

BUILDING A SENSE OF COMMUNITY ON CAMPUS THROUGH PHYSICAL DESIGN

by

URMILA VENKAT

(Under the Direction of David Spooner)

ABSTRACT

This research examines the role of the physical environment in the enhancement of a sense of community on campus. Building entries and campus open spaces are recognized as potential spaces on campus where the student community comes together. Prior theories and concepts on place and community were reviewed in an effort to identify chief components essential to build a sense of community on campus. Following this, the building entrance and open space surrounding The University of Georgia's College of Environment and Design was examined to analyze the nature of individual and community behavior with respect to the layout and design of the physical environment. Additionally, a questionnaire was designed to understand what students seek from the physical environment. Finally, design guidelines were applied to develop the sense of community around Caldwell Hall. The goal is to utilize these findings toward designing to encourage a sense of community on campus.

INDEX WORDS: Sense of Community, Place, Campus, Physical Design, Open Space, Building Entries, Human Behavior, Social Interaction, Community Involvement

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DEDICATION

I would like to dedicate this thesis to my parents, Sandhya and Venkat. Their unconditional love, support and patience have made this possible. I am forever grateful to them for providing me the opportunity to pursue my goals.

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CHAPTER 1

INTRODUCTION

Problem

For many, thinking about the architecture of community would begin with the conceptual structure of the World Wide Web. With the rapid onset of new age computer technology, smart phones and social networking websites, our fastest-growing communities are immaterial, and the most vital discussions of architecture tend to regard the “architects” of new computer software or foreign policy agreements. A sense of “community” does exist; however, the problem is that a lot of the community interaction is taking place at a “virtual scale”. Indeed, these new ways to connect with our fellow beings are exciting and thrilling. Who would not want to “build” ideas with architectural elegance and tectonic structure? Who is not fascinated by what is effectively magic: the ability to take part in a virtual twenty-four hour global community- unencumbered by our bodies and their organic requirements?

But while we continue to invent ever more sophisticated ways of countering nature’s physical ‘constraints’, the cries for “a lost community” are getting louder. Furthermore, as new buildings rarely achieve the power to symbolize and inspire today’s society, architects debate whether there remains any role for their profession at all by publishing books with such titles as *Digital City*, *De-Architecture*, and not rhetorically, *The End of Architecture*? Such responses to today’s actual conditions are not only appropriate, but in fact, they are deeply reassuring. They remind us that machines, however powerful, cannot replace the immediacy of human contact. They attest that true community still requires real places to take root. They suggest that if

architects are listening, then there is an urgent call for their services is to be heard (Ojeda, James Mary et al. 1997).

Community is a fragile and precious phenomenon that forms the foundation for our sense of identity and well-being; indeed, it is critical to the survival of our societies. Too often, architects feel powerless in creating places for community. Living in a technology driven and dependent generation, at times, designers are forced to ignore their potential to affect the people and communities who dwell in their spaces.

Focus

Most of the challenges facing today's college and university campuses focus on community, communication and the vitality of space. Campuses need "meaningful places" (Kenney, Dumont et al. 2005) (p.6). The advancement of technology, culture, the virtual world and manifestation of today's fast paced lifestyle and automobile-centric American culture, have come to be the cause of our loss of community.

"Conversation and interaction forms the backbone of community" (Kenney, Dumont et al. 2005)(p.54). Research shows that interaction among community members is fostered by the availability of "indoor and outdoor spaces where people can come together without much effort...places which encourage spontaneous and informal interaction among students" (Kenney, Dumont et al. 2005)(p.55).

Prior studies suggest that building entries are some of the most favored spaces for casual meetings, outdoor study and social interaction, where, between classes students can come together close to their home base or in a familiar territory (Marcus and Francis 1998). Understanding the importance of the edge, where the architecture and its surrounding

landscape merge to create semi built open spaces and testing the potential of the edge in bringing community together is the focal point of this research. The importance of building entries, campus open spaces, and their connection to building community cannot be overlooked. For this reason the thesis will largely focus on building entries and the surrounding open space, their design, treatment, and function with respect to their role in establishing social interaction and a sense of community on campus.

