

**A BEHAVIORAL ANALYSIS AND REDESIGN FOR
KANSAS STATE UNIVERSITY'S STUDENT UNION PLAZA**

By

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A THESIS

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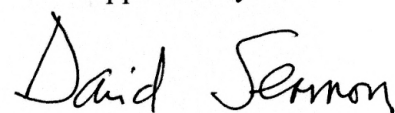
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ABSTRACT

This thesis is a behavioral study of Union Plaza, an outdoor open space on the campus of Kansas State University, Manhattan, Kansas. The major goal of this thesis is to offer design recommendations to make Union Plaza a more sociable place. In order to have an improved design, this research attempts to understand the role that the plaza plays in people's lives and to analyze environmental attributes and some architectural elements that will strengthen the plaza's sociability. Specifically, the purpose of this research is twofold: (1) to understand activities and users' behavioral needs in regard to Union Plaza by using observational methods; and (2) to use this understanding to present ideas for a preliminary revised design for Union Plaza that will generate greater sociability and interaction.

To accomplish these aims, the thesis takes the following order. Chapter 1 presents background and a physical description of Kansas State University and Union Plaza. Next, Chapter 2 reviews the literature on plaza design and sociability and provides a critical perspective on public space and public life as presented by such researchers as Whyte (1980) and Cooper Marcus and Francis (1998). Chapter 3 discusses the research methodologies and procedures used in the thesis, including description of data-collection methods, which mostly involve behavior mapping, counting, and tracking.

Chapter 4 describes the results from data analyses pertaining to the study of users' movements in and through the plaza. In turn, Chapter 5 presents the data and analysis of users at rest—e.g., sitting, reading, eating—while chapter 6 presents special events in Union Plaza. Finally, chapter 7 presents a preliminary design scheme for generating greater sociability and interaction in Union Plaza while also serving as a supportive place for student activities.

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Chapter 1

Introduction: Plazas, Sociability, and the KSU Union Plaza

Urban public spaces such as public parks, streets, and plazas have become one of the most critically studied issues falling within the scope of urban design, architecture, landscape, and environmental planning for the central reason that public places are important contributors to establish a city's livability and its sense of public life and sociability.

At their best, public open spaces offer many opportunities for accidental and planned encounters of friends, neighbors, coworkers, and acquaintances of all kinds. They draw and bind different groups of people together. Indeed, as a sociologist and urban designer William Whyte (1980) explains, that sociability usually occurs in public spaces in which different kinds of people gather and definitely these spaces give character and identity to the city. People in groups and people meeting people is the essence of urban sociability.

At their worst, public spaces can be ignored, and they will be nothing more than empty strips or areas of barrenness. In this view, the human perspective—i.e., people's needs—have been neglected in both public space design and management.

The research presented in this thesis examines Kansas State University's Union Plaza located at the heart of the campus in Manhattan, Kansas. The plaza serves primarily as a gathering place where campus users can have their lunch, study, and relax. In addition, the plaza occasionally serves as an area for special events such as commercial fairs and lunchtime concerts. Although this campus outdoor space

successfully ties the surrounding buildings together in a coherent scheme, it is less successful in meeting basic human needs in term of social aspect.

Overall, this thesis will conclude that Union Plaza was clearly designed to fulfill architectural rather than human needs. The visible problems occur at every level of the design, from the overall design of the site all the way down to smaller details such as seating and plantings. Although there are groups of picnic-type tables and chairs on the western edge of the plaza, it is far from inviting. There are few beckoning devices that attract people. Seating is insufficient in amount. Benches and seating are immovable, weak in terms of physical and social comfort, away from most activity that might be occurring on the plaza, and not allowing for variety of social groupings. In addition, a grassed open-lawn area on the eastern and western edges and a fountain are rarely used.

The major goal of this thesis is to offer design recommendations to make Union Plaza a more sociable place. In order to have improved design, this research attempts to understand the role that the plaza plays in people's lives and to analyze environmental attributes and some architectural elements that will strengthen the plaza's sociability. Specifically, the purpose of this research is twofold: (1) to understand activities and users' behavioral needs in regard to Union Plaza by using observational methods; and (2) to use this understanding to present ideas for a preliminary revised design for Union Plaza that will generate greater sociability and interaction.

To accomplish these aims, the thesis takes the following order. Chapter 1 presents background and a physical description of Kansas State University and Union Plaza. Next, chapter 2 reviews the literature on plaza design and sociability and provides a critical perspective on public space and public life as presented by such researchers as

Whyte (1980), Cooper Marcus and Francis (1998), Gehl (1987), and Mark Francis (1992). Chapter 3 discusses the research methodologies and procedures used in the thesis, including description of a data-collection methods, which mostly involve behavior mapping, counting, and tracking.

Chapter 4 describes the results from data analyses pertaining to the study of user movements in and through the plaza. In turn, chapter 5 presents the data and analysis of users at rest—e.g., sitting, reading, eating—while chapter 6 presents special events in Union Plaza. Finally, chapter 7 presents a preliminary design scheme for generating greater sociability and interaction in Union Plaza while also serving as a supportive place for student activities. (Here, practical design guidelines are provided for the plaza's future development and improvement of the existing plaza environment).

The Kansas State University Campus

Kansas State University (figure 1.1) is a comprehensive, research, educational, and public service institution with over 20,000 students. It was founded in 1863, as a land-grant institution under the Morrill Act, and its site was initially located on the grounds of the earlier Bluemont Central College. Seventeen years later, the university moved to its present site. The 664-acre campus is in the city of Manhattan, 125 miles west of Kansas City via Interstate 70 in the rolling Flint Hills of northeast Kansas. The university has sixty departments in the nine colleges of Agriculture, Architecture, Arts and Sciences, Business Administration, Education, Engineering, Human Ecology, Technology and Aviation, and Veterinary Medicines.

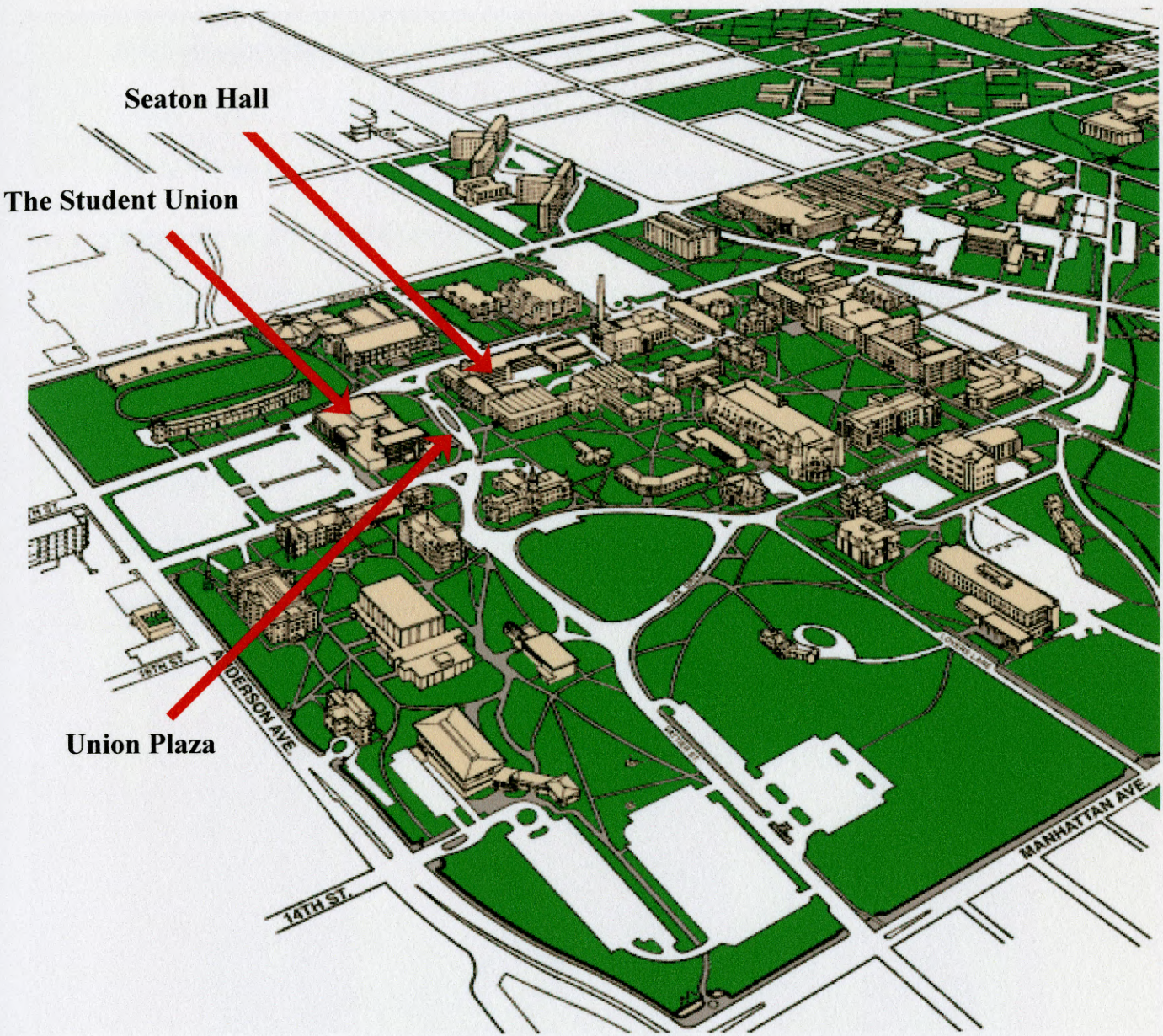


Figure 1.1: Kansas State University.

While there are many important colleges and buildings throughout the university, two buildings—the Student Union and Seaton Hall—in particular bear on the subject of Union Plaza. As illustrated in figure 1.2, for more than forty-seven years, the Student Union, a major hub of student activities and faculty social events, has served the university community and has developed into one of the largest and busiest buildings on campus. The Union contains a large food court, administrative offices, a small art gallery, banking facilities, bookstore, computer store, copy center, theatre, several meeting rooms, private dining facilities, a large ballroom, and a recreation area. Due to its diverse facilities, many students and faculty pass through the Union daily and spend time there each day. In addition to its diverse facilities, there are many special events held within the building that draw people from outside of the community—for example, job fairs, lectures, concerts, and selected sporting events, including bowling.



Figure 1.2: The Student Union.

With the diverse numbers of attractions and activities that are located in the Union, it serves as a focal point for activity on the campus. These activities draw large numbers of people to and through the plaza.

The second building important in understanding Union Plaza is Seaton Hall (see figure 1.3), completed in 1875 and today housing the College of Architecture, Planning, and Design, the Department of Biological and Agricultural Engineering, the Department of Architectural Engineering and Construction, and the Department of Geography. Because the number of students and faculty that use Seaton Hall totals approximately 1,500 people and because of Seaton's location on Union Plaza, the building is a major contributor to plaza users. In addition, students in Seaton Hall often use Union Plaza during the day as an outdoor escape, especially architectural students who otherwise spend many hours inside the building in design studio.



Figure 1.3: Seaton Hall.

The Union Plaza

Union Plaza runs east to west between 17th Street and the parking lot behind Anderson Hall, and north to south between Seaton Hall and the K-State Union. The plaza is situated in a centralized location where major pedestrian flows pass through the space. As already explained, as a result of the site being bounded by the Student Union and Seaton Hall, a high degree of use throughout the day is generated by these two buildings. Through its history, Union Plaza has served as an extension of the Student Union as well as a place for pedestrian traffic, demonstrations, and presentations by off-campus organizations seeking to interact with students. Figure 1.4 illustrates the Union Plaza space before renovation in 1999.

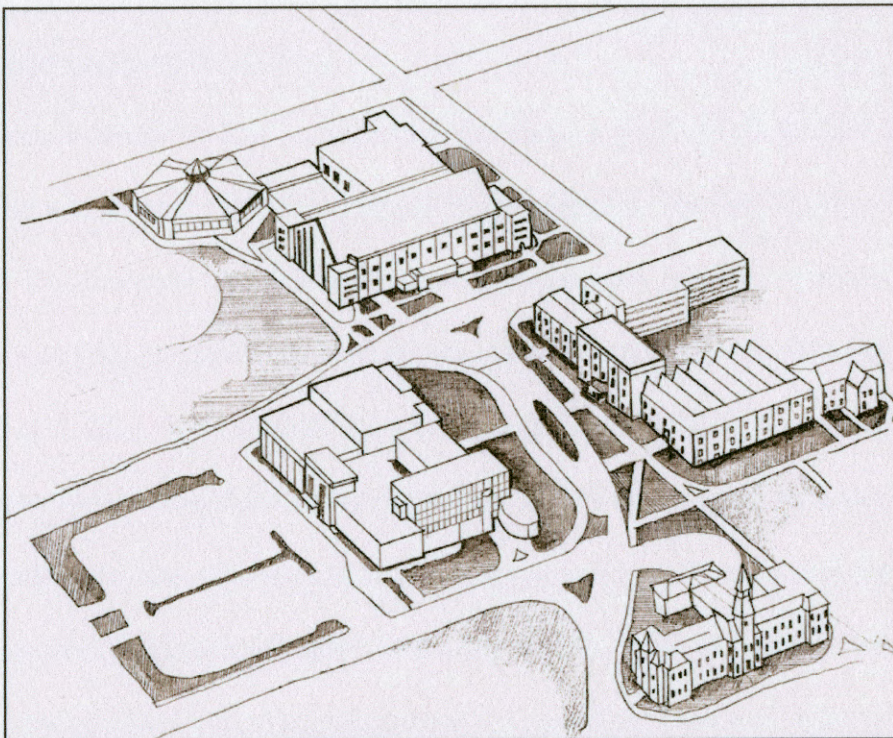


Figure 1.4: A sketch of Union Plaza before renovation.

Early in 1997, K-State Union Governing Board members announced a plan for remodeling the Student Union in order to upgrade the facility and to improve services for students, faculty, and visitors. Included in this remodeling plan was a proposal that the outdoor space between the Student Union and Seaton Hall also be upgraded. In late 1999, Union Board members presented a redesign scheme that would transform the space between the Union and Seaton Hall into a multi-use plaza. The design included removing the existing street and landscape. This design was proposed by the Ken Ebert Design Group, a Manhattan architecture firm and included many new features such as a covered portico entrance in the Union, a covered outdoor eating area, patterned walks, water fountain, grassed open-lawn area, planters, railings, lighting, decorative landscaping, and fixed seating. When completed, this 90,000-square-foot plaza project had cost approximately \$1 million.

Ebert's design for Union Plaza attempts create a space that is flexible in use and also a place where users can relax (Kansas State Collegian, Tuesday, January 21, 1977, no page). Ebert arranged architectural elements in the plan, such as a fountain that would draw users into the space, and an outdoor seating area (see figure 1.5) that would hold users and encourage them to spend time in the plaza. The intention of this outdoor seating area was to create a feeling of privacy by enclosing the space with low walls on the east and west. The idea was that Union patrons could purchase food in the Union and then eat outside (Manhattan Mercury, Thursday, June 1, 2000, no page). To Add the sense of privacy, Ebert placed an eating area on a raised platform and included an overhang to protect users from the weather. Other elements of the new plaza design were a sculpture, an informal amphitheater, and pylon with K-State flags. Though not

included in the final design, an amphitheater was envisioned to serve as a space for concerts, speeches, and other large events.



Figure 1.5: Outdoor eating area.

Figure 1.6 provides a site plan of Union Plaza and illustrates the major elements of the final plaza design. As indicated by 1, the main entry to the Union is an elevated terrace (2) covered by a free-standing roof. To the east of the main entry is a fenced, grassed open-space area (3), not generally available to users. The area in front of the Union entry (see figure 1.7) is a large level plaza area (4), which functions as a gathering place or a stage where bands play, commercial booths are set up, or displays are placed.

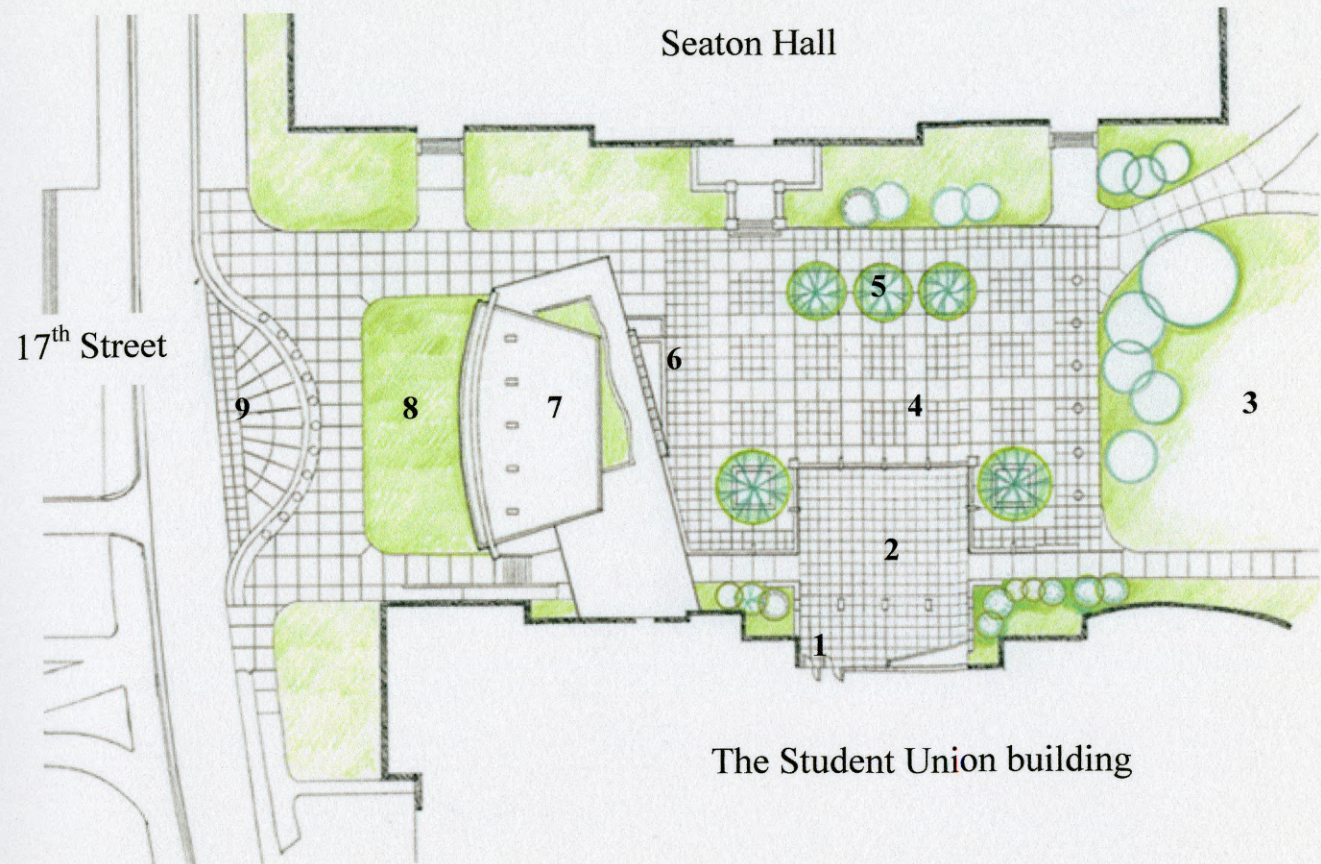
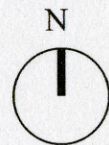


Figure 1.6: Site plan of Union Plaza.



- 1) Main entry to Student Union
- 2) Entry terrace
- 3) Grassed open-lawn area (east)
- 4) Special core of plaza
- 5) Trees—as a tribute to September 11, 2001
- 6) Water fountain
- 7) Outdoor eating area
- 8) Grassed open-lawn area (west)
- 9) Vehicular drop off area

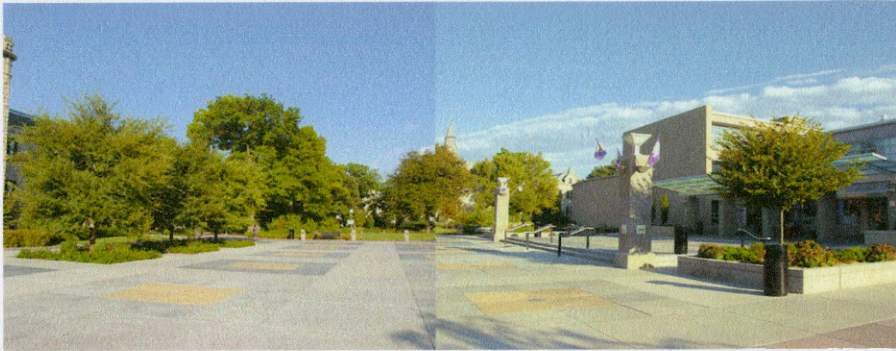


Figure 1.7: Special core of plaza.

This chapter has introduced the main research for this thesis and provided an overview of Union Plaza. The next chapter reviews the research literature relative to sociability and plaza design.

Chapter 2

Literature Review: Plazas, Sociability and Design

This chapter draws from theories relating to the study of environment and behavior focusing on public space and public life. The various sources, such as urban open-space studies, provide critical concepts and information useful for creating more successful and more sociable public spaces. Example of such studies include William Whyte's *The Social Life of Small Urban Space* (1980); Jan Gehl's *Life Between Buildings-using Public Space* (1987); Stephen Carr, Mark Francis, Leanne G. Rivlin, and Andrew M. Stone's *Public Space* (1992); Clare Cooper Marcus and Carolyn Francis's *People Places* (1998); Project for Public Spaces' *How to Turn a Place Around* (2001); and Diwakar Chintala's Master's thesis, "A Behavioral Analysis and Design for KSU's Union Plaza" (1996). All of these works will be discussed in this chapter because they form the research basis for the analysis and redesign of Union Plaza presented in this thesis.

The key question in this research is what can be done to turn Union Plaza into a more successful space? In other words, how can we make it a place that fosters greater social activity and interaction, where people will occupy the space, rather than just walk through? A review of the literature on plazas provides many helpful answers to this question.

The Nature of Plazas

In order to set a focus for this research and to have a better understanding, it is important to define what a plaza is. Edited by Carr, Francis, Rivlin, and Stone, *Public Space* (Carr, Francis, Rivlin, and Stone, 1992, p. 3) argues that all public spaces—streets, squares, and parks—are the stage upon which the drama of communal life unfolds. These dynamic spaces are an essential counterpart to routines of work and home life, giving form to the ebb and flow of human exchange, providing the channels for movement, the nodes of communication, and the common grounds for play and relaxation.

For this thesis, a plaza relates to an activity focus at the heart of some intensive built-up area. Typically, a plaza will be paved, enclosed by high-density structures and surrounded by streets. A plaza contains features meant to attract groups of people and to facilitate meetings. This definition is drawn from the work of Kevin Lynch (1981, p.443), who argues that open space is open when it is accessible. Marcus and Francis (1998) describe a plaza as a mostly hard-surfaced, outdoor public space from which cars are excluded. Its main function is as a place for strolling, sitting, eating, and watching the world go by. Unlike a sidewalk, a plaza is a place for passive enjoyment rather than a space to pass through. For that matter, activity in a plaza is important for its vitality and, therefore, also for its visual attraction. A plaza should be proportionate to the number of inhabitants, so that, on one hand, it may not be too small a space, or, on the other, not look like a desert with few people (Vitruvius, 1960, p. 132).

People Places, written by Clare Cooper Marcus and Carolyn Francis (1988), devotes one chapter to campus outdoor spaces, which is relevant to the research of this thesis. Almost every university campus has some kind of central plaza or gathering place

where friends meet, bands play, displays are placed, people come to watch other people or just to relax between classes, and people use as a passing-through space. From their observations and interviews, Marcus and Francis discovered what students most needed in campus outdoor spaces are more places to study and eat comfortably as well as opportunities to meet casually with faculty outside classes and office hours. Certainly, in an academic setting this type of interaction is at the heart of the concept of collegiality (Cooper Marcus and Francis, 1998, p. 175). The authors explain that plazas offer an opportunity to integrate university culture with the campus spatial structure. Whenever possible, there should be provided opportunities for commemorative events and other physical forms of group gathering and recognition.

Research on plazas has become significant because of public awareness of the social failure of many urban open spaces. In the past, open spaces such as parks, playgrounds, and plazas have been criticized as largely failing to serve their intended uses and users (Hester, 1984; Jackson, 1981). Mark Francis (1992) explains this failure in terms of designers and space managers who do not address people's needs. In this regard, the Project for Public Spaces (2000) identifies some common plaza problems relating to the design of space, for example a lack of good places to sit, a lack of gathering points, poor entrances and visually inaccessible spaces, and dysfunctional features. In short, the conclusion is that some open-space designers are careless in the way of not considering human factors in their design, and this weakness helps to explain why many public spaces are ignored.

There are many possible reasons for why some public spaces work for people so well, and some do not. William H. Whyte (1980) provides answers for those questions in

his *The Social Life of Small Urban Spaces* by describing the reasons for the success or failure of many public spaces. Whyte's work is one of the most important studies done on the topic of "sociability" of urban spaces.

As was explained in the last chapter, by sociability is meant the ability of a plaza to formally or informally draw people together in a plaza and thus generate human activity and sense of place. Whyte argues that what attracts people most are other people. As shall be discussed in the next section, much of his work is devoted to design and policy that will facilitate plaza sociability.

Plaza Design and Sociability

The next question to ask is what are the design factors that facilitate a sociable plaza? For Whyte (1980), three factors are essential; (1) location, (2) street-plaza relationship; and (3) sittability. Whyte argues that location is the most important factor that attracts a variety of users to come into a plaza. Plazas should be near large numbers of people, especially, close to high-density areas with mixed uses, along streets with heavy pedestrian flow, and easily accessible to all. Whyte found that the effective pedestrian distance is typically not more than three blocks because people usually will only walk a short distance to use a plaza.

The second most important plaza design factor, according to Whyte, is the street-plaza relationship, which he describes as a transition between the street and plaza. Being one of the most important aspects of plaza design, a smooth transition between street and plaza can encourage and discourage the plaza's use. Street plazas generally have no boundary, thus the transition should be such that it's hard to tell where one ends and the

other begins (Whyte, 1980, p. 57). The more users perceive a plaza as being an extension of the street, the more likely they will feel invited into it. From his plaza study, Whyte concluded that the sidewalk-plaza interphase is a convenient meeting place due to people usually waiting for friends and having conversation in this area. Crucially, Whyte emphasizes that the relationship between the street and plaza should stimulate *impulse use*, by which he means the quality of a space to draw people into it without hesitation or conscious decision.

According to Whyte, there are at least two factors that facilitate a plaza's impulse use: (1) sightlines or clear visibility in or out of the plaza; and (2) the use of beckoning devices—elements that draw people in—such as low and easy steps, trees, or a water feature. Whyte especially emphasizes sightlines because, if people do not see a space, they will not use it (Whyte, 1980, p. 58). Therefore, sunken plazas or plazas above the eye level, having dramatic changes of level between sidewalk and plaza, should be avoided. In other words, Whyte recommends only slight level changes to accommodate a few comfortable steps, which work as a beckoning device in order to enhance plaza use and image. Similarly, beckoning devices like trees and fountains, if designed carefully, can stimulate impulse use of plaza.

Whyte's third key design consideration is sittability. After studying out various factors of outdoor seating behavior such as sun angles and size of spaces, Whyte concluded that people tend to sit most where there are places to sit (Whyte, 1980, p. 28). In other words, once the design has enticed people in, they can be held by seating. Other things matter too—food, fountains, tables, sunlight, shade, and trees—but a place to sit is the most important element in plaza use.

Whyte suggests a major requirement for seating, which is 1 foot of seating for 30 square feet of plaza space. More than that, seating must be both physically and socially comfortable. Whyte presents his criteria for physically comfortable seating as seating that is no lower than one foot, no higher than three feet, and no narrower than sixteen inches. In addition, a plaza should provide seating choice so that people can sit alone, with one other, or with a group. This range of seating choices is what Whyte calls social comfort. Furthermore, seating should be provided with trees so that, in hotter weather, users can watch the passing scene in the comfort of shade. Overall, it is best to provide comfortable seating for people who will sit a while. If one wants to encourage people to linger in a public space, then physical and social comfort in seating is essential. Another one of his important elements is the moveable chair, which people give the sense of more choice and comfort. Whyte points out that the most successful public spaces offer a combination of informal seating ledges, walls, and steps that allow for more spontaneity as well as formal seating like chairs and benches (Whyte, 1980, chapter 2).

Whyte points out that food and triangulation are two other important factors that make a place more sociable. He (1980, chapter 4) says that food attracts people who, in turn, attract more people. Whyte's observations in New York City concluded that a plaza with a food kiosk, built-in snack bars, and outdoor restaurant is much more likely to attract users than is one without such features. And these vendors sometimes can be the strongest contributor of plaza sociability. *Triangulation*, or the presence of some object or event in the open space, can be used to draw and hold people in that space as well. Whyte (1980, p. 94) described triangulation as the process by which some external stimulus provides a linkage between people and prompts strangers to talk to each other as

though they were not. An example of triangulation might be a musical concert or a physical element such as a sculpture. When used as a technique for planning public spaces, triangulation means locating elements in a way that greatly increases the chances of human activity occurring around them. Whyte also believes that sun is a crucial factor, which influences human behavior in plaza, as people tend to move with the sun in colder months to get maximum warmth. The last design factor suggested by Whyte is the introduction of a water body in the plaza. He believes that water attracts people because they love to hear water or to splash their hands or stick their feet in water, in leisure moods.

Another factor important in plaza design, coming from the research of Mark Francis (1987), is free public access. The ability to enter spaces is basic to their use (Carr, Francis, Rivlin, & Stone, 1992, p. 138). Kevin Lynch (1981) defines accessibility in terms of open-space rights; in other words, people have freedom to use a space. For a space to be physically accessible, it should not only be without barriers to entry; it should also be well connected to paths of circulation. The connection of a plaza to adjacent sidewalk is an important aspect of this access (Whyte, 1980). The Project for Public Spaces (2000), a group of researchers working as a nonprofit organization, holds a similar opinion that accessibility is one key quality of successful public spaces. By accessibility, people can easily get into a public space, and they can circulate within it, making it convenient to use (Project for Public Spaces, 2000).

The next research study that will be discussed is Clare Cooper Marcus and Carolyn Francis's *People Places* (1998). Devoting one chapter describing design guidelines for campus outdoor spaces, Marcus and Francis argues that academic open

areas should function as an area to be in, rather than just to pass through. To make these spaces successful, designers should pay more attention to students' needs and their everyday use of space. The authors believe that a successful plaza accommodates two basic activities: (1) passing through; and (2) stationary behavior (i.e., sitting, studying, waiting, eating, watching). Thus, campus plaza design should allow these two activities to proceed without impeding each other.

Starting with the idea that users might have work or daily activities around campus, Marcus and Francis present the first type of campus outdoor space, which they call the "Home Base". This space is usually a kind of front porch, front yard, or back yard arising around campus buildings. From their observations, Marcus and Francis concluded that the front porch or main entry is a place that students use most frequently because they enjoy all the activity generated. Here, smooth transition from outdoor to indoor space, study and eating areas with comfortable seating, and furniture arrangement that accommodate to casual meeting between faculty and students outside classes are needed.

The next type of academic outdoor space is what Marcus and Francis call the "Common Turf"—a public area between buildings or parking lots—serving as a grand central place, providing the university with a sense of identity. Like Union Plaza, the Common Turf functions as a gathering place where friends meet, special events happen, and people come to watch other people or just relax between classes (Marcus and Francis, 1998, p. 186). In addition, weather permitting, the Common Turf can offer an area for casual outdoor study between classes or for discussions.

After reviewing these two types of campus outdoor space, the authors propose three design recommendations: (1) location; (2) size; and (3) special attributes. Similar to William Whyte's discussion, Marcus and Francis underline the importance of the location of a plaza in campus. First, a central plaza should be bounded by places—student center or union, library, cafeteria, or bookstore—that generate a high degree of use. Second, the plaza should be located where major pedestrian flows pass by so that many people become familiar with the plaza (Marcus and Francis, 1998, p. 188). The next design issue is size, which can vary considerably from that serving a large activity—speeches, performances, and rallies—to a small plaza with fewer uses or empty when not used. With this argument, Marcus and Francis point out that plaza spaces should be designed for both large gatherings as well as for less intense activities that usually happen on a day-to-day basis such as studying, conversing, and eating.

According to Marcus and Francis, another important design consideration is spatial attributes, which mainly focus on the importance of seating. According to Marcus and Francis's campus observations, people seek out visible seating areas on the main plaza for daily meetings with friends, but some users seek less prominent locations for quiet. Other people feel more comfortable sitting on the edge of a space with something at their back (Marcus and Francis, 1992, p. 189). The more articulated the edge of a plaza is, the more edge-sitters can sit on it. An analogy that the authors mention is a flowing river—pedestrian movement—with eddies off the side. These eddies—spaces just to the side of major pedestrian flows—should be provided in noticeable or less noticeable spots. Marcus and Francis suggest that seating should be provided on “eddies” for users sitting and watching other users. Illustrated in figure 2.1, offering many anchor

spots (e.g., trees, column, planters), providing different form of seating (e.g., benches with and without backs, steps, retaining walls, fountain edges), and locating seating in various locations are essential factors for effective plaza design.

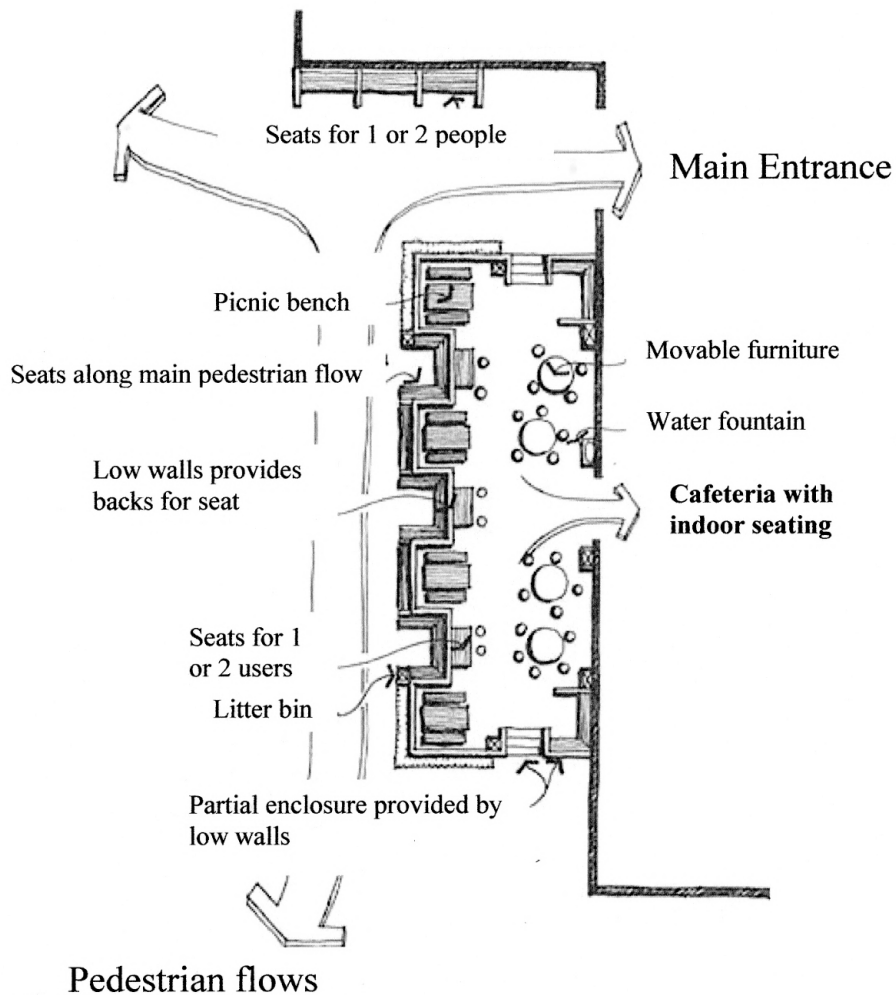


Figure 2.1: An example of Marcus and Francis's design ideas for campus plazas.

Research Methods and Plazas

An important part of this thesis is the use of research methods that will provide a thorough picture of how the Union Plaza is used by students, staff, and others. A useful general reference with regard to environment-behavior research is John Zeisel's *Inquiry by Design* (Zeisel, 1981). According to Zeisel, observing behavior is empathetic and direct, deals with dynamic phenomena, and allows the observer to be minimally intrusive (Zeisel, 1981, p. 116). Zeisel summarizes six factors in environmental observation that an observer must pay attention to: (1) who; (2) doing what; (3) with whom; (4) in what relationship (aural, visual, tactile, olfactory, symbolic); (5) in what context (socio-cultural context); and (6) where (physical setting).

The findings reported in Whyte's *The Social life of Small Urban Spaces* (Whyte, 1980) are the result of studies utilizing direct observation method like those that Zeisel advocates. Whyte used time-lapse cameras overlooking plazas and recorded daily user patterns. It must be noted that the methods which Whyte used to collect information are photographic and observational techniques such as trace measures, behavior mapping, counting, tracking, and also interviews. Through experience, the methodology he utilized was decided as the best way to find out how a public space is used and what physical factors are important in sustaining sociability in an urban setting. These observations included users' circulating and stationary activities—standing, sitting, conversing, people-watching, and so on. These activities as a rhythm of plaza life are observed as to location, time of day, gender, the physical characteristics of the space, and climate and all of them were recorded in behavior map (see figure 2.2). In five minutes, he marked every sitter, whether male, female, alone, or with others, by using different symbols.

Whyte learned, for example, that the morning time use of most plazas is sporadic but by 11:00 a.m. activity increases and remains alive until about 2:00 p.m. when use again becomes sporadic during mid and late afternoon.

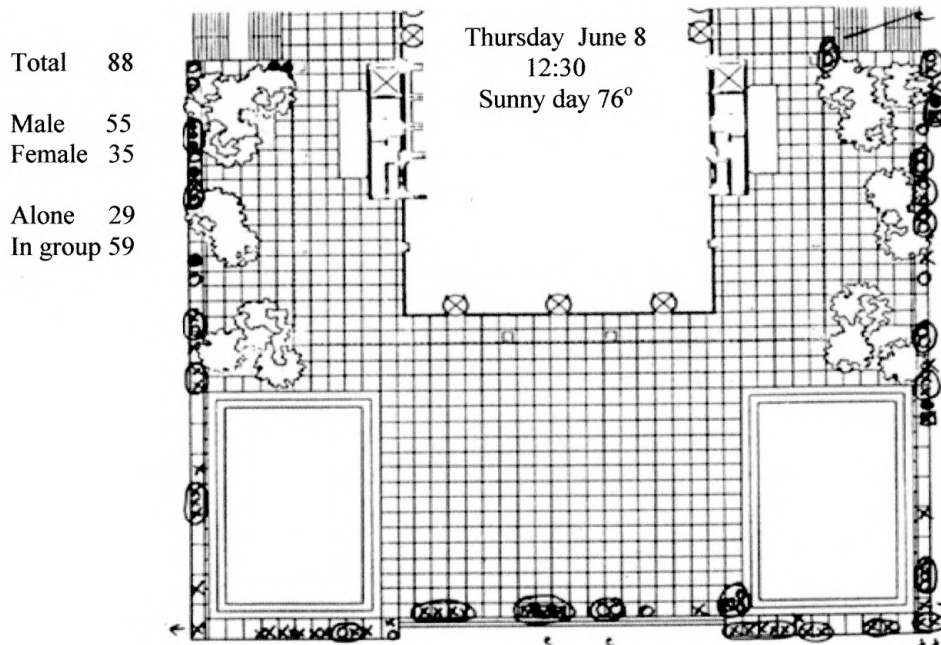


Figure 2.2: Whyte's behavior map of Seagram plaza.

In order to gather his observational data, Whyte employed a number of small motion picture cameras, which were set to record events on the plazas in ten-second intervals. This filming allowed Whyte and his research team to systematically track and map locations and peoples' behavior. Therefore, direct observation is the core of Whyte's work, which is convincing proof that behavior mapping is a successful method to analyze physical factors that enhance sociability in public outdoor spaces.

A European parallel to Whyte's work is Jan Gehl's study on outdoor activities—*Life Between Buildings* (Gehl, 1987). This research focuses on the range of human

activities in cities, especially on ordinary days and the multitude of outdoor spaces. Moreover, the author concentrates on the relationship between the physical environment and the life in public spaces. Gehl's studies arise out of observation of behavior in pedestrian settings similar to that of Whyte. Initially, he started the research from a set of questions: How is the public space used? And what can be done to improve the conditions for public life?

Like Whyte, Gehl provides information on seating for example placement and orientation. He says that seats should be strategically placed where there is, for example, a niche, a corner, or a place that offers intimacy and security. In addition, orientation and view play an important role in the choice of a place to sit. When people choose to sit in a public environment, it is always to enjoy the advantages the place offers (Gehl, 1987). The opportunity to see events or what is going on in a space is also an important factor in users' choice of sitting place.

One of Gehl's best-known research examples is a study of a square in Copenhagen. Gehl recorded numerous items such as scale, climate, function, furnishings, benches, and life in the square. This study was conducted on selected days of the week and year, especially when weather permitting. Gehl's study makes it possible to describe and evaluates the development of public life in Copenhagen over a period of nearly three decades. Pedestrian traffic is one major theme in this study. Illustrated in figure 2.3, in order to understand pedestrian flows, a survey map of the square was used to track and count pedestrian behavior every 15 minutes. Gehl counted the number of people walking through the space, who sat where, and when the space was busy or slow. Although his

study concentrates more on research findings than process, his conclusions give an idea of what to look for in observing urban settings.

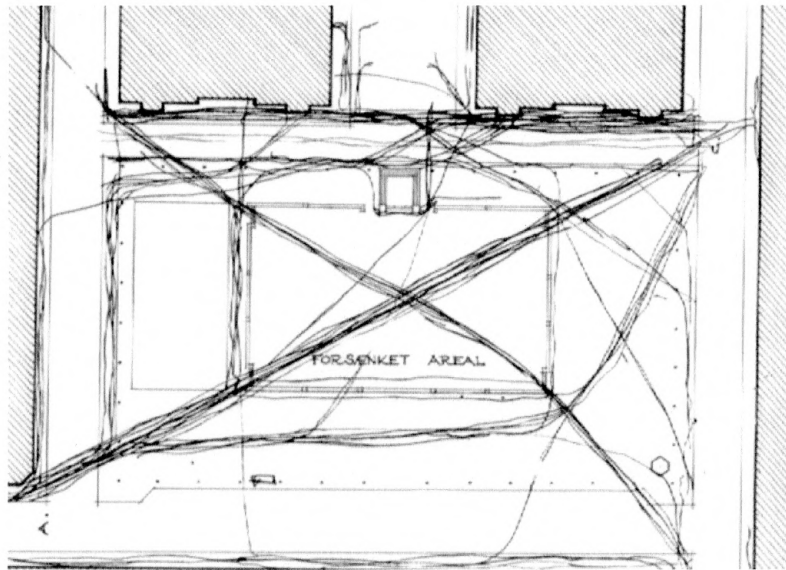


Figure 2.3: A survey map of pedestrian flows on a square in Copenhagen.

