outdoor spaces stated, "People seem to always be there and it seems less threatening." When asked why she felt the Quadrangle and Union were safe, a female subject stated, "because there is always people around and there are enough call boxes for security." The survey showed students overwhelmingly feel safest when people are around. This may also reflect in the lack of crimes that have taken place within the landscape in these areas. Offenders avoid areas where they can be detected and as one student noted, "if there's something wrong going on everybody can see and help."

Criteria for Safe Space Results

Four determining factors, that promote safe design and positive perception of safety in exterior site features, were gathered from results of previous research conducted by urban planners across the country. These factors are **natural surveillance**, **constant users**, **clear design** and the last is a combination of ***high prospect*** (line of sight), ***low refuge*** (hiding place for offenders) and **escape** (for users). They will be applied to the following four sites:

Perceived "Most Unsafe"	Perceived "Most Safe"
1. Kirby Smith / Hart Parking	1. Quadrangle
2. Campus Lake Area	2. Union

Kirby Smith / Hart Parking Lots

Natural Surveillance

The Kirby Smith and adjacent Hart parking lots offer limited natural surveillance during the day and even less at night because parked cars obstruct the view (see Figures 7,8). The surrounding buildings, Kirby Smith Hall and two privately owned housing developments, provide some surveillance from the occupants within the structures. However, it is unknown whether these occupants would respond to or report suspicious persons in the parking lot areas.

Constant Users

As discussed earlier, there must be at least five or more "constant users" in an area to make it feel safe and user friendly. From personal onsite observation during the day, students were seen coming and going from the parking areas, which were full at the time. By design, parking lots do not have "constant users" staying onsite for any period of time. With the lack of eyes on the parking lots and being located on the edge of campus, the parking areas make users feel unsafe.

Clear Design

In general, the Kirby Smith and Hart parking lots do not have well-designed pedestrian pathways within the parking area. Users are left to wander through the parked cars to get to the parking lot's edge. The main access to campus from the Hart parking lot is through a wooded area known as the Enchanted Forest and then around the Greek Theatre. Informational signs are visible from this area of the Hart parking lot. One denotes the Greek Theatre and the other a map of the LSU campus with words 'you are here' and an arrow pointing to the site. For users new to campus this can be very helpful.

The bright yellow Call Box that flickers a blue light at night is designed to directly connect a person to campus police in an emergency. Only one Call Box is located between the two parking lots for persons who need police assistance. Another box is placed in front of Kirby Smith Hall. A person fearing safety has a long way to walk or run to reach either Call Box.

Prospect, Refuge and Escape

The area was observed to have *low prospect* for users. Parked cars block the line of sight for users and in turn offer offenders a place to hide behind vehicles creating *high refuge* for them to stalk their victims. Ideally, a safe design has *high prospect* for the user to view their surroundings, *low refuge* for offenders to hide, and escape for the victim.

Summary

The Kirby Smith and Hart parking lots received a high number of "most unsafe" perceptions by subjects, which was supported by crimes reported in this area. The lack of "constant users" and natural surveillance in the area along with *high refuge* for offenders, validates student perception of the lack of safety.

Subjects suggested adding more lighting to the area and police patrols. A new emergency Call Box located within the Hart lot would make access to campus police easier. People in the space would feel somewhat safer knowing they have direct access to police assistance. In addition, a kiosk for security at the main entrance to the parking lot along Aster Street would deter crime by providing natural surveillance and improving perception of safety.

Campus Lake Area

The Campus Lake area actually encompasses three distinct areas: (1) parking

Figure 7. Kirby Smith parking lot

Figure 8. Hart parking lot

along South Stadium Road (south of the lake); (2) the rear of the resident halls (north of the lake); and (3) resident parking in front of resident halls (see Figures 9,10,11).

Natural Surveillance

The parking area along the lake provides natural surveillance around the lake's edge, but the parked cars along the road obscures surveillance. Parking along the South Stadium Road is reserved for students who live on campus (zone 3-Resident). Students who choose to park here must walk along the pathways flanking either side of the lake to reach the resident halls. Users can view the surroundings as they walk along the pathway.

The north edge of the lake backs up to the rear of the resident halls. Natural surveillance is good. Students were observed sitting outside during the day at seating areas provided in the back of each of the resident halls. At night, the area is lit around the buildings that allow residents to survey the area. The area behind Blake Hall was less lit and thus lessens one's ability to observe the surroundings.