Argument and Question

This thesis argues that physical design can enhance a sense of community on campus. The thesis strives to show that manipulating the physical environment after careful observation and analysis of its existing conditions and behavior patterns could significantly change the way the social environment functions.

The physical environment has an immense impact upon human feelings, behavior, engagement and community. “Campus designs today do not merely create a functional space, mood or atmosphere they facilitate certain behaviors” (Kenney, Dumont et al. 2005) (p.54). While a number of factors influence the overall sense of community on campus, as designers the one factor that we do have control over is physical design. The goal of this thesis is to show how physical design can enhance and foster a sense of community on campus. Attempts toward achieving this are based on a review of prior research and theory on place and community, along with behavioral analysis on campus spaces.

“When we speak about community we are usually referring simply to a group of people in similar roles, and when we speak about “creating a sense of community” on campus we are striving for more than just an understanding of

roles. It is more about aiming at a sense of identity with the institution and with one another, the feeling of attachment and the development of a sense of belonging to that place”- (Kenney, Dumont et al. 2005)(p.47).

This definition equates “a sense of identity”, “ attachment” and “a sense of belonging” to “a sense of community”. Based on this definition, this thesis explores theories and concepts on “place”, to gain a better understanding on the following: a sense of place, place identity, place attachment and place experience. The goal is to understand how these concepts affect a sense of community. Gaining this knowledge is a fundamental step towards examining the relationship between physical design and a sense of community. Therefore, the overarching question that this thesis addresses is: **“How does physical design have an influence on the sense of community on campus?”**

The supplementary questions that this thesis investigates are:

- a. What are the components of place that influence the sense of community on campus?
- b. How can the design and layout of the physical environment be manipulated to encourage community involvement and social interaction?
- c. How can physical design features be implemented to increase the holding capacity of a space?

Purpose

The purpose of the thesis is to address two large problems faced by many campuses today, namely the loss of community and the insufficient use of open spaces, stressing the importance of both in the overall campus life and experience. This thesis argues that both have a

strong relationship with one another, and further explores how physical design can be used to address these issues. Outdoor spaces have frequently been ignored in texts of campus planning and design, “their use for circulation, study, relaxation, and aesthetic pleasure deserve far greater attention than they have yet received” (Marcus and Francis 1997)(p.175). Furthermore, we need to understand the complexity of human behavior and social interaction, and the way the built environment should be constructed to respond to the more elaborate understanding of people and the environment.

Goals

The goal of the thesis is to test the relationship between physical design and community, and how physical design interventions influence the overall sense of community. Through behavior mapping studies at The University of Georgia’s College of Environment and Design the thesis focuses on building entries and open spaces to investigate the relationship between the sense of community around campus and physical design.

With a wide range of texts written on place and community, the goal of this research is to provide a means to translate this vast database of concepts into real world design applications. The research will provide an understanding of the relationship between physical design and sense of community on campus and how the former influences the latter.

The objective is to capture our present understanding and provide a structure into which further developments can be exploited. This will help gain an awareness of the design decisions that can be applied to the entry spaces of campus buildings, whereby the level of social interaction and overall sense of community is enhanced.

Thesis Structure

In order to use physical design to enhance a sense of community, the thesis examines what a sense of community means and the various factors that have come to be understood as the cause for loss of community. The first step of this thesis is to provide a base definition for a “sense of community” on campus. This helps us understand the aspects of community that need to be taken into consideration when determining the factors which influence the ways in which “community” functions.

Three primary tasks are undertaken to answer the questions that this thesis poses. First, a critical examination is made of prior theories and research on place and community. Second, behavior mapping studies involving behavioral analysis at Caldwell Hall’s entrance porch and lobby space are conducted. And finally, a design application is created to illustrate how the knowledge gained through prior theories and behavioral studies can be translated into a real-world application.