Diwakar Chintala's *A Behavioral Analysis and Design for KSU's Union Plaza* (1996) also adopted direct observation and behavior mapping in order to understand the movement patterns of people using plazas, in this case, the KSU Union Plaza space before remodeling. The author mainly used mapping, documentation, and photographic techniques, and his observations were conducted in a typical week in October. Chintala did his behavior mapping at various times of the day—morning, noon, and afternoon—and divided his observations into two phases carried out simultaneously. The first phase dealt with users in movement, and the second phase dealt with users at rest. This methodology reveals the major functions of the plaza space and user needs. He then

utilized his research findings as the basis for an improved design scheme for the Union Plaza space.

All of the above studies use behavior mapping to study the users' activities and their movement in a particular space. All of these frameworks provides a useful approach for the current research, which will emphasize behavior mapping of users in movement and at rest during different selected time periods.

In summary, this chapter has discussed the relevant literature related to several behavioral studies of plazas. Some design guidelines for creating a plaza that is more sociable have been presented, as well as concepts that would permit flexibility in plaza use. The previous studies were also reviewed with regard to methods and related themes that established the basis for this thesis. The next chapter discusses the specific research methods used in this thesis to collect information of place and activities in Union Plaza.

Chapter 3

Research Methodology: Observing User Behavior in Union Plaza

As discussed in the introduction, the major issue of this research is to address how Union Plaza can be better designed to enhance greater social activities and interaction. This thesis responds to this question by attempting to offer design recommendations to create Union Plaza as a sociable place. The previous literature review provides implications for the approach and methodology for this thesis. Regarding people's use of Union Plaza, behavioral analysis is one of the most helpful research methods to examine the relationships between people and the plaza.

Before design improvements of Union Plaza can be made, it is important to understand how the plaza is actually used and to clarify the way people move through and organize themselves in this open space. A major source for deriving this knowledge is from behavioral analysis, which can reveal the patterns of use and the relationships between people and specific attributes, activities, problems, and conflicts that occur in Union Plaza. When these patterns are understood, the decisions that discourage or encourage such use through design will be better known.

Thus, the objectives of behavior analysis of Union Plaza are as follows:

- One:** To obtain a better sense of how Union Plaza is used and what activities occur in the space;
- Two:** To determine and record major pedestrian flows, by which people move within the plaza;

- Three:** To understand the spatial patterns of people using the plaza.
- Four:** With respect to special events in the plaza, to understand the activities and users needs on such occasions in order to integrate better useful design elements necessary to accommodate such events.

To document observational data such as the movement and direction of users and the various activities occurring in Union Plaza, behavior mapping was adopted in this research. Behavior mapping, also known as activity mapping, was used to record users' activities, both in term of stationary people and those in motion in the plaza. The research was divided into three themes: (1) observing people in movement; (2) observing people at rest; and (3) observing special events. The observations of people in movement were recorded from Thursday, October 10 to Thursday, October 17, 2002; and the observations of people at rest were recorded from Monday, September 22, 2003 to Friday, September 26, 2003. In turn, the observations of special events were conducted for six different activities, which included University family day, a pottery sale, and a lunchtime rock concert.

Pilot Study

Before the actual mapping process began, informal observations were carried out on Monday, October 7 and Tuesday, October 8, 2002. The purpose of this pilot study was to establish: (a) a mapping procedure; (b) observation points for monitoring the plaza's activities; (c) observation time periods; and (d) major pedestrian flows.

To begin the process, a base map was constructed as presented in figure 3.1. This base map illustrates the layout of Union Plaza, including the building structures—the Student Union, and Seaton Hall—that encircle Union Plaza. In addition, the base map included existing landscape features—for example, trees, lawns, water fountain, ledges and low walls, light towers, sidewalks, steps, and pedestrian paths. A large number of copies of this base map were made on letter size sheets and placed on a clipboard for ease of recording Union Plaza’s activities.

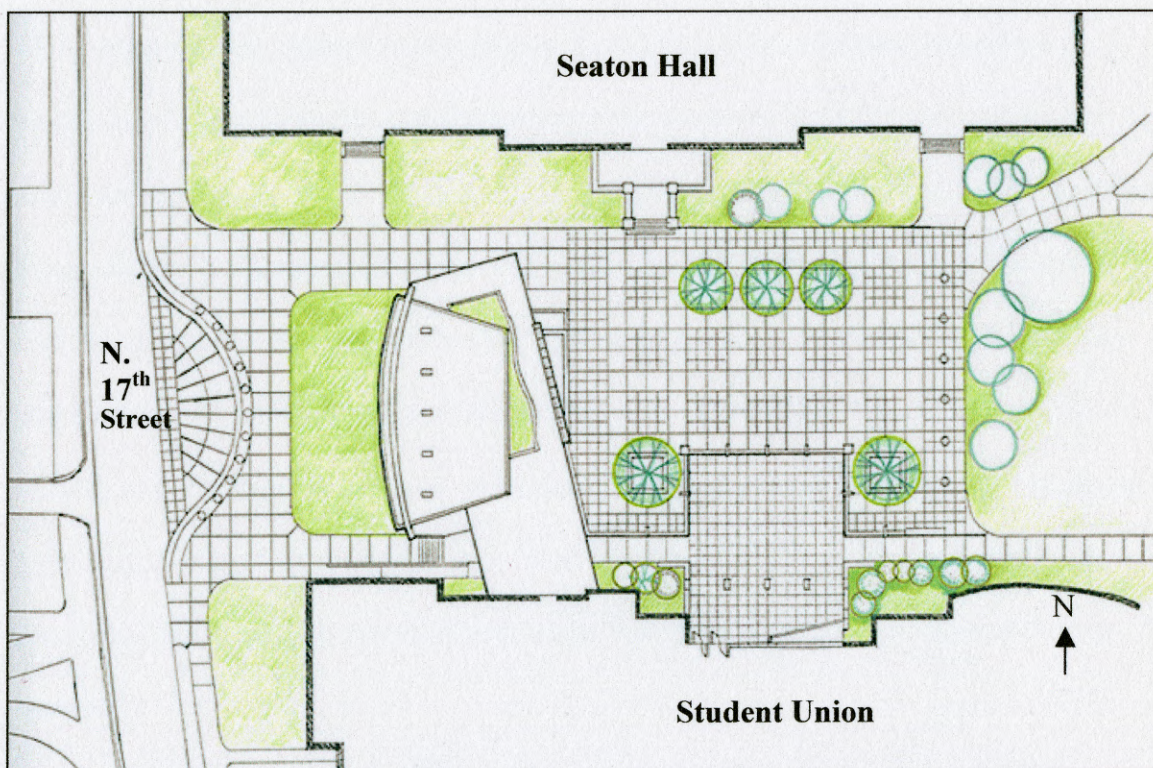


Figure 3.1: Union Plaza’s base map.

Once the base map was made, the next step was to choose several convenient observation points from which to view and study life on Union Plaza. It is very important to select viewing positions that offer clear sight lines for monitoring all parts of the plaza. Illustrated as figure 3.2, three observation spots were selected to watch the activities in the plaza. In order to count people moving, it was essential to choose observation positions that offer an unobstructed view and the possibility of quickly shifting to the next location for observation.

Observation point 1 was set in the main entry of the Student Union. Situated at the south end of the plaza, this observation point provides a clear view of major pedestrian flows converging at the entrance of the Student Union. However, this spot could not provide a view of the flows along the western edge of the plaza. Thus, position 2 was chosen in the upper patio area where there are fixed tables and chairs covered by a rooflike structure. This point gave clear sight lines to record pedestrians and activities that happened in both the western and eastern sides of the plaza. Observation point 3 was located on the main entrance deck of Seaton Hall. Even though this high point provided a view of all access paths to the plaza, the memorial trees in front of Seaton Hall obstructed the view of pedestrian flows in the central plaza, which could be seen from position 1.

After the observation points were chosen, it was important to establish the observation time periods. From the pilot study, it was determined that most of the activity in Union Plaza takes place during three periods: (1) early morning, when people are on their way to classes or their offices; (2) during lunchtime, when users go for lunch at the Student Union; and (3) between classes.

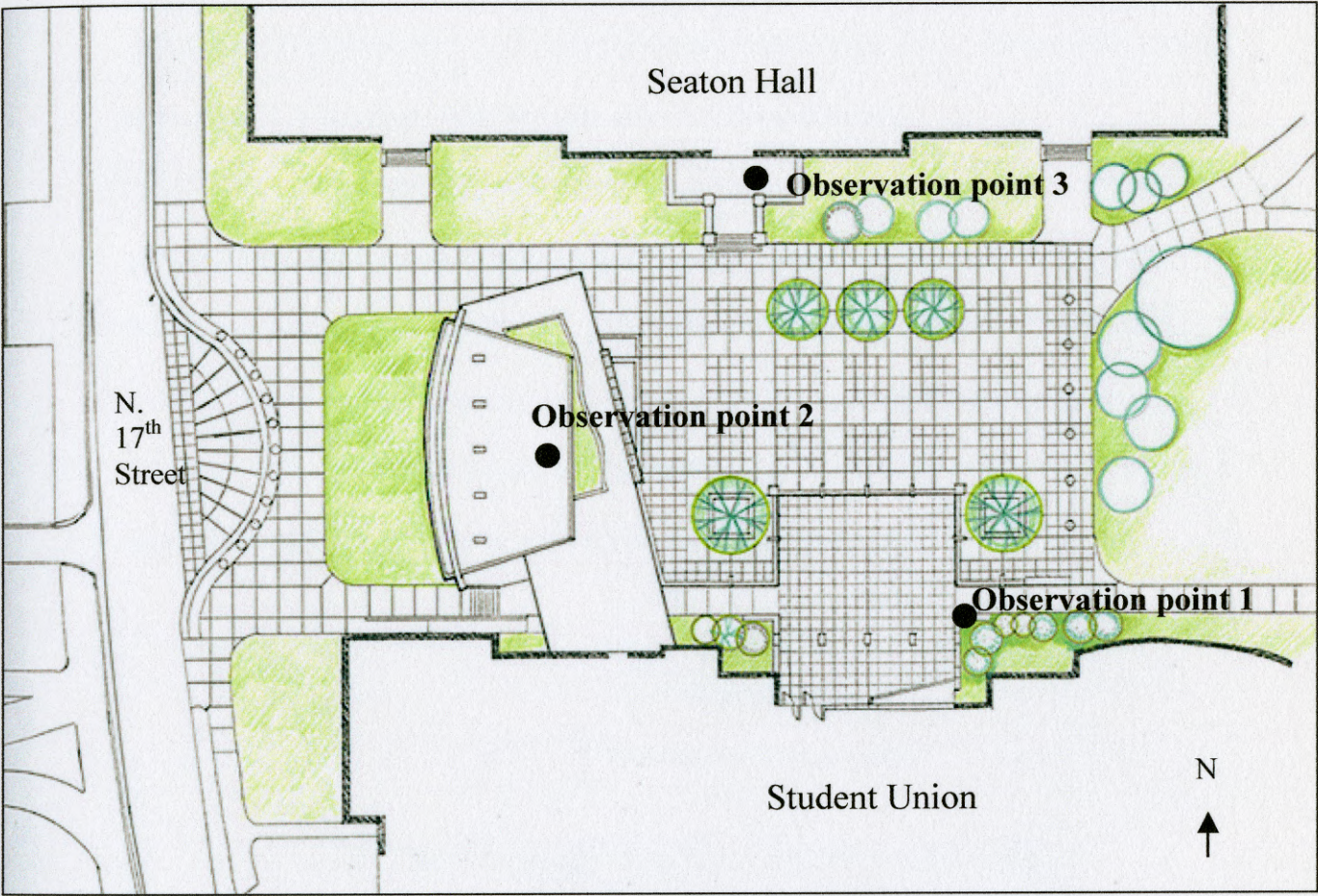


Figure 3.2: Observation points for monitoring Union Plaza.

When Kansas State University is in session, the class schedule allows a ten-minute break between the fifty-minute classes. The break begins twenty minutes past each hour and ends at half past the hour. During this time period Union Plaza experiences high intensity of pedestrian flow and various activities. Hence, these periods were chosen as the most essential times for observing the plaza.

Once the observation points and time periods were decided, the next step was to identify the major movement patterns in the plaza. Observing behavior in the plaza during the two-day pilot observation period generated good insight about pedestrian flows. To establish the major flow lines and measure the intensity of these flows, rough estimates of the number of people in major pedestrian flows were made. Also, a rough sketch of flow lines was drawn on the base map (see figure 3.3).

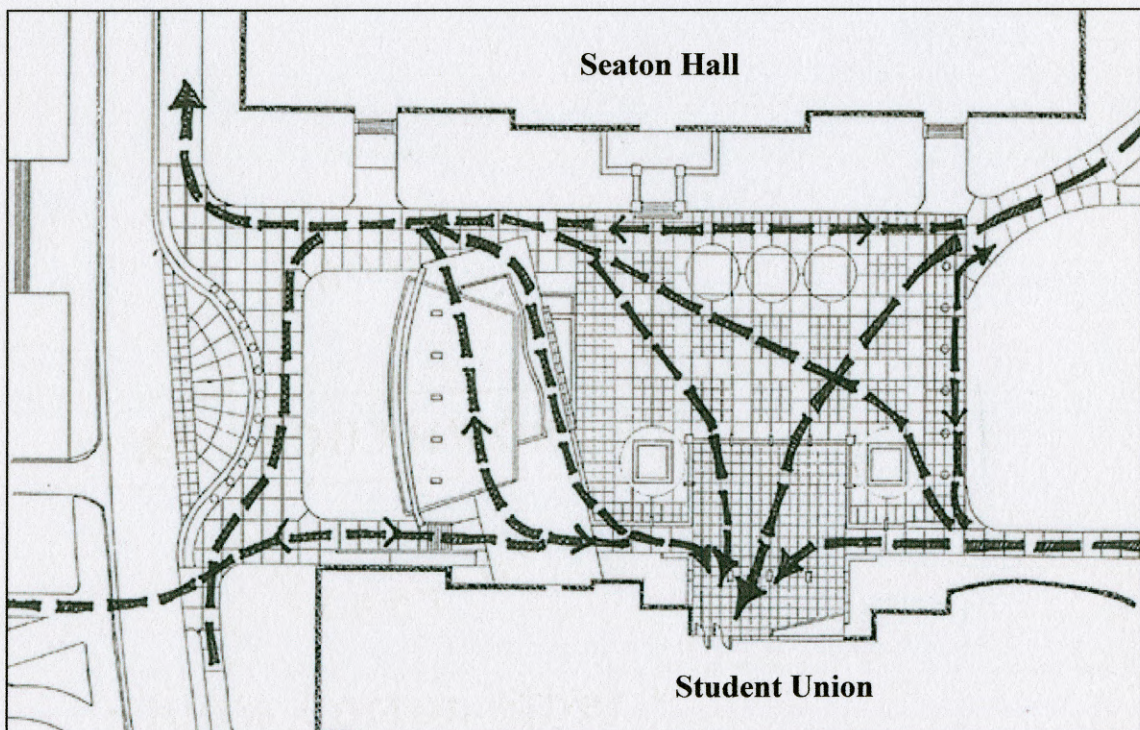


Figure 3.3: A rough sketch of pedestrian flows.

As shown in figure 3.4, eleven major pedestrian flows were established and named as numbers 1 through 11. In addition, different colored lines on the base map were used to illustrate these paths. Then each of these flows was observed to record the intensity. The results of a flow analysis of these eleven pedestrian routes will be discussed in the next chapter.

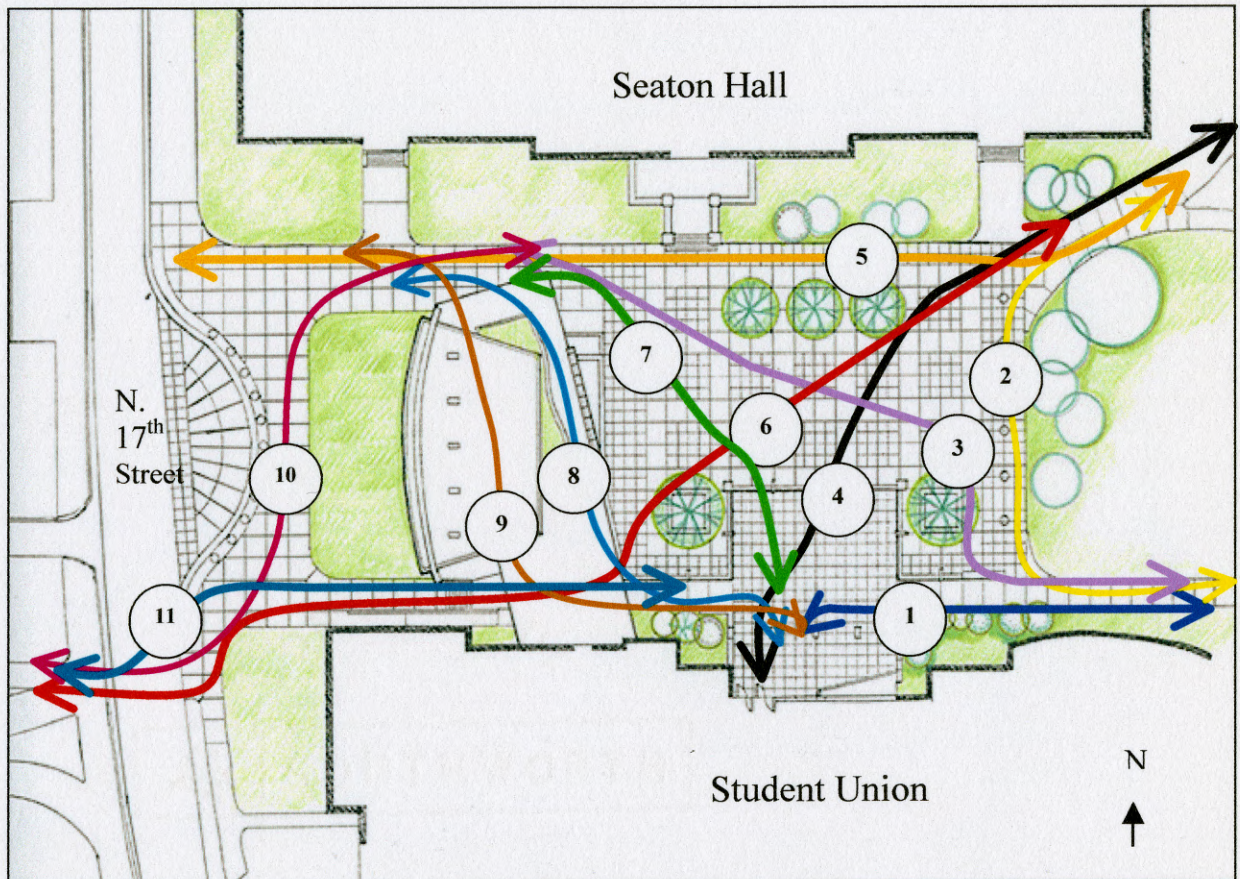


Figure 3.4: Major pedestrian flows.

When the traffic was heavy, it was difficult to count people in each flow, especially, flow 4. Therefore, in order to fix this problem on the base map, particular points were marked on each flow line, and people were counted as they crossed these lines in a given time period. These particular points are marked letters A through L as shown in the map of figure 3.5.

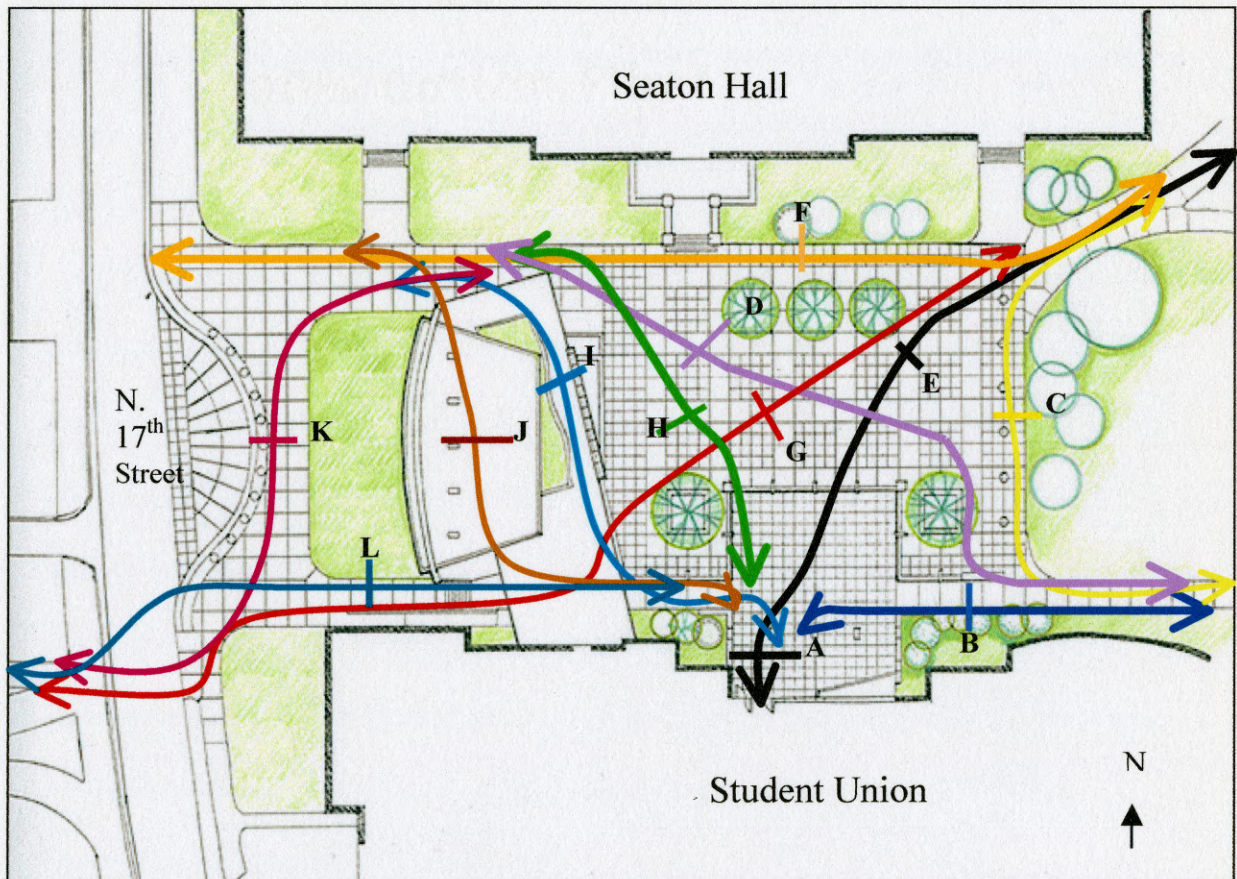


Figure 3.5: Major pedestrian flows with particular points.

Methodological Procedures for Observing People in Movement

After the pilot study was completed and recording procedures improved accordingly, formal observation was scheduled for six working days between Thursday, October 10 and Thursday, October 17, 2002, from 9:19 a.m. to 4:31 p.m. This length of time was used in order to observe people in movement, and to record their patterns in Union Plaza. The details of major pedestrian routes were then presented by different colors on the A3-size base map. The location to monitor pedestrians was observation point 2 as shown in figure 3.2 (p. 31).

The weather in general that week was mild and mostly sunny with a few days with cloudy periods. With the exception of Wednesday, there was no precipitation. The time periods chosen are when most of the classes occur, and it is when the plaza is most used by pedestrians. Most of the earliest classes begin at 8:00 a.m., but at that time Union Plaza is only used minimally. Hence, observation began at 9:19 a.m. because at this time there are many students in the space and therefore more activity to observe. From the pilot study, the highest intensity of activities occurs during a ten-minute period from twenty to half past the hour. That is the reason for conducting most of the observations during this time period.

It is important to note that almost all departments of Kansas State University end their last class by 5 p.m., and the plaza does not experience many activities after that time. With these concerns in mind, observations for the behavior mapping were concluded at 4:31 p.m. Based upon the need for good weather when people would feel comfortable being outside, the behavior mapping was conducted in October. Because this month is part of the fall season, there is not much chance of experiencing severe

weather conditions. Also during this time, because of the exceptional Kansas fall weather, people are more likely to participate in outdoor activities in Union Plaza. Table 3.1 reports the temperature (Fahrenheit) during the observation week.

Table 3.1: The climatic conditions of the six days of observing people in movement.

Day	Temperature (° F)
Thursday 10 th	77°
Friday 11 th	70°
Monday 14 th	65°
Tuesday 15 th	62°
Wednesday 16 th	59°
Thursday 17 th	60°

Source: The Kansas City Star.

The plaza observation began on Thursday, October 10, 2002 at 9:19 a.m. The people walking through the first observation point—A—on flow 1 were monitored and counted for one minute. The next point—B—on flow 2 was observed at 9:20 a.m. to 9:21 a.m. As illustrated in figure 3.6, to record users, many base maps and observation forms were required. Using the counts from these maps and forms, a separate table was prepared for each of the twelve-minute periods. This table is a matrix of the counts for each time period set along the horizontal axis and the particular observation point set along vertical axis.

Monday October 14, 2002											
Observation of pedestrian movement											
Location	9:19 – 9:20	9:20 – 9:21	9:21 – 9:22	9:22 – 9:23	9:23 – 9:24	9:24 – 9:25	9:25 – 9:26	9:26 – 9:27	9:27 – 9:28	9:28 – 9:29	9:29 – 9:30
203 A	16 + 6 + 2 (24)										
20 B		III (3)									
8 C			— (1)								
51 D				III (12)							
177 E					12 + 16 (28)						
90 F						4 + III (9)					
48 G							III (3)				
39 H								III (4)			
16 I									II (2)		
5 J										— (1)	
27 K											I (1)
31 L											II (2)

Figure 3.6: Observation form for counting pedestrian movement.

The first plaza observation period finished at 9:31 a.m. at the last major pedestrian flow—number 11. Each of the flow paths was observed and its intensity of use was recorded. The next plaza watching began at 10:19 a.m. and ended at 10:31 a.m. The mapping process was completed every twelve minutes between nineteen minutes and thirty minutes past an hour. The observations ended at 4:31 p.m. and it continued for 6 days with 8 time periods per day. The whole process of mapping was accompanied with photographic documentation and rough estimation regarding the number of people in these major flows was made. The findings of the mapping process will be discussed in

the following chapter. First, however, it is important to describe the research method for observing and recording users at rest.

Methodological Procedures for Observing People at Rest

The mapping procedure for people at rest was similar to that used to record movement patterns, although there are some differences in techniques as required by the specifics of mapping people at rest. To have a better sense of relationships between users and Union Plaza, the base map (see figure 3.7) for observing people at rest has more physical details—benches, groups of picnic tables and chairs, low walls, ledges, and landscape—than the map used for pedestrian movement. While mapping, the base map was placed on a clipboard for ease in handling. Major seating and standing locations were mapped on the base map using dots of different colors. Some instances of triangulation, or other interesting information was recorded as verbal notes along with the mapping.

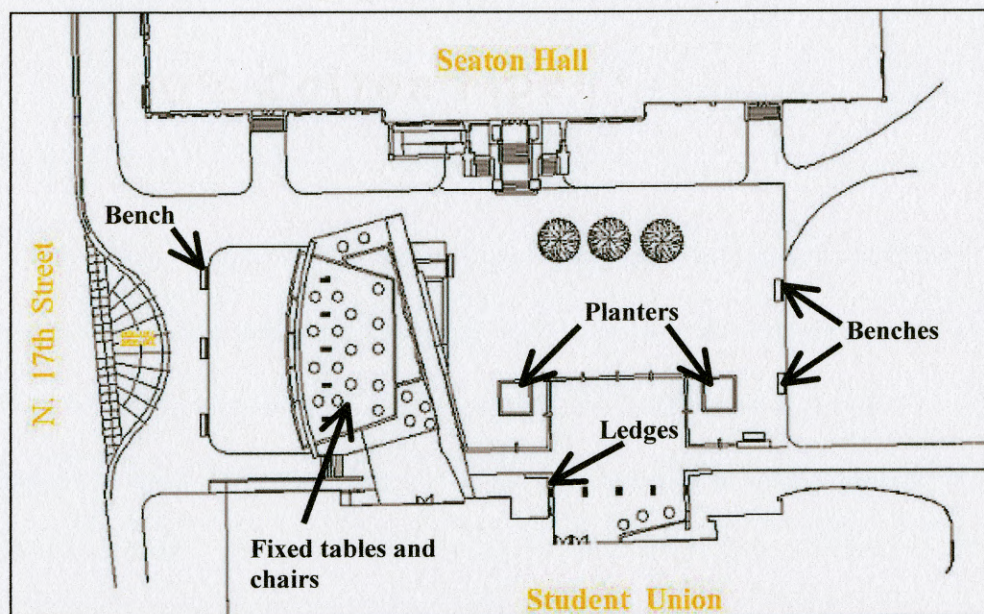


Figure 3.7: Base map of observation of people at rest.

The observation of people at rest in Union Plaza was conducted for a span of five days when the university was in session between Monday, September 22, 2003 and Friday, September 26, 2003. As with movement, this particular period in September was chosen because of the moderate weather conditions. As illustrated in table 3.2, the weather during this period was not severe; moreover, on each day, the temperature was mild and warm, encouraging people to participate in outdoor activities.

Table 3.2: The climatic conditions of the five days of observing people at rest pattern.

Day	Temperature (° F)
Monday 22 nd	72 °
Tuesday 23 rd	77 °
Wednesday 24 th	71 °
Thursday 25 th	62 °
Friday 25 th	62 °

Source: The Kansas City Star.

During the pilot study, five major zones where people frequently involved themselves in activities were identified (see figure 3.8), and recording maps were divided into five areas in order to facilitate the describing and counting of user activity. These five areas included: (1) the main entry to Student Union; (2) the spatial core of the plaza; (3) the outdoor eating area and water fountain; (4) the vehicle drop off area; and (5) the steps at the three main entrances of Seaton Hall.

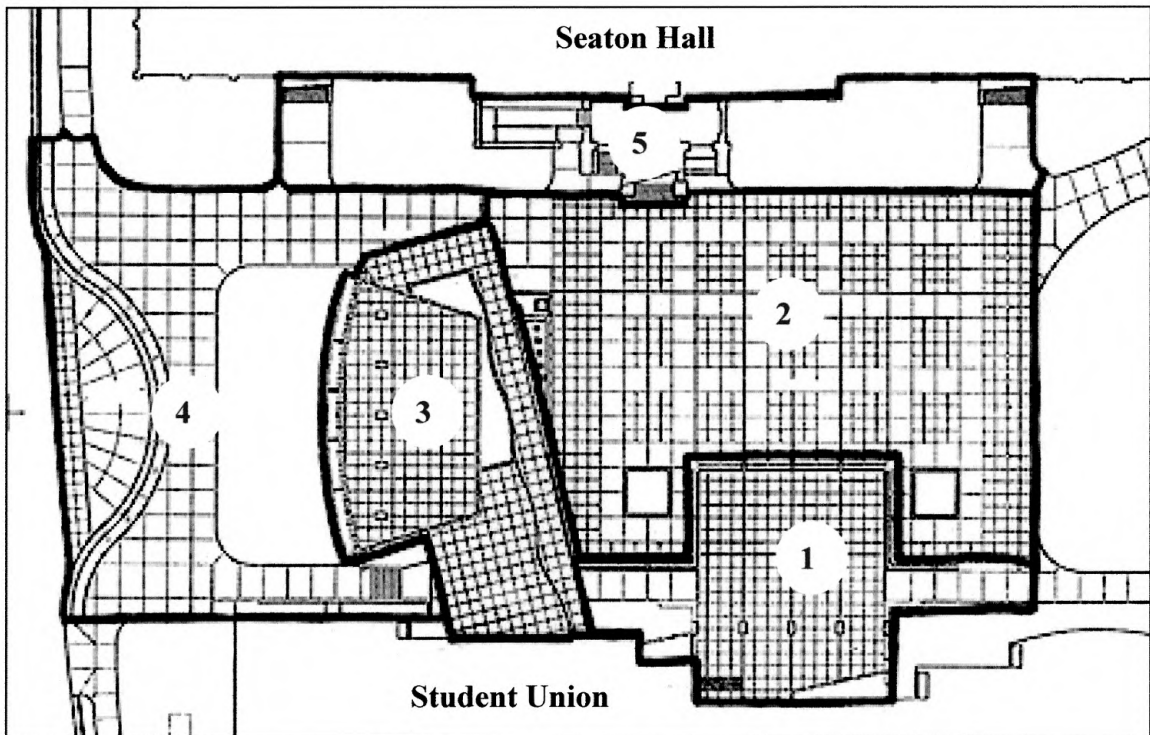


Figure 3.8: Five major zones.

These five major zones were observed in term of: (1) seating locations; (2) common standing locations; (3) the number of people using different seating locations; and (4) the activities users partake in when they were in the plaza. The seating and standing locations were primarily recorded on the base map and grounded in counting number of users. Each of the five zones was observed for two minutes.

As described earlier, the mapping procedure of people at rest is similar to the recording of people's movement patterns, thus a set of ten base maps and ten observation forms, as shown in figure 3.9, was used at different times of each day. While mapping, these maps were placed on a clipboard for ease in handling. To count the number and to map the location of users, it was important to have clear visual access to each of the seating spots. After several attempts to find the best spot, it was felt that observation

point 2 provided the best view and allowed observation of other information such as users' gestures, size of the user group, and so forth.

BEHAVIOR MAPPING - DATA COLLECTION FORM		Location: <u>Union Plaza</u>			
Date: <u>Monday, September 15 '03</u>		Time:			
Location Time Period	A 9:55-9:57	B 9:57-9:59	C 9:59-10:01	D 10:01-10:03	E 10:03-10:05
<u>Activities</u>					
1. Sitting-Smoking	I				
2. Sitting-Reading	III	II	III III		
3. Sitting-Observing					
4. Sitting-Conversing	II	III III	II		
5. Sitting-Eating					
6. Sitting-Using Cell-phone					
Sitting - Total					
1. Standing-Smoking		I			
2. Standing-Conversing					
3. Standing-Observing					
4. Standing-Using Cell-phone					
Standing - Total					

Figure 3.9: Observation form for counting people at rest.

The observation of people at rest started at 9:55 a.m. and ran to 2:35 p.m. As already pointed out, Union Plaza experiences greater activity during lunchtime and the ten-minute breaks between classes. Thus, most of the observations focused on these time periods. The mapping was divided into three time sessions—morning, mid-day, and afternoon. Five periods—9:55– 9:57 a.m., 9:57 – 9:59 a.m., 9:59 – 10:01 a.m., 10:01 – 10:03 a.m., and 10:03 – 10:05 a.m.—were mapped to study the morning period. This was followed by mapping of the mid-day lunch period, which ran from 11:55 a.m. – 1:05 p.m. Last the afternoon period was observed and ran from 1:25 p.m. – 2:35 p.m.

Beginning at 9:55 a.m., the main entrance of Student Union was also monitored and mapped for a span of two minutes. The important information recorded during this mapping was the number of people, the locations where those users were, and the type of activities they were involved in, such as conversing, smoking, eating, reading, or talking on cell phones. Also, the size of the group was mapped. To record the different activities, people indicated on the base map in different colors.

Illustrated in figure 3.10, each person was represented by a different symbol in order to identify a certain type of activity—for example, an X indicated a stationary cell-phone users, while a solid dot indicated a user standing and speaking to another user. In addition, people alone, or with others were indicated by a circle around their activity symbol. After two minutes left, the next zone was observed for the same length of time. During the observations, a photographic record was also made.

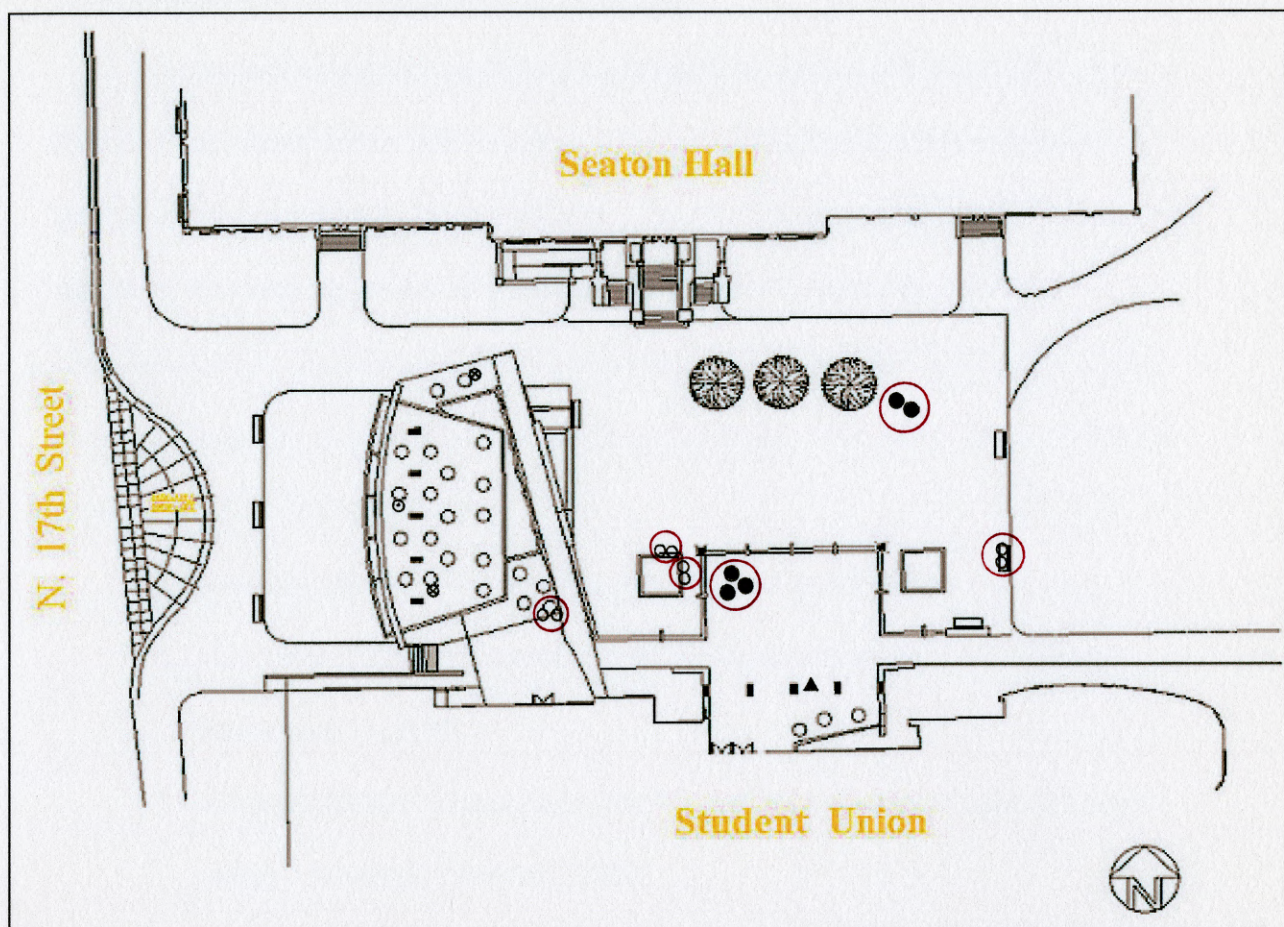


Figure 3.10: Mapping process of people at rest and symbols representing various activities in Union Plaza.

- Standing-talking
- ▲ Standing-smoking
- Standing-observing
- × Standing-using cell phone
- Sitting-talking
- ⊗ Sitting-reading
- ⊙ Sitting-observing
- ⓔ Sitting-eating
- Ⓢ Sitting- using cell phone

Methodological Procedures for Special Events

As mentioned earlier, this thesis also studied several special events in Union Plaza. These events are factors that change the typical plaza character in terms of pedestrian movement and behavior patterns. The procedure of mapping these events was similar to the mapping process of observing people at rest, including the same observation point (location no.2) and time periods (9:55 a.m. – 2:31 p.m.). Also, the same base maps for recording movement and rest patterns were used. The three special events observed were as follows:

1. Print and photograph sale – Tuesday, September 16, 2003.
2. The Union Program Council's "free ice-cream and music" – Wednesday, September 17, 2003.
3. Commercial fair / Pottery sale (two separate events held at same time in the plaza) – Monday, October 6, 2003.

This chapter has explained the methods used in this thesis in order to study user behavior in Union Plaza. The next chapter presents the results from these research methods, beginning with an analysis of user movements.

Chapter 4

A Behavioral Mapping Analysis of Movement in Union Plaza

This chapter reports the results from observing people in movement in Union Plaza. As described in the previous chapter, a major source for deriving observational data is from behavior mapping conducted at different time periods for six days. This behavioral analysis assumes that it is important to understand how Union Plaza is actually used and to identify its daily use patterns before any redesigns are made. Therefore, the aim in analyzing people moving is to investigate major pedestrian flows and to obtain a clear picture of daily use patterns and present functions of Union Plaza. In addition, this chapter will examine a number of other important questions such as: Who are the users using the plaza? Where do they come from and how do they arrive? What do they engage in the plaza?.

For clarity of study and a deeper interpretation of both aggregate counts and behavior mapping, this chapter is divided into two sections. In the first section, the flow patterns of users in movement is discussed and examined with the help of behavior maps. In the second section, observation tables are analyzed to compare users' patterns and interpret meaningful relationships.

Union Plaza's Major Movement Flows

As explained in Chapter 3, the information recorded on base maps explains the main function of the plaza and shows movement patterns, which are indicated as fixed

flow lines (see figure 4.1). These pedestrian movements clearly suggest the major traffic routes and access ways into the plaza. Specifically, one finds there are eleven major pedestrian flows, six of which converge at the Student Union. However, apart from these major flows, there are other smaller flows that are sub-branches of these major routes and thus not indicated in the flow map of figure 4.1, where the thickness of the lines indicates the intensity of the flows. This thickness was determined by the result of the aggregate count of users at each flow as shown in table 4.1 and graph 4.1.