Constant Users

"Constant users" were observed using the site during the day along the north edge of Campus Lake behind the resident halls. Approximately ten students were seated in shaded back patios of the resident halls, which provide a view of the lake. However, less than 5 people were observed using the areas behind the halls after dark. The area south of Campus Lake had even less "constant users" during the day or at night.

Clear Design

A new concrete pedestrian pathway and lighting has recently been installed along the south edge of Campus Lake. Buildings are clearly marked and walkways with ample lighting at night are located along the entrances of the resident halls.

Prospect, Refuge and Escape

Moderate to *low prospect* and *refuge* was observed in the Campus Lake area. Moderate *prospect* was observed behind the resident halls along the lake edge due to vegetation obstructing views. In some areas, the vegetation could provide a hiding place for offenders. *Low prospect* was found in the resident parking lots in front of the resident halls due to parked cars obscuring the line of sight for users. The Miller extension lot is farthest from the resident halls and may provide less escape for users in that area. Also, escape may be perceived limited by a person walking around the sides of the lake due to lack of "constant users" in the area who could help in an emergency.

Summary

The Campus Lake area encompasses three areas with varying degrees of safety. Student's fear of safety around the lake's edge was not verified by crimes reported. Yet, the crime map verified fears north of the lake in the resident parking lots.

Students suggest better lighting around the lake but personal onsite observations found the area to be well illuminated at night. However, better lighting is needed in the Julian Miller extension parking area. This may deter crime at night and improve perception of safety.

Figure 9. View from north side of Campus Lake

Figure 10. Area north of Campus Lake behind Miller Hall

Figure 11. Parking in front of Miller Hall

Quadrangle

Natural Surveillance

The Quadrangle is a large open area with many pedestrian pathways that crisscross the site (see Figure 12). There is moderate natural surveillance within the site because azaleas lining the Quadrangle obscure the view for users. The trees, mature live oaks and lace bark elms; have been pruned in such a way that provides the ability to observe the surroundings. Academic buildings lining the Quadrangle provide added surveillance from people within the structures looking out into the landscape.

Constant Users

During a school day an estimated 60 or more people, mainly students, use the Quadrangle. Numerous benches placed throughout the site allow people a place to take a break, eat lunch or get in a quick study between classes. The Quadrangle area has adequate lighting. Users were observed congregating at night in front of the Middleton Library located at one end of the Quadrangle. The library is open until 2:00 am on weeknights and many students take advantage of the late hours in order to get class work completed.

Clear Design

The Quadrangle provides good circulation for pedestrian traffic with numerous sidewalks. However, the buildings surrounding the Quadrangle are not clearly marked which makes it difficult for users to find their way.

Prospect, Refuge and Escape

The site provides *moderate prospect* and *refuge* due to shrubs obstructing ones view. The vegetation, while providing intimate outdoor spaces in the Quadrangle for

users, may limit a user's ability to prospect their surroundings. In addition, it may provide offenders a place to hide. Users to the site have many escape routes out of the Quadrangle through passageways between buildings and may find help by entering the academic buildings surrounding the site.

Summary

Even though the Quadrangle is considered a safe area, there are still things that could be done to improve the location further. Locating a sign by the Middleton Library containing a map of the campus and a detailed map of the buildings surrounding the Quadrangle would help users orient themselves to the area. In addition, nameplates could be added to the buildings to make them easier for users to identify.

Figure 12. Quadrangle with view of Middleton Library in the background

Union

Natural Surveillance

The Union is a gathering place for people on campus and provides ample natural surveillance (see Figures 13,14). The Union's large windows allow users to survey the area outside which adds natural surveillance of the site.

Constant Users

"Constant users" can be observed during the day. A newly remodeled plaza in the front of the Union provides many areas for users to sit with friends. Student organizations often setup tables along the main walk to the Union where many students will stop and gain information.

The rear of the Union, which is quite large with many mature live oaks shading the site, is mainly used as a passageway. It is a sharp contrast to the front of the Union, which is always lively during the day.

Clear Design

The public easily locates the Union as it is in close proximity to the Parade Grounds and Memorial Tower. Highland Road is the main thoroughfare on campus and is adjacent to the Union. Yet, during the week it is easier to access this area on foot. The newly remodeled landscape at its entrance is well-designed providing ample seating and gathering space.