Chapter Two puts forth the definition of “a sense of community” that this thesis relies on. Based on this definition, chapter two examines four aspects of place with respect to community (Sense of Place, Place Attachment, Place Identity, and Place Experience). Through the investigation of prior theories and research on place and community, this thesis identifies four key components that show promise in enhancing a sense of community on campus. They are: Familiarity and Continued Experience, Activity and Meaning, Identity and Physical Design.

Chapter Three adds real-world data to the ideas and concepts discussed in Chapter Two. Students that use Caldwell Hall’s entrance porch and lobby space were randomly selected to participate in a questionnaire survey. The survey was designed to understand students’ needs from campus spaces (indoor and outdoor), the factors that influence their sense of attachment to

a place, and the physical design features they seek from a space. The questionnaire also was designed to gauge the students' opinion of Caldwell Hall's entrance porch and lobby space. Chapter Three discusses the findings from the student survey and then relates these the findings back to the four key components of community.

Chapter 4 comprises the behavioral mapping studies. The goal of this chapter is to understand the existing conditions, current functioning, patterns of movements, nature of activities taking place, and problems faced by the community it houses. Following this study, a design intervention is setup in this space and a post-design intervention behavior mapping study is conducted (identical to the pre-design intervention study). The goal of the design intervention is to collect data that will aid in understanding the influences physical design has on the student community.

Chapter Five ties together the prior theory and research discussed in Chapter Two along with the findings from the student survey (Chapter Three) and the behavioral study (Chapter Four) toward real world design application. Following this discussion, Chapter Five concludes with a conceptual design for Caldwell Hall's entrance porch and lobby space. The goal of the design is to provide an example design solution that focuses on sustaining and strengthening social interaction and a sense of community on campus.

Chapter Six is a brief conclusion which summarizes the first five chapters and draws conclusions about physical design and its influence on the sense of community on campus. Additionally, this chapter discusses the importance of designing for a sense of community on campus; the importance of conducting behavioral studies and suggests possible directions for future research.

CHAPTER TWO

COMMUNITY AND PLACE THEORY

Planning and design has always been about creating and maintaining the quality of the built environment and making it meaningful to its users. This chapter discusses the importance of understanding the underlying qualities that convey a sense of community, their relationship to the users' experiences, and their importance for a successful design process.

The goal is to establish an understanding of key concepts and theories on community put forth by various authors. This chapter begins by adopting a definition for “community” and is followed by a theoretical look into each of the factors, which influence a sense of community. The chapter concludes with a discussion on how physical design has a role to play in creating community on campus.

Sense of community has been studied extensively in psychology and sociology. While scholars have distinguished between geographically defined communities (community of place) and aspatial communities of interest (Nasar and Julian 1995), we are particularly concerned with communities of place, and the nature and quality of interpersonal relationships within these places (Manzo and Perkins 2006).

Manzo explains that, a psychological “sense of community” is thought to be multi-dimensional (Chavis and Wandersman 1990; Perkins, Hughey et al. 2002) and has been defined in many ways, but the “consensus revolves around feelings of membership or belongingness to a

group, including an emotional connection based on a shared history, as well as shared interests or concerns” (Manzo and Perkins 2006)(p339).

For the purpose of this thesis, the definition which has been adopted to define the term “community” is set forth by Kenney and Dumont in their recent text, titled *Mission and place: Strengthening learning and community through campus design*.

According to Kenney and Dumont,

“When we speak about community... we are usually referring simply to a group of people in similar roles... and when we speak about “creating a sense of community” on campus we are striving for more than just an understanding of roles. We are striving at a sense of identity with the institution and with one another, the feeling of attachment and the development of a sense of belonging to that place”(Kenney, Dumont et al. 2005)(p.47).

Filtering through this definition, we see that it fundamentally equates “sense of community”, to two key concepts that are:

- a) Sense of Place: this encompasses place attachment and a sense of belonging, and
- b) Sense of Identity: with one another, with oneself and with the place itself.

Hence, in order to understand these two aspects of community, we refer to Place Theory and various texts written on “Sense of Place”, “Place Attachment”, “Place Identity” and “Place Experience”.