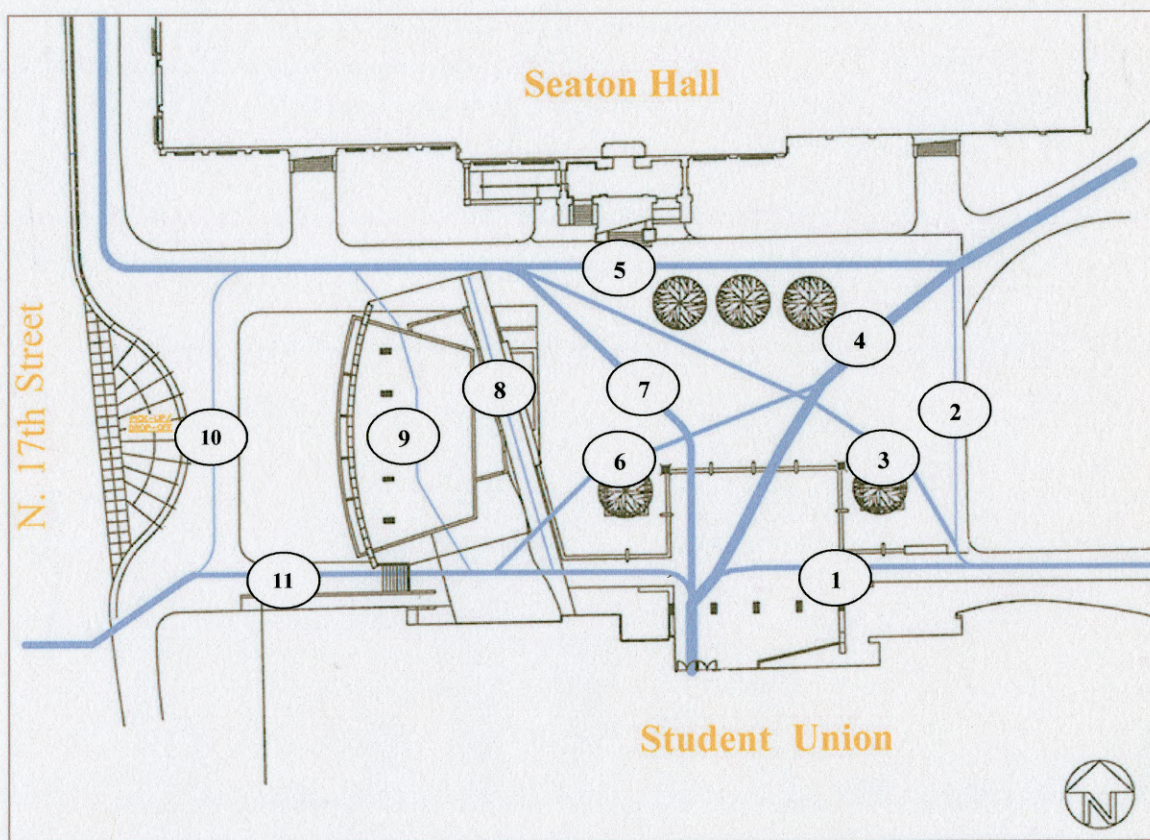


Figure 4.1: Major pedestrian flows in Union Plaza.

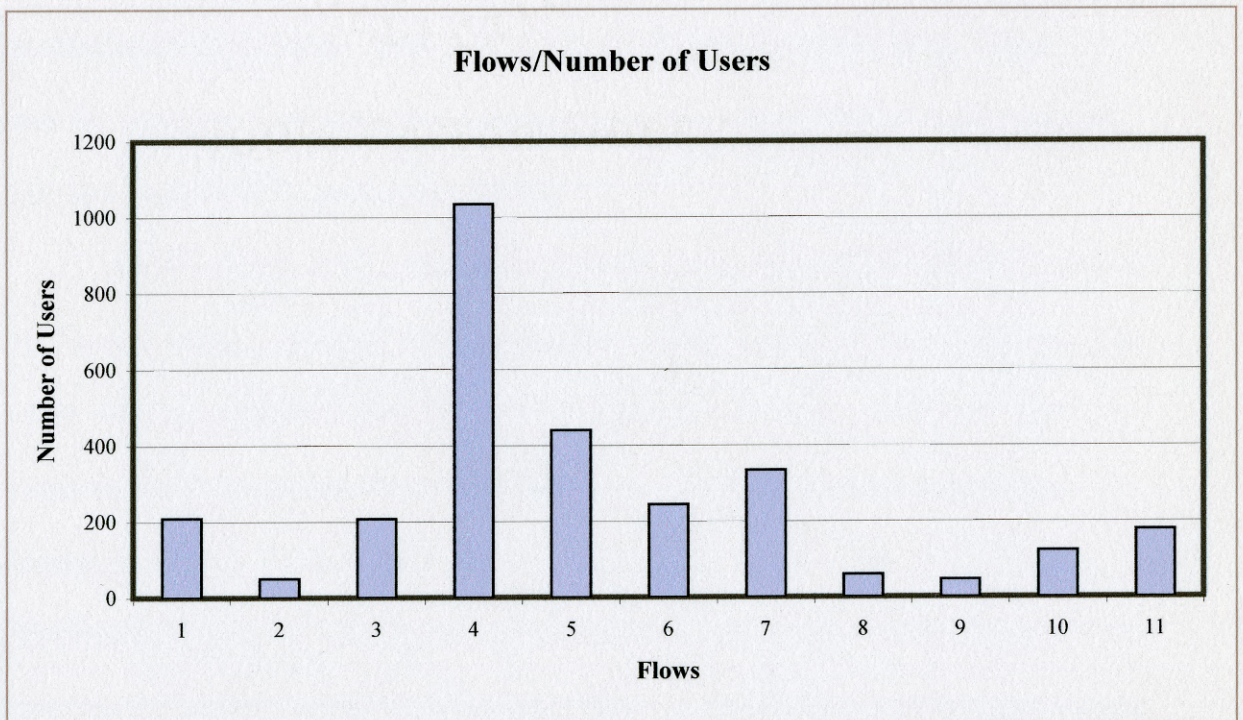
Key:

- Low pedestrian flow (149 or less users)
- Medium pedestrian flow (between 150 – 299 users)
- High pedestrian flow (between 300 – 999 users)
- Highest pedestrian flow (over 1,000 users)

Table 4.1

**Comparison of Total Weekly Number of Users on Major Pedestrian Flows
Thursday October 10 – Thursday October 17, 2002**

Major Pedestrian Flows	Number of Users
1	209
2	50
3	207
4	1035
5	440
6	244
7	334
8	60
9	46
10	123
11	178



Graph 4.1: Comparison of total weekly number of users on major pedestrian flows.

Observations indicate that the main factors that influence these major flows are the direction and the destination of the users. Pedestrians frequently move between buildings by using the Union Plaza as their path. The time periods—the ten-minute break between classes, lunchtime, and the class schedule of the particular day—are also important factors. Several times during the observation period a special event occurred in the plaza space that changed the flow patterns through the plaza. Another key factor is the weather, thus rain and cold discourage activities in the plaza as fewer people visit the Student Union, while good weather encourages people to linger in Union Plaza.

Table 4.1 and graph 4.1 illustrate the aggregate number of pedestrians using different travel routes through the plaza. One notes that the eleven major flows in Union Plaza can be divided into three groups: (1) high-pedestrian flows—flows 4, 5, 7; (2) medium-pedestrian flows—flows 1, 3, 6, 11; and (3) low-pedestrian flows—flows 2, 8, 9, and 10. Next, we need to describe the character of these flows, the movement patterns, and how each relates to pedestrian activity.

As shown in table 4.1, there were 1,035 people using flow 4 to walk in and out of the Student Union. This total indicates that flow 4, which begins from the northeast side of the campus, is the most intense pedestrian flow in Union Plaza. Functioning as a major traffic thoroughfare, flow 4 daily includes a great bulk of pedestrians during lunchtime and ten-minute break (see the photographs of figure 4.2 and 4.3). The information from table 4.2 and graph 4.2 reveals that lunch break was the time that flow 4 involved the largest number of pedestrians. This could be explained by the large number of pedestrians using the Student Union for lunch. The plaza activities intensified during the mid day until late afternoon when intensity decreased.



Figure 4.2: Flow 4.



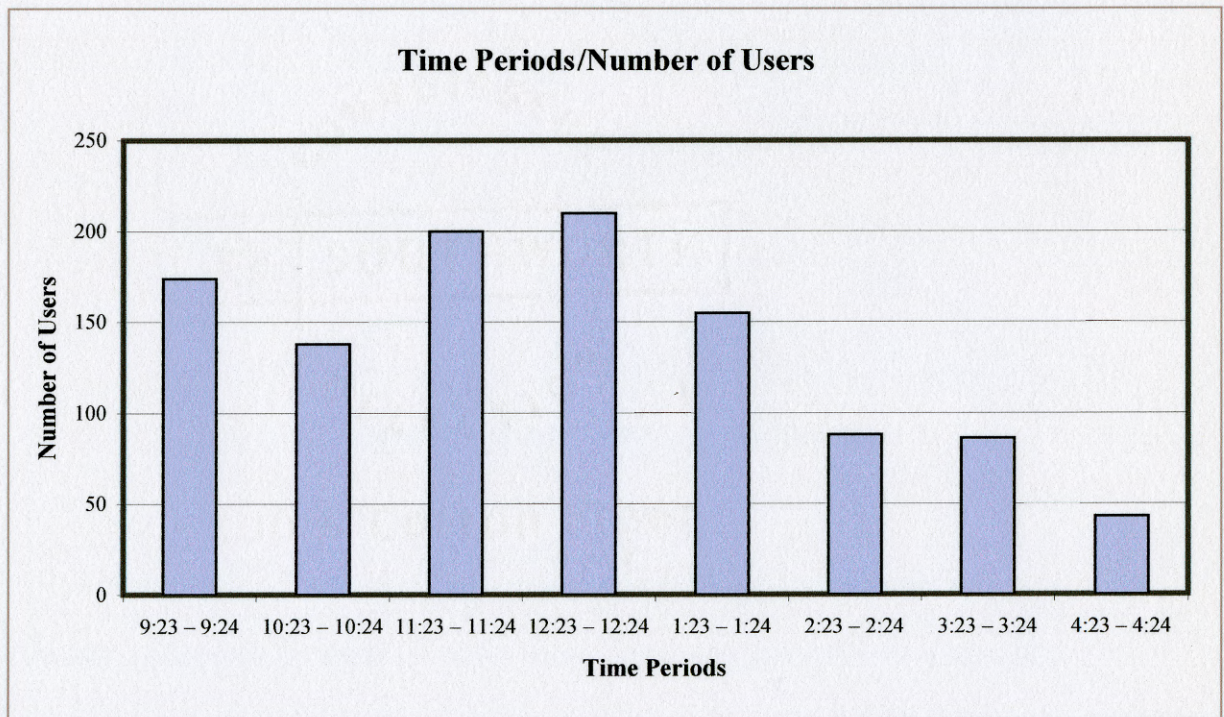
Figure 4.3: Flow 4.

Table 4.2

Comparison of Total Weekly Number of Users on Flow 4 at Different Time Periods

Thursday October 10 – Thursday October 17, 2002

Time Periods	Number of Users
9:23 – 9:24	174
10:23 – 10:24	138
11:23 – 11:24	200
12:23 – 12:24	210
1:23 – 1:24	155
2:23 – 2:24	88
3:23 – 3:24	86
4:23 – 4:24	43



Graph 4.2: Comparison of total weekly number of users on flow 4 at different time periods.

It should be marked that flow 4 is used by various groups of people—faculty, students, employee, and visitors—directly walking to the Student Union. As illustrated in figure 4.4, most pedestrians using flow 4 enter and leave Union Plaza from the east and northeast side of the campus. In addition, another important group of pedestrians traveling on flow 4 are architecture students and faculty who enter or leave the eastern entrance of Seaton Hall.

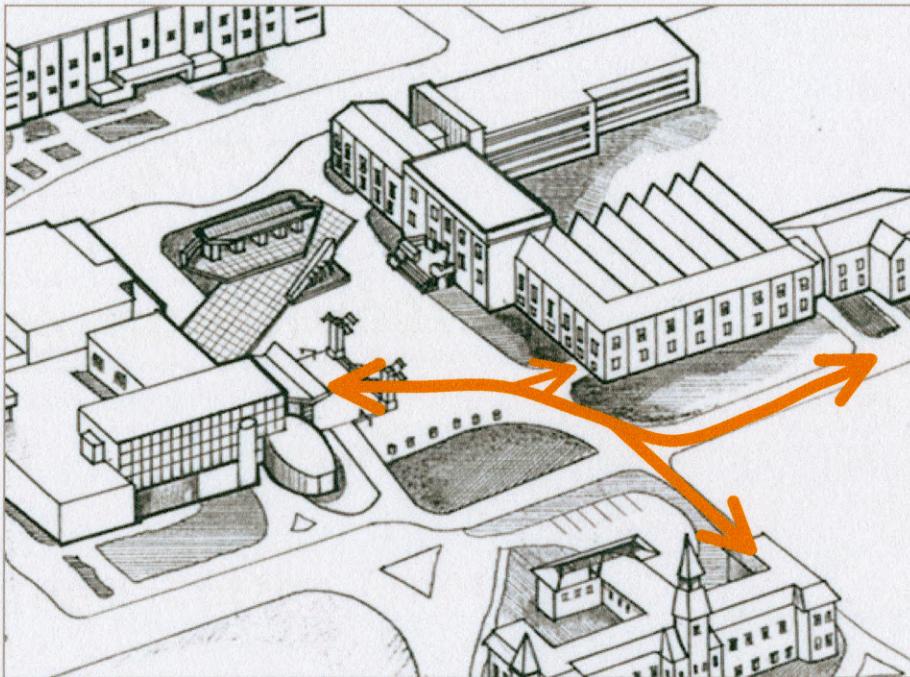


Figure 4.4: Sources of pedestrian flow 4.

During most observation days, many conversations occurring along flow 4. Usually, pedestrians stopped and had a conversation with their friends whom they bumped into while walking along flow 4 (see figure 4.5). This action can be explained as the “traveling conversation” that Whyte (1980 p. 21) describes. The next chapter on “rest” in the plaza will discuss this pattern in greater detail.



Figure 4.5: Traveling conversation occurring on flow 4.

The next flow that will be discussed is flow 5, which originates from the northeastern and the northwestern sides of Union Plaza. With 440 people passing through it during the six days of observation, flow 5 is the second highest flow in the plaza. It should be noted that this flow is not a passage moving towards the Student Union but functions as a narrow corridor that pedestrians use for crossing the plaza in an east-west direction. Usually, students moving from one class to another or moving between buildings are a major user group of this flow.

The third largest flow of the plaza is flow 7, which involved a total of 334 users during the observation period. With one end at the Student Union entry and the other at the northwest border of the plaza, the movement pattern of this flow is mostly directed towards the Student Union. A majority of users are students and faculty coming from the

northwestern side of the campus and the main entrance of Seaton Hall in order to use facilities at the Student Union.

Having looked at the 3 flows with the greatest intensity, we next consider lesser flows with aggregate totals ranging from 250-150. These flows are 1, 3, 6, and 11. Flow 1, situated on the southern edge of Union Plaza, is another of the major flows moving towards the Student Union. As shown in table 4.1, the aggregate number of pedestrians of flow 1 is 209 pedestrians arriving from the south or the southeast side of the campus. A majority of the users of this path do not go to the Student Union but use the plaza as a transit pathway and move to the east or to the west across the north face of the Student Union.

The next route is flow 3, having 207 users. The pedestrians along this flow were not heading to the Student Union at all, but merely users of Union Plaza. The source areas for these users are similar to that of paths 7,8, and 9, but the destination is obviously different. Flow 3 exists as an informal crossroad—paths that are clearly observable on the plaza but not formally constructed.

Flow 6, with 244 users during the study is similar in use to flow 3, and its users move from the southwest or the northeast in a diagonal direction across the plaza. Most people on this pathway are coming from or going to the west side parking lot to their homes in the neighborhoods west of campus. Those who are traveling northeast are going to campus buildings towards the east or slightly north of the plaza.

As another transit path, flow 11, with only 178 users, was one of the less used flow paths on Union Plaza. Flowing mostly in an east-west direction, this flow meshes somewhat with flow 1. The users of flow 11 may enter the Student Union or they may

continue across the front of the Union. These users may be from the same source as those that use flow path 6 and 10—the neighborhoods west of campus.

The pathways designated as low pedestrian intensity—flows 2, 8, 9, and 10—are used by less than 130 people over the observation period. Flow 2 had only 50 users during that time period and traverses the space between the northeastern and the southeastern corners of the plaza. With the sidewalk at the eastern border of the plaza taking most of the north-south traffic, flow 2 is out of the way for most users. The most probable users of this pathway are those that come from the southeastern part of the campus and are headed toward the northeastern entrance of the plaza. In addition, of these users are architectural students coming from Seaton Hall and walking to classes in other buildings situated in the southeastern side of the campus.

Two low flows are flows 8 and 9, which are similar in location and pattern of users. These flows run parallel to each other along the outdoor eating area. Most users of these two pathways come from the northwestern side of the campus and head for the Student Union. Even though flow 8 was obviously designed to serve as a small street taking its users to the Student Union or to the northwestern border of the plaza, this flow, with sixty users, was rarely used by pedestrians. However, when Union Plaza was occupied by a large special event and a large crowd of people in the plaza center, other users tended to use flows 8 or 9 to avoid the crowd.

Finally, the last pedestrian route, flow 10, is along the western edge of Union Plaza. This flow involved people dropped off from cars in the vehicle access drop off area, or people coming from the old Stadium parking area. The majority of users of this

path either are going to Seaton Hall or are continuing across the northern edge of the plaza and exiting at the northeastern corner.

In studying the movement patterns of pedestrians in Union Plaza, it is important to report the destination that most pedestrians walk towards, and what access routes were used to get there. Table 4.3 and graph 4.3 summarize the aggregate number of people passing through particular points used for observation. As explained in the last chapter and as shown in the map of figure 4.6, these particular points—letters A through L—were marked on each flow line to help with the counting.

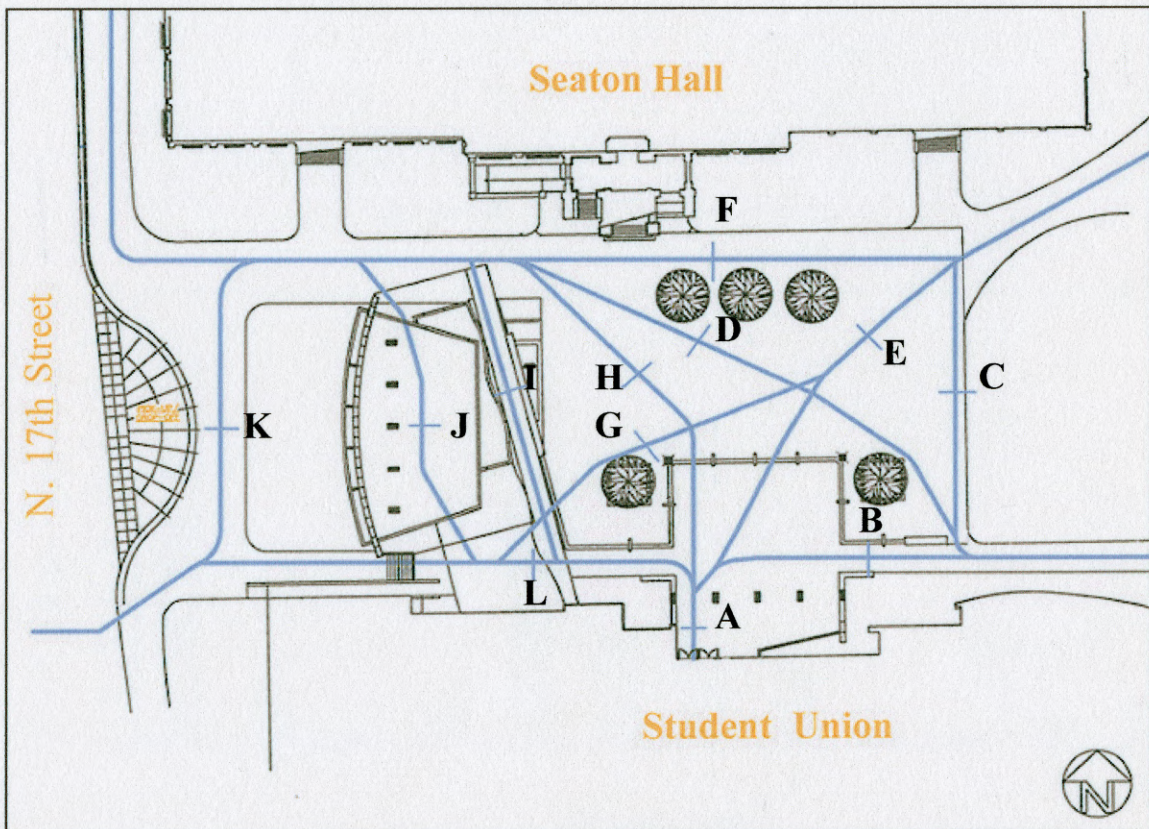
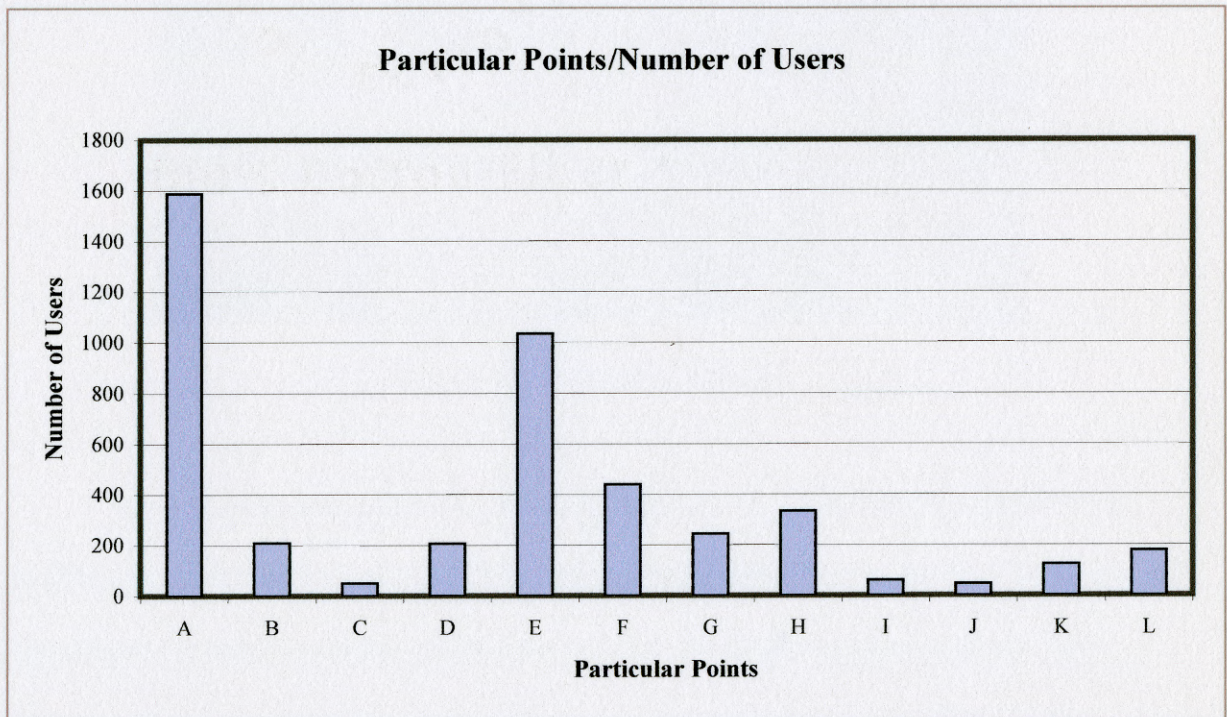


Figure 4.6: The particular points.

Table 4.3

Comparison of Total Weekly Number of Users crossing points A through L
Thursday October 10 – Thursday October 17, 2002

Particular Points	Number of Users
A	1589
B	209
C	50
D	207
E	1035
F	440
G	244
H	334
I	60
J	46
K	123
L	178



Graph 4.3: Comparison of total weekly number of users at particular points in Union Plaza.

The findings of these observations (see table 4.3 and graph 4.3) indicate that the main entry of the Student Union, which has the greatest concentration of flows in the Union Plaza, was the primary area where most pedestrians go from or to. For the six observation days at the selected time periods, the total number of people passing through point A, located at the main entry of the Student Union, was 1,589. As a result of facilities inside the Student Union, six of the major pedestrian flows converge at point A (see figure 4.7), right in front of a main entrance of the Union building.



Figure 4.7: Particular point A.

Another important point –E– which had the second highest point of pedestrian traffic in the plaza with a total of 1,035 users during the observation period. Flow 4 is used throughout the day by students walking to and from the Student Union or to and from points on campus north of the plaza. The various sidewalks that lead to flow 4 bring students from many directions onto this one path. Because flow 4 is a major thoroughfare, point E is passed by many users of the plaza. Other points summarized on table 4.3 and

graph 4.3 will not be discussed further because of their low counts relative to busy points A and E.

Union Plaza's Aggregate Weekly Flow

On the six observation days of Thursday October 10 – Thursday October 17, 2002, the number of users moving through the plaza was established by tracking and counting. From observations, it can be concluded that most of the users are students, faculty, and employees coming from nearby buildings. One might say that Union Plaza is the stage in which the drama of university social life unfolds because this space is an essential part of the routines of work and school life at Kansas State University. In other words, Union Plaza provides channels of movement, nodes of communication, and a common area for members of the University community as well as for visitors.

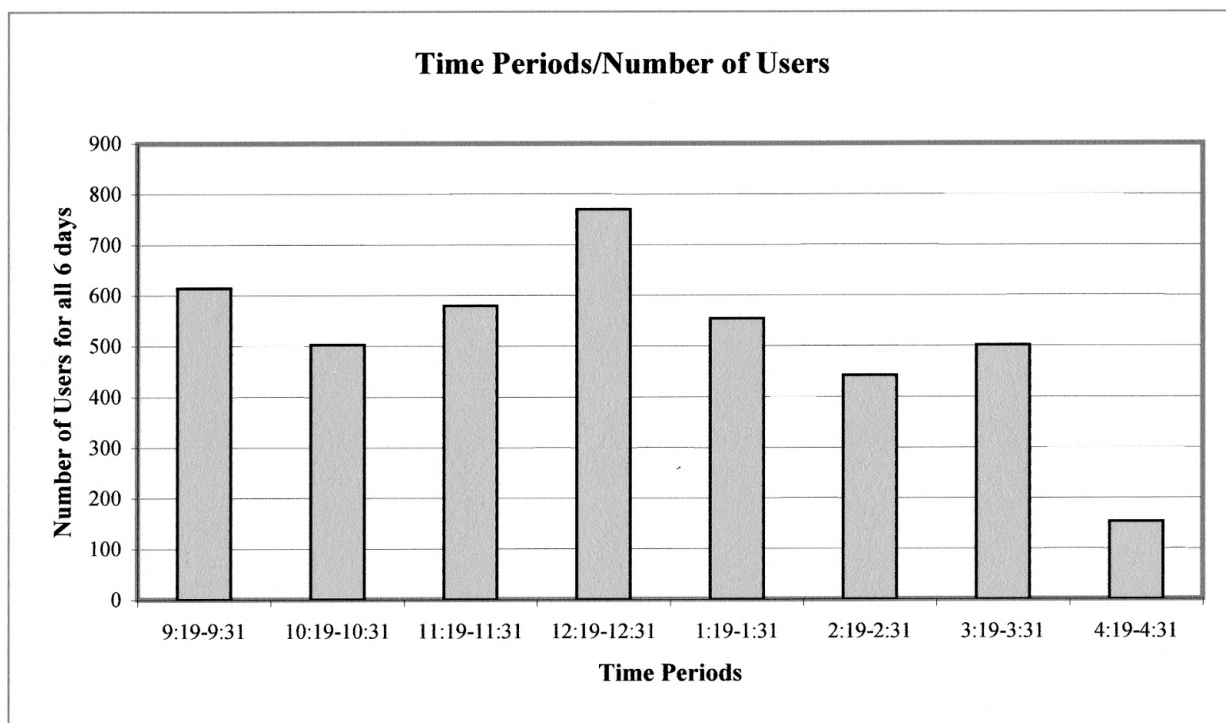
During a full week of observations, one of the most interesting findings was the weekly ebb and flow of people using the plaza. People in movement are the first and foremost activity, which generates the basic liveliness of Union Plaza, especially on weekdays. The data in table 4.4 and presented in graph 4.4 portray the weekly fluctuation of users. Clearly, these data show that the variation of pedestrian flows depend considerably on time period.

As table 4.4 and graph 4.4 indicate, the rhythms of Union Plaza's life in the morning hours were sporadic. Most of the earliest classes begin at 7:30 a.m. and this is when earliest activity begins in the plaza. At this time, a few students arrive on campus and rush to their classes or go to the Student Union for breakfast or a cup of coffee. As shown by table 4.4, activity livens up by 9:19 a.m. as many students (over 600) began to walk through the plaza after early classes have ended. However, the number of users

Table 4.4

Aggregate Weekly Flows by Observation Periods
Thursday October 10 – Thursday October 17, 2002

Time period	Number of Users for all 6 days
9:19-9:31	615
10:19-10:31	503
11:19-11:31	580
12:19-12:31	770
1:19-1:31	555
2:19-2:31	442
3:19-3:31	502
4:19-4:31	153



Graph 4.4: Aggregate weekly flows by observation periods.

during the observation period decreased by 100 people at 10:19 a.m.– 10:31 a.m. to 503 users. In the next observation times, the aggregate number of users gradually increased and reached a peak at lunchtime with 770 users. The period 12:19 p.m. – 12:31 p.m. marks the peak time when weekly travel is most concentrated.

However, the number of users drops to 555 in the late afternoon in the time period of 1:19 p.m. to 1:31 p.m. This can be explained by the fact that most classes in the afternoon section have started at 1:30 p.m. and the lunch hour of faculty and employees has ended at 1:00 p.m. Therefore, these users have to travel back to their buildings to return to work. Also those students who have come to the Student Union for lunch or to meet friends have left to go back to classes or to their homes for the day.

In the 2:19 p.m. – 2:31 p.m. observation period, the use of the plaza decreased by another 100 people. Most people by this time have already eaten lunch for the day. In contrast, the number of users increased by 100 people at 3:19 p.m. – 3:31 p.m. this upswing in the number of users of the plaza may explained by most classes on campus ending at 3:20 p.m. and the students and faculty crossing the plaza in order to get home. In addition to the ebb and flow in the plaza, there are always users that cross the space merely to get from one point to another. These users walk through the plaza for a numbers of reasons including going from one class to the next one or going to the Student Union for a snack. By the last observation period, 4:19 p.m. – 4:31 p.m., there were only 153 users in the plaza. By this time, most classes have ended and a majority of users have returned home.

Day-by-Day Variations in Union Plaza's Aggregate Flows

As demonstrated above, the aggregate counts of users using Union Plaza for a full week provide a clear picture of the weekly ebb and flow of the plaza use and the certain time periods that the space experienced the highest and lowest number of users. To obtain a more precise understanding of the usage of the plaza at different days of the week, the next discussion will present the day-by-day variations in pedestrian flows on the six observation days from Thursday October 10 to Thursday October 17, 2002.

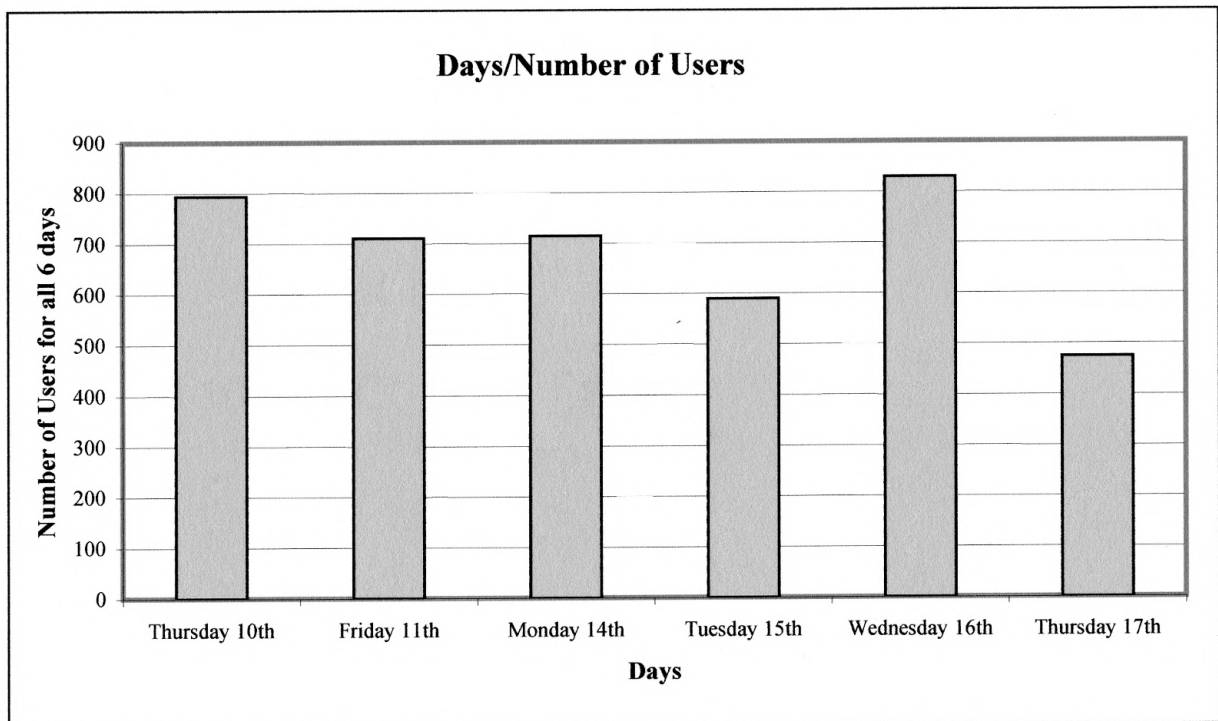
As shown in table 4.5 and graph 4.5, the total number of users throughout the six observation days was 4,117. Here one sees clearly that Wednesday 16 had the maximum recording of 844 users, followed by Thursday 10, which had 791 users. With 711 users, there was a decrease of about eighty people using the plaza on Friday 11, followed by Monday 14 with 715 users; Tuesday 15 with 590 users; and Thursday 17 with only 466 users.

Studying this data in greater detail, the numbers lead to a broader question: what are the major factors that influence the fluctuation of plaza use? To explain the differences in the numbers of users from one day to the next, there are many factors that are predictable and must be looked into. A major influence would be the day of the week. Generally, on Monday, Wednesday, and Friday there are more classes scheduled than on Tuesday and Thursday. Classes on Monday, Wednesday, and Friday only last fifty minutes with a ten minute break between, while Tuesday and Thursday classes last for an hour and fifteen minutes with a ten minute break between. This difference in schedule of the days was not taken into account when establishing the observation time periods. This oversight has effected the observation data.

Table 4.5

Day-by-Day Variations of Aggregate flows
Thursday October 10 – Thursday October 17, 2002

Days	Number of Users
Thursday 10 th	791
Friday 11 th	711
Monday 14 th	715
Tuesday 15 th	590
Wednesday 16 th	844
Thursday 17 th	466
Total	4,117



Graph 4.5: Day-by-Day variations of aggregate flows.

Another important factor that may influence the usage of the plaza is the weather. When the weather was fairly good on one day, the numbers of users was higher than on the same day the next week, which was cool and cloudy. This assumption can be used to explain the difference of the total counts of users between Thursday October 10 and Thursday October 17. However, the effect of temperature on walking behavior is rather subtle, and this thesis does not intend to measure it in any general way. Another, smaller influence on the numbers of users can be the times when various faculty are holding tests, especially in the larger classes on campus. While some students do not attend class everyday, they will be there when a test is held.

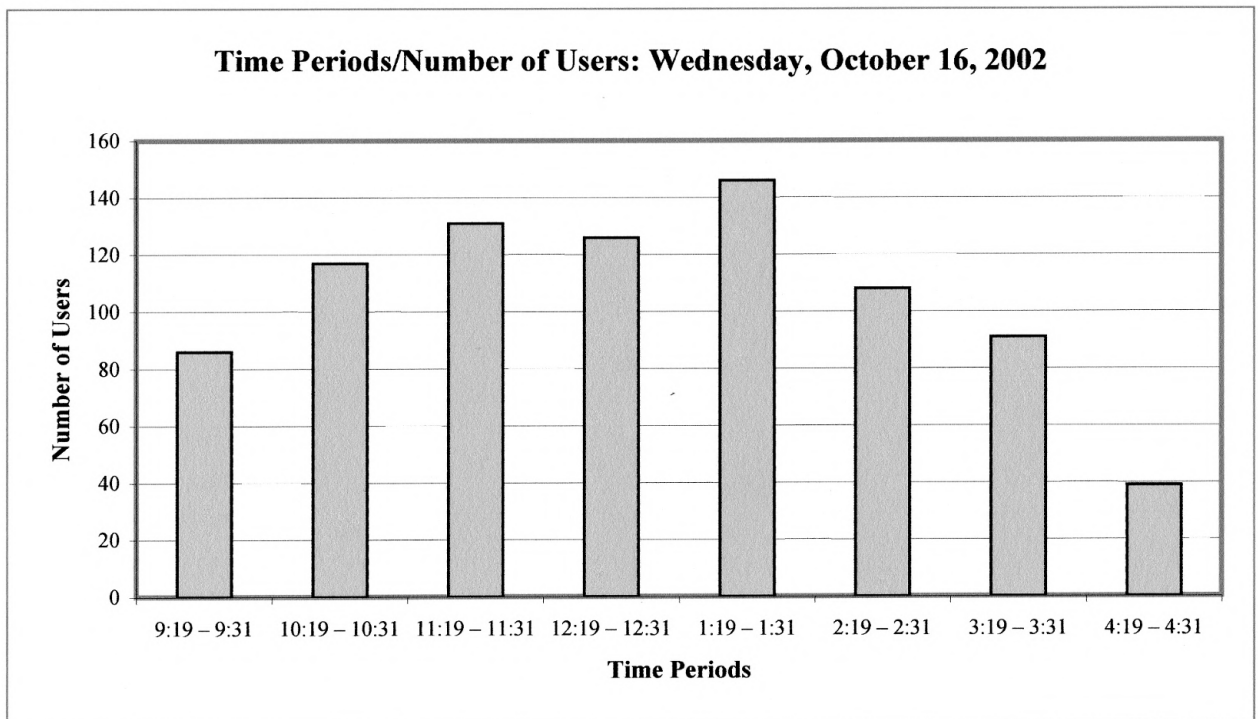
Table 4.6 and graph 4.6 shows the aggregate number of users at different time periods on Wednesday October 16, the busiest day observed. As presented in table 4.6, the time 1:19 p.m. – 1:31 p.m. was the peak period for Wednesday October 16 with 146 users. Because of a light rain in the morning hour between 9:19 a.m. to 9:31 a.m., the pedestrian rate was sporadic and less—about eighty-six users. However, the number of users continued rising to 131 users at 11:19 a.m. – 11:31 a.m., which was the time that the rain tapered off then stopped. In the late afternoon from the time 2:19 p.m. to 2:31 p.m., the number of users decreased to 108 and continued decreasing to 91 at 3:19 p.m. – 3:31 p.m. At the last observation time period, 4:19 p.m. – 4:31 p.m., there were only thirty-nine users passing through Union Plaza.

Another busy day during the observation week was Thursday October 10. As shown in table 4.7 and graph 4.7, on Thursday October 10, Union Plaza was livened up by a large number of users in the early morning. Starting at 9:19 a.m. – 9:31 a.m., there were 149 users entering the plaza. A majority of pedestrians was students heading to the

Table 4.6

Comparison of Intensity of the Plaza Use For Selected Time Periods on Wednesday October 16, 2002

Time Periods	Number of Users
9:19 – 9:31	86
10:19 – 10:31	117
11:19 – 11:31	131
12:19 – 12:31	126
1:19 – 1:31	146
2:19 – 2:31	108
3:19 – 3:31	91
4:19 – 4:31	39
Total	844

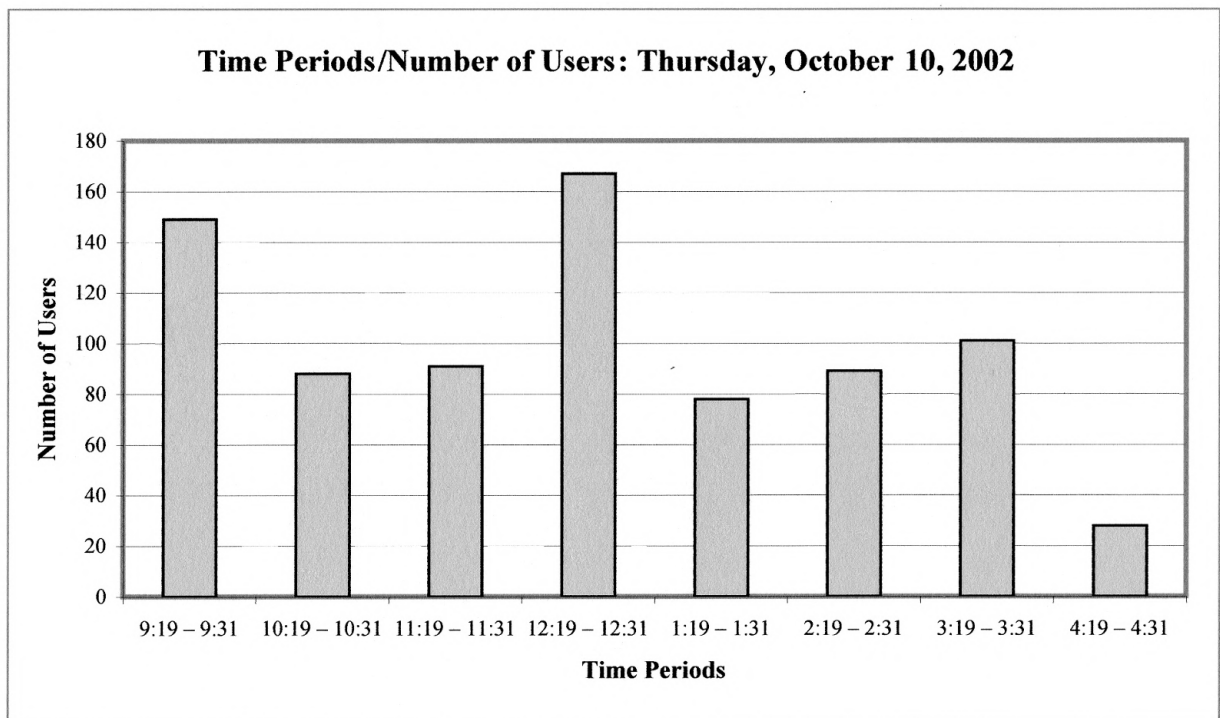


Graph 4.6: Comparison of intensity of the plaza use on Wednesday October 16, 2002.

Table 4.7

Comparison of Intensity of the Plaza Use For Selected Time Periods on Thursday October 10, 2002

Time Periods	Number of Users
9:19 – 9:31	149
10:19 – 10:31	88
11:19 – 11:31	91
12:19 – 12:31	167
1:19 – 1:31	78
2:19 – 2:31	89
3:19 – 3:31	101
4:19 – 4:31	28
Total	791



Graph 4.7: Comparison of intensity of the plaza use on Thursday October 10, 2002.

Student Union after first classes ended. The total number of users dropped rapidly to eighty-eight at the time period of 10:19 a.m. – 10:31 a.m. and slightly increased by three people at 11:19 a.m. – 11:31 a.m. The total count of pedestrian rose at 12:19 p.m. – 12:31 p.m. with 167 users. This was the peak time of Thursday October 10 when the pedestrian movement was the most concentrated. After the afternoon classes began, there was a rapidly decrease in the number of users compared to the time at 12:19 p.m. – 12:31 p.m. The amount of pedestrian remained nearly the same for the next several hours.