Prospect, Refuge and Escape

The outdoor environment around the Union provides *high prospect*. The live oaks, that are pruned underneath, coupled with low growing vegetation throughout the landscape provides line of sight for the user. There is *low refuge* for potential offenders to

hide behind structures and vegetation and the site around the Union provides escape for users if confronted by an offender.

Summary

The Union is considered safe but enhancements can still be made to the area. The outdoor space behind the Union is not used effectively. To entice constant use of this locale, gathering spaces should be constructed similar to the main entrance.

Figure 13. Front of Union

Figure 14. Seating in front of Union

CHAPTER 5

CONCLUSION

The objective of the thesis was to demonstrate a process than could be used by planners and other designers involved in campus design to improve perception of safety. Planners need to be aware of the psychological effects of their designs on the outdoor environment. A barrier needs to be removed between designers and users. Going a step further to keep abreast of crime preventative features and techniques that are effective in the landscape is a must in today's society that is riddled with crime.

Research that was conducted on the LSU campus exposed a perceived lack of safety among users in certain areas. The evaluations of both perceived safe and unsafe areas on campus brought about a better understanding of how users see and interact in their surroundings. Involving the public in the design process educates designers to how space is actually used by the public. Furthermore, users to the site can help identify problem areas that have been over looked by planners. In order to design or improve an area many factors must be in place to make the area safe for users and deter crime while at the same time being perceived as safe by the users to the site.

Natural surveillance plays a key role among users to a site. People want to be able to survey their surroundings to determine personal safety. If the line of sight is blocked by vegetation that is too high or over grown, users will perceive the area as unsafe. Selecting proper vegetation such as low growing shrubs or maintaining trees by pruning them up will create *high prospect* for the user and *low refuge* for the offender thus improving perception of safety. Clear design is another important factor in safe design. Areas on campus with good circulation and a well-maintained landscape were perceived

to be safe by subjects in the survey. Providing adequate seating for users promotes constant use and again creates a positive perception that the area is safe.

Perceptions of a site can change at night depending on the lighting provided. Subjects perceived many sites unsafe at night. Users were found to be reluctant to use a site that was poorly lit and lacking in constant use by others. Areas that have users at night such as parking lots should provide adequate lighting and good circulation for users to get to and from the vehicle. Also, the area adjacent to the parking lot should be designed for optimal surveillance for the user. This can be achieved by placing the parking in locales that have activity at night. Emergency Call Boxes were shown to improve people's perception of safety within the space. It acts as a safety net for users. When alone in a site they feel safer if they can call for assistance when faced with danger. It may also deter criminals fearing they will be reported to the police.

The factors mentioned to improve physical and perceived safety in the outdoor environment does not encompass all the avenues landscape architects and other planners can incorporate into safe design. The hope of this thesis is to enlighten designers on the subject of crime prevention and the perception of safety in the landscape. Further research on the LSU campus that leads to actual improvements of public safety is encouraged for persons involved in campus planning and maintenance.

REFERENCES

Bell, Simon. Landscape: Pattern, Perception and Process. New York: Routledge, 1999.

Crowe, Timothy D. Crime Prevention Through Environmental Design: Applications of Architectural Design and Space Management Concepts. Stoneham: Butterworth-Heinemann, 1991.

Day, Kristen. "Strangers in the Night: Women's Fear of Sexual Assault on Urban College Campuses," Journal of Architectural and Planning Research. 16 (Winter 1999): 289-312.

Dober, Richard. Campus Design. New York: John Wiley & Sons, Inc., 1992.

Fisher, Bonnie S., Jack L. Nasar. "Fear of Crime in Relation to Three Exterior Site Features: Prospect, Refuge, and Escape," Environment and Behavior. 24 (January 1992): 35-65.

Hoffman, Allan M., John H. Schuh, Robert H. Fenske. Violence On Campus: Defining the Problems, Strategies for Action. Gaithersburg: Aspen Publishers, Inc., 1998.

Jacobs, Jane. The Death and Life of Great American Cities. NY: Random House, 1961.

Jeffery, Ray. Crime Prevention Through Environmental Design. Beverly Hills: Sage Publications.