Before we move forward into place theory, it is useful to keep in mind the problems facing prior theory on “place” and “community”. Research shows that while planners enthusiastically pursued issues of participation and other social dynamics in planning, they often have failed to incorporate environmental psychology concepts in their research and practice. As

well, psychologists who study place attachment do not usually discuss community development (Manzo and Perkins 2006). A combination of these perspectives can provide a more holistic and richer understanding on how planning and design impacts human emotions and behavior, as well as how these responses direct community development and participation. This thesis attempts to bridge this gap, by applying the theory that will be reviewed in this chapter to the space and community, which comprises Caldwell Hall's entrance porch and lobby.

The following authors have been selected to inform the discussion about place, as their writings on place theory surfaced as the most significant and prolific with regard to community planning and enhancement.

Place Theory

Understanding the connections between communities and their places is essential for planning and design to be meaningful (Lopez 2009). In our endeavor to gain a better understanding of the aspects of place, which inform a sense of community, four concepts will be examined: Sense of Place, Place Attachment, Place Identity and Place Experience as illustrated in the figure 2.1. Studying these concepts can help us understand which elements need to be considered when designing in order to enhance the sense of community or to increase the users' desire to inhabit or experience that place.

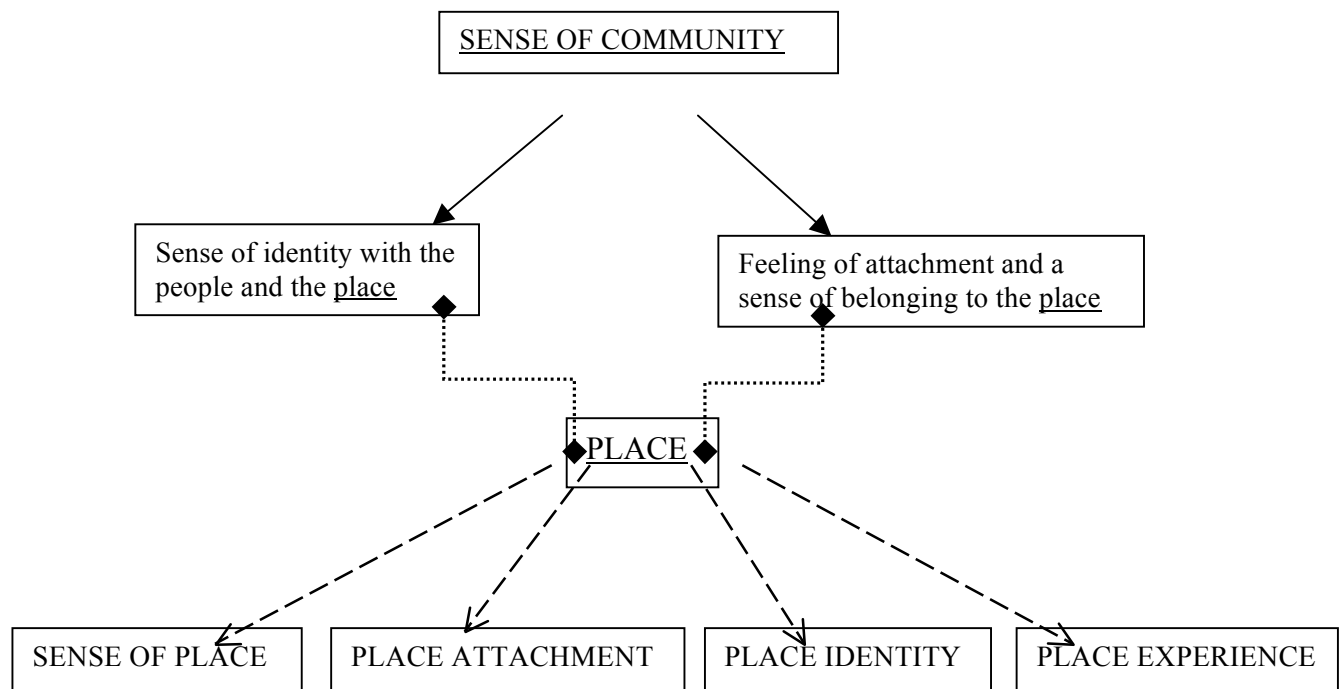


Figure 2.1: Relationship between place and community

Sense of Place

For decades, humanistic geographers, environmental psychologists and designers have studied people's emotional relationships to place. Yi-Fu Tuan's work was amongst the first to examine the ways in which people attach meaning to place. He views place as space endowed with value. He argues that what begins as undifferentiated "space" evolves into "place" as we come to know places better and endow them with value. Thus, places acquire deep meaning through the "steady accretion of sentiment" and experience (Yi-Fu 1974). Tuan stresses the importance of "continued experience" through time, and states that it is with frequent visiting and experience of a given space over time, that one comes to really know place (Tuan and Corporation 1977)(p.33). According to Tuan, the meaning given to a space by people is what transforms it into place. He talks about "meaning", with regard to individual and group

experiences in a place. When people have significant, familiar, and pleasant experiences in a space over a period of time, they associate that space with meaning and value. This is how space transforms from to a well-known and familiar “place”.

Edward Relph perceives place as a source of security and identity for individuals and groups of people (Relph and Charles 1976). According to Relph, Sense of Place is a combination of:

- The physical components found within a given space (natural and the built environment)
- The activities which take place within the space (group and individual)
- Meanings which comprise a space (interpersonal interaction and experiences)
- The individual’s experiences and connections with that space