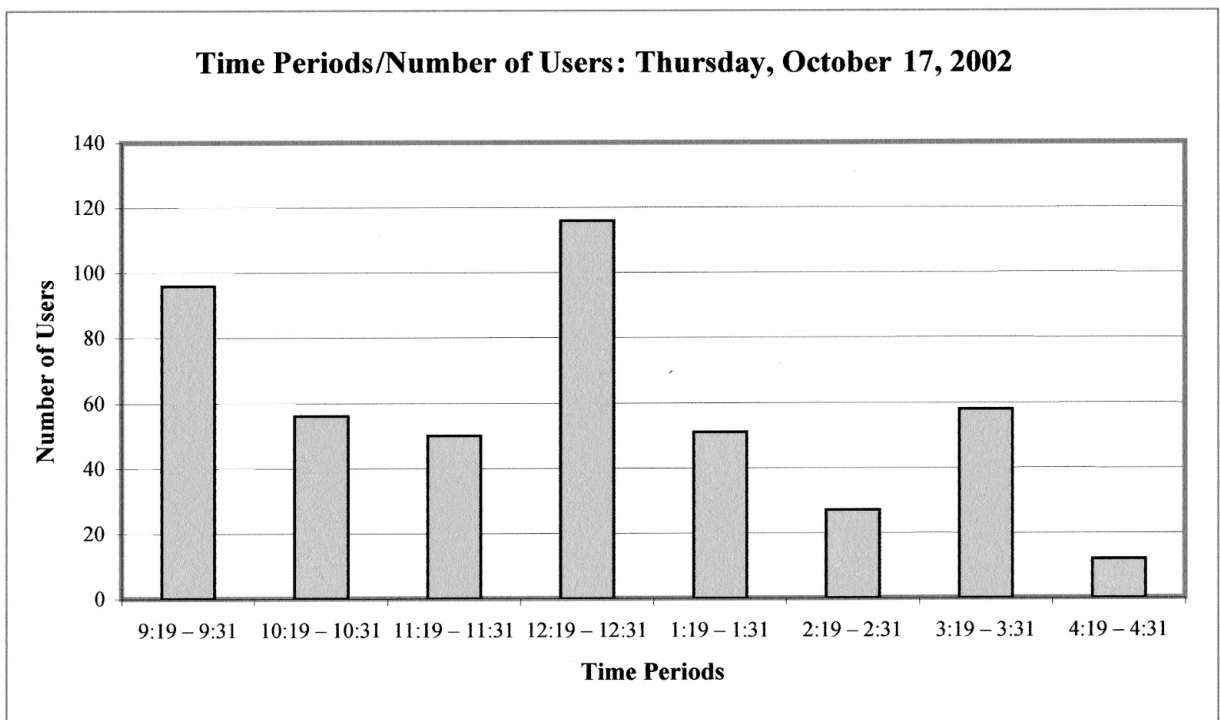
While Thursday October 10 experienced a dramatic number of users, one week later the total number of users became smaller by almost half of what they were on Thursday 10. As illustrated in table 4.8 and graph 4.8, there were only 466 users recorded on Thursday October 17. Union Plaza was visited by more people during the lunch hour or the peak time period, 12:19 p.m. – 12:31 p.m., with about 116 users than any other time in that day. In addition, it can be seen that the morning time periods (9:19 a.m. - 11:31 a.m.) had more pedestrians passing through the plaza (a total of 202) as compared to the afternoon counts between 1:19 a.m. to 4:31 p.m. (a total of 148). It can be concluded that many users leave campus after lunch hour or their morning classes have ended.

It is important to note that the two Thursdays in the study are influenced by much the same factors as far as those affected by the University. However, it is questionable that the usage on these two days, one week apart, is very different in terms of the total number of users. From the data, the main reason for this difference may have been the weather conditions. On Thursday October 10, the temperature was warm—77 degrees

Table 4.8

Comparison of Intensity of the Plaza Use For Selected Time Periods on Thursday October 17, 2002

Time Periods	Number of Users
9:19 – 9:31	96
10:19 – 10:31	56
11:19 – 11:31	50
12:19 – 12:31	116
1:19 – 1:31	51
2:19 – 2:31	27
3:19 – 3:31	58
4:19 – 4:31	12
Total	466



Graph 4.8: Comparison of intensity of the plaza use on Thursday October 17, 2002.

Fahrenheit. On the other hand, one week later, on Thursday 17, it was cooler, at 60 degrees Fahrenheit.

The Monday observations of users in movement are illustrated in table 4.9 and graph 4.9. This day recorded an average total count of about 715 users. The bar graph clearly indicates that there was a steady increase in the aggregate number of users as the day progressed from morning to midday. During the time 9:19 a.m. – 9:31 a.m., Union Plaza had ninety-one users. However, the number of users went down about ten people during the next observation time period. Again, the plaza was intense at the time 11:19 a.m. – 11:31 a.m. with ninety-eight users and an increase to users to 120 users at the time 12:19 p.m. to 1:31 p.m., probably because Monday is the first day of the new week and students are ready to be involved in classes again after the weekend.

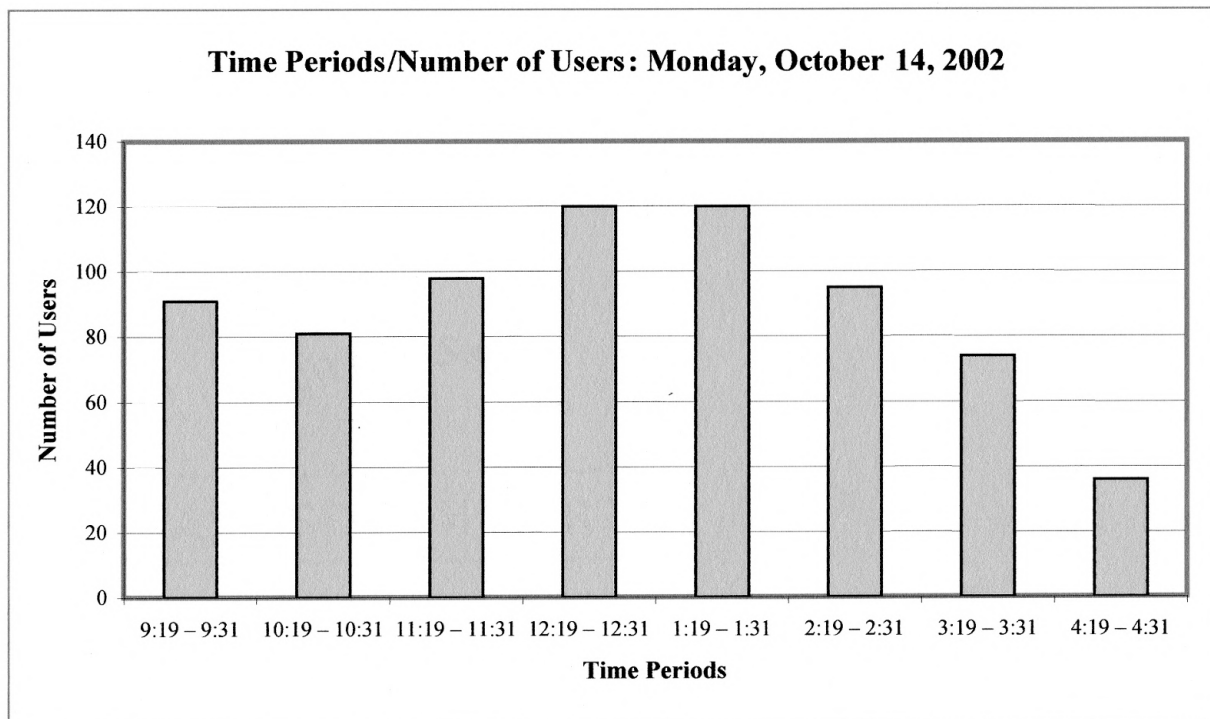
From bar graph 4.9, it is noticed that the afternoon counts in Union Plaza gradually dropped during the time 2:19 p.m. to 4:31 p.m. Notice that there were only thirty-six users entering the plaza in the last observation time period—4:19 p.m. to 4:31 p.m. An explanation for this decrease may be that there are many students still recovering from the weekend. Thus, these students may leave campus early after finishing their morning classes.

Another day that had almost an equal number of users recorded was Friday October 11. As shown in table 4.10 and graph 4.10, the total number of users during all observation times on this day was 711 users. Similar to Monday October 10, the morning hours had more users passing through Union Plaza than the afternoon counts. Note that on Friday, the last day of the week, most students' minds are probably on weekend and it

Table 4.9

Comparison of Intensity of the Plaza Use For Selected Time Periods on Monday October 14, 2002

Time Periods	Number of Users
9:19 – 9:31	91
10:19 – 10:31	81
11:19 – 11:31	98
12:19 – 12:31	120
1:19 – 1:31	120
2:19 – 2:31	95
3:19 – 3:31	74
4:19 – 4:31	36
Total	715

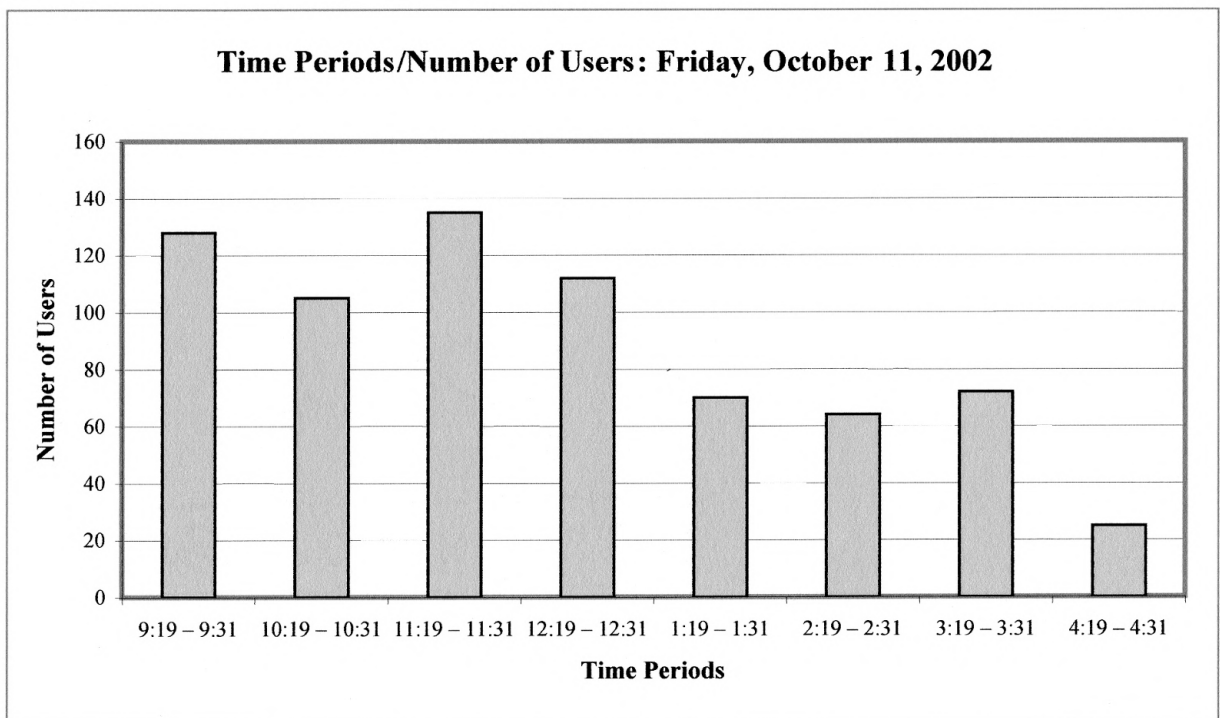


Graph 4.9: Comparison of Intensity of the plaza use on Monday October 14, 2002.

Table 4.10

Comparison of Intensity of the Plaza Use For Selected Time Periods on Friday October 11, 2002

Time Periods	Number of Users
9:19 – 9:31	128
10:19 – 10:31	105
11:19 – 11:31	135
12:19 – 12:31	112
1:19 – 1:31	70
2:19 – 2:31	64
3:19 – 3:31	72
4:19 – 4:31	25
Total	711



Graph 4.10: Comparison of intensity of the plaza use on Friday October 11, 2002.

is possible that people plan to end their activities and start their weekend earlier, even though most students have classes scheduled on this day.

During 9:19 a.m. – 9:31 a.m., a great number of users were moving through the plaza—128 users. However, the total count of users decreased by about twenty people at 10:19 a.m. and then gradually increased at 11:19 a.m. – 11:31 a.m., which was the peak time period of that day—135 users. When the time reached to 12:19 p.m. – 12:31 p.m., there were 112 users passing through the plaza. The number of users constantly decreased in the next two observation time periods—1:19 p.m. to 1:31 p.m. and 2:19 p.m. and 2:31 p.m. The total counts of users slowly increased at the time 3:19 p.m. – 3:31 p.m. to about seventy-two users and then the usage of the plaza was sporadic with only twenty-five users around 4:19 p.m. – 4:31 p.m.

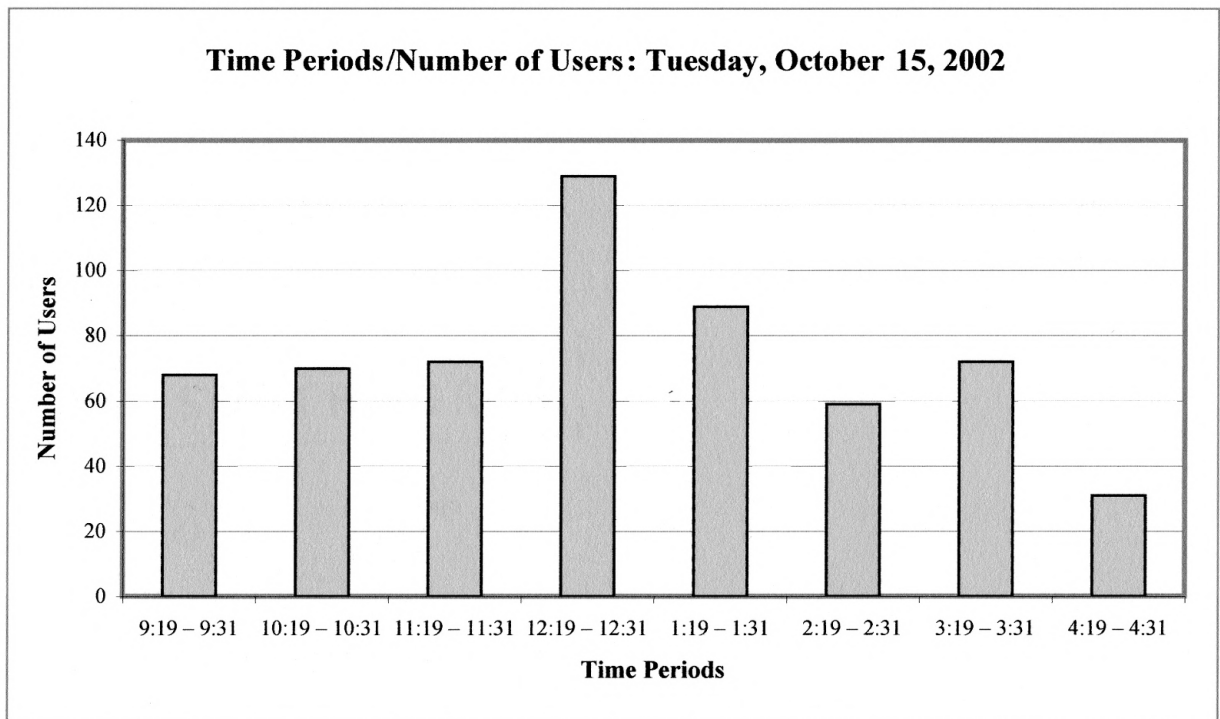
The last day that will be discussed is Tuesday October 15. As shown in table 4.11 and graph 4.11, a total of 590 users were recorded on Tuesday, which accounts for one of the smallest numbers of users during the six observation days. The factors effecting the use of the plaza on this Tuesday are virtually the same as any Tuesday or Thursday. Throughout the day there was not any significant variation in the number of users except at the peak time period during 12:19 p.m. – 12:31 p.m. with 129 users. Bar graph 4.11 indicates that there were not many pedestrians passing through Union Plaza in the morning hours. All of the numbers of users from the three observation time period in the morning averaged seventy pedestrians.

After the lunch period, the number of users decreased and was variable eighty-nine in the 1:19 p.m. – 1:31 p.m. period; fifty-nine in the 2:19 p.m. – 2:31 p.m. time period; and seventy-two in the 3:19 p.m. – 3:31 p.m. period. During the last observation

Table 4.11

Comparison of Intensity of the Plaza Use For Selected Time Periods on Tuesday October 15, 2002

Time Periods	Number of Users
9:19 – 9:31	68
10:19 – 10:31	70
11:19 – 11:31	72
12:19 – 12:31	129
1:19 – 1:31	89
2:19 – 2:31	59
3:19 – 3:31	72
4:19 – 4:31	31
Total	590



Graph 4.11: Comparison of intensity of the plaza use on Tuesday October 15, 2002.

period, the number of users was low, with only thirty-one. On this Tuesday, the temperature 62 degree Fahrenheit, and it was a clear and sunny day, much the same weather as the day before. However, the total number of users decreased from the previous day, which may be due to there being fewer classes scheduled on Tuesday and Thursday.

The next discussion will summarize the general findings and recommendations based on the observations and a part of analyzing counts that were presented earlier in this chapter.

Conclusions on Movement

As mentioned earlier, the primary goal of this chapter is to investigate pedestrian movement patterns and to obtain a better understanding of daily use of Union Plaza. All goals are interrelated and will finally help to develop the preliminary design guidance for the plaza. With the help of the observations and the recordings from behavioral mapping and photographs, the findings derived from these sources can be used to describe those movement patterns, the daily usage, and the functions of Union Plaza. These findings are summarized as follows.

Considering the field observations and the study of flow maps illustrating the eleven major pedestrian pathways, one can conclude that Union Plaza acts primarily as a street and a circulation space, which largely attracts a stream of users from the nearby buildings. Observations indicate that the principal use of the plaza is by pedestrians entering and leaving the adjacent buildings, especially from the Student Union, which is a

hub of mixed uses of the campus. The majority of the plaza users is a group of students and faculty who daily use the space as a route to get from one place to another.

The study also shows that Union Plaza has the quality of accessibility, which works at two levels—physical and visual. As illustrated in figure 4.8, there are ten access ways from the surrounding areas to Union Plaza and most of them are able to be seen from one corner to another. These access points encourage the plaza to have a variety of activities and many pedestrians.

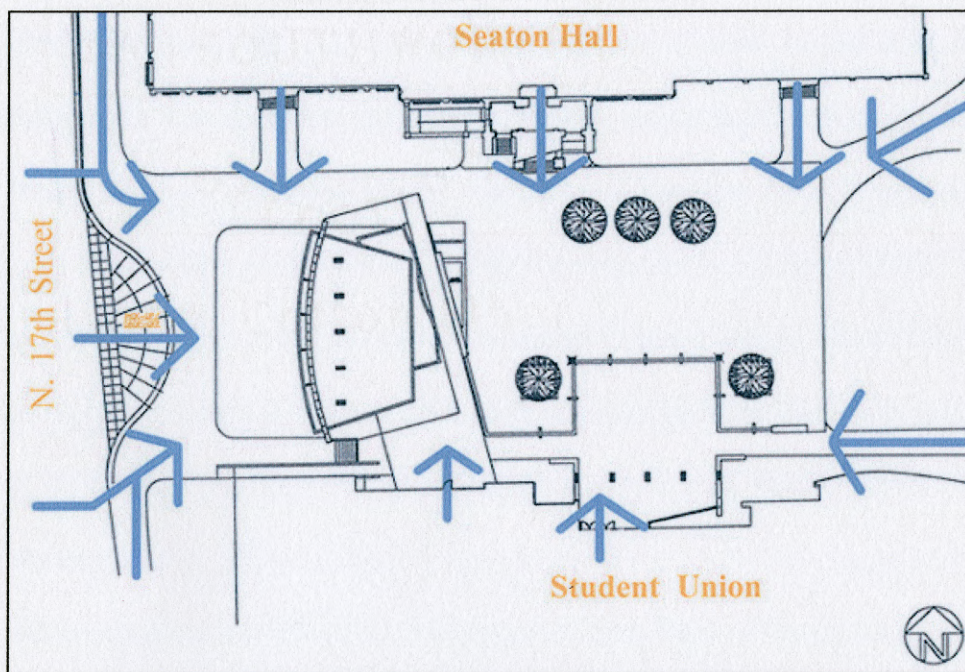


Figure 4.8: Ten access ways to Union Plaza.

A basic finding in this chapter is the identification of the pedestrian movement flows by which users can flow in and out of Union Plaza. The flow survey strongly confirms that the movement patterns regularly found are pedestrians crossing the plaza on the diagonal in east-west direction or walking along the northern and southern boundary

of the space. According to the flow analysis, each of these travel routes has a different level of use from highest to lowest density. Various factors—weather conditions, destination, distance, and class schedule—may influence the volume of pedestrians of individual flows. Another basic finding is that the plaza has a high peak use at lunchtime with many more activities than during the other times of the day.

Another finding relates to the relationship between Union Plaza and the nearby buildings. Union Plaza exists in conjunction with two important buildings—the Student Union and Seaton Hall—that partially assist to define the plaza space. The observations of pedestrian flow reveal that the plaza and these two buildings are related in a term of a functional aspect. The Student Union and Seaton Hall are bridged by short pathways in Union Plaza. A group of pedestrians daily traveling on these tiny flows is students, faculty, and employees entering and leaving the eastern entrance of Seaton Hall. In regard to pedestrian flow study, this relates to another finding, which is that Union Plaza functions as a formal entrance space to the Student Union building due to the space directing a bulk of pedestrian traffic to the building, particularly from the northeastern side of the campus.

Also important are pedestrian behaviors in Union Plaza. Occasionally, pedestrians stopped their movement and had a conversation with friends whom they bumped into even though they were traveling along a heavy traffic stream. As described by Whyte (1980 p.21), this phenomenon is called “traveling conversations,” which often occur for pedestrians during their route activity.

Another aspect of typical pedestrian interaction is the possibility of conflict among pedestrians crossing the mainstream flow. The observation studies show that

there was a conflict, especially at the intersection between flow 3 and 4 as shown in figure 4.10. Being a low-pedestrian pathway, flow 3 exists as a crossroad intersecting the southeastern and northwestern directions of pedestrian flow. On the other hand, flow 4 functions as a major traffic thoroughfare that is used for crossing from the northeastern corner of the plaza to the Student Union. This conflict can be seen as stopping and shuffling, or breaking of the normal walking pace at the point of intersection.

Having looked at movement pattern in Union Plaza, we next must consider users' stationary patterns, which are discussed in the next chapter.

Chapter 5

A Behavioral Mapping Analysis of People at Rest in Union Plaza

Besides movement, the other important activity that occurs in Union Plaza involves people at rest. Mostly, this outdoor behavior involves leisure activities such as sitting, standing, conversing, eating, reading, and other casual activities. Therefore, the major aim of this chapter is to report these various activity patterns deriving from the observations in Union Plaza and to understand how the plaza is actually used to facilitate these uses.

The activity of people at rest in this thesis can actually be interpreted as the stopping of the movement of users as they pause in public space. Mostly, these pauses are for a short time due to the encounter with an acquaintance. People exchange a few words or a friendly gesture, and some of these greetings lead to prolonged conversations requiring a place to sit. Another important factor that makes users stop is triangulation, which involves special events such as student exhibitions, commercial fairs, memorial events, and even chalk messages written on the sidewalks. Also, the ringing of a cell-phone may cause someone to stop for a short period of time in the pedestrian flows, or for a longer period of time as they sit down to partake in the conversation.

This chapter provides an interpretation of both aggregate counts and data deriving from the behavior mapping. The chapter is divided into two sections. In the first section, observation tables are analyzed to describe the plaza's activity patterns. In the second section, the five seating locations and weekly and daily rest patterns are discussed and examined with the help of behavior mapping.

Rest Patterns in Union Plaza

The major aim of the study of users' resting patterns is to gain a complete understanding of activities in Union Plaza. From the observations, one can say that Union Plaza acts as a street scene filled with a mix of outdoor activities. The findings reveal that the activities in the plaza can be divided into two categories: (1) movement activities (discussed in Chapter 4) and (2) stationary activities—sitting, conversing, reading, standing and so forth. This chapter will mainly discuss the stationary or rest activities in Union Plaza.

Behavioral mapping reveals that there are various types of outdoor activities occurring in Union Plaza. As observed for five days during selected time periods, these behavioral patterns can be categorized into two main situations: (1) sitting and (2) standing. There are many different kinds of resting activities like conversing, smoking, watching other people, and using a cell-phone that are engaged with while either sitting or standing. As mentioned in Chapter 3, these resting types in the plaza were listed before the actual behavior mapping was conducted.

In this thesis, “sitting” refers to any person who sits in Union Plaza for more than two minutes—for example, people sitting on the chairs, benches, and steps—and engaged in such activities as conversing, observing, reading, eating, smoking, and using a cell-phone. Similarly, “Standing” refers to any person standing in a place for more than two minutes and involved in such behaviors as conversing, observing, smoking, and using a cell-phone.

Behavioral observation points out that most users engaged with different kinds of rest patterns intentionally come into the plaza for the purpose of spending time outdoors,

when the weather is mild and moderate. Sometimes there were users presenting themselves by chance such as in smoking or watching other people. In addition, there were many users pausing briefly within the main flow due to chalk messages on the walkway (see figure 5.1). Sidewalk chalking is a student activity for posting announcements, as well as for promoting student or fraternity events, solicitations, and voting. Chalk drawings on walkways are considered a good way for people to get their messages across. As illustrated in figure 5.2 and 5.3, to raise awareness and to create a more visual presentation, all literature and drawings found on sidewalk areas of Union Plaza usually appear in multicolored chalk.



Figure 5.1: Graffiti on walkway causes pedestrians to stop for a short period of time.

Observations of chalking indicate that many pedestrians strolling through the plaza will likely stop and read the writings on the walkway. However, some just take a glance and continue walking out. In addition, not only does sidewalk chalking advertise

special events, but it also provides a connection between people, sidewalk writers, and strangers to interact with each other (see figure 5.4 and 5.5). Student chalking activity draws people together and provides a chance for strangers to have conversations, thus generating another example of William Whyte's "triangulation"—a process by which some external stimulus provides a linkage between people and prompts strangers to talk to converse.



Figure 5.2: Sidewalk writers prefer to use multicolored chalking to catch people's attention.



Figure 5.3: Another colorful drawing in the plaza.



Figure 5.4: Triangulation in Union Plaza, Student chalking activity.



Figure 5.5: Triangulation in Union Plaza.

As discussed earlier in chapter 4, it is a common sight to find a person leaving or heading to the Student Union and then bumping into an acquaintance at the entry terrace or in the middle of pedestrian flows (see figure 5.6). As Whyte (1980, p.21) pointed out, when people stop to talk on a plaza, they usually do so in the middle of the traffic stream. My observations suggest that this kind of contact is mostly unplanned and ended rapidly by a short exchange of words or a brief discussion. Therefore, this “traveling conversation” is one of the main reasons for users to stop in Union Plaza.

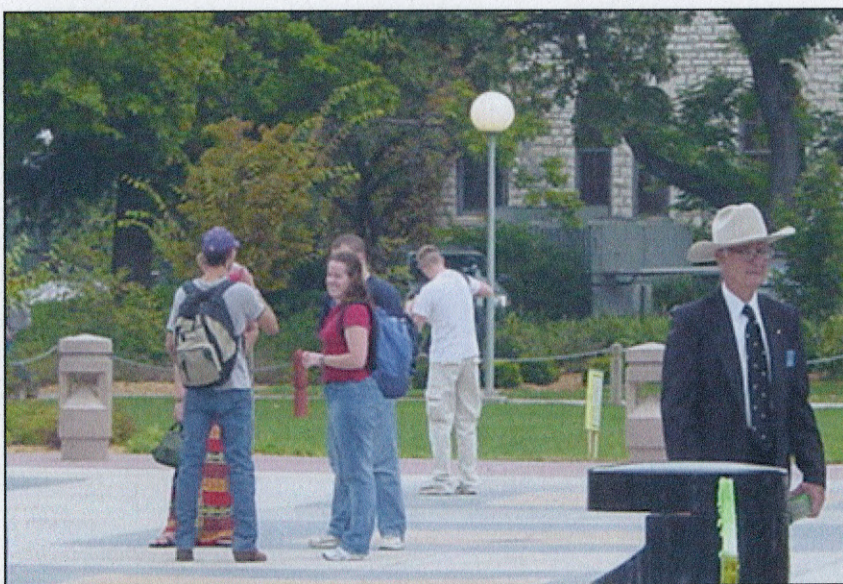


Figure 5.6: An encounter with another user, leading to a brief pause in Union Plaza.

Another reason causing many pedestrians to pause briefly in the plaza while they are walking is the ringing of a cell-phone. Cell phones are a new communication technology, especially among K-State students. Everyday, more and more students are walking around with cell phones, and are also more comfortable about using them. On my five observation days, the Union Plaza experienced many cell phone users throughout the day. The study suggests that when the weather is good and it is pleasant to be

outdoors, the typical pedestrian, while talking on a cell phone, will look for a place nearby to sit down and continue his or her conversation (figure 5.7 and 5.8). On the other hand, if phone users cannot find good seating, they will stand and move around in the same spot. In addition, it was observed that some cell-phone users took their phone call into a more private space in the plaza such as a planter, bench, or low wall in order to be away from other people.

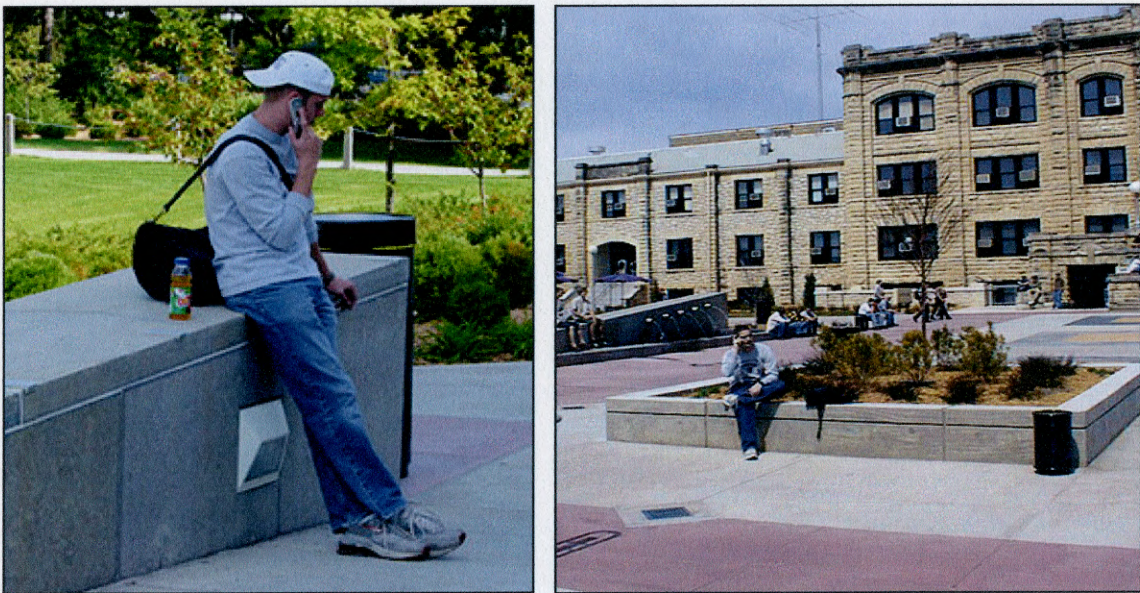


Figure 5.7 and 5.8: People talking on their cell phones are likely to find a place to sit.

As described previously, Union Plaza is a hub of activities, thus many people that try to get others to hear a message, buy a product, or subscribe to beliefs will use the north main entry of Student Union to be heard. Observations indicated that these messages can also cause pedestrians going into or out of Student Union to stop briefly (see figure 5.9 and 5.10). As illustrated in figure 5.11, during the lunch period, there were two people distributing flyers along the major pedestrian flows as well as at the entrance of Student Union building. These leaflets received a number of different

responses—some people simply turned away, and others took the flyers and yet threw away later. Only a few people appeared to actually read what is written.



Figure 5.9: Pedestrian stops in her path to get the flyer.



Figure 5.10: Heading to Student Union a passerby accepts the pamphlet.



Figure 5.11: Leaflets being handed out near entrance of Student Union building.

Specific Rest Patterns in Union Plaza

The previous discussion described general trends in observing Union Plaza during the five days. Next, the analysis of behavior mapping is discussed in detail to examine how often the plaza is used, how many users actually come, and which outdoor activities users are engaged in most.

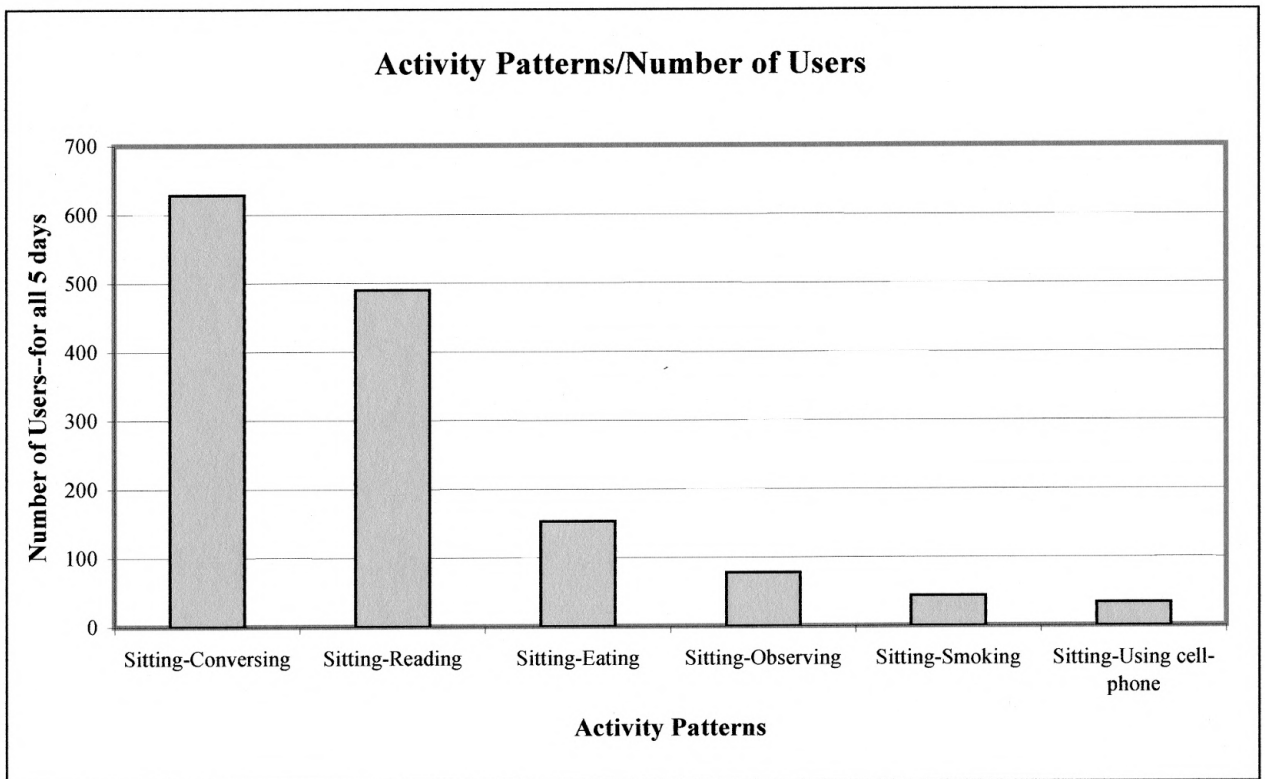
As illustrated in table 5.1 and graph 5.1, the total count of users engaged in different activities while sitting in Union Plaza for the five observation days was 1,427. Graph 5.1 clearly indicates that sitting and conversing, with 628 users, was the most predominant activity that users engaged while they were in the plaza, followed by sitting and reading, which involved 490 users. A total count of users sitting and eating was 153. Since those eating lunch only occupy the plaza during a short time period in the day, their total number throughout the entire day is lessened due to the small number that occupy

Table 5.1

Ranking of Different Activities While Users Were Sitting in Union Plaza for the Five Observation Days

Monday September 22 – Friday September 26, 2003

Activity Patterns	Number of Users
Sitting-Conversing	628
Sitting-Reading	490
Sitting-Eating	153
Sitting-Observing	78
Sitting-Smoking	44
Sitting-Using cell-phone	34
Total	1,427



Graph 5.1: Ranking of different activities while sitting in Union Plaza for the five observation days, Monday September 22 – Friday September 26,2003.

the space the rest of the day. In the time periods other than, lunch the majority of users in Union Plaza are conversing and reading. The graph also shows that the aggregate number of users sitting and observing—seventy-eight users—was about half as many as users sitting and eating.

The other two activity types—“sitting and smoking” and “sitting and using a cell-phone”—involved the smallest number of users. Sitting and smoking was an activity having a low number of only forty-four users. The people in sitting and smoking category are typically those who use buildings adjacent to the plaza. Smokers do not typically go out of their way to smoke thus usually go to an open area immediately outside of their buildings. Further, there were only thirty-four users sitting and using a cell-phone, which accounts for the smallest total during the six days, probably because this kind of activity occurring in the plaza by chance, and users just paused for a short period of time.

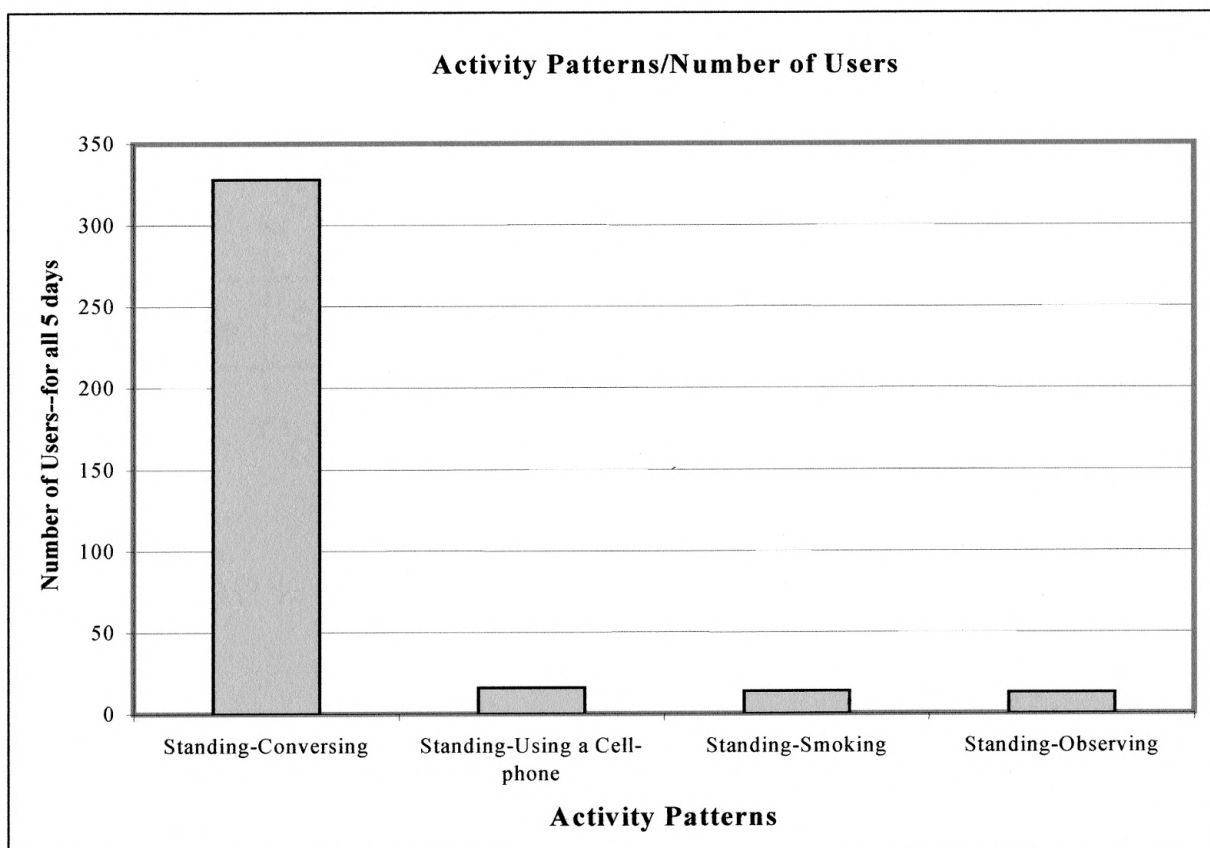
Moving to standing patterns of plaza users, table 5.2 and graph 5.2 show the total number of users involved in various behaviors while standing in Union Plaza on the five observation days—a total of 371 persons. Here, one sees clearly that standing and conversing—328 persons—is the largest group of standing users. The observations point out that the people represented by the number in the standing and conversing category usually meet with a friend or acquaintance by chance. This may be explained by the fact that the conversations develop when these users meet each other, and thus it is largely unpredictable when the conversation will end. Furthermore, no one in group conversations moved from the spot where they met to a more suitable place to sit or stand. Therefore, the standing and conversing group can be seen everywhere in the

Table 5.2

**Ranking of Different Activities while Users Were Standing in Union Plaza
for the Five Observation Days**

Monday September 22 – Friday September 26, 2003

Activity Patterns	Number of Users
Standing-Conversing	328
Standing-Using a Cell-phone	16
Standing-Smoking	14
Standing-Observing	13
Total	371



Graph 5.2: Ranking of different activities while users were standing in Union Plaza for the five observation days, Monday September 22 – Friday September 26, 2003.

plaza—in the middle of the plaza at the main entry of Student Union and so forth. The next group activity is users engaged in such standing behaviors as smoking, observing, and using a cell-phone. These categories had a total number of users less than twenty. The standing and using a cell-phone group had a total of sixteen users, followed by the standing and smoking group, which had fourteen users; and the standing-observing group, which had thirteen users. One notes that the standing and observing group involves users stopping for a longer duration. These people may be wait for something or somebody, enjoy the surroundings, or to watching plaza goings on.

People that are in the standing-and-smoking category are typically those that have stepped outside for a moment to smoke a cigarette. These users smoke usually between classes or taking a break from their office work. It was observed that weather conditions do not influence their decision whether or not to smoke.

It was also noticed that there is a large difference between the standing and conversing group and the three other categories (standing and smoking, standing and observing, and standing and using a cell-phone). This variation may be explained by the fact that most people are likely to sit down while they are involved such activities as smoking, watching, or talking on a cell-phone. Therefore, these totals, compared to the standing and conversing group, are considerably less.