Lab, Steven P. Crime Prevention: Approaches, Practices and Evaluations. Cincinnati: C.J. Anderson, 1988.

Lam, William M. C. Perception and Lighting as Formgivers for Architecture. New York: McGraw-Hill Book Company.

Lewis, Laurie. Campus crime and Security at Postsecondary Education Institutions. Washington D.C.: U.S. Dept. of Education, Office of Educational Research and Improvement, National Center for Education Statistics, 1997.

LSU Police Department. "Crime Statistics." Baton Rouge, LA. 2004. <www.lsu.edu/PubSafety/lsupolice.nsf/$Content/Crime+Statistics>

Madden, Kathy, Andy Wily-Schwartz. "How to Design a Safe Public Space," Landscape Design. (March 2002): 21-24.

Merry, Sally Engle. Urban Danger: Life in a Neighborhood of Strangers. Philadelphia: Temple University Press, 1981.

Michael, Sean E. “CPTED and Vegetation: A Primer on Planting Design for Law Enforcement.” Landscape Architecture. 92 (November 2002): 24-29.

Newman, Oscar. Defensible Space: Crime Prevention Through Urban Design. New York: Collier Books, 1972.

Poyner, Barry. Design against Crime: Beyond Defensible Space. Boston: Butterworths, 1983.

Rosenbaum, Dennis P., Arthur J. Lurigio, Robert C. Davis. The Prevention of Crime: Social and Situational Strategies. Belmont: Wadsworth Publishing Company, 1998.

Schneider, Tod. Safer Schools Through Environmental Design. Eugene: ERIC Clearinghouse on Educational Management, University of Oregon, 2001.

Sheets, Virgil L., Chris D. Manzer. “Affect, Cognition, and Urban Vegetation: Some Effects of Adding Trees Along City Streets,” Environment and Behavior. 23 (May 1991): 285-305.

Smardon, Richard C. “Perception and Aesthetics of the Urban Environment: Review of the Role of Vegetation,” Landscape and Urban Planning. 15 (1988): 85-106.

Smith, Michael Clay, Richard Fossey. Crime On Campus. Phoenix: The Oryx Press, 1995.

Tversky, Barbara. “Structures of Mental Spaces: How People Think About Space,” Environment and Behavior. 35 (January 2003): 66-88.

Wallis, Allan. Crime Prevention Through Environmental Design: An Operational Handbook. Washington D.C.: U.S. Dept. of Justice, National Institute of Justice: [Supt. Of Docs., U.S. G.P.O., distributor], 1981.

Zahm, Diane. “Crime-Proofing Design,” Landscape Architecture. 85 (2002): 120.

Zelinka, Al, Dean Brennan. SafeScape: Creating Safer, More Livable Communities Through Planning and Design. Chicago: Planners Press, 2001.

Zimring, Craig, Ruth Conroy Dalton. “Linking Objective Measures of Space to Cognition and Action.” Environment and Behavior. 35 (January 2003): 3-16.

APPENDIX: SURVEY

Consent Form

My signature on this sheet indicates that I volunteer to participate in the perception of safety survey. This is a thesis project that will evaluate student perceptions of safety from crime on the LSU campus. Participants in the study will be asked to answer survey questions and circle areas on the map provided that are perceived as most unsafe and areas that are perceived as most safe. The surveys will become property of the student directing the study and may be used in scholarly papers and publications. I understand all participants in this study are volunteers and I may withdraw from the project at any time. The study will be confidential and my identity will not be revealed without my permission.

_____ _____

Signature Date

Circle each of the following:

1. Male Female

2. Undergraduate Graduate PhD

3. On campus housing Off campus housing

4. Drive to Campus Walk or bike to campus Ride bus to campus

Age _____

Circle 2 outdoor areas on the LSU map that you perceive as <u>most unsafe</u> and 2 areas you perceive as <u>most safe</u>.