“While meanings of places may be rooted in the physical setting and objects and activities...they are not property of them. Rather, they are property of human interactions and experiences (Relph and Charles 1976)(p.47-48). While this tells us that the physical setting is not responsible for the meaning attributed to place, it is important to note that the physical setting does have the capability to provide for and facilitate human interactions, which in turn does come to be meaningful. The physical setting, with all of its elements, forms an inherent position in the people-place relationship.

Norberg-Schulz approaches place with respect to its environmental character. He terms his conceptualization of place as the “genius-loci”. He views place as the result of the relationships between actions, conceptions and physical attributes. He writes, “spaces where life occurs are places” (Norberg-Schulz 1984)(p.5). He emphasizes the environmental character of a space and the importance of the uniqueness of each space from the other. In order to form a lasting image in people’s minds, each space must possess a unique quality and character, which should reflect

the place, the community and its culture (Ratz 2008). Place can also be broken down in terms of space and character. “Space denotes the three-dimensional organization of the elements which make up a place, and character denotes the general atmosphere which is the most comprehensive property of any place”(Norberg-Schulz 1984)(p.11).

Fritz Steele’s text on Sense of Place expresses that the following two aspects of place are key factors in shaping an individual’s sense of place. First, the specific experiences a person has in a particular setting, and second is how that setting causes him or her to feel; the mood it induces in each individual. According to Steele, a sense of place can be “created by the pattern of reactions that a setting stimulates for a person” (Steele 1981)(p.12).

In Kevin Lynch’s text, *A Theory of Good City Form*, he writes, “Sense of place is the interaction between person and place...[and]...depends on spatial form and quality, culture, temperament, status, experience and current purpose of the observer” (Lynch 1981)(p.131). In his previous text *The Image of the City*, he writes that, “a sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a memory trace” (Lynch 1960) (p.119). In this text he talks about “environmental image”. Lynch poses the idea that one’s image of place consists of three key components: identity, structure and meaning. Akin to Norberg-Schulz’s viewpoint, identity refers to the uniqueness of the space and the importance of each space being distinct from the other. Structure refers to the spatial layout, organization and pattern. Structure is what helps users get oriented within a space and navigate their way through the space. It renders a space with clarity and simplicity, avoids ambiguity and fosters familiarity. Meaning refers to a connection between people and place. He explains that meaning is a very subjective entity, which varies according to individual experience. Although meaning can be hard to directly address, if we focus our efforts on identity and structure then users will be able to

relate to the space and endow it with their own meaning and value (Lynch 1960). It is this personal element and connection, which each individual user brings to the space, which sets it apart from just another space. Lynch writes that in this way, space will become a true place, remarkable and unmistakable (Lynch 1960; Ratz 2008).