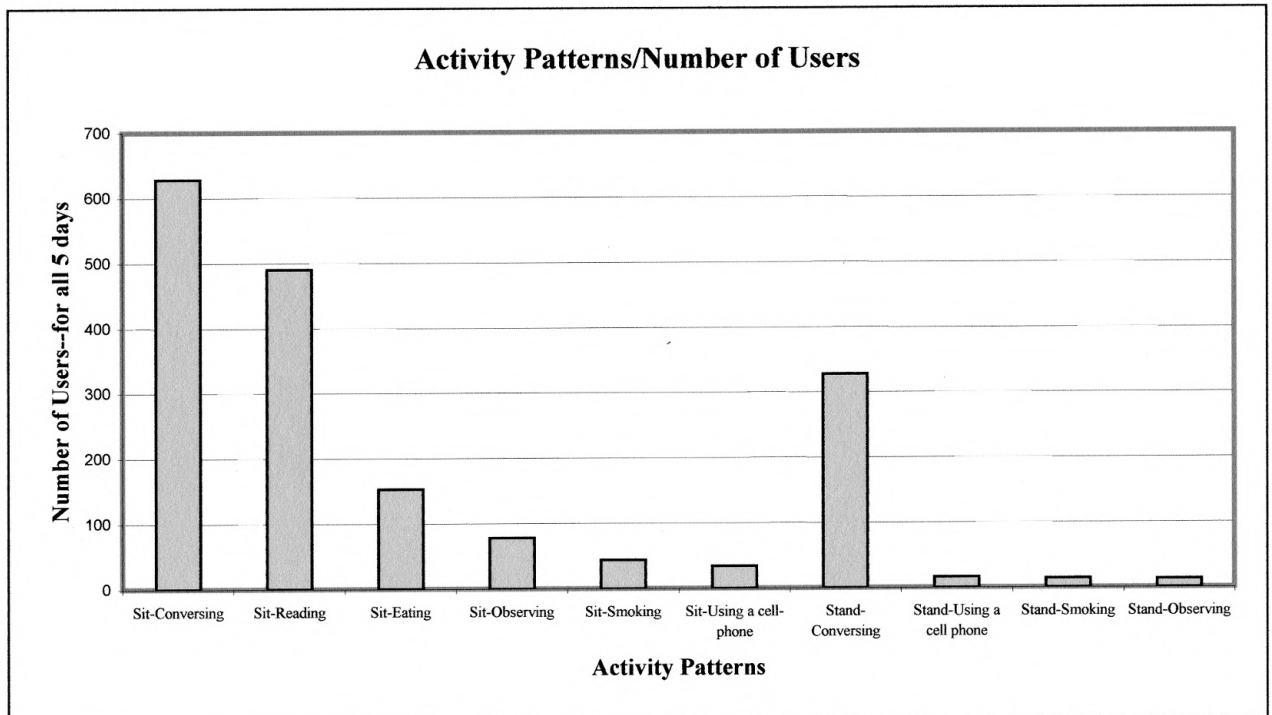
Table 5.3 and graph 5.3 compare the total number of people sitting and standing in Union Plaza as observed for the five days during all selected time periods. As is clearly evident, there were many more people sitting (1,427) than people standing (371) in Union Plaza. Part of this large variation may be explained by the fact that users would rather sit while they are involved in other plaza activities.

Table 5.3

**Comparison of Ranking Total Number of Users Sitting and Standing in Union Plaza for the Five Observation Days
Monday September 22 – Friday September 26, 2003**

Sitting Patterns	Number of Users
Sitting-Conversing	628
Sitting-Reading	490
Sitting-Eating	153
Sitting-Observing	78
Sitting-Smoking	44
Sitting-Using a cell-phone	34
Total	1,427

Standing Patterns	Number of Users
Standing-Conversing	328
Standing-Using a cell-phone	16
Standing-Smoking	14
Standing-Observing	13
Total	371



Graph 5.3: Comparison of the total number of users sitting and standing in Union Plaza for five observation days, Monday September 22 – Friday September 26, 2003.

The observations indicate that when people stand, they are more likely to be in motion and once they stop, whether it is to converse, smoke, observe, or use a cell-phone, this temporary stop is typically short. If the same person is going to be engaged in an activity for a longer period of time, it is likely that he or she will sit down. In addition, the motivation to sit or to stand will be virtually the same in every situation, whether it be conversing, smoking, and observing. It is obvious from observations that sitting activities are more comprehensive and more demanding in Union Plaza than those related to standing.

The Day-by-Day Results from Observing People at Rest in Union Plaza

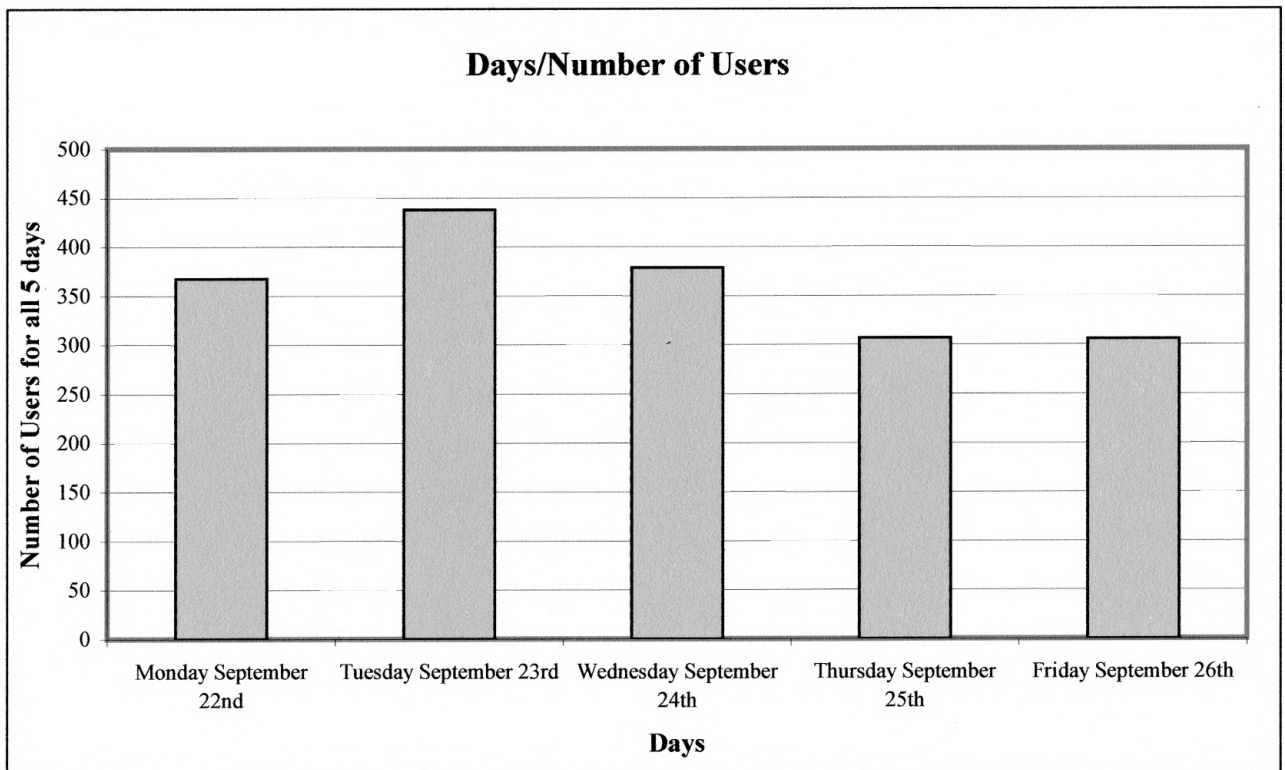
The above discussion addressed the various kinds of rest patterns and also identified the frequent outdoor activity that users were engaged in most while being in Union Plaza. To have more understanding of these rest patterns at different part of the day, the next discussion will report the intensity of users at rest between different days and selected time periods during the observation week.

The observations and the behavior mapping of outdoor activities in Union Plaza were conducted for five working days from Monday, September 22, 2003 to Friday, September 26, 2003. As illustrated in table 5.4 and graph 5.4, the total number of users at rest during these five observation days was 1,798. Table 5.4 reveals that there were about 300 people present each day. As can be seen, Tuesday September 23 showed the maximum recording of 438 users, followed by Wednesday 24, which had 379 users. On Monday September 22, there were 368 users and on Thursday September 25 and Friday September 26, with 307 and 306 users respectively.

Table 5.4

**Aggregate Daily Number of Users at Rest in Union Plaza,
Monday September 22 – Friday September 26, 2003**

Days	Number of Users for all 5 days
Monday September 22 nd	368
Tuesday September 23 rd	438
Wednesday September 24 th	379
Thursday September 25 th	307
Friday September 26 th	306
Total	1,798



**Graph 5.4: Aggregate daily number of users at rest in Union Plaza,
Monday September 22 – Friday September 26, 2003.**

As discussed above, there was not much fluctuation in the total count of people at rest in Union Plaza among different days of the observation week, a pattern perhaps explored by the good weather during the week, which involved temperature between the upper 70s and the lower 60s Fahrenheit. This good weather encouraged people to be outside and to enjoy the sunshine and the plaza ambience.

Another important finding from the behavior mapping is the pattern of the total number of users at rest on different observation time periods. As shown in table 5.5 and graph 5.5, there was a fluctuation in the total count of users at rest as the day progressed from morning to evening.

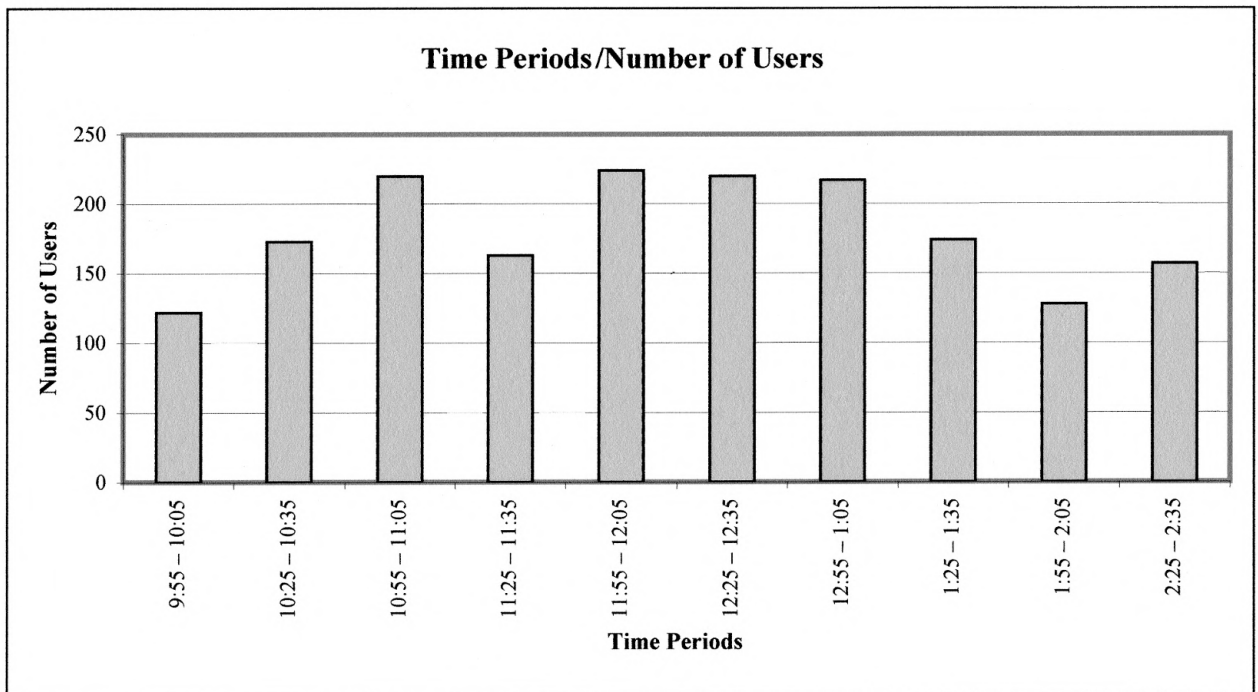
As shown in graph 5.5, there were not many activities occurring in the morning time period of 9:55 a.m. to 10:05 a.m. However, the number of users at rest rapidly increased by about 100 people in the time period of 10:25 a.m. to 10:35 a.m. and then dropped by about sixty people at 11:25 a.m. – 11:35 a.m. Activities livened up again by 11:55 a.m. as many users (over 220) remained and were involved in activities in the Plaza. Graph 5.5 points out that the three time periods that comprise lunch between 11:55 a.m. to 1:05 p.m. are the peak periods when Union Plaza experienced the highest number of stationary activities. The total counts of users at rest gradually decreased by about 40 people in the 1:25 p.m. – 1:35 p.m. observation period when some afternoon classes began. A total of 128 users at rest were recorded at 1:55 p.m. – 2:05 p.m. During the 2:25 p.m. to 2:35 p.m. time period, the number of users slightly increased to 157 due to classes releasing their students around 2:20 p.m.

Due to the Student Union containing many eateries inside, this building becomes a hub of activity during the peak lunch time—11:55 a.m. – 1:05 p.m. During this time,

Table 5.5

**Aggregate Daily Number of Users at Rest, Selected Time Periods
Monday September 22 – Friday September 26, 2003**

Time Periods	Number of Users for all 5 days
9:55 – 10:05	122
10:25 – 10:35	173
10:55 – 11:05	220
11:25 – 11:35	163
11:55 – 12:05	224
12:25 – 12:35	220
12:55 – 1:05	217
1:25 – 1:35	174
1:55 – 2:05	128
2:25 – 2:35	157
Total	1,798



Graph 5.5: Aggregate weekly number of users at rest, selected time periods,
Monday September 22 – Friday September 26, 2003.

a majority of plaza users participated in only a few different activities. As illustrated in table 5.6 and graph 5.6, the total number of users sitting and standing in the plaza during these peak time periods was 466, and, out of this total, 156 users were in the sitting and conversing category. This group was the largest of all the observation activities. The next largest number was the sitting and reading category with 113 people. The final two major activities were standing and conversing with eighty-two, and “sitting and eating” with eighty. The remaining activity patterns were involved counts less than twenty users, with sixteen for sitting and smoking, seven for sitting and watching, and three for sitting and talking on a cell-phone.

The next section reports the results of observing users in each of Union Plaza’s five major study zones described earlier in chapter 3.

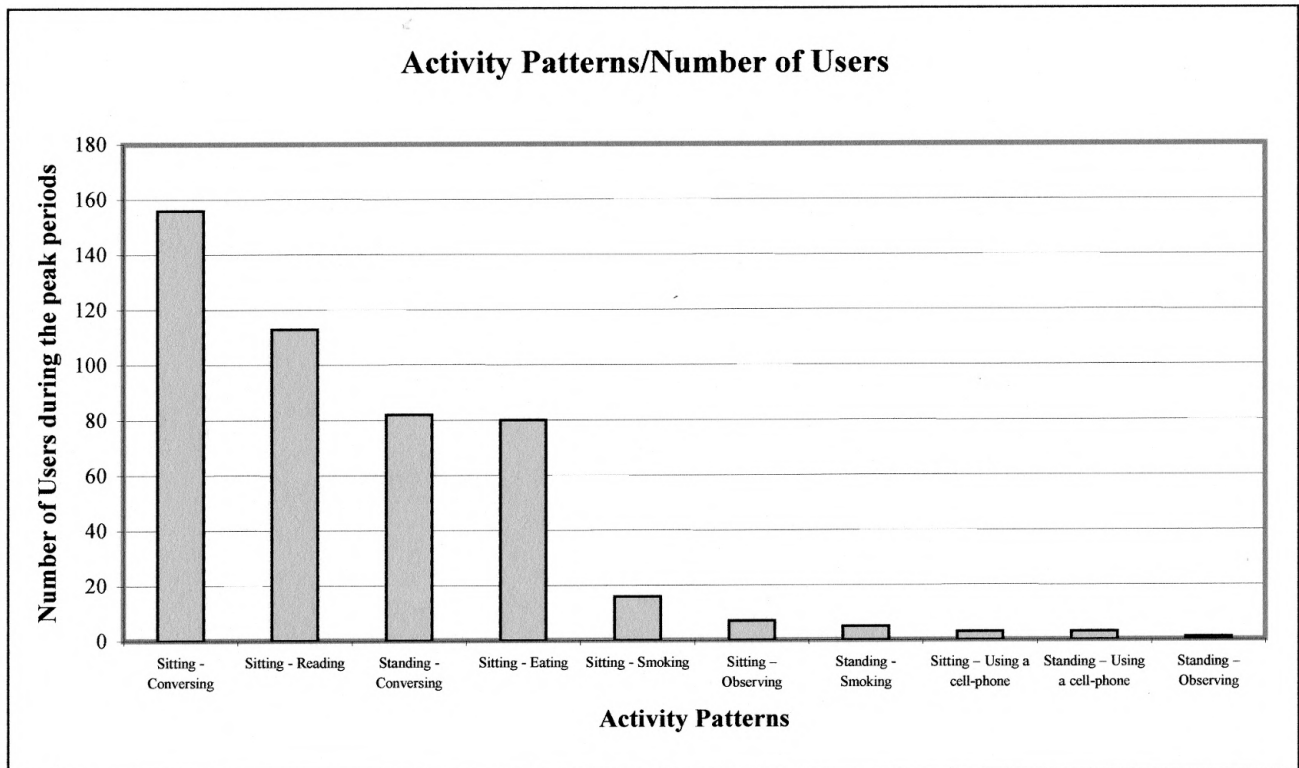
The Five Major Study Zones

As explained in Chapter 3, to simplify the observation of activity patterns, Union Plaza was divided into five specific study zones that included: (1) the main entry to the Student Union; (2) the spatial center of the plaza; (3) the outdoor eating area and water fountain; (4) the vehicle drop off area; (5) the steps at the three main entrances of Seaton Hall. These specific areas daily experience a mix of stationary activities with different levels of use. During observations, it was noticed that some areas are used more frequently, such as the outdoor eating area, the main entry to the Student Union, and the spatial center of the plaza. It was also noticed that with special events the five study zones functions changed depending on where the event was located. People would be drawn to that area and would shift the dynamic of that area. For example, when the

Table 5.6

Comparison of Total Number of Users Sitting and Standing in Union Plaza for the Five Observation Days During Peak Time Periods

Activity Patterns	Number of Users
Sitting - Conversing	156
Sitting - Reading	113
Standing - Conversing	82
Sitting - Eating	80
Sitting - Smoking	16
Sitting - Observing	7
Standing - Smoking	5
Sitting - Using a cell-phone	3
Standing - Using a cell-phone	3
Standing - Observing	1
Total	466



Graph 5.6: Comparison of the total number of users sitting and standing during the three peak periods.

concert stage was set up in the spatial center of the plaza, this changed from one of mostly transit to an area where people stopped and were drawn to the music. In addition, when the weather changes, the usage of the five study areas will be different. For example, rain is a significant factor of change. When it is wet outside, the outdoor eating area is rarely used.

Table 5.7 and graph 5.7 show the total counts of users at rest in each of the five study areas during the different time periods. It is evident from graph 5.7 that the outdoor eating area (see figure 5.12) was the most frequently used with 913 users, followed by the main entry to the Student Union (528 users), and the spatial center of the plaza (310 users). There were only thirteen users recorded in the vehicle drop off area, while the steps of the three main entrances of Seaton Hall had thirty-four users at rest. It can be seen clearly that the total counts of users in each study area is greatly different. Perhaps this difference relates to time periods, weather conditions, and the amount or choice of seating provided in each location.

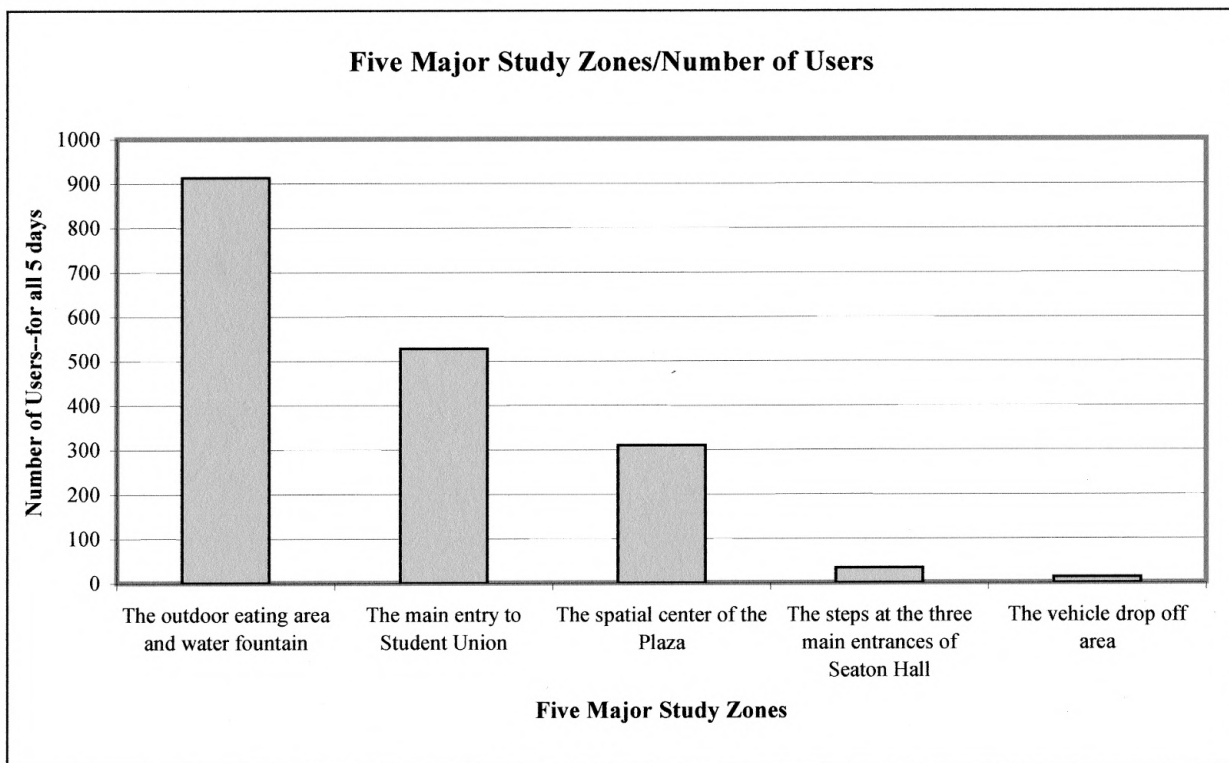


Figure 5.12: The outdoor eating area.

Table 5.7

**Ranking, Total Number of Users at Rest in the Five Major Study Zones
Monday September 22 – Friday September 26, 2003**

Five Major Study Zones	Number of Users at rest
The outdoor eating area and water fountain	913
The main entry to Student Union	528
The spatial center of the Plaza	310
The steps at the three main entrances of Seaton Hall	34
The vehicle drop off area	13
Total	1,798



Graph 5.7: Ranking, total number of users at rest in the five major study zones, Monday September 22 – Friday September 26, 2003.

An analysis of users sitting and standing while engaged in various activities in the five study areas is reported in table 5.8 and graph 5.8. The outdoor eating area, with 883 people sitting, was used more for sitting activities than standing, of which there were only thirty users, followed by the main entry to the Student Union, which had 311 users sitting and 217 users standing. The spatial center of Union Plaza also had a greater number of users sitting (204 users) than standing (106 users) as did the vehicle drop off area (3 vs. 10 users). The last area is the steps at the three main entrances of Seaton Hall, which had more users standing (25 users) than sitting (9 users).

After comparing the total number of users sitting and standing in the five study areas, it can be concluded that the outdoor eating area and water fountain attract more users than any other areas. Observations indicated that frequently the outdoor eating area seems to be filled with people who were likely to spend time by conversing with a friend or friends, reading or studying school work, or eating during lunch time.

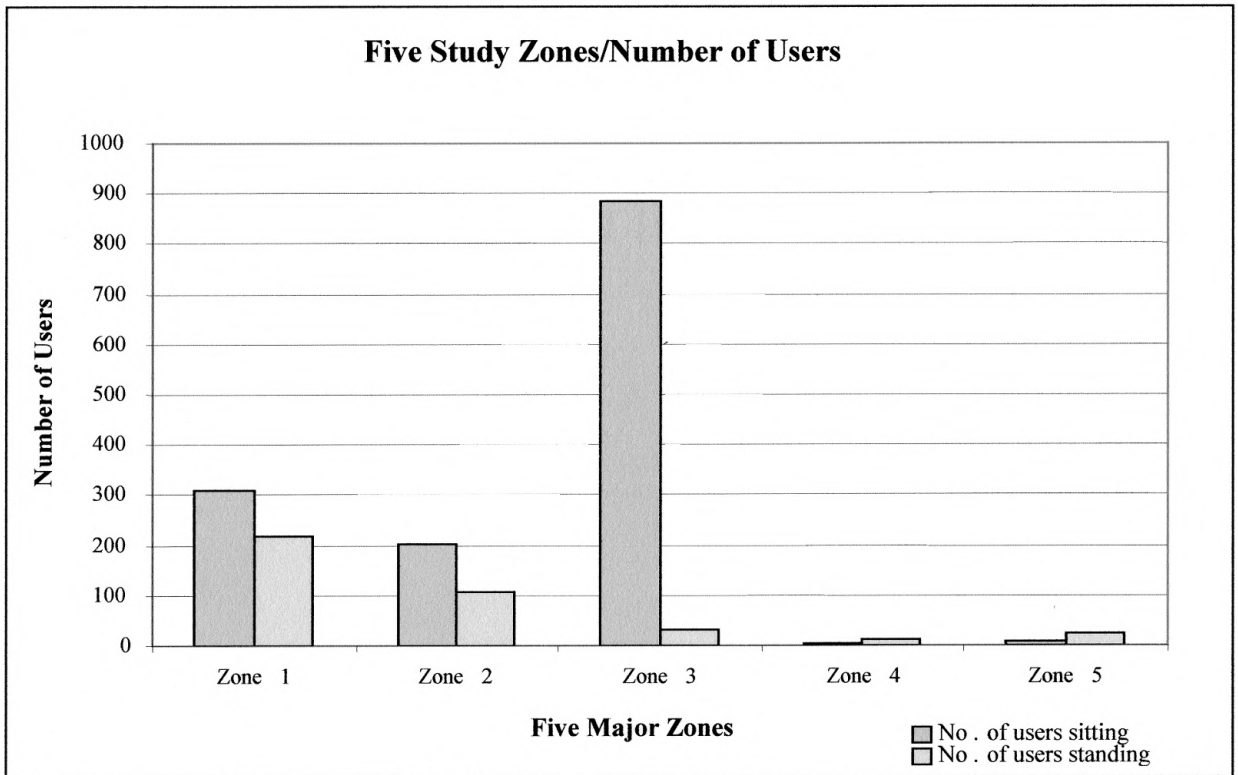
Table 5.8 and graph 5.8 indicate that there were more people sitting than people standing during the five working days studied. This can be explained by the fact that sitting is considerably more comfortable than standing. Table 5.8 and graph 5.8 also suggest the question of why so many users sat in the outdoor eating area and why so few were present in the vehicle drop off area or the steps of the three main entrances of Seaton Hall. Perhaps, a key answer is the difference in the amount of seating in each area. There are various types of seating in all of five study areas. However, the amount and choice of seating in each area are different. Therefore, the issue of seating may be considered as one factor that influences the total number of users sitting and standing in each location.

Table 5.8

Comparison of the Total Number of Users Sitting and Standing in the Five Major Study Zones

Monday September 22 – Friday September 26, 2003

Five Major Zones	Number of Users Sitting	Number of Users Standing
1) The main entry to Student Union	311	217
2) The spatial core of the plaza	204	106
3) The outdoor eating area and water fountain	883	30
4) The vehicle drop off area	3	10
5) The steps at the three main entrances of Seaton Hall	9	25
Total	1,410	388



Graph 5.8: Comparison of the total number of users sitting and standing in the five major study zones, Monday September 22 – Friday September 26, 2003.

To gain more insight into the use of each study zone, and to enable a more in-depth understanding of users' activities in Union Plaza, the five major study areas are next presented individually through table and graph data, as well as thru photo. An analysis of behavior mapping will be made to detail activities occurring in each study area. The seating types and the pathways will be also discussed to examine how they affect where people stand and converse.

1. The Outdoor Eating Area and Fountain

Located on the west side of Union Plaza, the outdoor eating area and water fountain is one of the favorite sitting areas where users go to rest, to study, to meet friends, or to have lunch when the weather conditions are physically pleasing (see figure 5.13 and 5.14). The major elements in the outdoor eating area are immovable picnic tables and chairs, a long retaining wall, and a fountain. Umbrellas cover some of the picnic tables, but those that are protected by the cantilevered glass butterfly roof are not. Note that the addition of umbrellas to some outdoor tables offers an important visual cue to passing pedestrians that seating and eating lunch are encouraged.

As illustrated in figure 5.15, the outdoor eating area is bounded by a long retaining wall on the western side, allowing people to sit. Observations demonstrate, that even though this sitting wall serves as secondary seating in this area, it was rarely used during peak hours and was used even less during the rest of the day. Once all the tables in the seating area were occupied by one or more persons, then additional users person would sit on the retaining wall or the low wall behind the fountain (see figure 5.16).



Figure 5.13: The outdoor eating area.



Figure 5.14: The outdoor eating area.



Figure 5.15: The retaining wall on the western side of the outdoor eating area.

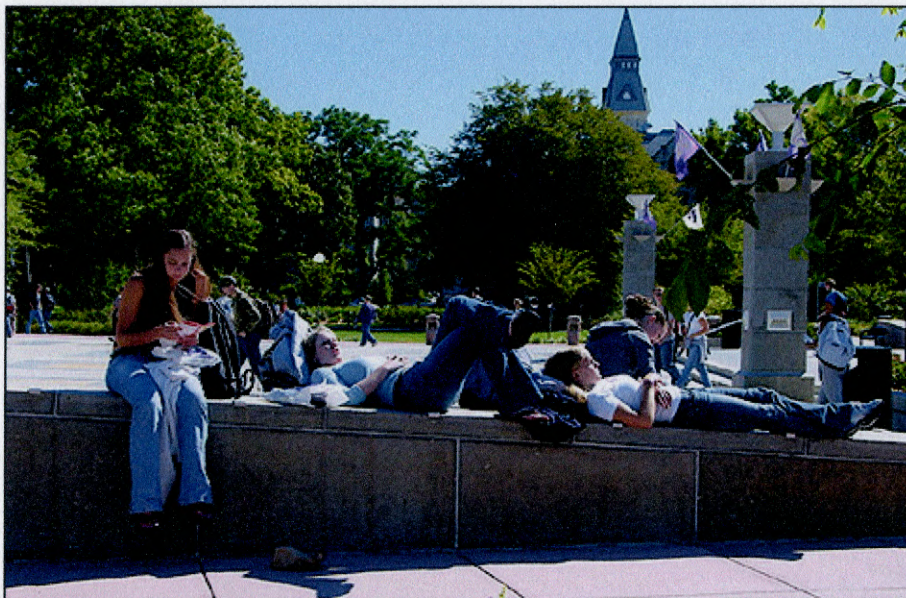


Figure 5.16: Users are relaxing on the low wall behind the fountain.

Based on observations, the outdoor eating area accommodates various types of stationary behavior. Table 5.9 and graph 5.9 present the ranking of different activities, while users were sitting and standing in the outdoor eating area. Sitting and reading was the largest of all the observed activities, with 361 users. This was partly due to the enjoyable weather during this time period. Many users were there for reading, studying, or taking in the sun between classes or after lunch. The next category of users was sitting and conversing, with 341 people. This is due mostly to the large amount of seating spaces available.

As illustrated in figure 5.17, groups of picnic-type tables and chairs, retaining wall, low walls, and steps are indicated in color. Many people will gather at this eating or study space with their friends to have lunch or just to talk (see figure 5.18 and 5.19). As shown in table 5.6 and graph 5.6, there were 146 users who were in the sitting and eating category. The other two major activities were sitting and observing with fifteen people, and sitting and talking on a cell-phone with fourteen users. Due to the fact that the outdoor eating area is a non-smoking zone, there were no people to be counted in this category, whether sitting or standing.

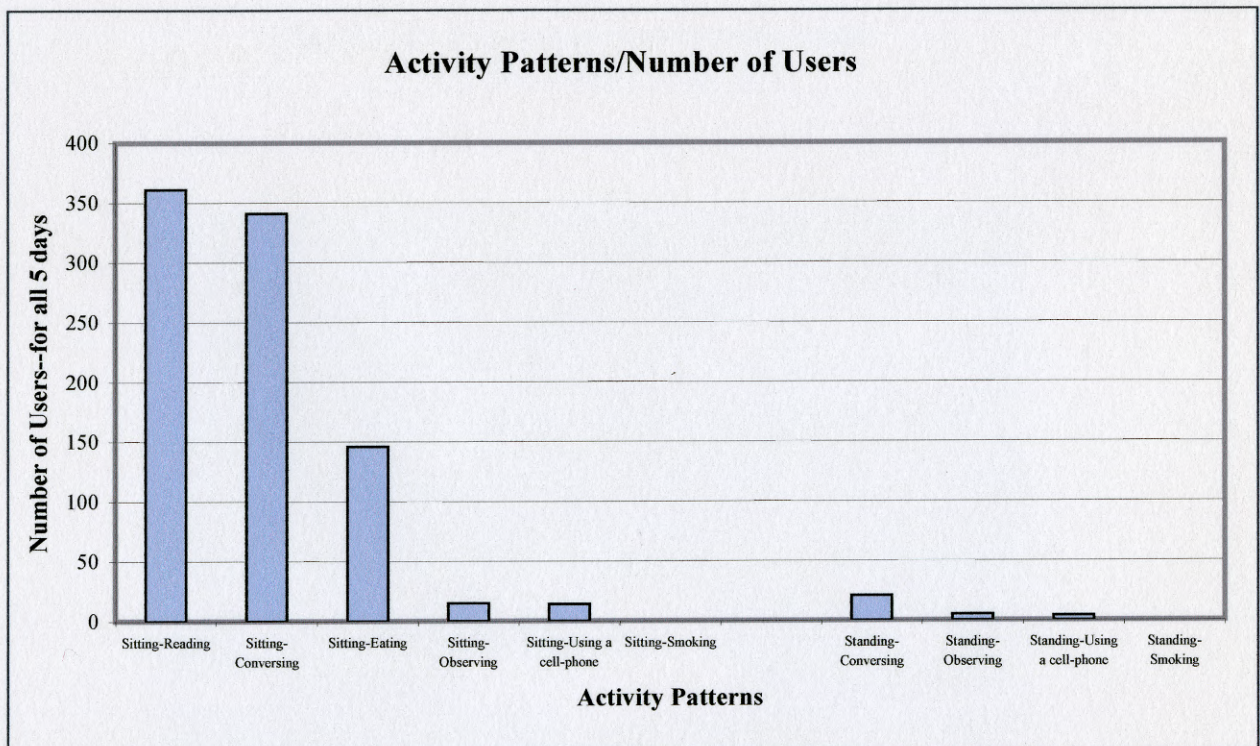
Moving to standing behavior, the total count of users standing and conversing was twenty-one. The final two activities were “standing and observing” with five, and “standing and talking on a cell-phone”, with four users. There are two pathways that pass through this area, one of them well used throughout the day, and the other typically used only during lunch. As shown in picture 5.20, the more heavily used path is the one just to the west of the sloping fountain wall—flow 8, the southern edge area; and the lesser used route travels between the picnic tables—flow 9. Pedestrians will sometimes accidentally

Table 5.9

Ranking of Different Activities while Users Were Sitting and Standing in
The Outdoor Eating Area and Water Fountain
Monday September 22 – Friday September 26, 2003

Sitting Patterns	Number of Users
Sitting-Reading	361
Sitting-Conversing	341
Sitting-Eating	146
Sitting-Observing	15
Sitting-Using a cell-phone	14
Sitting-Smoking	0
Total	883

Standing Patterns	Number of Users
Standing-Conversing	21
Standing-Observing	5
Standing-Using a cell-phone	4
Standing-Smoking	0
Total	30



Graph 5.9: Ranking of different activities while users were sitting and standing in the outdoor eating area and water fountain, Monday September 22 – Friday September 26, 2003.

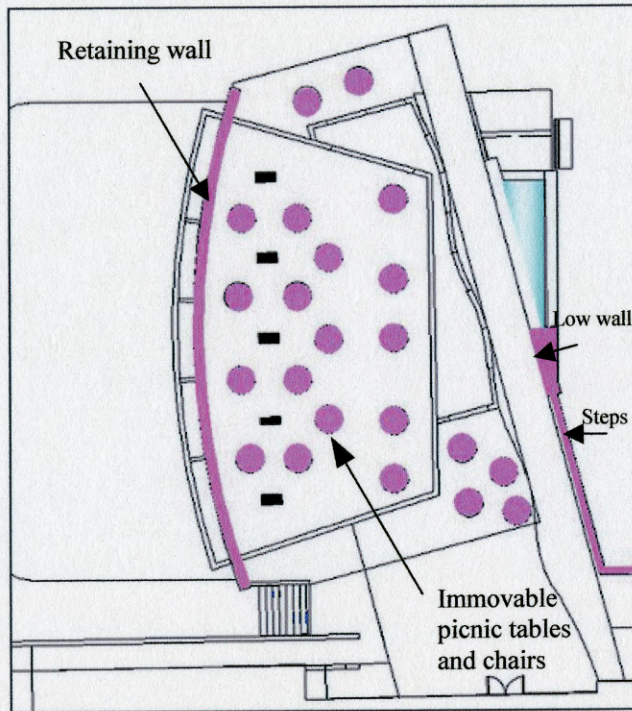


Figure 5.17: Major seating and sittable places in the outdoor eating area.



Figure 5.18: Groups of picnic-type tables and chairs draw many users to hang out with their friends.



Figure 5.19: Various activity patterns occurring in the outdoor eating area.

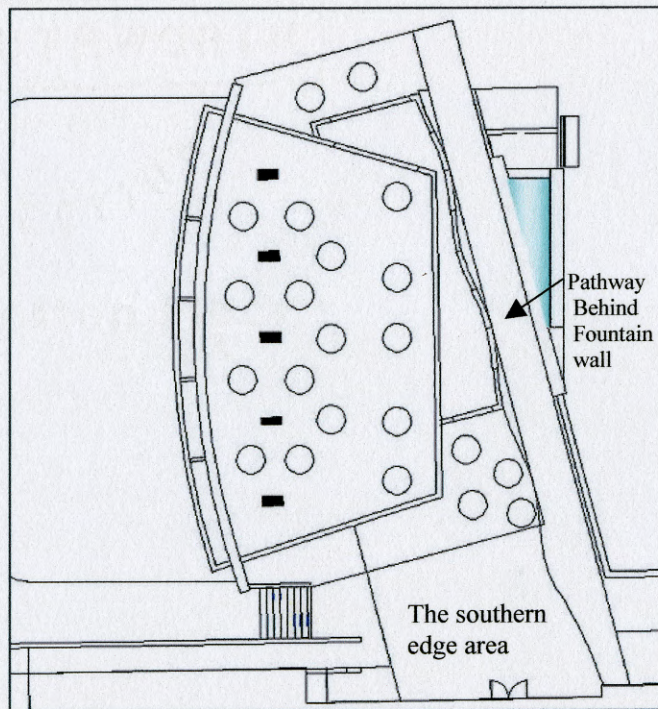


Figure 5.20: The locations of street conversations in the outdoor eating areas.

meet others that they know on one of these pathways and a conversation will often take place. If they talk more than a few minutes, usually they will find a place to sit in the outdoor eating area and extend their conversation.

2. The Main Entry to The Student Union

The next study area is the main entry to the K-State Student Union (see figure 5.21). The main entry is located in front of the north entrance of the Student Union, which serves as a hub of various activities and provides a range of student services on campus. As illustrated in figure 5.22 and 5.23, observations suggest that the main entry becomes a significant place that a large number of people use for passing through, sitting, socializing, gathering, or watching the activities going on around them. In addition, this entrance sometimes becomes a favorite “hang out” for passersbys.



Figure 5.21: The main entry of the K-State Student Union.

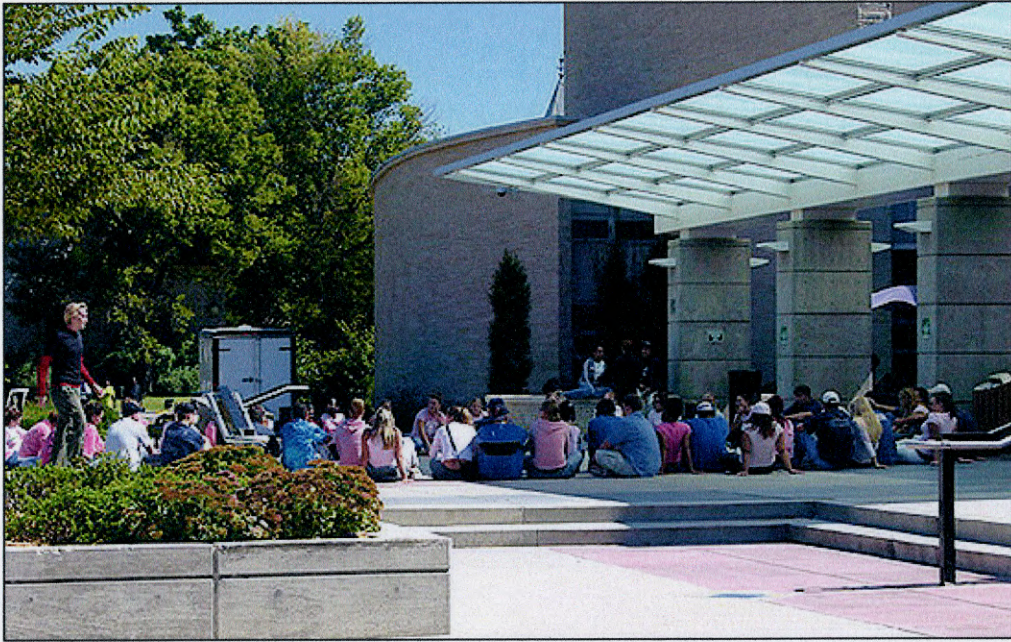


Figure 5.22: A large group of students gathered in the main entry of the Student Union.



Figure 5.23: A group of Architectural students using the main entry space as a location for their movie.

Table 5.10 and graph 5.10 show the ranking of various activities while users were sitting and standing in the main entry to the Student Union on the five observation days. It is clear that standing and conversing—191 persons—is the largest group of activities, followed by sitting and conversing group, which had 146 users. Next, sitting and reading had seventy nine users; sitting and observing group with forty one people, and sitting and smoking with thirty four people. The remaining activity patterns involved counts less than fifteen persons, with ten for standing and smoking; eight for standing and observing and “standing-using a cell-phone”; six for sitting and using a cell-phone; and five for sitting and eating.