⃠ **most unsafe** ◯ **most safe**

Name the locations that are <u>most unsafe</u> 1. _____

2. _____

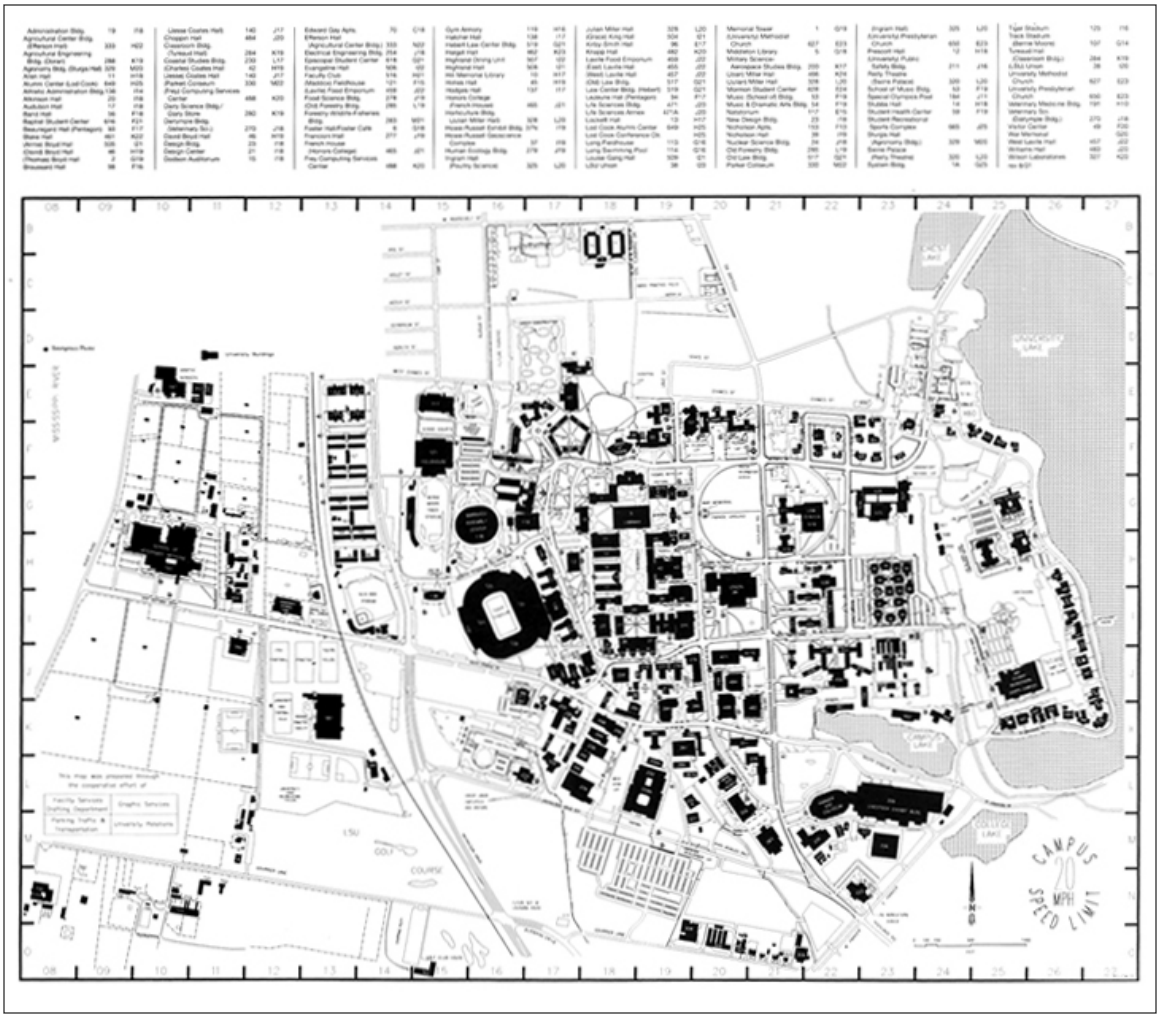
Why do you consider the locations unsafe?

What would you change to make them safer?

Name the locations that are <u>most safe</u> 1. _____

2. _____

Why do you consider the locations safe?


CAMPUS
20
MPH
SPEED LIMIT

VITA

Mary Frances Fernandez was born in Baton Rouge, Louisiana. She worked for a residential landscape service company in the Baton Rouge area for four years before attending college. Her studies focused in the arts and she received a Bachelor of Fine Arts degree in graphic design in May 2001. Before the year was up, she decided to go back to her roots in landscaping. She is currently a candidate for the degree of Master of Landscape Architecture at Louisiana State University and will receive her master's degree in May 2005.