Nicholas Entrikin writes that in addition to personal meaning and spatial nature, places take on meaning over a period of time as their activities are “fused with human goals, values and intentions” (Entrikin 1991)(p.11). This temporal component that Entrikin talks about is essential in tying meaning to place. With this, one comes to truly “know” a place and feels secure to linger in it for extended periods of time.

J.B Jackson also talks about the importance of familiarity, where he stresses the idea of ritual, repetition and continued experience of a place. Jackson views the characteristics associated with a sense of place as “a lively awareness of the familiar environment, a ritual repetition, a sense of fellowship based on shared experience” (Jackson 1994)(p.159). His writing accepts the somewhat vague disposition of place and human emotions more than other texts. He acknowledges the subjective quality of people’s perceptions and feelings toward space, and the ever-changing nature of the environment. He addresses this by posing the idea of regularity, repeated celebration and ritual, which come to be the strong driving force for people to return to a place (Ratz 2008). He explains that it is the cyclical sense of time inherent in the regular recurrence of events which gives people a sense of connectedness and continuity (Jackson 1994).

Brief Summary on Sense of Place

Each of the authors discussed above have somewhat differing opinions on their interpretation of a sense of place. Yet as one draws parallels between these ideas, strong similarities are discovered.

Yi-Fu Tuan stresses the effect of continued experience on people's perception and sense of place. With the frequent visiting and experience of place over time, one comes to know place well and becomes familiar with the given place, its people and surroundings. This familiar and significant experience in a particular space over time, gives meaning to that space. In this way, a sense of place is established in the minds of the users of that place.

Edward Relph emphasizes the physical setting in the people-place relationship, along with the activities, which take place in a given space. The other two components, which encompass a sense a place are, individualistic experiences and the meaning associated with the given place – similar to Tuan's discussion.

Norberg-Schulz views the unique quality and character of each space as key components in the formation of a lasting image in the minds of its users. According to Norberg-Schulz the environmental character is what helps us return to a given space time and time again, rendering it different from all other spaces, which we come across.

Like Norberg-Schulz, Kevin Lynch also addresses the importance of the unique quality of space. He talks about "environmental image". The three aspects of place that Lynch emphasizes are: unique quality of the space, spatial layout and the personal meaning associated with that place. This perspective whereby space is transformed into a unique place via the meaning given to it by its users draws strong parallels to Yi-Fu Tuan's place theory.

Joining Tuan and Lynch in addressing the importance of spatial nature and meaning attached to place is Nicholas Entrikin. Entrikin brings another key element into this equation – Time. The temporal component plays a major role in the development of a sense of place. In addition to Tuan and Entrikin, J.B Jackson as well, stresses the role of familiarity, continued experience, regularity, ritual and repetition. While Jackson admits the subjective nature of human

emotions and perceptions, he reminds us that with everything around us constantly changing, people seek something known and familiar that they can return to. This provides people a sense of stability and a sense of self.

The diagram below (figure 2.2) illustrates the key factors that contribute to a sense of place, as stressed by the above authors,

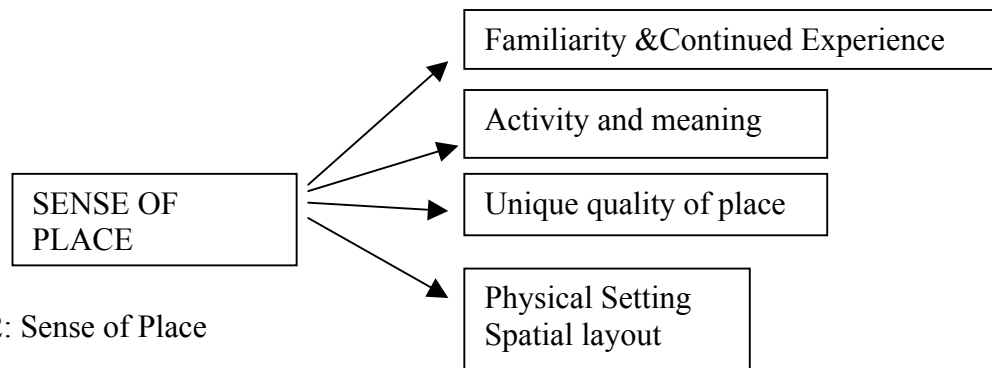


Figure 2.2: Sense of Place

Place Attachment

Theory on place attachments and meaning, explored largely in environmental and community psychology, can help us understand how particular preferences, perceptions, and emotional connections to place relate to community social cohesion, organized participation and community development (Manzo and Perkins 2006).