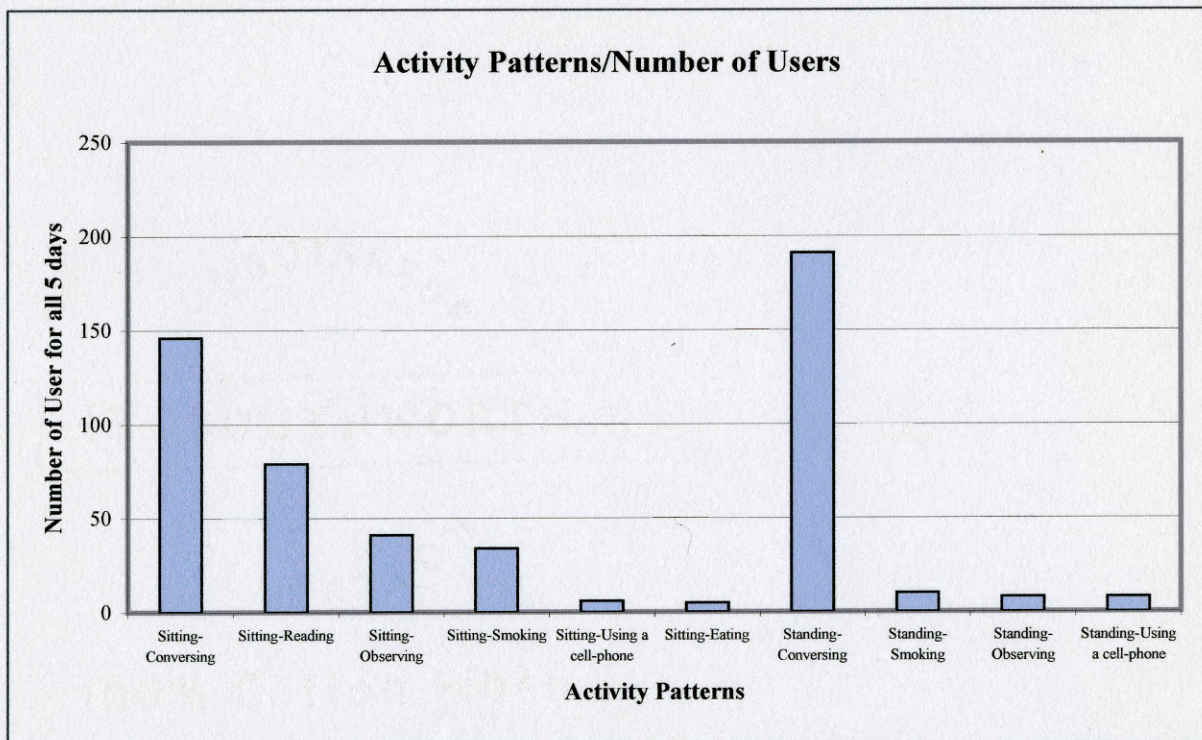
During the observation week, the largest activity pattern for the main entry of the Student Union was standing and conversing, which mostly involved pedestrians in “traveling conversation” (see figure 5.24). There are a number of explanations that can be used to describe the great bulk of the traveling conversations in the main entry of the Student Union. Behavioral observations indicate that the conversations originate within the major pedestrian flow—flow 4. As mentioned in Chapter 4, due to having the greatest number of pedestrians traveling during lunchtime and ten-minute break, flow 4 functions as a major traffic thoroughfare that many pedestrians use for walking in and out of the Student Union. Therefore, pedestrians who are heading to or away from the Student Union will pass through the main entry. Figure 5.25 illustrates the locations where pedestrians paused to have a short conversation with another user or users. It is evident that users did not move away from the major pedestrian flow but remained closely to the major line of flow. As Whyte (1980, p.21) explained this behavior relates

Table 5.10

**Ranking of Different Activities while Users Were Sitting and Standing in
The Main Entry of Student Union
Monday September 22 – Friday September 26, 2003**

Sitting Patterns	Number of Users
Sitting-Conversing	146
Sitting-Reading	79
Sitting-Observing	41
Sitting-Smoking	34
Sitting-Using a cell-phone	6
Sitting-Eating	5
Total	311

Standing Patterns	Number of Users
Standing-Conversing	191
Standing-Smoking	10
Standing-Observing	8
Standing-Using a cell-phone	8
Total	217



Graph 5.10: Ranking of different activities while users were sitting and standing in the main entry of the Student Union, Monday September 22 – Friday September 26, 2003.



Figure 5.24: The major activity pattern in the main entry of the Student Union is standing and conversing.

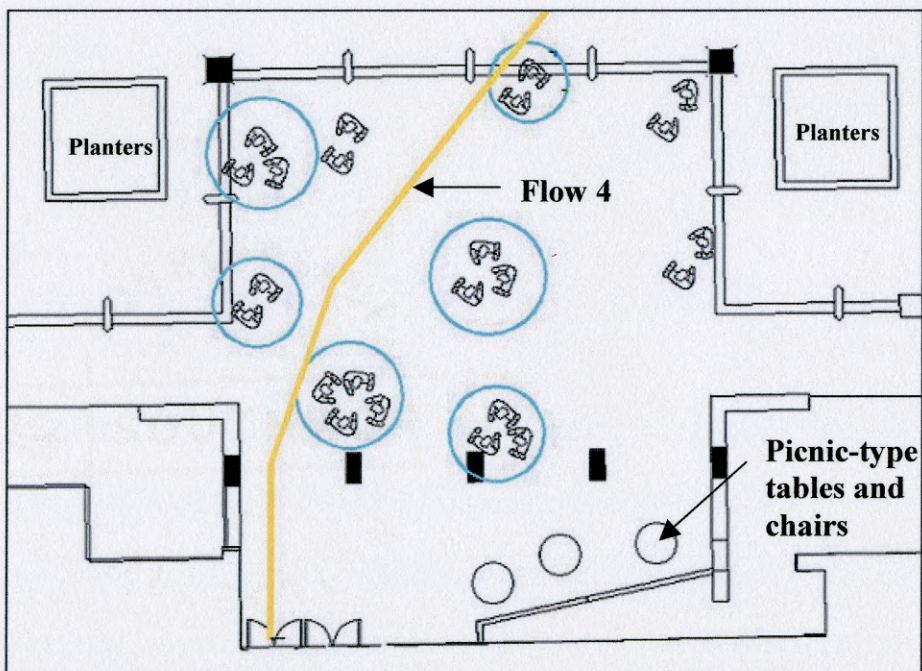


Figure 5.25: The most frequent locations in the main entry of the Student Union, where users were likely to stand while conversing with others.

to people's inclination to remain in the main flow, blocking traffic, even being jostled by it. This does not seem to be a matter of inertia but of choice—instinctive, perhaps, but by no means illogical.

Another activity pattern that had a large number of users during the five observations days was sitting and conversing. Users were observed utilizing the ledges, picnic-type tables and chairs, and steps in the main entry area for sitting and conversing with friends. These types of seating are presented by purple color in figure 5.26.

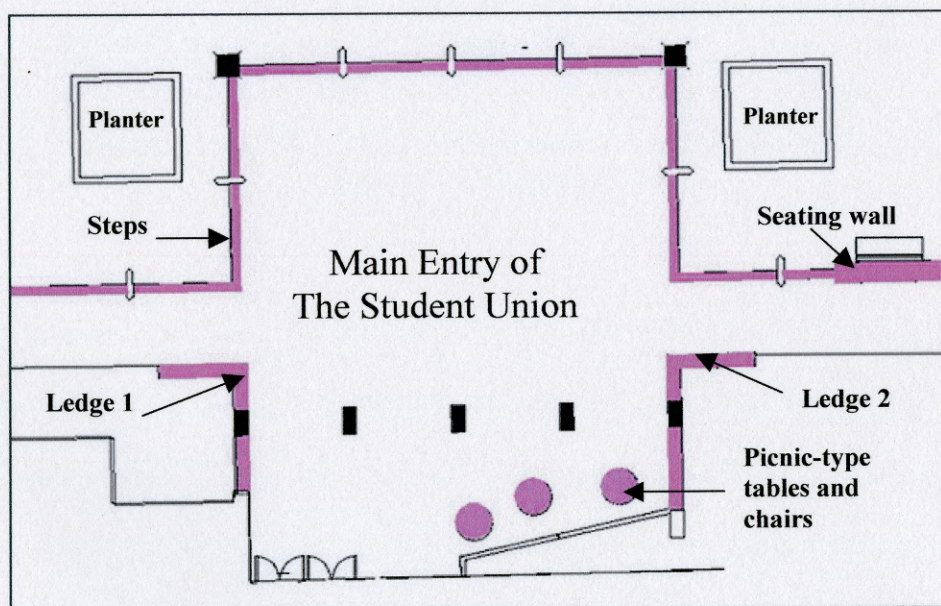


Figure 5.26: Types of seating in the main entry of the Student Union.

As illustrated in figure 5.27, the favorite sitting areas are both the ledge 1 and 2, indicated by the blue circles, located on either side of the entrance to the Student Union. Observations indicate that the most common activities found in these sitting spots were people conversing, reading newspaper, smoking, or watching other people. However, observations indicate that the majority of sitters on these two ledges are more likely to talk with their friends rather than doing other activities.

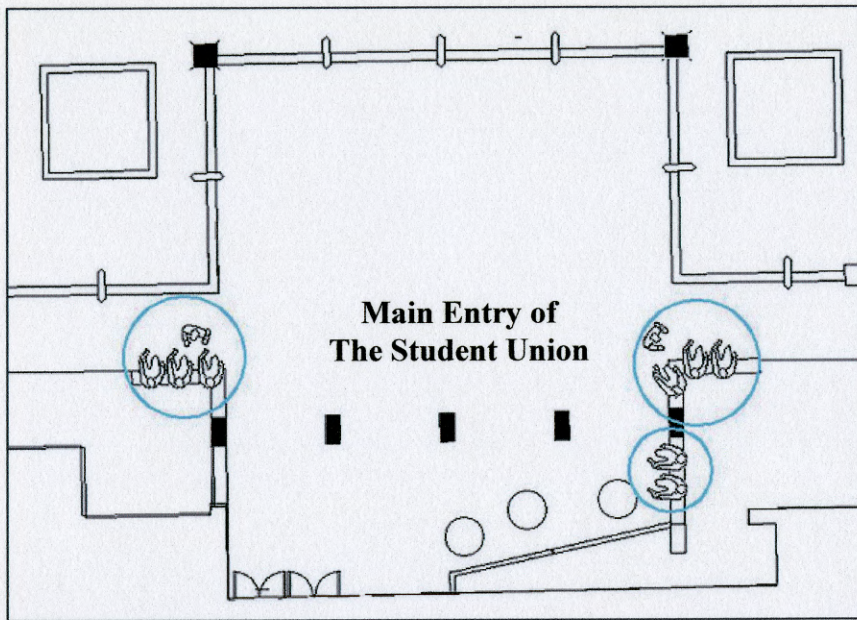


Figure 5.27: The most frequently used seating places in the main entry of the Student Union.

Figure 5.28 and 5.29 indicate that it is common to see groups of people tending to gravitate to these edge seating. As illustrated in figure 5.29, sometimes a few people formed a group and they were later joined by more friends (see figure 5.30). This may be one of advantages of sitting on or very close to the traffic lines, where someone is clearly visible from any point in the plaza. Because these sitting locations are highly visible, friends can see each other from distance. To get their friends' attention sometimes people will often wave their hands or shout out loudly.

Another frequent activity that was found in these favorite sitting areas was people watching. Typically, it was found that there were some users who were watching other people or looking at the pedestrian traffic. According to William Whyte (1980, p.13), "What attracts people most, it would appear, is other people." While hardly comfortable



Figure 5.28: Groups of people are likely to gravitate to the edge seating.



Figure 5.29: A small group at the edge seating.



Figure 5.30: Later, the same group was joined by more friends.

to sit, the two concrete ledges in front of the Student Union are still the most popular sitting spots. This may be explained by the reasons that these two sitting areas are located along the southern edge of Union Plaza and also adjacent to the major pedestrian flows—flow 1 and flow 11 (see figure 5.31). Therefore, users sitting at these locations often have a good opportunity to view the street scenes in the plaza. Sitting on the edge of the plaza space offers a sense of safety as well as prospect of what is going on. Perhaps, with the secure feeling, encouraged by the Student Union Building line behind, observers may feel more comfortable to watch the world goes by.

Another seating area that sometimes was a popular place is the steps of Student Union main entry. Observations reveal that those using the main entry steps typically involved in such activities as reading, watching the street scene, or talking with friends.

As illustrated in figure 5.32, users clustered on steps. It may be the reason that steps are wide enough so as to sort themselves out into groupings—more so than on fixed benches. However, for groups of more than two, linear steps do not work well.

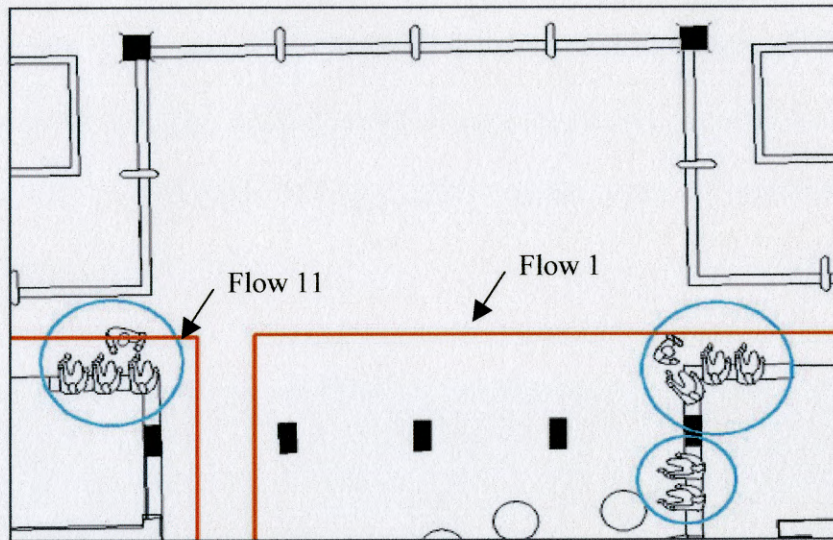


Figure 5.31: Two sitting areas are close to flow 1 and 11.



Figure 5.32: Users clustered on the steps.

3. The Spatial Core of the plaza

Located towards the eastern side of the plaza, the spatial core area offers more uses than just being a space to pass through (see figure 5.33). The previous chapter described how there are six major pedestrian flows that encourage high density and mixed uses in the spatial core area, especially around lunchtime. Behavioral observations indicate that besides being a walking street, the spatial core area attracted a wide variety of activities such as conversing, reading, smoking, getting some sun and fresh air, or watching others.



Figure 5.33: The spatial core of Union Plaza.

As illustrated in table 5.11 and graph 5.11, a frequent activity observed in the spatial core area was sitting and conversing (101 people). The next largest activity group was standing and conversing (ninety-six users). In turn, sitting and reading had forty-four users; sitting and observing, twenty-four users; sitting and using a cell-phone, fourteen users; and sitting and smoking, eleven users. The remaining activity patterns,

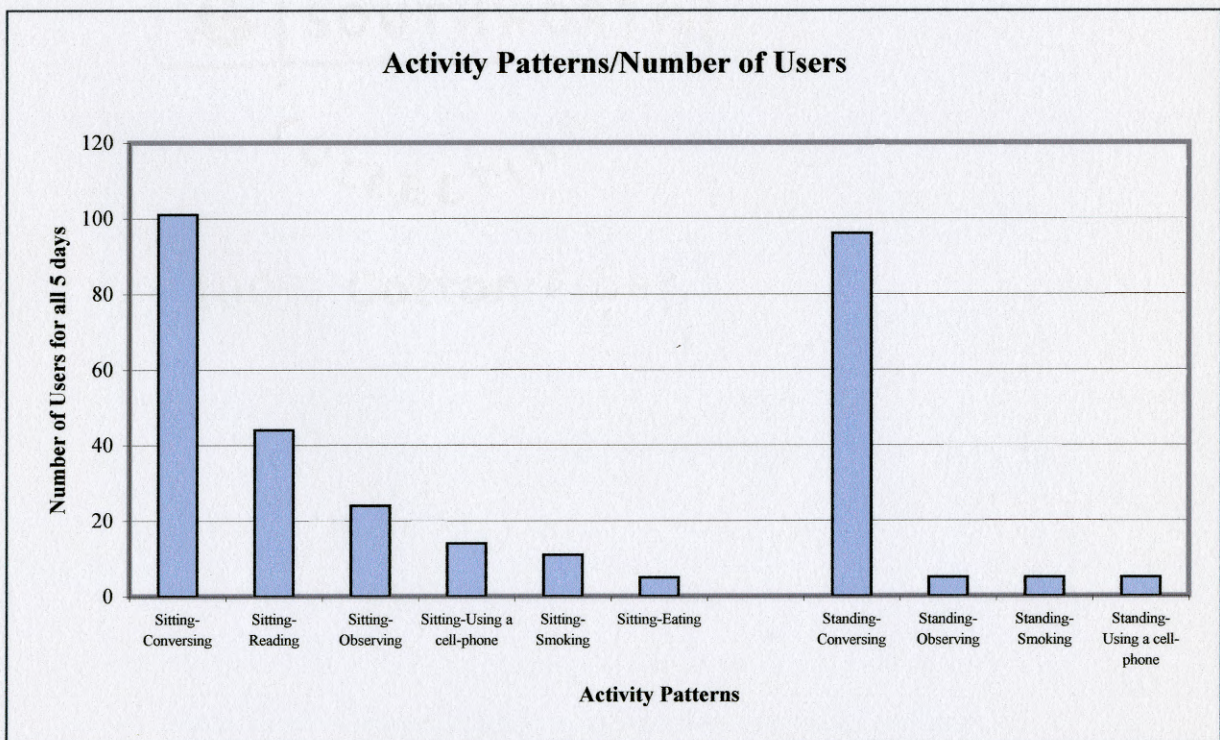
Table 5.11

Ranking of Different Activities While Users Were Sitting and Standing in The Spatial Core of The Plaza

Monday September 22 – Friday September 26, 2003

Sitting Patterns	Number of Users
Sitting-Conversing	101
Sitting-Reading	44
Sitting-Observing	24
Sitting-Using a cell-phone	14
Sitting-Smoking	11
Sitting-Eating	5
Total	199

Standing Patterns	Number of Users
Standing-Conversing	96
Standing-Observing	5
Standing-Smoking	5
Standing-Using a cell-phone	5
Total	111



Graph 5.11: Ranking of different activities while users were sitting and standing in the spatial core area, Monday September 22 – Friday September 26, 2003.

which involved only five people, were sitting and eating, standing and observing, standing and smoking, and standing and using a cell-phone.

The major seating choices in the spatial core area are planters and immovable benches. All seating types and arrangements are noted in purple in figure 5.34.

Observations indicated that the favorite sitting areas were planters 1 and 2, which are close to the main entry of Student Union. Besides greenery to be enjoyed, the locations of these planters attract a large number of users to sit in Union Plaza, especially planter 1, due to providing visual interest and also being accessible to passersby from the major pedestrian flows nearby.

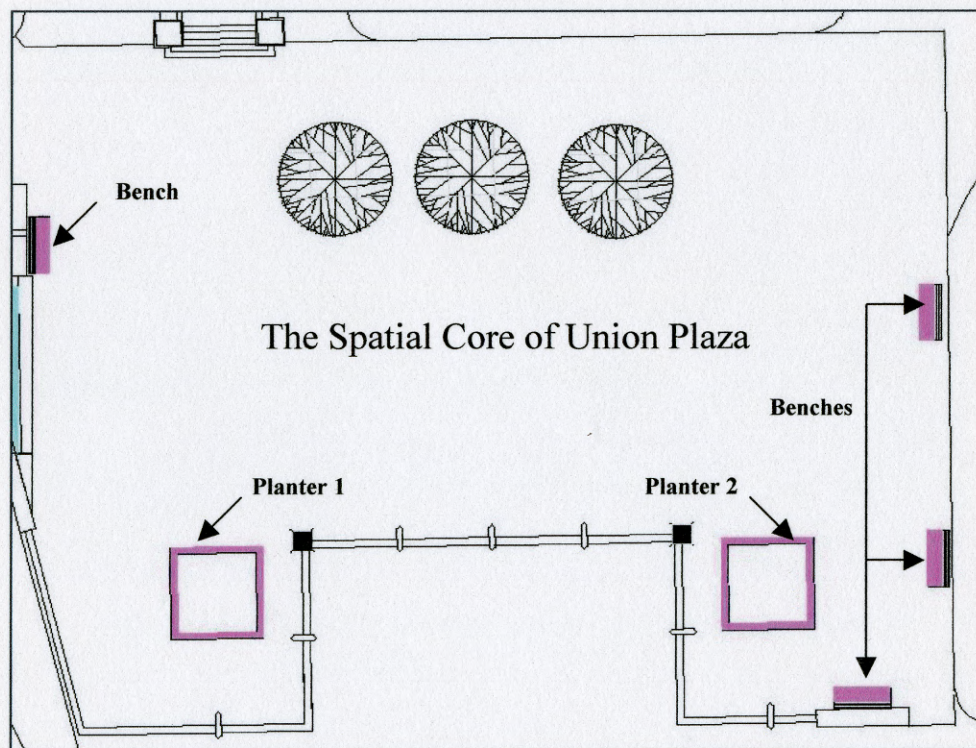


Figure 5.34: Types of seating in the spatial core of Union Plaza.

Often seating arrangements are assumed where none are intended, as in figure 5.35. A group of users occupied a small area between the planter 1 and the steps up to the main entry of Student Union for interaction. It is clear that several people still had to stand while some sat down. In addition, the usage of this small space seems to be an accidental seating arrangement. Also the features of column and the steps together with the planter form a semi-enclosed space in which to gather. With the seating that is facing each other, there is a chance for groups larger than three or four to gather together and discuss school or personal matters.



Figure 5.35: The most favorite sitting area in the spatial core of Union Plaza.

Not only does planter 1 serve as a gathering place for small groups, but it also offers a seating place for individuals and couples seeking for privacy. Observations indicate that there were many individuals who came to planter 1 to relax, rest, or to get

some sun and fresh air during the peak periods, especially lunchtime. As illustrated in figure 5.36 and 5.37, planter 1 often offered a relaxing stop for users seeking a private place at peak times.



Figure 5.36: Many users seek a brief respite from the crowds.



Figure 5.37: Couples sitting on planter were often found.

Benches were another seating type that also tended to attract users seeking privacy, couples engaged in intimate conversation (see figure 5.38), or individuals reading, using a cell-phone, or sunning themselves. Observations indicate that only two or three people could occupy the bench at the same time. As illustrated in figure 5.39, the bench provided a location around which to form a discussion group. However, this area did not offer adequate seating as to provide the entire group a place to sit.



Figure 5.38: Users conversing while sitting on a bench.



Figure 5.39: Group conversation centered around a bench.

Another activity that always happened in the spatial core area was the “traveling conversation.” During observation times, it was common to see some pedestrians stop walking due to an accidental encounter with friends. Usually, when persons who know each other met, they exchange some words or class notes and if time permits, brief conversations were extended. Figure 5.40 plots the frequent standing spots, circled by blue color, during five observation days. Obviously, pedestrians were more likely to stay longer in Union Plaza while having “traveling conversations”. As already pointed out earlier, groups of people were often found to select their spots for talking right on or very close to the intersection of several traffic lines.

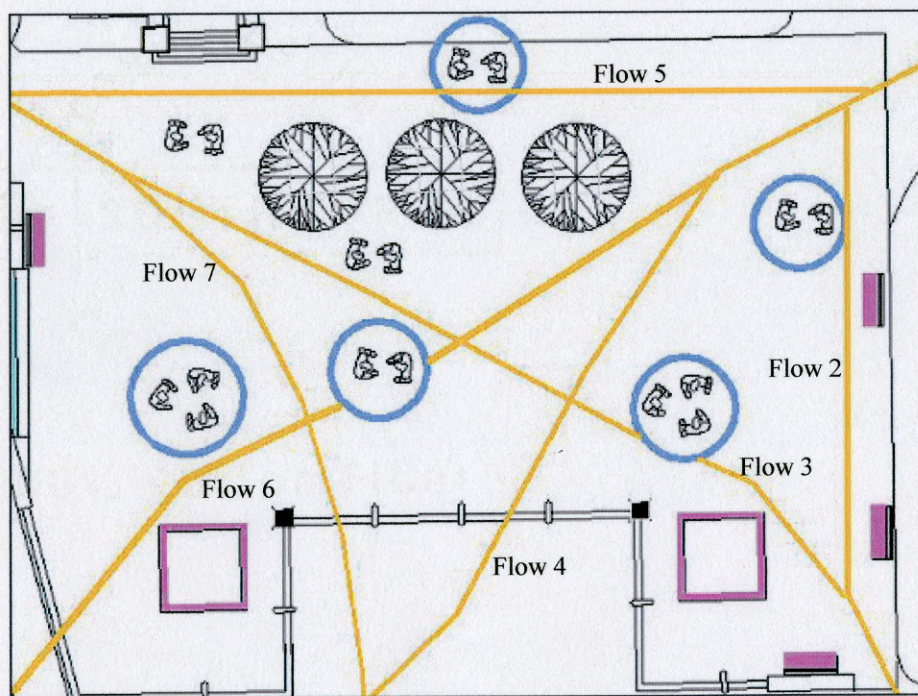


Figure 5.40: The most frequent spots where users were likely to stand while conversing with others in the spatial core area.

4. The Vehicle Drop Off Area

Located on the far western edge of Union Plaza, the drop off area is rarely used except for several specialized purposes. As shown in figure 5.41, the main feature of this zone is the actual vehicle drop off area, which is defined by concrete bollards arranged in a semi-circular shape. The major sitting areas are three benches arranged in a row facing 17th Street for use by people waiting to be picked up by someone in a vehicle.

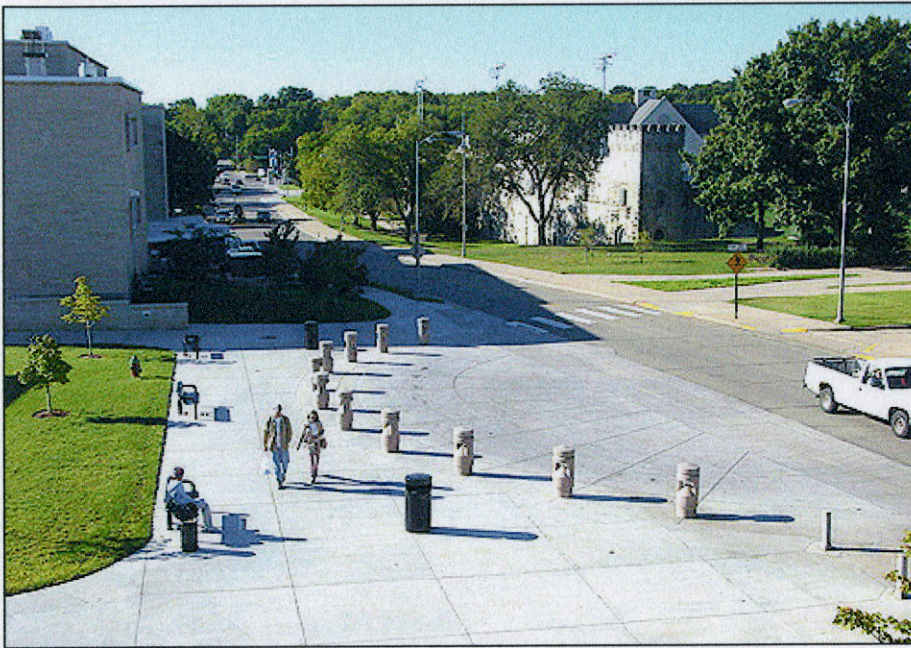


Figure 5.41: The vehicle drop off area.

Observations indicate that the primary use of the drop off area is for transit through to other parts of the campus or to get picked up by a car. There were very few recorded resting activities observed during the study period. The only users that did any resting activities during the observation period were ones that were sitting on one of the three benches where people waiting for rides would typically sit. As illustrated in figure

5.42, often a user was found sitting and using a cell-phone while waiting for someone. However, there were occasional accidental meetings between friends that happened while one of them was sitting on a bench waiting to be picked up. In addition, observations suggest that the drop off area may not be designed for people only to occupy or wait. Often a car would be in the semi-circle, waiting for someone to emerge from one of the buildings.



Figure 5.42: Sitting and using a cell-phone is activity pattern often seen in the drop off area.

5. The Steps of Seaton Hall

Along the southern façade of Seaton Hall are located three groups of steps that connect Seaton Hall to Union Plaza. These steps are arranged such that one set is on the centerline of the building; the other two are located symmetrically about this center towards the southeast and southwest corners of Seaton Hall. The steps also have low walls that run down the length of them and these often serve as seating areas.

During observation periods, there were very few activities that occurred on these steps. The major observed resting activity was standing and smoking; also in comfortable weather people would sit and talk. No matter what the weather, there were always found people standing and smoking on the stairway towards the east, partly because of the regular use by Architecture students and faculty (see figure 5.43).



Figure 5.43: The eastern steps of Seaton Hall.

Another activity pattern sometimes found on the center steps of Seaton Hall was sitting and reading. Users were likely to sit in a small sitting area immediately off the top landing of the steps, which is blocked from the wind while being fully exposed to the sun from the south. The last group of steps is located on the west side of Seaton Hall. This

stairway was never used by anyone as a place to sit or briefly pause during the five observation days.

Conclusions on Rest Patterns

The study of various activity patterns revealed how the plaza is used and how the space functions to serve these uses. Essential matters such as seating types, amounts, and location of seats help to determine the effectiveness of the space and how it serves the needs and activities of those who pass through or use the plaza. In addition, the findings address users' needs and also provide clues for how the plaza can be made to serve these needs better. The usage of Union Plaza involves intentional meetings, accidents, or chances. The results suggest that most people go to Union Plaza for specific reasons—for example some may wish to rest and interact with friends, to eat lunch at the outdoor eating area, or to read a newspaper on a planter when the weather permits. Other users' purposes were less obvious and could not be recorded in this study because they would require detailed interviewing, which this study did not undertake.

According to the observations of the users and their stationary activities as well as the analysis of aggregate counts of those activities, it is evident that Union Plaza offers opportunities for informal and unplanned meetings of friends and acquaintances. Frequently, users encountered and had conversations with others many times during the day. This behavior, called “traveling conversation”, is one key factor that causes people to pause and linger in Union Plaza.

The plaza also functions as a stage where some come to perform or to let people hear their messages, such as giving speeches, playing music, handing out free ice cream,

or chalking sidewalks. All these events can be called “triangulation”, which is another factor that makes people stop and rest in Union Plaza. More than that, these events draw people together and encourage people to interact with others. The next chapter on special events in the plaza will provide more examples and describe triangulation in greater detail.

As discussed earlier, some users purposefully visited and spent their time in Union Plaza when the weather was mild. There were many various stationary activities reported such as sitting, studying, conversing, waiting, eating, or observing others. Users need to relax and to enjoy the outdoor environment. There was evidence that many users looked for a place in Union Plaza that accommodates relaxation and offers a brief pause from their daily routines (see figure 5.44 and 5.45).

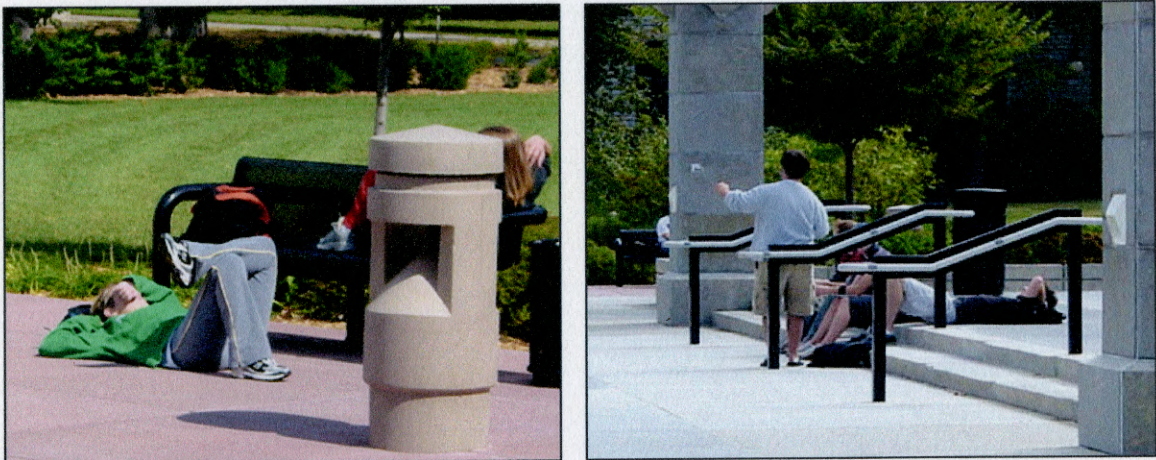


Figure 5.44 and 5.45: Some users seek out the plaza as an area for relaxation.

Observations suggest that Union Plaza can offer some sitting because of the variety of seating types—chairs, benches, ledges, steps, and planters—that offer users the opportunity to remain in the space. However, findings also indicate that there is not

enough seating to support all the plaza stationary activities, including users' needs. In addition, the arrangement of seating in the plaza rarely enhances group interaction due to size limitations and conversational orientation for couples (see figure 5.46, and 5.47). More about the lack of seating will be discussed in the Conclusion chapter of this thesis. The thesis's next chapter examines special events in Union Plaza.



Figure 5.46: Size limitation of picnic-type tables and chairs in the outdoor eating area.



Figure 5.47: People find a place to sit even though not enough seating provided.

Chapter 6

A Behavioral Mapping Analysis of Special Events in Union Plaza

As discussed in the previous chapter, one of the principal factors that contributed to people stopping in Union Plaza was “triangulation.” Special events are considered a feature that can generate “triangulation,” due to their ability to draw and hold people in the space. Therefore, the main purpose of this chapter is to report the results from observing pedestrian movement and rest patterns of users in Union Plaza during special events and to understand the change of the plaza’s character while serving as a place for those events.

Throughout the school year, there is a wide range of special events that take place in Union Plaza. The majority of these special events occur in the fall and the latter parts of the spring, when the weather is pleasant outside. The scope of the activities located in the plaza varied from small events, sometimes involving only a single table, such as a credit card promotion or a voting registration table. At other times, these events were large and occupied the entire spatial center of Union Plaza, for example University Family Day or the K-State Open House.

As described in the methodology chapter, this thesis studies three special events, which are different in scales and situations. However, observations indicate that these special events similarly caused variations in the activities of Union Plaza. For example there were changes in the flow of pedestrians through the spaces, people stopped from different places throughout the plaza to look and see what was happening, as well as those users who stopped at the event to participate or just observe. There were many

observers who were pedestrians deviating from the straight path that they would otherwise travel on, as they got closer in order to see better what was on display.

The following discussion will present three special events by examining how these special events affected the major pedestrian flows of Union Plaza. The locations of the special events are noted and the numbers of users that were drawn to and spent time around are also reported.

1. Print and Photograph Sale

The observations for the print and photograph sale were conducted on Tuesday, September 16, 2003. This event began around 10:00 a.m. when many pedestrians entered Union Plaza. As illustrated in figure 6.1, this commercial event was located on the northern side of the spatial core area of Union Plaza. The photograph sale event occupied a sizable amount of area of the plaza, and was arranged to display as many works as possible to the public where they could be seen with ease.



Figure 6.1: Print and photograph sale.

In that day, it was evident that the photograph sale affected the movement patterns of some major pedestrian flows that passed near the space where the event was located. As illustrated in figure 6.2, the sale event attracted many pedestrians traveling along flows 3, 4, 6, and 7. While being in the traffic stream, these pedestrians were likely to pause and find out what the event was about.

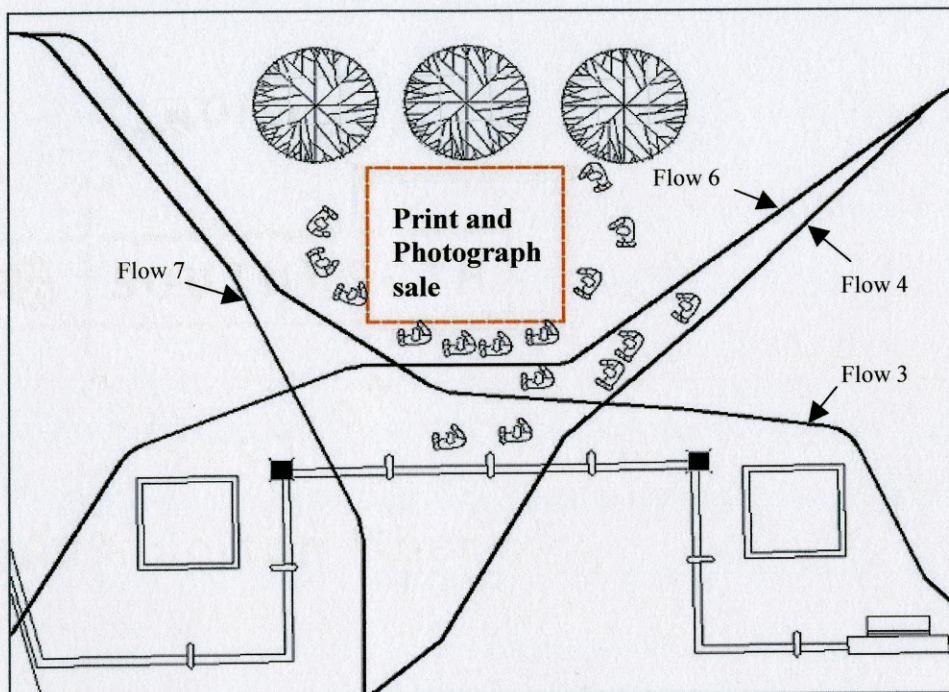


Figure 6.2: The photograph sale event drew many pedestrians to pause in the plaza.

Often people would stop and merely watch what was going on from a distance before deciding to enter the sale area and look through the selections (see figure 6.3). At each observation period, over twenty people crowded into this commercial hub were recorded. In addition, the sale area became denser because of more people tending to gravitate, especially around lunchtime.



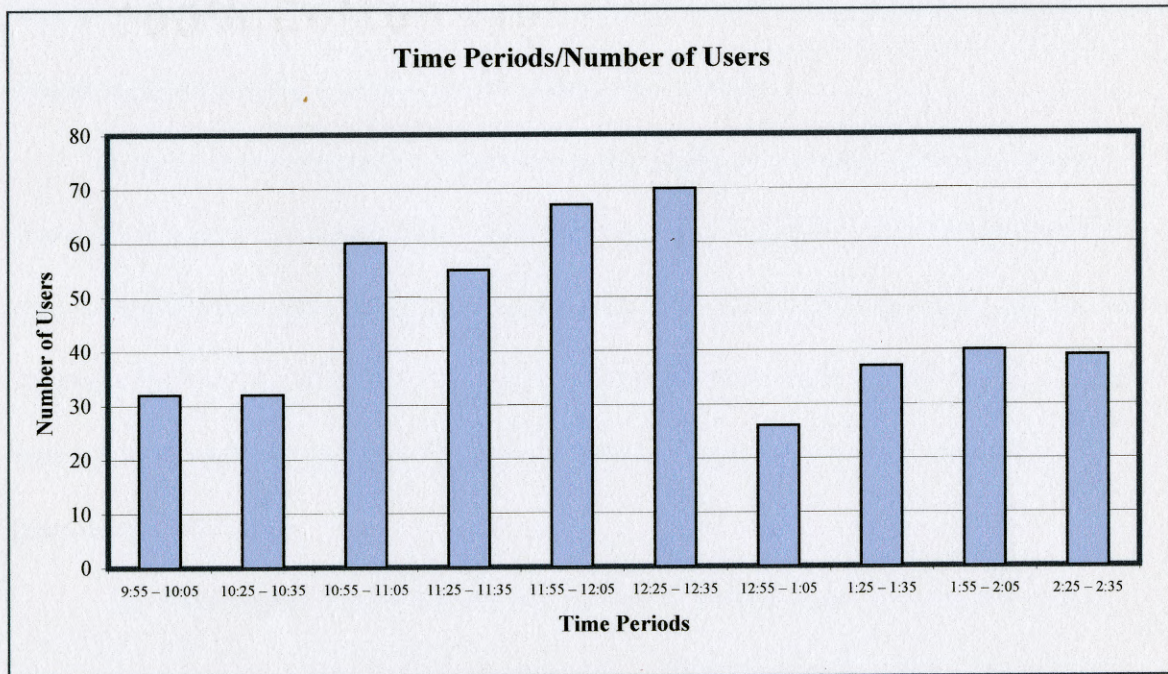
Figure 6.3: People tended to stop and watch what was going on.

Table 6.1 and graph 6.1 illustrate the fluctuation in the total number of users at rest during the photograph sale event during different observation time periods. As shown in graph 6.1, not many users were in the plaza during the morning time periods of 9:55 a.m. to 10:05 a.m. and 10:25 a.m. to 10:35 a.m., even though between those times the picture seller had already set up his booth. Around the time period 10:55 a.m. to 11:05 a.m., Union Plaza began to enliven as fifty users lingered in the space and were engaged in various stationary activities. Observations indicate that the photograph sale event attracted a large number of users during the peak periods (10:55 a.m. – 11:05 a.m., 11:25 a.m.-11:35 a.m., 11:55 a.m.-12:05 p.m., and 12:25 p.m.-12:35 p.m.). However, the total number of users decreased rapidly from 12:55 p.m. to 2:35 p.m.

Table 6.1

**Total Number of Users at Rest During The Print and Photograph Sale at
Selected Time Periods
Tuesday September 16, 2003**

Time Periods	Number of Users
9:55 – 10:05	32
10:25 – 10:35	32
10:55 – 11:05	60
11:25 – 11:35	55
11:55 – 12:05	67
12:25 – 12:35	70
12:55 – 1:05	26
1:25 – 1:35	37
1:55 – 2:05	40
2:25 – 2:35	39
Total	458



Graph 6.1: Total number of users at rest during the Print and Photograph sale at selected time periods, Tuesday September 16, 2003.

Table 6.2 and graph 6.2 summarize the aggregate number of the users' sitting and standing activities. From this table, one sees a greater number of users sitting, which was 260, while the total count of users standing was 198. Even though the total number of users sitting was greater than the total number of users standing (about sixty persons), the largest group of activity patterns in Union Plaza was users standing while watching and participating in the special event.

As shown in table 6.2 and graph 6.2, the total number of users standing while participating in the photograph sale was 147 users. The next group was sitting and reading, which had 128 people, followed by sitting and conversing, which had sixty-one users; standing and conversing with forty-seven users; sitting and eating with forty-two users; and sitting and observing with twenty-four users. The remaining activity patterns involved counts less than ten people, with five for sitting and smoking; and four for standing observing. There were no users involving with three rest patterns—standing and observing and standing or sitting while using a cell-phone.

It was noticed during the observations that while the special event was taking place, there were some areas of the plaza that were unaffected by the goings-on around them. One of these areas was the outdoor eating area, where users were doing what they normally do—eating, reading, or studying. As presented in table 6.2 and graph 6.2, there was a great number of users sitting while reading or study their lessons during the photograph sale event.

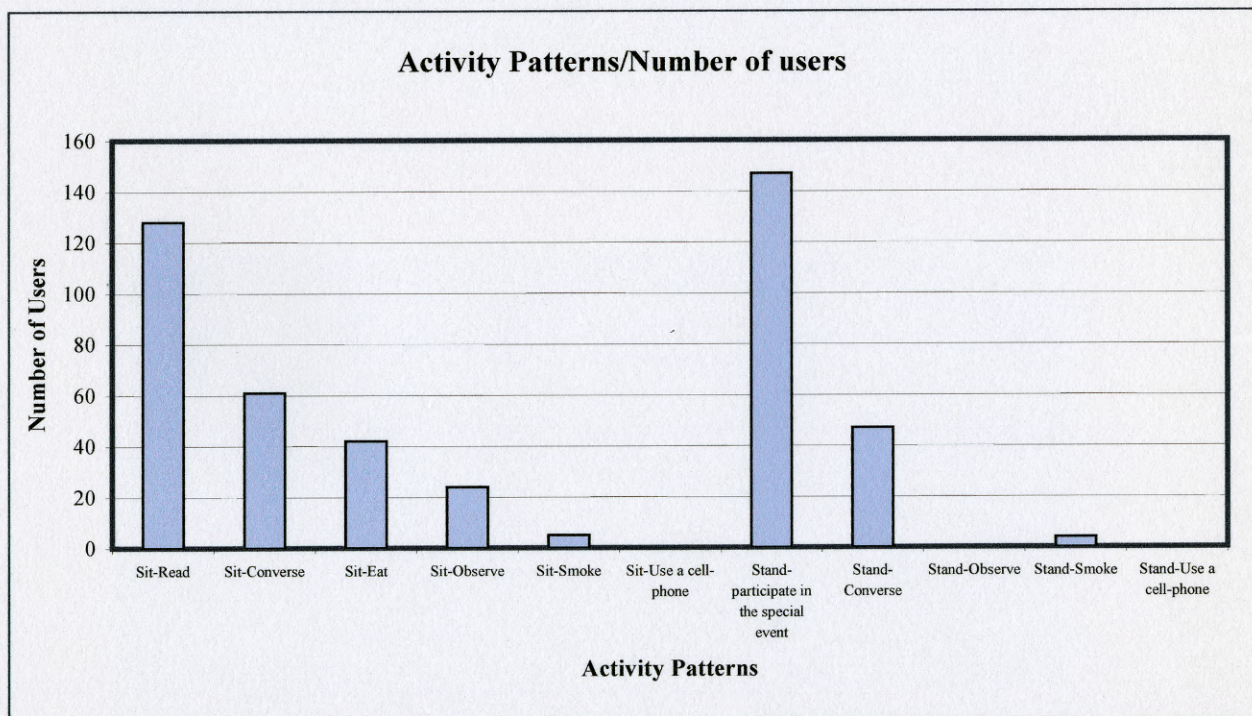
As illustrated in figure 6.4 and 6.5, groups of people were likely to gather and have conversations around the photograph event. This may explain that when people were looking at prints in a stack near another person who was also looking, one would

Table 6.2

**Ranking of Total Number of Users Sitting and Standing in Union Plaza
During Prints and Photographs Sale
Tuesday September 16, 2003**

Sitting Patterns	Number of Users
Sitting-Reading	128
Sitting-Conversing	61
Sitting-Eating	42
Sitting-Observing	24
Sitting-Smoking	5
Sitting-Using a cell-phone	0
Total	260

Standing Patterns	Number of Users
Standing-participating in Prints and Photographs Sale	147
Standing-Conversing	47
Standing-Observing	0
Standing-Smoking	4
Standing-Using a cell-phone	0
Total	198



Graph 6.2: Ranking of total numbers of users sitting and standing in Union Plaza during Prints and Photographs sale, Tuesday September 16 – Friday September 19, 2003.

comment to the other or ask their opinion of the image. Probably, another reason is that people accidentally encountered their friends while he or she was looking or participating in the event.



Figure 6.4: People interacting with others.



Figure 6.5: Often, people encountered with acquaintance incidentally.

2. Student Senate's "Free Ice Cream and Music"

Sponsored by the KSU Student Senate, the free ice cream and music took place on Wednesday, September 17, 2003. Throughout the day, the weather was sunny and mild with a maximum temperature of eighty-six degrees Fahrenheit. The Student Senate hosted this special event in order to give the opportunity for K-State students to meet with the Senate's staff and give comments or thoughts about tuition fee increases by filling out a survey form. Offering a free scoop of ice cream was an inducement for students to join the event and complete the survey form. As illustrated in figure 6.6, the free ice cream booth was set up near the northern entrance of Student Union where it attracted a large number of passersby leaving or entering the building, as well as those on other pedestrian flows that came near the table.



Figure 6.6: The Union Program Council's free ice cream.

Another main attraction was an informal live concert from a college band, located in the spatial center of Union Plaza. As seen in figure 6.7, a temporary stage was erected at the eastern edge of the plaza. The band started to play around noon while some pedestrians come into the plaza and headed to the Student Union.



Figure 6.7: The music band on the eastern edge of Union Plaza.

Observations indicate that there were some pedestrian conflicts during peak periods. These areas—the main entrance of Student Union and the eastern edge of the plaza—often encountered the highest congestion caused by people crowded around the free ice cream booth and the music stage (see figure 6.8). As illustrated in figure 6.9, the gray areas present the locations where people tended to gravitate around the special events. Here, a large number of music watchers and people attracted by the free ice cream offer often blocked the pedestrian movement in flow 1 and 3 as shown by the red lines in figure 6.9.



Figure 6.8: Some pedestrian flows were blocked by music watchers.

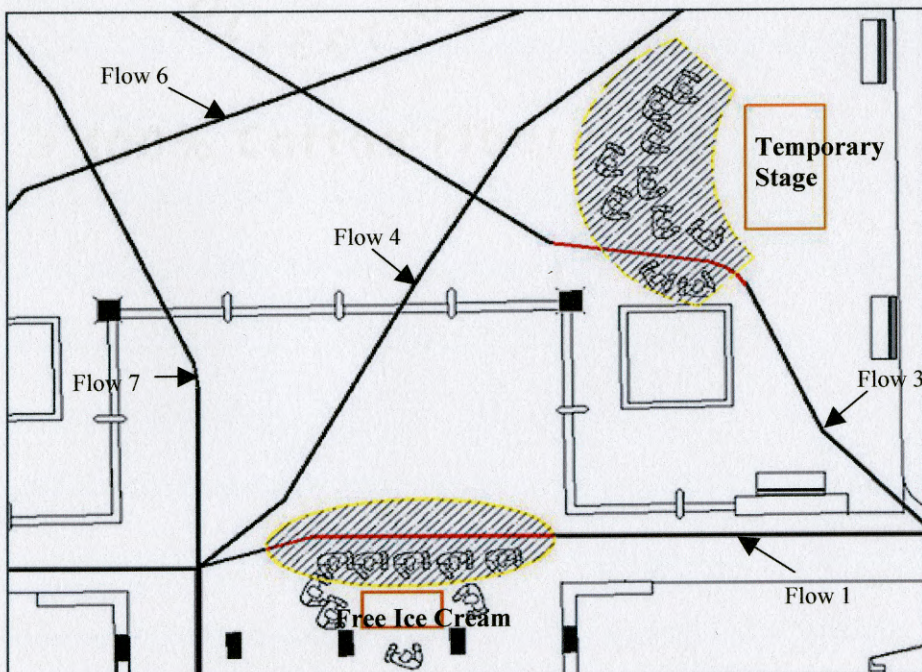


Figure 6.9: The pedestrian conflicts caused by a large number of people involving with the special events.

Another pedestrian flow that was affected by the informal live concert was flow

2. It is evident that pathway 2 was temporarily blocked by the stage. This occurrence altered the usual circulation patterns such that people using flow 2 for crossing from the south to northern edge of the plaza had to travel on flow 3 or had to walk longer distances by passing through the music listeners.

The variations of users at rest for the different time periods are shown in table 6.3 and graph 6.3. From this table, one sees a steady increase in the number of users in the plaza as it gained the highest use at the time period 12:25 p.m. to 12:35 p.m., which had 112 users, and then decreased. Noted that the free ice cream was started around 10:55 a.m., with about fifteen people stopping at the booth at that time. Many more pedestrians stopped by the free ice cream booth until the event ended at around 1:55 p.m. Thus, the free ice cream and the live concert were the main reasons that caused users to rest in Union Plaza. In addition, these events generated a faster-than-usual rise and fall in the plaza's use during the observation periods.

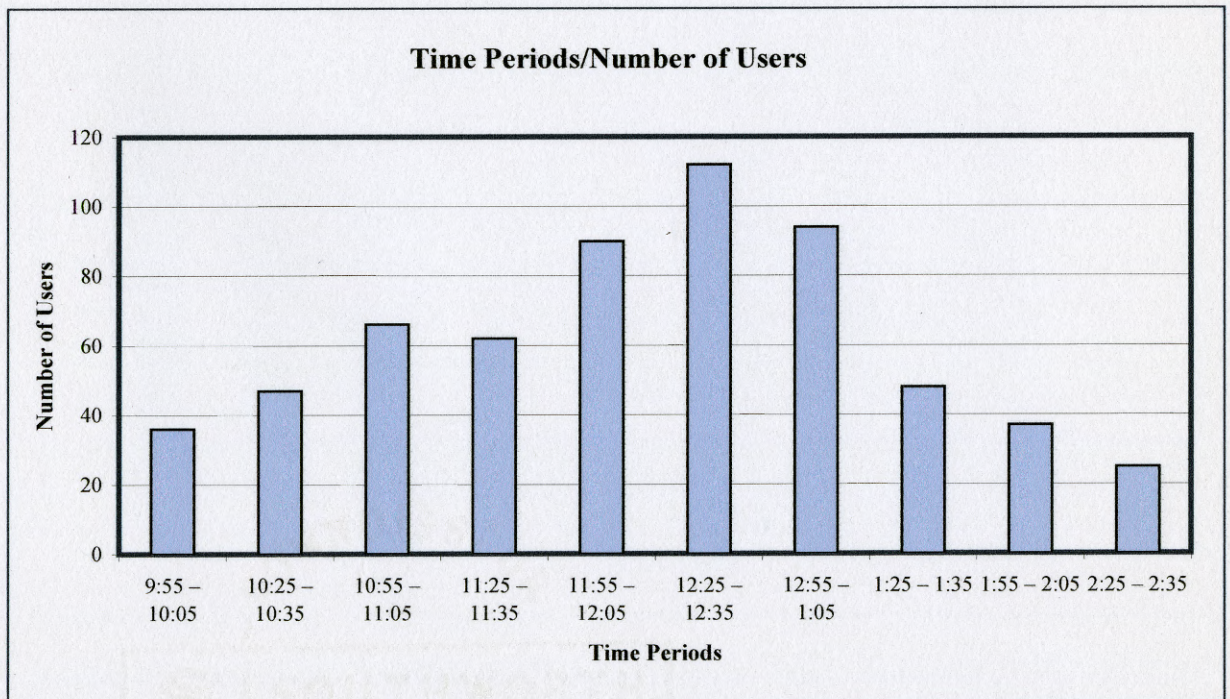
Table 6.4 and graph 6.4 summarize the aggregate number of users at rest while engaging in various activities. In terms of sitting and standing activities, from table 6.4 one sees that the total number of users sitting (354 users) is higher when compared to the total number of users standing (236 users). Table 6.4 and graph 6.4 also show the greatest number of users engaged in the activity of sitting and conversing, which had 147 users. The next largest activity groups are sitting and reading (126 users), and standing and participating in special event (126 users). Another activity pattern that also had a large total number of users was standing and conversing (120 users), followed by sitting and eating, which had sixty users. The remaining activities had total counts of users less

Table 6.3

Total Number of Users at Rest During The Free Ice Cream and Music at Selected Time Periods

Wednesday September 17, 2003

Time Periods	Number of Users
9:55 – 10:05	36
10:25 – 10:35	47
10:55 – 11:05	66
11:25 – 11:35	62
11:55 – 12:05	90
12:25 – 12:35	112
12:55 – 1:05	94
1:25 – 1:35	48
1:55 – 2:05	37
2:25 – 2:35	25
Total	617



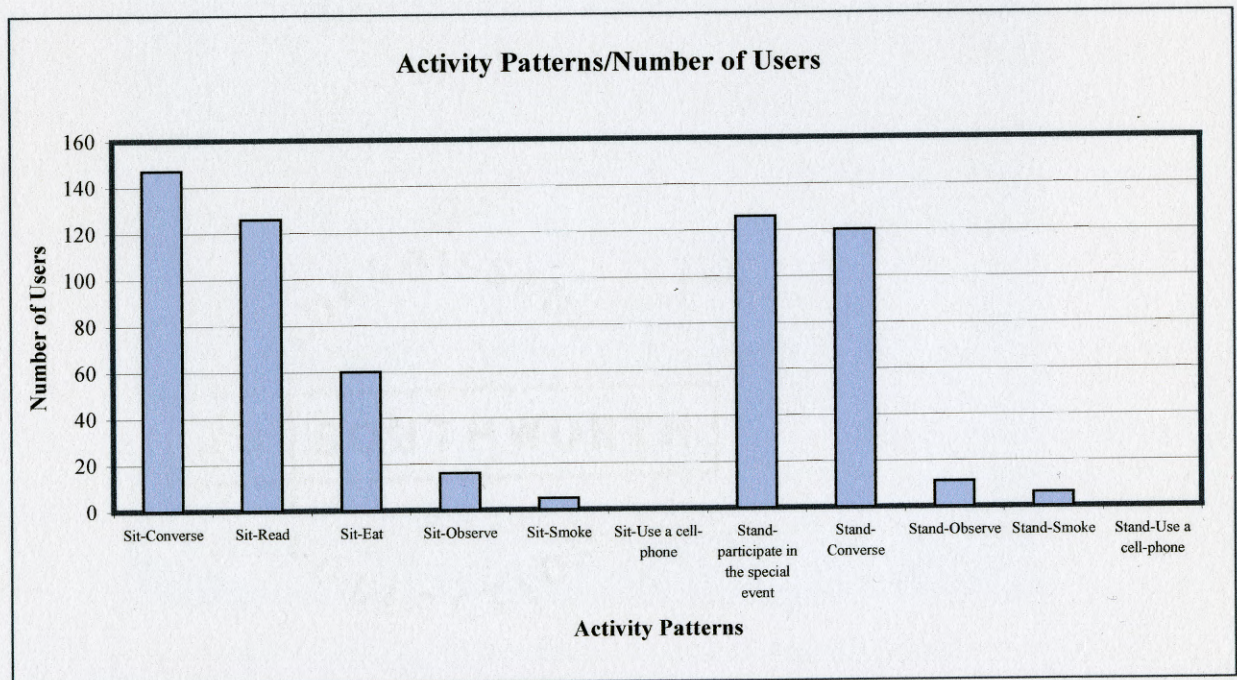
Graph 6.3: Total number of users at rest during the free ice cream and music at selected time periods, Wednesday September 17, 2003.

Table 6.4

Comparison of Ranking Total Number of Users Sitting and Standing in Union Plaza During The Free Ice Cream and Music Wednesday September 17, 2003

Sitting Patterns	Number of Users
Sitting-Conversing	147
Sitting-Reading	126
Sitting-Eating	60
Sitting-Observing	16
Sitting-Smoking	5
Sitting-Using a cell-phone	0
Total	354

Standing Patterns	Number of Users
Standing-participating in Free Ice Cream and Music	126
Standing-Conversing	120
Standing-Observing	11
Standing-Smoking	6
Standing-Using a cell-phone	0
Total	263



Graph 6.4: Comparison of ranking total number of users sitting and standing in Union Plaza during the free ice cream and music, Wednesday September 17, 2003.

than twenty people, with sixteen for sitting and observing; eleven for standing and observing; six for standing and smoking; and five for sitting and smoking. There were no users recorded in the group of using a cell-phone, whether sitting or standing.

3. Commercial Fair/Pottery Sale

Taking place in the entire area of spatial center of Union Plaza, The ThunderDorm Campus Technology Tour was scheduled on Monday October 6, 2003 to demonstrate the latest consumer technology for college students. As illustrated in figure 6.10, setting up temporary activity tents, many sponsors showed their products and allowed students to have hands-on experience with new technologies.



Figure 6.10: The ThunderDorm Campus Technology Tour at Union Plaza.

As shown in figure 6.11, another event that was also scheduled on that Monday was the K-State Pottery Sale, which was located on the southwestern side of the spatial center of the plaza not far from the ThunderDorm event. The pottery sale sponsored by The K-State ceramic club began around 9 a.m. and ran from Monday, October 6 to Friday, October 10, 2003. The sale consisted of several portable tables for displaying pottery items, such as bowls, pots, vases, as well as abstract pieces.



Figure 6.11: K-State Pottery Sale.

The overall layout of the two special events and the major pedestrian flows that were close to those events are shown in figure 6.12. Considered as a large special event, the Thunder Dorm Campus Tour consisted of various activities that were located in different areas throughout the spatial core of Union Plaza. On the other hand, the pottery sale, a much smaller event, occupied a narrow space near the southern edge of the plaza. Observations indicate that the two special events were one of the main factors that made

the plaza's users stop and spend a longer amount of time than usual in the plaza. However, it was clear that the wide variety of activities such as games, testing the new products, and drawings to win prizes offered by the ThunderDorm was much more attractive to pedestrians than the pottery sale, which drew fewer participants.

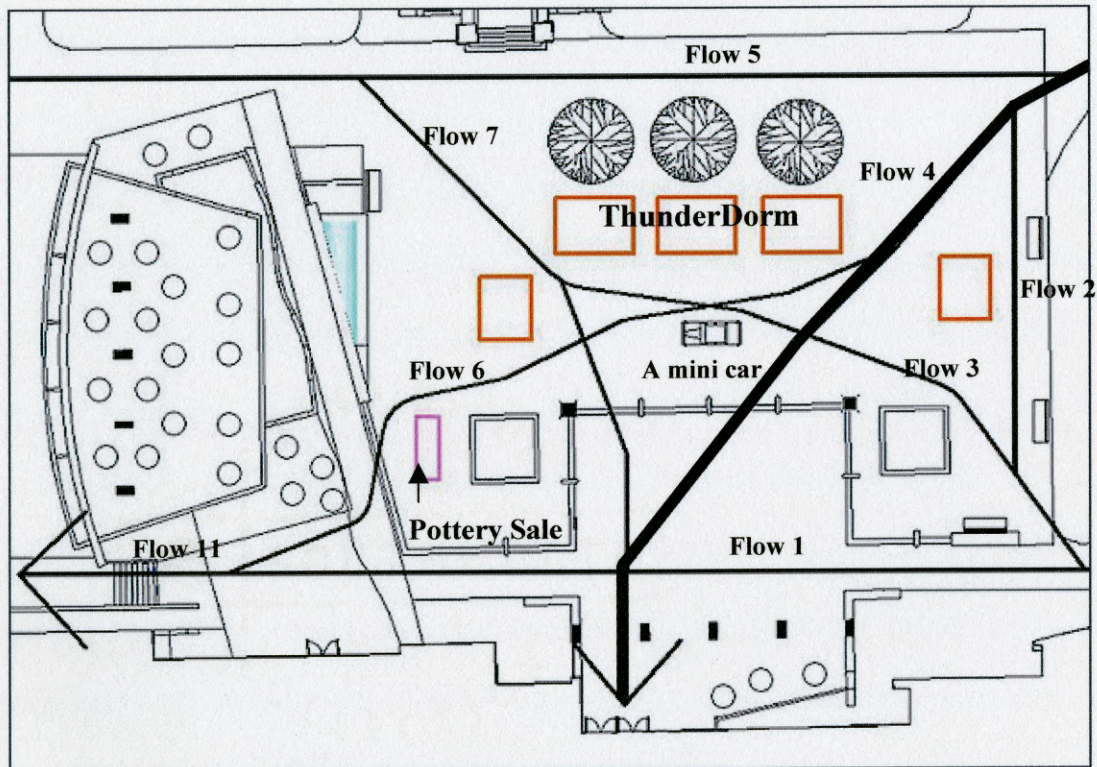


Figure 6.12: The overall layout of the two special events.

Observations also point out that the location of the ThunderDorm event is a key advantage that encouraged many users to participate in the event. There were four major pedestrian flows—flow 3, 4, 6, and 7—that passed through the middle of the space, where the ThunderDorm event was located. Functioning as a main thoroughfare of Union Plaza, flow 4 was the most intense pedestrian flow during all observation times. As illustrated in figure 6.12, the intensity of traffic on flow 4 is presented by the thick

line. Almost pedestrians traveling on these major pathways were more likely to look around and see what was going on in the plaza, with some stopping and participating in the event's activities.

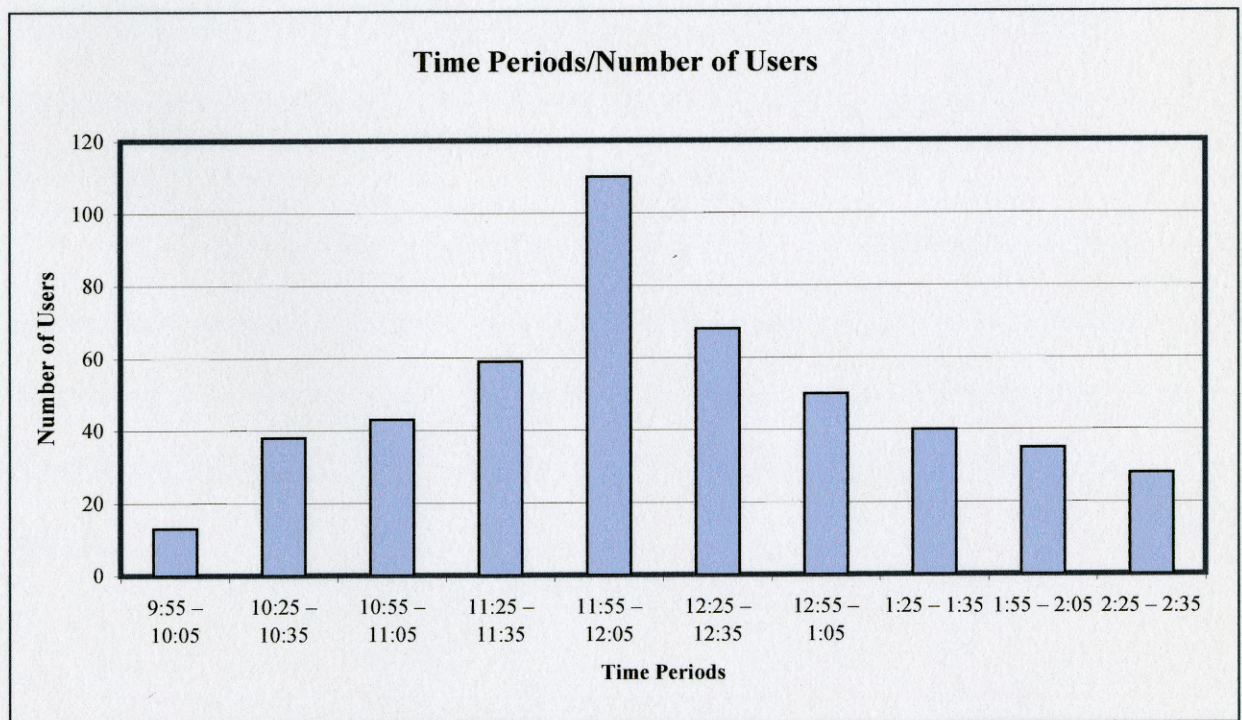
In contrast, the pottery sale drew few people. Observations indicate that there were few pedestrian flows—flow 6, 8, and 11—close to the pottery event. Moreover, these flows were along the less-used flow paths. The pottery event was set up not far from the outdoor eating area, however very few users from that area were observed visiting the event. In addition, the pottery display booth was simple and not able to grab the attention of passersby from a distance. Therefore, during that Monday, one concludes that the pottery sale could not compete with the potential to draw participants that the ThunderDorm had.

Table 6.5 and graph 6.5 present the aggregate counts of users at rest at observation time periods—total of 484 users. In looking at this table and graph, one notes that in the early morning period starting at 9:55 a.m. – 10:05 a.m., there were thirteen users. The total number of users engaging in stationary activities increased to thirty-eight at the time period of 10:25 a.m. – 10:35 a.m. and rapidly rose to forty-three people at 10:55 a.m. to 11:05 a.m. Around 11:25 a.m. – 11:35 a.m., the total number of users reached to fifty-nine users. Union Plaza experienced the largest number of users at rest from 11:55 a.m. to 12:05 p.m., with 110 users. In turn, the total number of users decreased by about forty persons at 12:25 p.m. to 12:35 p.m. and then constantly decreased until the last observation time period, 2:25 p.m. – 2:35 p.m., with twenty-eight people.

Table 6.5

Total Number of Users at Rest During The ThunderDorm Campus Tour and
The Pottery Sale at Selected Time Periods
Monday October 6, 2003

Time Periods	Number of Users
9:55 – 10:05	13
10:25 – 10:35	38
10:55 – 11:05	43
11:25 – 11:35	59
11:55 – 12:05	110
12:25 – 12:35	68
12:55 – 1:05	50
1:25 – 1:35	40
1:55 – 2:05	35
2:25 – 2:35	28
Total	484



Graph 6.5: Total number of users at rest during the ThunderDorm Campus Tour and the Pottery sale at selected time periods on Monday October 6, 2003.

Table 6.6 and graph 6.6 compare the counts of people sitting and standing in Union Plaza as observed during the ThunderDorm Campus Tour and the pottery sale. As is clearly evident, there were many more people standing (274) than people sitting (210) in the plaza. This variation may be explained by the fact that the majority of users tended to participate in these special events especially the ThunderDorm Campus Tour. Graph 6.6 indicates that standing and engaging in the two special events, with 235 users, was the most predominant activity that users were involved in while were in the plaza, followed by sitting and reading, which had eighty-nine people.

The next largest group was sitting and conversing, with seventy-six users. The other two activity types—"sitting and eating" and "standing and conversing"—had an equal numbers of users, with thirty-one people each. Observations point out that the users represented by the number in the standing and conversing category usually encountered a friend or acquaintance by chance. Also from observations, it was noted that many users having a "traveling conversation" were likely to gravitate toward the ThunderDorm event.

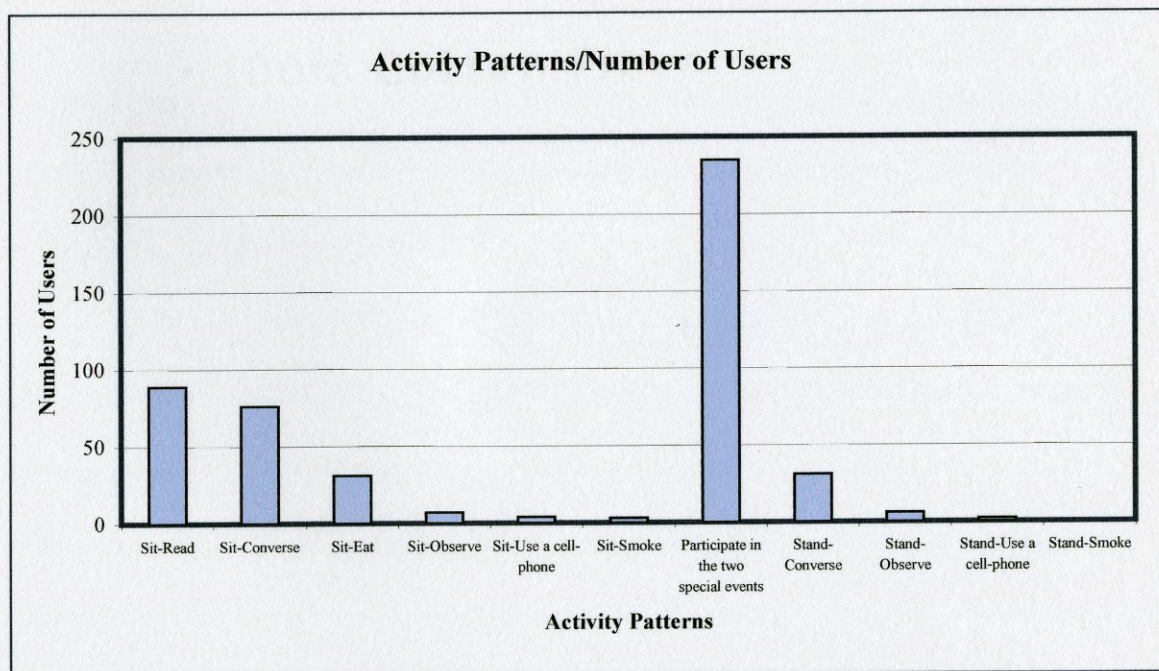
The remaining activities had a low number of users—less than ten. The total for sitting and observing was seven people; for standing and observing, six users; for sitting and using a cell-phone, four users; for sitting and smoking, with three users; and for standing and using a cell-phone, only two users. No one was recorded standing and smoking.

Table 6.6

Ranking of Total Number of Users Sitting and Standing in Union Plaza
During The ThunderDorm Campus Tour and The pottery sale
Monday October 6, 2003

Sitting Patterns	Number of Users
Sitting-Reading	89
Sitting-Conversing	76
Sitting-Eating	31
Sitting-Observing	7
Sitting-Using a cell-phone	4
Sitting-Smoking	3
Total	210

Standing Patterns	Number of Users
Standing-participating in the ThunderDorm event and the Pottery sale	235 (205 + 30)
Standing-Conversing	31
Standing-Observing	6
Standing-Using a cell-phone	2
Standing-Smoking	0
Total	274



Graph 6.6: Ranking of total number of users sitting and standing in Union Plaza during the ThunderDorm Campus Tour and the Pottery Sale on Monday October 7, 2003.

Conclusions on Special Events

Focusing people's attention and getting them to react to an object in space as well as generating interaction between strangers in order to engage in conversations are the main workings of "triangulation." As discussed in this chapter, three special events that took place in Union Plaza were studied. The results indicate that these three events are good examples of "triangulation," due to attracting people to the plaza and increasing the chances for the plaza's users and those who did not know each other to talk to one another.

Groups of people commented to others around them on the pictures during the photograph sale. A large crowd of spectators gathered and chatted with each other around the music stage. A large number of people were drawn to the game held by the ThunderDorm Campus Tour event. These are some parts of special events that can lead to "triangulation", which William Whyte (1980, p. 94) suggested as one of the necessary elements contributing to success of a public place besides location, street-plaza relationship, and sittability.

In Union Plaza, the special events usually are held in the plaza's spatial core and the main entrance of the Student Union. Therefore, the use of Union Plaza in this area was affected by the grouping of people gathering around the special events. Another effect of the special events was a shift of some major pedestrian flows and movement patterns, which conflicted with the participants in the events. Often the people that were using the pathways would see the congestion ahead and they would be interested in what was happening. These people would often become participants in the event and add to the numbers.

Observations clearly demonstrate that the location of special events in Union Plaza had an influence on their success. These findings point out that the success of an event relates partly to the major pedestrian flows passing through or near the locations where the events were held. For example, as illustrated in figure 6.13, when the pottery sale was set up at location 1, the southwest corner of the spatial core, indicated by purple area, there were few people visiting. However, the next day, when the event was moved to location 2, which was the north-center part of the spatial core, indicated by the blue area, more people were attracted to the event.

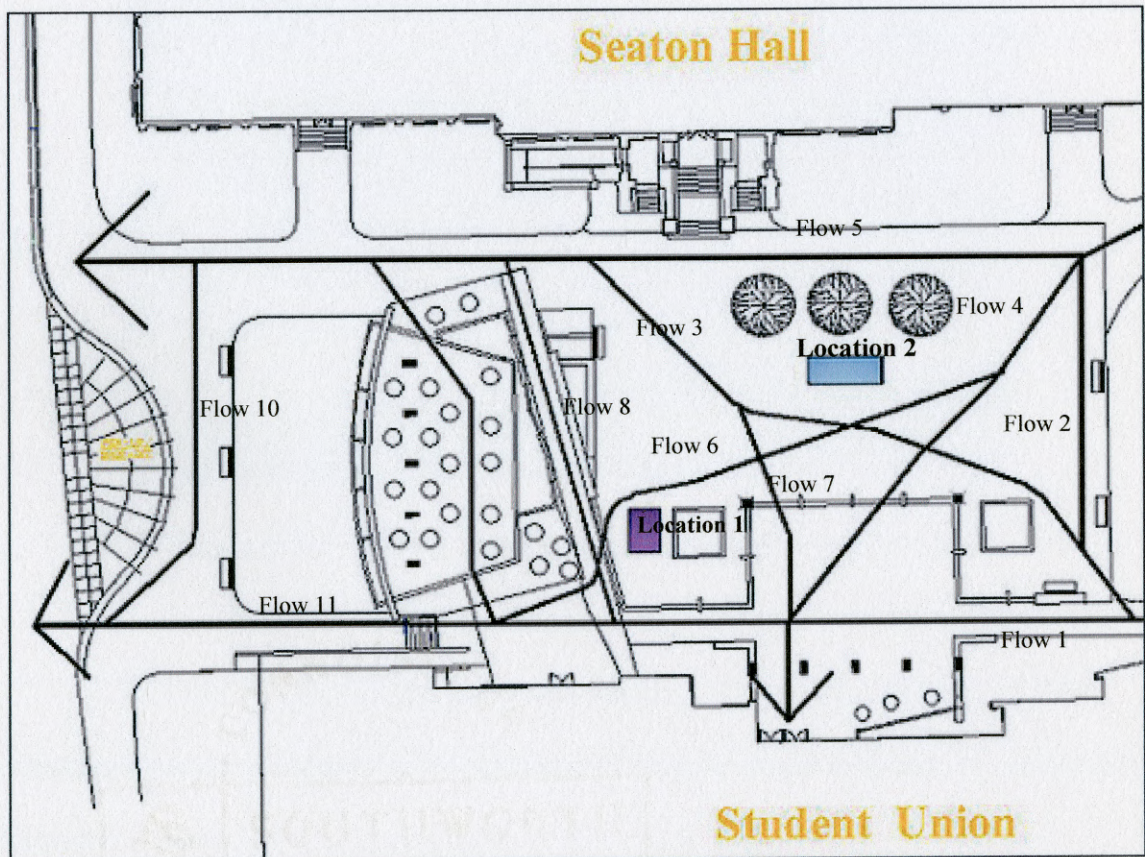


Figure 6.13: The different locations occupied by the Pottery Sale during its three days.

As shown in figure 6.14, there have also been some special events located in the vehicle drop off area. Far away from Union Plaza's major pedestrian flows, these events had few people visit them, and their advertising had to really get people's attention to draw them over into that area. Most events located in that space did not succeed in their advertising, nor did they succeed in getting very many people participating.



Figure 6.14: Advertisement bus in the vehicle drop-off area.

The next chapter will present design implication for Union Plaza integrating the findings from the literature review of chapter 2 and the empirical behavior analysis of chapters 4, 5, and 6.

Chapter 7

Design Implications For Union Plaza's Redesign

This chapter presents a preliminary design scheme for generating greater sociability and interaction in Union Plaza. The practical design guidelines provided derive from what has been learned in the previous chapters 2, 4, 5, and 6. As mentioned in chapter 2, the major research source in this thesis is William Whyte's work *The Social Life of Small Urban Space* (1980), which discusses key design strategies that Whyte used in regard to plazas, streets, and other urban public spaces. Taking the principles that Whyte learned in his studies and the findings deriving from the observations of the different functions of the plaza, this chapter discusses the key of Union Plaza that influence the sociability, according to Whyte. These recommendations will help to improve the various attributes of the plaza that may help the space to work better and thus become a more sociable space.

(1) Location

Location is the first key to emphasize for a plaza's success. According to Whyte (1980), the primary factor determining the potential for sociability in urban space is its location in relation to its users and nearby activities. In other words, a dense concentration of people in the surrounding area strongly influences the use of a plaza. Therefore, a plaza's location is the most important design factor because it brings a variety of users into a plaza.

Bounded by the K-State Student Union and the Seaton Hall building, the plaza has a great benefit from its prime location. The findings in chapters 4-5 indicate that Union Plaza daily experiences a high volume of pedestrian traffic and diverse use and activities. These are partly the influence of the K-State Student Union, generating a high degree of uses and supplying a daily regular flow of people across the plaza throughout the day and into the evening.

(2) Street-Plaza Relationship

Another important feature for a plaza's success, according to Whyte (1980), is the plaza's relationship to streets and street corners. Streets adjacent to the plaza help to provide people that can enter into the space. Furthermore, Whyte also argues that the area where streets or sidewalks and plaza meet is a key to success or failure (1980, p. 57). Thus, to have a greater benefit, a plaza should be located near heavily used streets or street corners. Another researcher, Clare Cooper Marcus, suggests in *People Places* (1998) that street plazas are generally used for brief periods of sitting, waiting, and watching. Therefore, having a good and comfortable seating edge, a widened sidewalk, or a corner sun pocket will encourage the usage of a plaza.

As illustrated in figure 7.1, the western border of the plaza barely has a street-plaza relationship. Mostly, pedestrians entering the plaza from this side are mainly people traveling from the old stadium, the parking lot, and the neighborhood to the west. Observations indicate that pedestrians have to cross North 17th Street in order to access Union Plaza. It was noticed that this western area is underused due to a lack of activity and good places to sit except three benches used for sitting while waiting to be picked up

by car. In addition, the western border of Union Plaza fails to provide clear sight lines, due to a physical barrier—the high wall of the outdoor eating space (as indicated with thick black line). Therefore, it is hard to see any beckoning devices—such as ledges or trees in the plaza. One can conclude that this side does not provide a place for activity or clear visibility to Union Plaza.

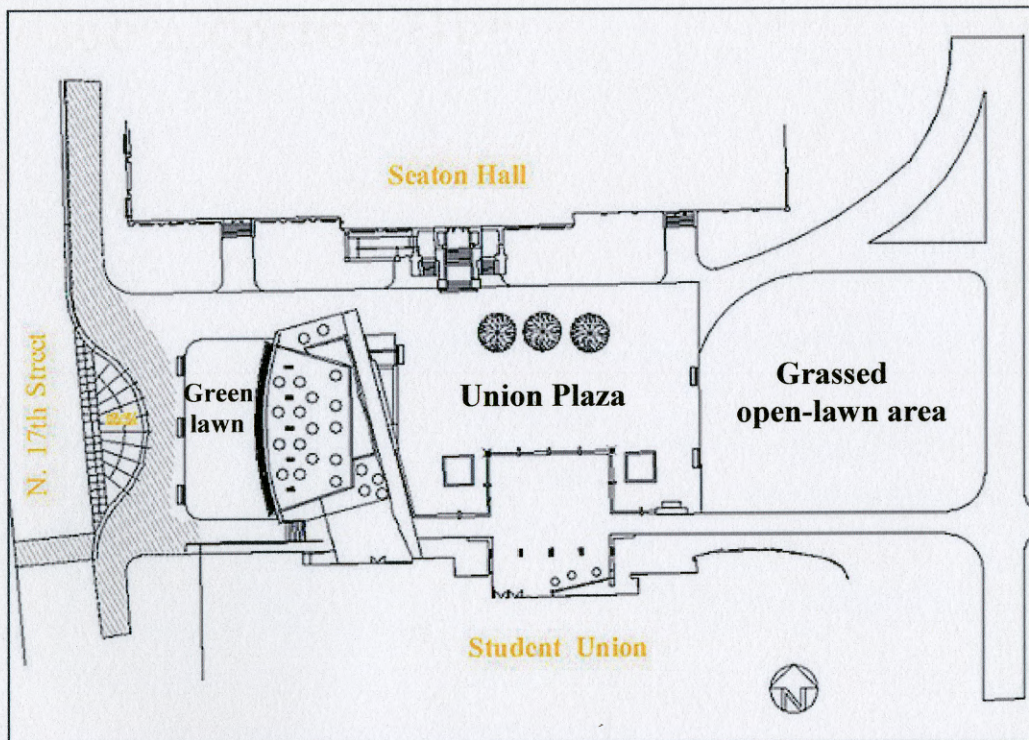


Figure 7.1: The 17th Street sidewalk does not offer a good view of the plaza.

In the analysis of the Union Plaza, it was also noticed that the entire eastern third of the open space to the north of the Student Union is a grassy area and undeveloped. There may be an oversight made when designing this space, so that the street, or the sidewalk adjacent to Union Plaza, on the eastern side, is not an integral part of the plaza itself. As illustrated in figure 7.2, the gray area indicates the eastern sidewalk separated

from the plaza space by the grassed open-lawn area, which pedestrians cannot pass through. To enter the plaza, passersby traveling on this eastern sidewalk have to change and walk on another pathway—flow 1. Another important feature is visibility, or visual access, that helps to invite people to enter the plaza. However, a row of low plants circling around the grassed open-lawn area is a barrier for visual access from the eastern sidewalk.

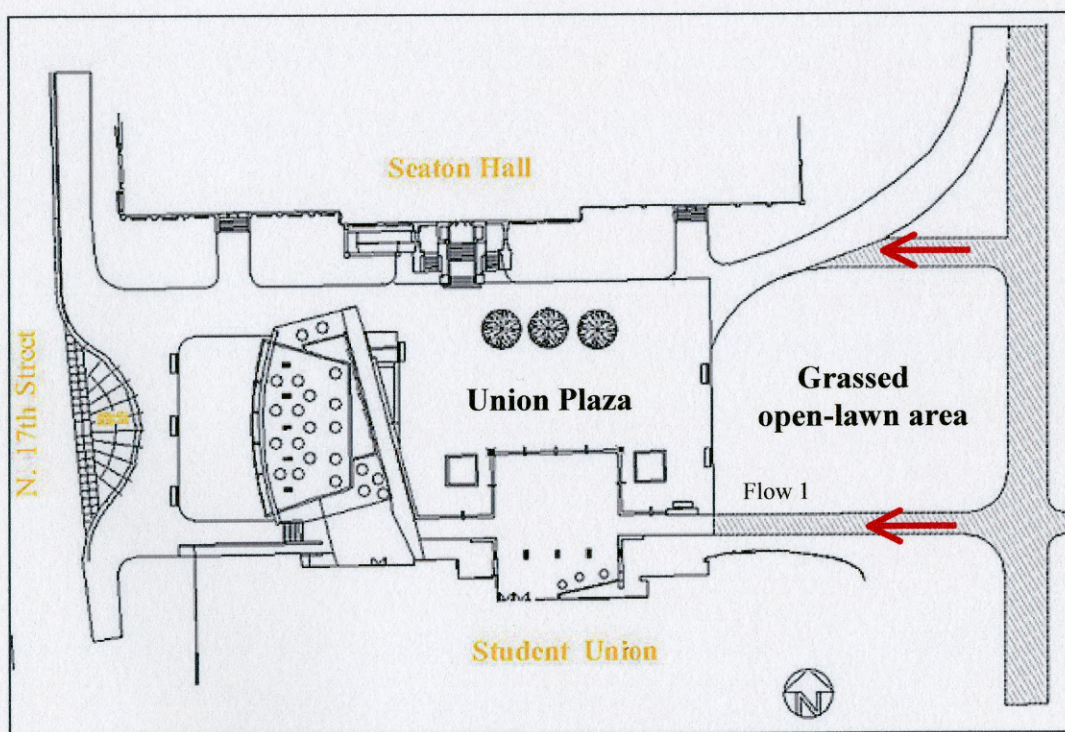


Figure 7.2: The eastern sidewalk is separated from the plaza space.

In its current state, the grass-open area on the western side of the plaza is rarely used. With the large wall bordering the east side of the lawn, it is cut off from the rest of the plaza. It has become a dead area, where nothing takes place. To change this “dead zone,” it is proposed that facilities should be provided to encourage activities in this

space. The wall should be made less a barrier by a gentle sloping feature where the low side begins near the vehicle drop-off area and the high point is against the wall on the western edge of the outdoor eating area. There should be holes punched in this barrier in order to allow access through the wall, into this area from the main plaza. To further enhance a person's ability to use and enjoy what will become a slope, there should be added a shading feature. With this feature, people will be able to use this area as an addition to the outdoor eating area, where they can sit in the grass, under the shade and enjoy their meal or book, or even their nap.

However, in some parts of Union Plaza, there is no boundary between the plaza and pedestrian pathways. As shown in figure 7.3, the gray area identifies the pedestrian sidewalk situated on the northern edges of the plaza. The majority of passersby are people walking from the east or west sides of the campus. Obviously, it is seen that this pathway—flow 5—becomes part of the plaza space.

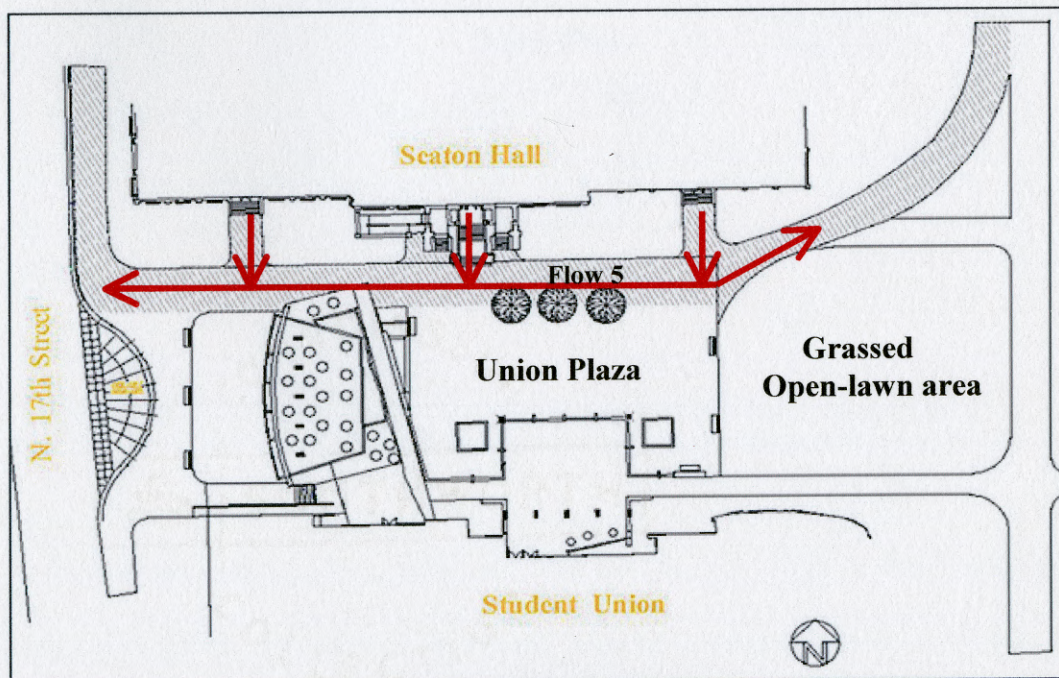


Figure 7.3: Flow 5 integrates into the main plaza space.

Observations have indicated that where the path enters the plaza at its northeast corner, people often will gather and talk to friends that they meet spontaneously. This area is circled by the red line in figure 7.4. Where flow paths converge or diverge there are often people stopped, talking to others. In addition, this area has a clear sightline and provides a better view for seeing what is going on in the plaza than the eastern and southwestern entrances of Union Plaza. With the recent addition of the three trees along the northern side of the plaza, a pathway has been more clearly defined as it lines up the front of Seaton Hall.

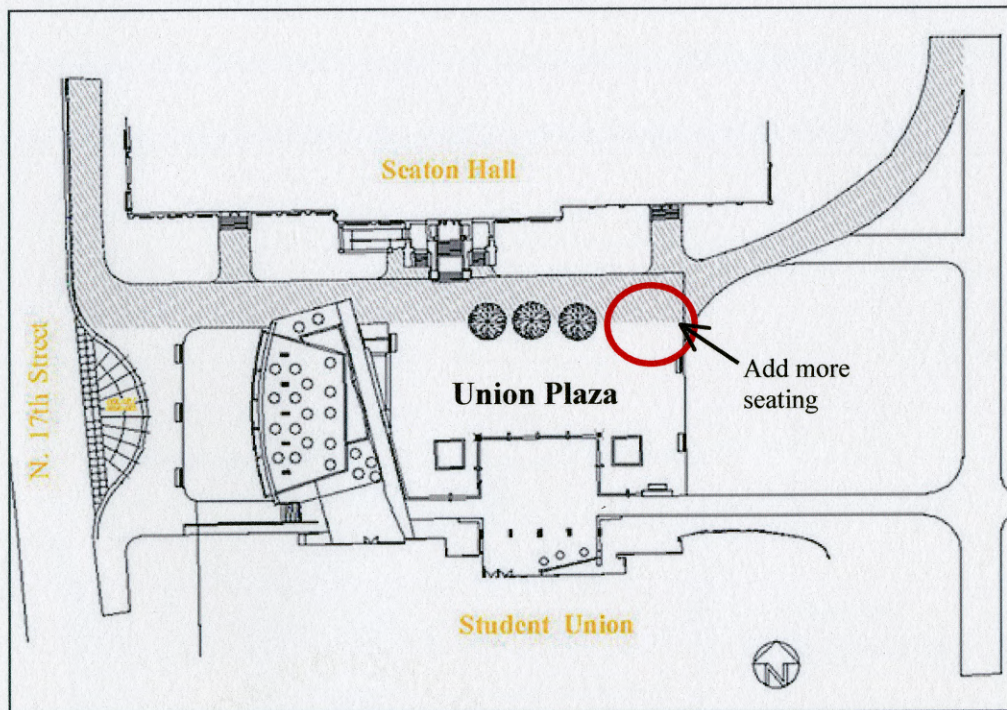


Figure 7.4: Often, people are likely to have conversations at the northeast corner of Union Plaza (Conversation node marked by red circle).

During the special events, pedestrians traveling on this pathway were more likely to pause, then walk to participate in the events. However, a lack of seating is a problem of this area. Therefore, in the redesign of the plaza, additional seating should be

added along this pathway on its northern edge, against the grass areas to the South of Seaton Hall.

As illustrated in figure 7.5, another sidewalk that enters into the plaza is located on the southern edge of the space. The gray line identifies the sidewalk, which runs in an east-west direction. This sidewalk enters into the main entrance platform on the northern side of the Student Union. Observations indicate that this intersection, where the sidewalk and the main entrance meet, is used for periods of sitting, waiting, watching others, smoking, and so forth. In the redesign, more seating should be provided around this intersection. People like to sit on the edge, as well as meeting others that sit on the wall. Together they observe the goings-on in the plaza. With the clear sightline from this location, a person can see across the space to watch people coming or going.

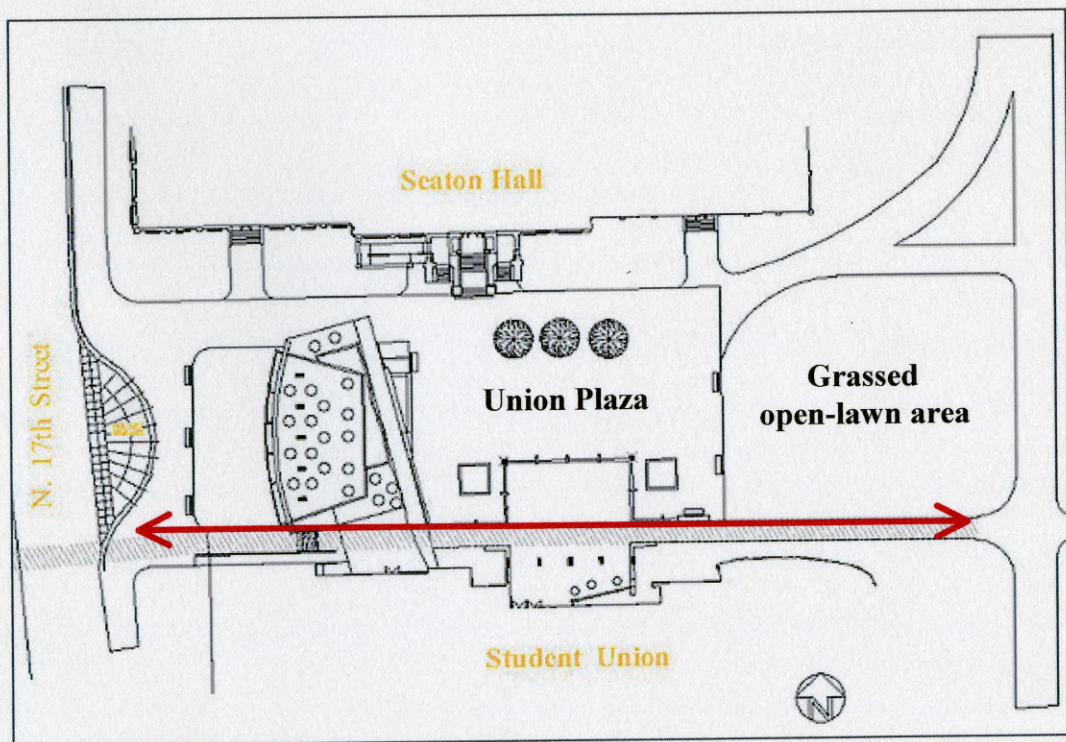


Figure 7.5: Southern walkway through the plaza space.

(3) Sittable Spaces

Once location and street-plaza relationship bring people into a plaza, one of the ways they can be held is by seating. Seating is a basic requirement that offers users the opportunity to remain in a plaza. According to Whyte's research (1980), a plaza's success is related to the amount of sittable space available. Whyte explains, "people sit where there are places to sit" (1980, p. 28). Therefore, it is crucial to provide seating that is both physically and socially comfortable, as well as offering a variety of seating options.

The study of the rest patterns in chapter 5 clarifies how seating types, amounts, and location of seats serve the users' needs and activities in Union Plaza. The plaza offers a variety of seating types—immovable picnic-type tables and chairs, fixed benches, ledges, steps, and planters—that give users the opportunity to remain in the space. As discussed in chapter 5, the findings indicated that when the weather is good, during a typical weekday or during special events, there is not enough seating to sustain all the plaza's stationary activities, including social interaction.

According to Whyte (1980), the minimum amount of seating for a successful plaza space is one linear foot for every thirty square feet of the area. This amount was written into New York City zoning amendments in 1975 to ensure that public open spaces would be made to serve people's needs. In Union Plaza there are approximately 64,217 square feet of open space based on the area within the purple line delineated in figure 7.6. The area was measured from 17th Street to the north-south sidewalk that passes to the east of the Student Union building, and from the grassy area south of Seaton Hall to the northern edge of the sidewalk that runs in front of the Student Union.

According to William Whyte's requirement of one linear foot for every thirty square feet, Union Plaza should provide 2,140 linear feet of seating. However, measurements of the plaza's actual seating arrive at a total of only 539 linear feet (based on a measurement of all benches, planters, sitting walls, ledges, and chairs in the outdoor eating area). Thus, any proposed redesign for Union Plaza must include much more seating, including seating that is physically and socially comfortable.

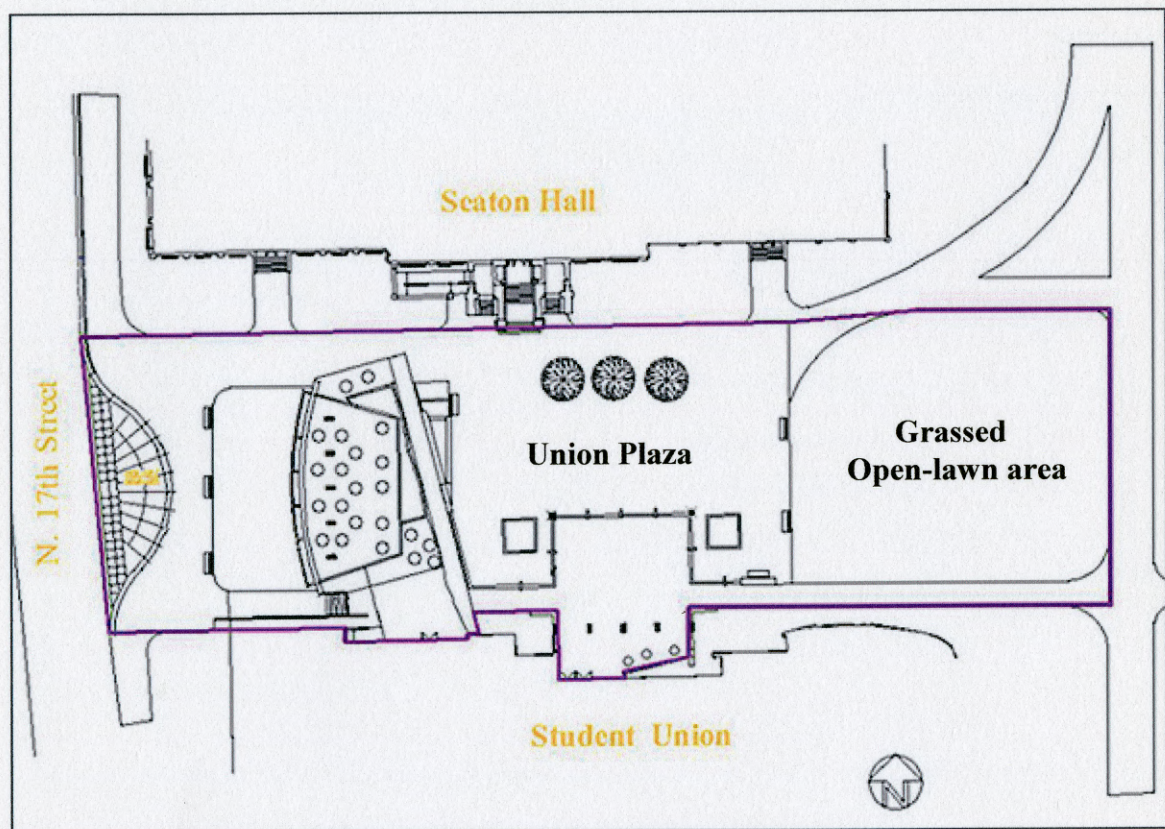


Figure 7.6: The plaza area used for measurement.

During observations, it was noted that there are three primary locations on the plaza where people sit and where some seating was provided. As shown in figure 7.7, these locations are the outdoor eating area, the planter with the tree in the southwest corner of the spatial core, and the corner-sitting ledge near the entry to the Student Union building. Each of these areas will be discussed individually and then analyzed to consider how they can be improved.

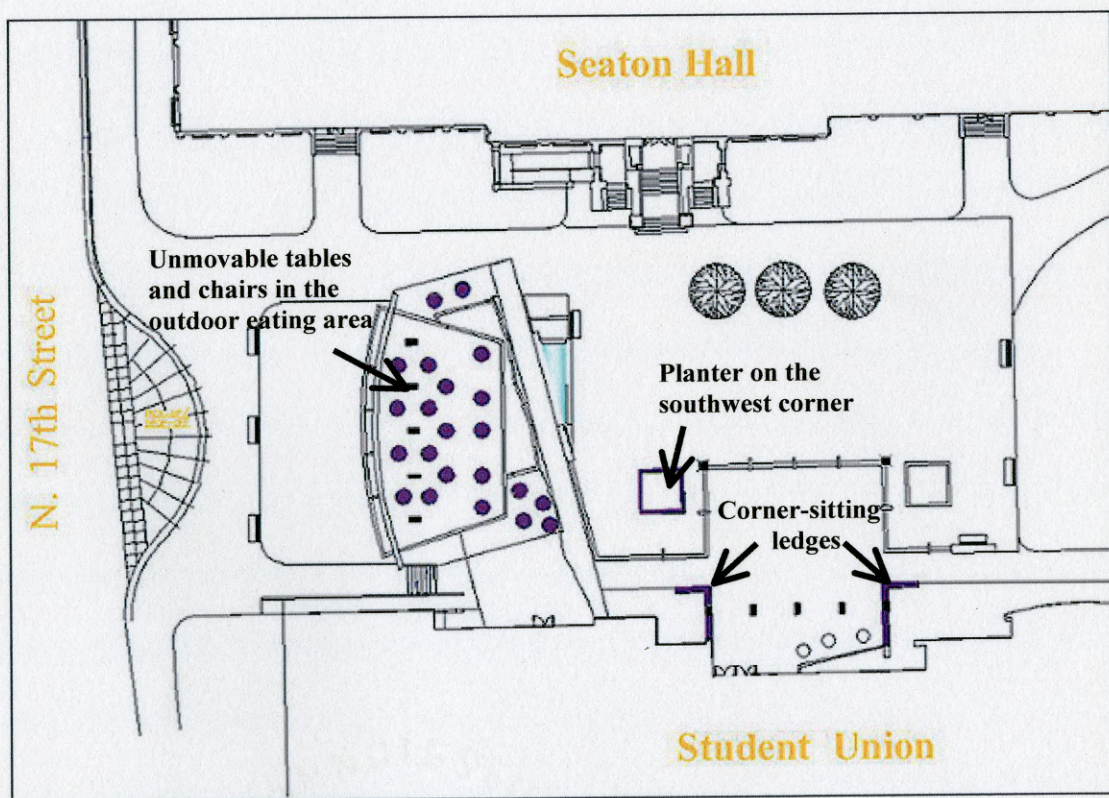


Figure 7.7: The most favorite sitting locations in the plaza.

The outdoor eating area will be considered first. With many fixed seats and tables, this area goes a long way toward providing enough seating for any needs that may arise. During most of the day, there is enough seating for all the people that visit the area. But during the lunch periods as well as during special events around this space, the

seating was not enough, and people had to sit on the wall, or on other locations that were not designed to be seats. However, there is also a lack of flexibility in the seating types.

In the redesign of the plaza, more seating should be added as well as different seating types. It could be better if seating types varied from seats that allow group conversations to seats where one person can sit comfortably alone. With the modification of the grass area to the west of the eating space, more varied seating types could be available. Also a low seating wall along the eastern edge of the space could be added to further define the space in a way that the low planter cannot.

Another seating area is the planter at the southwest corner of the spatial core (see figure 7.9), which is used because of its location near several pedestrian pathways. During observations, it was learned that this planter is much more used than the one located to the east of it. The planter works effectively by itself, but needs a design element such as backrests to work with it in order to be more effective. Backrests would allow people to sit more comfortably in the space, which would enable them to be able to stay in the plaza for longer periods of time. In addition, to accommodate and encourage group interactions, the new seat shapes such as multiple corner units should be introduced in this area of the plaza.

The corner-sitting ledge located to the immediate west of the main north entrance to the Student Union is the place that people tend to occupy during all observation periods. Conversing with friends, reading a newspaper, or watching others passing by are the major activities that were found in this spot. To reinforce the positive features that this seating possesses, there must be features that enhance physical and social comfort.

Extending the ledge or adding seating with backrests on the other side of the walkway are some ways that more sittable space can be provided.

There are many places throughout the plaza where additional seating can be incorporated. For example, on the eastern side of the spatial core of the plaza, seating can be added in a variety of arrangements that can serve different needs. Opportunities can be taken to add seating spaces along the grass and planted areas to the south of Seaton Hall where people could stop to rest or just watch others go by on the flow path directly in front of them.

(4) Triangulation

Special events are considered a feature that can generate “triangulation” in Union Plaza. In this thesis, there were three different special events studied, which are contrasted with each other to observe the various ways in which the space would function under varying needs. A key requirement of the plaza is spatial and environmental flexibility that can accommodate those different needs. The spatial core of Union Plaza often serves as a stage for special events. However, it seems that there are other requirements that are difficult to accommodate, such as utility needs and seating. Often there will be long electric cords running from buildings to accommodate an event. Weatherproof power outlets placed strategically throughout the plaza would solve much of this problem.

In addition, there are also flexible sitting needs that could be provided. For example, movable seats located on the edges of the plaza could be relocated when there is a need, such as a special event. A part of flexibility is in the people that visit the plaza

being able to choose where and how they want to occupy the space. By designing many different additional seating features, there would always be enough space that could be occupied by the plaza's users in any manner that they desired. Seating features could even be one of the reasons that people visit Union Plaza—i.e., giving people an easy opportunity to interact comfortably as a group.

(5) Food

Whyte (1980) observed that food was a major factor for bringing people into a space and keeping them there. A person is more likely to spend time in a space eating food or drinking a beverage. During some of the observations, there were vendors who were selling food outside of the Student Union building, in the plaza. As illustrated in figure 7.8, and 7.9 there was a Greek restaurant that was set up with tables and chairs in the southwest corner of the spatial core area, while the food was located along the northwest entrance of the Student Union building.



Figure 7.8: The Greek Restaurant set up in Union Plaza.



Figure 7.9: The restaurant was located in the southwest corner of the spatial core area.

The example above indicates one addition to the Union Plaza that is greatly needed: an outdoor vendor who can provide food when the weather is pleasant and can be shut down in the colder months. At this time, there are food facilities only inside the Student Union. For a person to utilize the plaza, they have to obtain their food inside of the building then turn around and walk back outside to be able to enjoy the weather. The facilities outside must be designed for seasonal use, since there will be no demand or desire to eat outdoors during the cold months of the year. This is only a small change, but it could dramatically change the dynamics and usefulness of the plaza for much of the year.

Based on the above discussion, the existing strengths and weaknesses of Union Plaza are summarized in table 7.1. As this table indicates, one main strong point of Union Plaza is location. In addition, as the plaza is a large open space, it is flexible for various scales of social events. On the other hand, the plaza has such weaknesses as a lack of street-plaza relationship or sufficient amounts of seating, and beckoning devices, as well as unused portions, as, for example the east and west grassy areas.

Table 7.1: Strengths and weaknesses of Union Plaza.

Strengths	Weaknesses
1. Excellent location. Bounded by buildings that generate a high degree of use. 2. KSU's principal large gathering place; flexible for holding special events.	1. Lack of street-plaza relationship in the western and eastern sides of the space. 2. Insufficient seating; existing seating is both physically and socially uncomfortable. 3. Lack of beckoning device—i.e. trees or focal point. 4. East and west grassy areas unused due to separation from plaza's main space.

The next section proposes a preliminary redesign scheme for Union Plaza and its immediate surroundings.

A Redesign Scheme for Union Plaza

The major aim of the design changes for Union Plaza proposed here is to improve the sociability of the space. Encouraging more use of outdoor activities, attracting more users to the space, and finding design means to hold these users longer in the space are the main design means by which Union Plaza might become more sociable. The presentation of this section is in the form of brief descriptions and illustrations to show the new design features. These illustrations include a master plan and sketches.

Figure 7.10 presents the master design proposal of Union Plaza. This proposed design is envisioned to improve the physical appearance and environment in the plaza that may help to generate more sociability in the place. In addition, another design goal is to promote and support more activities in the plaza. As understood as an extension of the nearby buildings—Student Union and Seaton Hall—Union Plaza usually experiences the activities flow from these two buildings. Therefore, appropriate seating providing physical and social comfort, new trees, shrubs, benches, tables, a food kiosk, and new fountain are incorporated in the new design.

As indicated by number 1 in figure 7.10, beginning at the vehicle drop off area on the western border of the plaza, the location was redesigned with the idea to bring this area into use and not just be a dead area. As figure 7.10 illustrated, the three benches that are currently there are removed. Here, the proposal provides a major addition of seating. These seats are in the form of two raised tree planters with backrests, and seating bollards with lighting, placed around the oval shape of the pull out in the vehicle drop off area (see figure 7.11 and 7.12). These bollards are designed to be a seating feature to provide more choices of seating in this area.

N. 17th Street

Seaton Hall

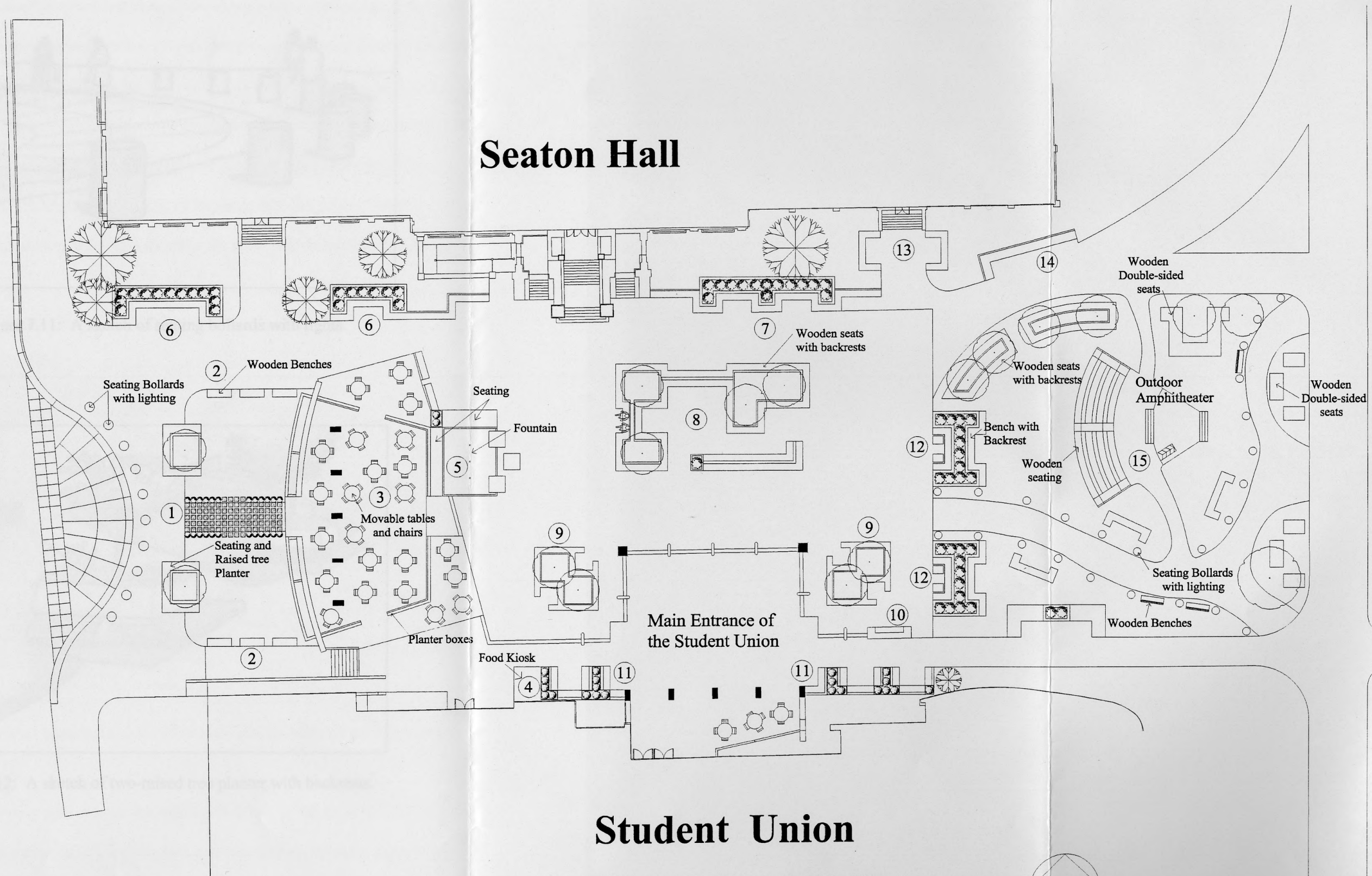


Figure 7.10: Proposed master design for Union Plaza.

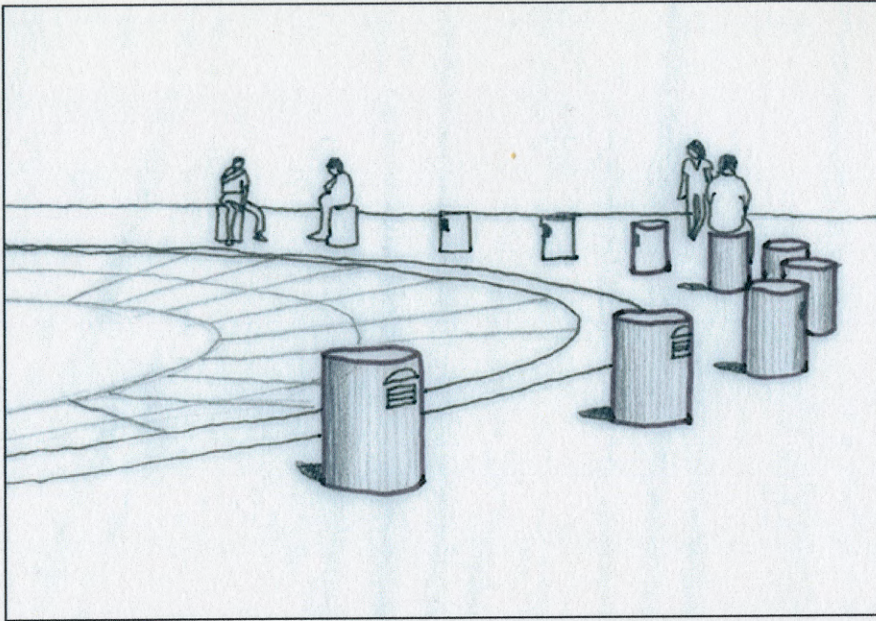


Figure 7.11: A sketch of seating bollards with lights.

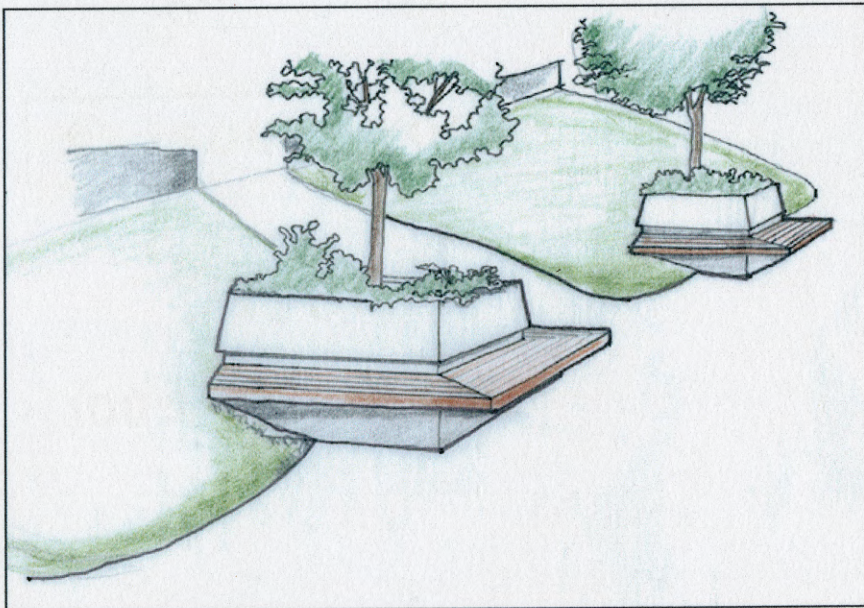


Figure 7.12: A sketch of two-raised tree planter with backrests.

Figure 7.13 illustrates the new designed space of the western edge of Union Plaza. The western grassy area is filled to be a low sloping hill to lessen the barrier-like effects of the current retaining wall, on the east side of the grassy area. There is a path of pavers that travels up this hill and becomes a new circulation path into the outdoor eating area. The wall is broken in the middle in order to allow pedestrian flow through. Three additional benches were located on the northern and southern edge of the grassy area as indicated by number 2. In total, the additions of the slope hill, the pavers, seating with backrest, as well as the seating bollards may make the space more usable than it was before.



Figure 7.13: Two planters with backrests and seating bollards with lightings.

The outdoor eating area indicated as number 3 is one of the favorite locations that users tended to gravitate toward. Therefore, this area should provide more comfort and

facilitate more social interaction. In the master-design proposal, the fixed picnic-typed tables and chairs are replaced by movable tables and chairs, which allow more flexibility in seating orientation and arrangement of the group interactions that occupy the area. Here, one could sit alone or with friends. The movable tables and chairs allow freedom to users to arrange a place to fit their needs and to encourage comfortable sitting activity. Around the perimeter of the elevated platform that forms the main area of the eating space, a low fence with a planter box around the outside is placed. There are openings in the north as well as the south side of this fence. Another entrance is opened in the eastern side to allow people flow through this area into the main plaza. As Whyte (1980, p.50) suggests, food has a great ability to attract people. Therefore, the master-design proposal of Union Plaza provides a temporary food kiosk when the weather is comfortable. This area as marked by number 4 is attached adjacent to the indoor food court of the Student Union.

In the redesign, the entire fountain is also replaced, including the sloping retaining wall on the western edge. A new fountain marked as number 5 has been designed to replace the old one. Envisioned as an anchor and focal element, this new fountain provides more seating options around the water, including low, smooth concrete-seating features on the north and west that allow users to sit very close and interact with the water. On the eastern side of the water feature, there are seating platforms that are square in shape, with one of the shapes pulling away from the water, while the other two have half of the seating surface cantilevered out over the water's surface. As illustrated in figure 7.10, the fountain itself will be composed of three

waterspouts that can spray varying heights, in order to add visual interest and variation to this feature.

To create more use and encourage people to stay longer in the plaza, there have been several changes made to the spatial center of Union Plaza. Starting on the northern side at the planted area to the south of Seaton Hall, several changes were made. In the western area marked by number 6, seating features were added that are rectangular in shape. Planters bound the outside edges of these benches. As indicated by number 7, in the eastern-planted area, two similar seating elements are added. The seating pads are arranged in a regular rectangular setting, while these seats have a backrest that also serves as a wall to the planter that is surrounding this element.

Located in the middle of the spatial core of Union Plaza, The three existing trees are replaced with a large planter and seating feature marked by number 8. The element is made up of three main planter beds that are connected with seating, that have a backrest and can be occupied on both sides. These seating arrangements are on the north and the western sides of the feature.

As indicated by number 9, the existing tree planters at the spatial core of the K-State Union Plaza have been replaced with sitting planters that are able to accommodate groups in different arrangements. On the southern side, there is a separate seating bench that is in line with the eastern and southern planters as marked by number 10. This bench is also two-sided, with a small planter on its western edge.

As indicated by number 11, near the main entrance to the Student Union there have been several elements changed. From the observations, individuals or people in groups to wait for friends or observe other people often use the two ledges located in the

front of the main entrance of the Student Union. Therefore, for attracting pedestrian activity, it is proposed that the positive aspects of this seating edge should be strengthened. The ledges on the east and the west sides of the main entrance are to be replaced by an element that contains more linear feet of seating. Here, rectangular seating elements have been proposed. These features will continue to allow people watching, while allowing a greater diversity of seating activities to take place.

As marked by number 12, a major addition in the western edge of Union Plaza is two rectangular seating features, which are planned to face out into the plaza. As illustrated in figure 7.14, planters are also designed as backrests, which would allow greater comfort. In addition, these two seating features contain two small tables that allow users to read, work on homework and so forth. On the eastern side of these features are benches that let users look into the grassy area to watch what is happening in the space, whether it is a concert or just other people.

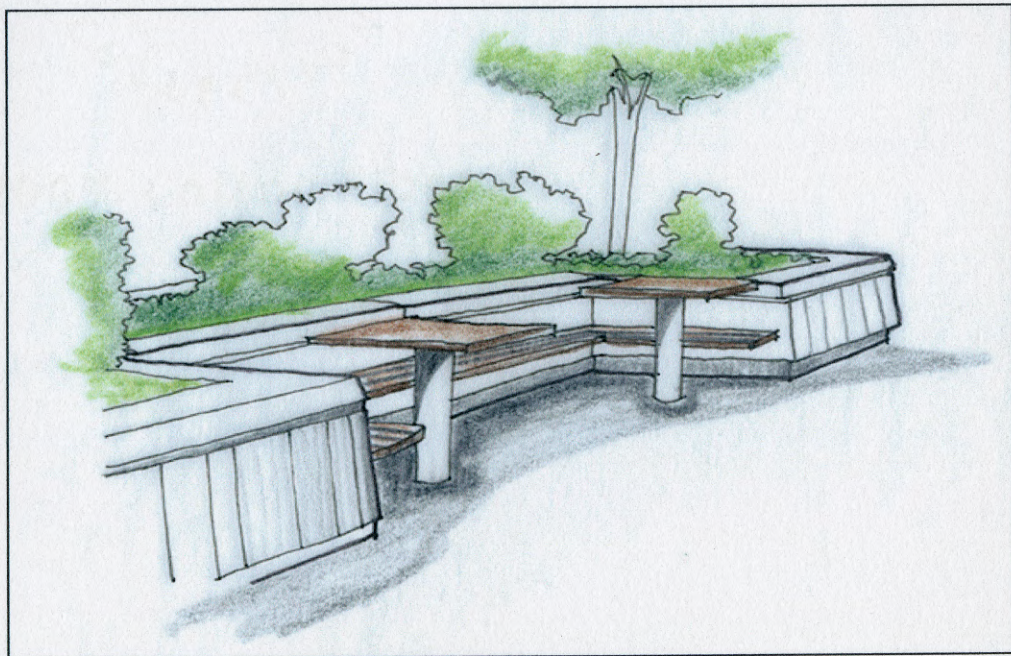


Figure 7.14: A sketch of the rectangular seating placed on the western edge of the plaza.

As indicated by number 13, additional seating has been added just outside the southeastern entrance to Seaton Hall. From the observations, it was found that there are many students that often stepped outside of Seaton Hall to smoke, use a cell phone, or talk with friends. To accommodate groups of users and encourage their social interactions, the researcher proposes to place seating on both sides of the southeastern entrance of Seaton Hall. Nearby, the research has placed a L-shaped bench at the northeastern entrance of the plaza, indicated by number 14.

A small outdoor amphitheatre replaces the eastern grassy area as marked by number 15. Increasing the use and activity, creating a new gathering place, and establishing a place accommodating concerts, special events, speeches, performances, and occasional outdoor classrooms are the main purposes in placing the outdoor amphitheatre in this grassy area. The size of the amphitheatre can accommodate approximately forty sitting spectators. The layout of the stage is a wide fan arrangement including four seating rows. In addition, several pathways have been added to allow pedestrians access to this area, which is edged by seating bollards with lightings. There are several wooden benches placed along the edges of this path to encourage people to enjoy the space, to watch others, or to watch stage events. In addition, simple seating elements are added around the perimeter of the eastern grassy area. In total, the amount of seating in this redesign is 2,188 linear feet; an amount above the minimal required figure of 2,140. A summary of current and proposed seating amounts is provided in table 7.2

Table 7.2: Summary of Union Plaza's seating, current and proposed (in linear feet).

Plaza's total square footage	64,217 square feet
Minimal Required Seating *	2,140 linear feet
Current Seating	539 linear feet
Proposed Seating	2,188 linear feet

*Based on William Whyte's requirement of 1 linear foot of seating for every 30 square feet of plaza space.

Figure 7.15 presents a sketch of a section of the eastern grassy area to aid with understanding the topographical changes that are proposed. On the left side of the section there are the rectangular seating features located to the eastern edge of the plaza. To the east of the section there is the stepped seating for the amphitheater. The slight changes in level, approximately three feet below ground level, is proposed in order to let people using the seats to see what is happening over those in front of them. Also, with rows of seating being lower to the ground, the visibility of the stage by others around this area is not limited. If the rows of seats were to be entirely above ground, the sight lines to the stage would be limited. This space is also accessible to the physically disabled who can reach the front rows by the path that enters the area between the stage and the rows of seating.

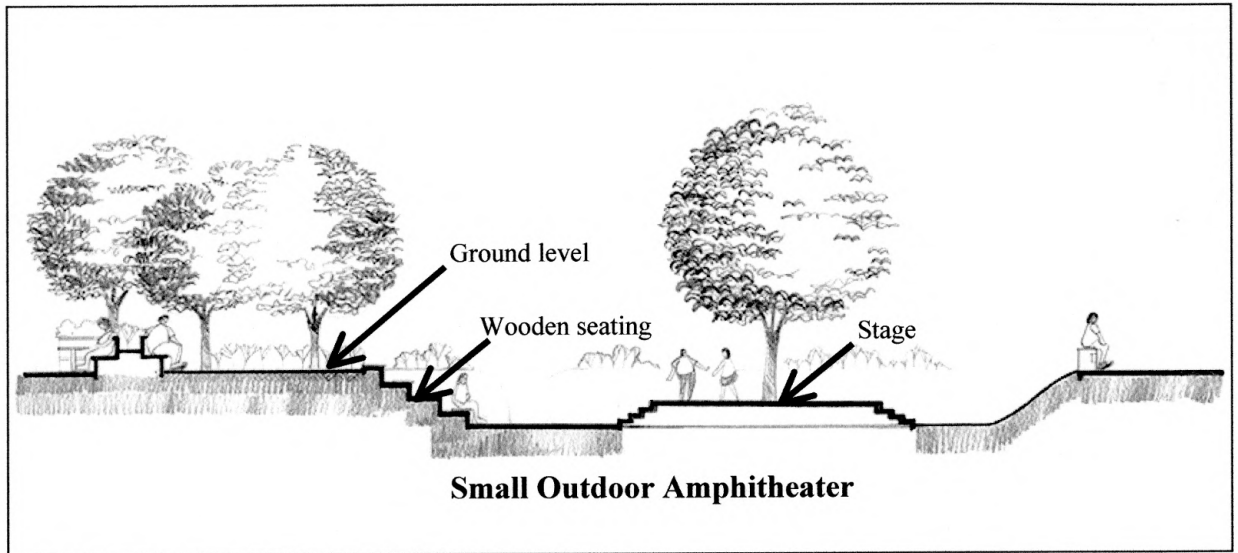


Figure 7.15: A section of the eastern grassy area of Union Plaza.

Conclusion

In this chapter, the summary of the preliminary redesign for Union Plaza and the final conclusions have been provided. The purpose of this study has been to develop design criteria, which can contribute to improvement of sociability in Union Plaza. With the changes described to the plaza, there will be more to do in the space as well as facilities to provide more flexibility and opportunities to serve the needs of the space in the future. With the additional proposed seating, Union Plaza will have a much greater capacity to provide for people's uses of the space, and also have the ability to hold these users for longer periods of time.

The changes provided in this chapter have been developed according to the research findings in chapter 4-6. The main focus of these redesign recommendations is to enhance the sociability of Union Plaza by providing more use, comfort, and attractiveness for users. From the knowledge gained in the observations, Union Plaza is a

place that experiences heavy pedestrian traffic almost everyday. However, it was discovered that there were areas in the plaza that were underused and that its amenities are often not able to support users and their interactions. Therefore, with the new inviting attributes and features that are proposed in the master-design plan, it is believed that Union Plaza may provide more opportunities for user interaction, enjoyment, and comfort.

The preliminary design scheme in this chapter is a starting point that can be enhanced with further research and design developments. To create these design changes, the author gained the knowledge from previous research focusing on social aspects in the urban environment, especially the work conducted by Whyte (1980) and Marcus and Francis (1998). These researchers proposed what design factors can make the place more successful. Therefore, the observations and behavioral studies of Union Plaza including the suggestions from those researchers have been used together to improve the features in the plaza.

After presenting the research findings and the preliminary design scheme, this thesis found that it is important to understand how environments affect human beings and how physical design and designer's intentions affect the environment. In designing open spaces, it is essential that designers incorporate concepts, theories, and research findings into their designs in order to better address users needs. Increasing levels of sociability, comfort, and use should be included and developed in the design criteria for any public open spaces.

This thesis concludes that sociability is a major factor in the success of urban open spaces. It was discovered that many attributes existent in Union Plaza, such as

seating, ledges, planters, or steps, are not contributing to sociability, social interactions, use, or people's comfort. Also, many spaces are unused that could be contributing elements in making the plaza a more enjoyable place to be. However, the plaza has some positive factors that influence sociability. For example, the location of the plaza is adjacent to the activity hub of the campus, The Student Union building, which is highly visited during the day, and through the evening. The presence of triangulation in the plaza, such as programmed events, is another important factor that influences the sociability of Union Plaza. If location is the most important factor in plaza design, then Union Plaza is successful on this point; however it is because plaza success is not only based on location alone, that Union Plaza's sociability is not as complete as it might be.

Finally, the researcher concludes that all available knowledge, research findings, design recommendations, including the observations of the current Union Plaza, might be used to design this space to be more successful both for current users and for those who will use the plaza in the years ahead.

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