Altman and Low define place attachment as an affective bond between people and places. It includes different actors, social relationships, and places of varying scale (Altman and Low 1992). In Manzo and Perkins research on the *Importance of Place Attachment to Community Participation and Planning*, they write, “place attachments, in influencing individual and group behavior, affect communities at large” (Manzo and Perkins 2006)(p.337).

Riger and Lavrakas’s writing states that the two aspects of attachment that are communal in nature are: a sense of bondedness, or feelings of being a part of a larger group, and a sense of

rootedness to the community (Riger and Lavrakas 1981). Therefore, it is said that emotional bonds with the community or neighborhood, are products not only of individual internal processes, but are also external social processes. “People’s attachments to place are often intertwined with their sense of community” (Manzo and Perkins 2006)(p.339).

Similar to Jackson’s view of Sense of Place, the text *Disruptions in Place Attachment* states the fluid nature of place attachments. Brown and Perkins suggest that place attachments are not static; they change in accordance with changes in the people, activities, and places involved. However, they are nurtured through the continuing series of events that reaffirm humans’ relations with their environment (Brown and Perkins 1992).

Tuan uses the term “*Topophilia*” to express personal attachment to place, which is also the title of his book. Tuan explains how we develop personal associations and attachment with place. He begins by suggesting how as children, the only places we know are home and our neighborhood, and these are the places which our everyday memories are built. As a result, these places are filled with meaning (Yi-Fu 1974; Ratz 2008). As we grow, places where we spent large quantities of time are that with which we tend to become familiar. This physical world that we become closely familiar with, also invokes feelings and emotions of comfort and safety, just as “home” did during childhood. Tuan states that topophilia comprises aesthetic appreciation alongside the memory of human incidents. He says that a distinctive and dynamic physical environment can enhance this connection (Yi-Fu 1974; Ratz 2008). This personal attachment to place will in turn affect the overall nature of the space, whereby the probability of establishing a sense of community is increased.

Brief Summary on Place Attachment

It is notable that emotional connection and attachment to a place is at the heart of a sense of community. Even though place attachment is defined as the bond between people and place, it can certainly complement a sense of community, as it can encourage social interaction and group participation.

Riger and Lavrakas's writings show that people's development of attachment to a place, in reality, is a result of their desire to be accepted as a member of a larger group or community. This begins with the social need to be affiliated with a particular group, location or community (Lang 1994). Place attachment is one way in which this is manifested in the physical environment.

Brown and Perkins suggest focusing on continued experience, while emphasizing the fluid nature of place attachments. Continued experience helps reaffirm people's connection with place and with each other. Similar to Brown and Perkins, Tuan also discusses the influential role familiarity and continued experience has in the development of personal attachment to place. The environment we familiarize ourselves with on a day-to-day basis invokes feelings and emotions of comfort and safety. As a result, these places are charged with meaning. As well, Tuan explains that a distinctive and dynamic physical environment can enhance this connection, where aesthetics, spatial layout and physical design elements have a part to play.

Prior researchers have in fact linked a sense of community to place attachment at both the individual and community scale. For example, the study of a Brooklyn neighborhood found that attachment to the neighborhood served as a necessity for the development of a sense of community among neighbors (Rivlin 1987; Manzo and Perkins 2006). Furthermore, both sense of community and place attachment manifest themselves behaviorally in participation. Evidently

both place attachment and sense of community go hand-in-hand, and can be valuable when tied to practice. The diagram below establishes connections between Place Attachment and the various factors that contribute to it.

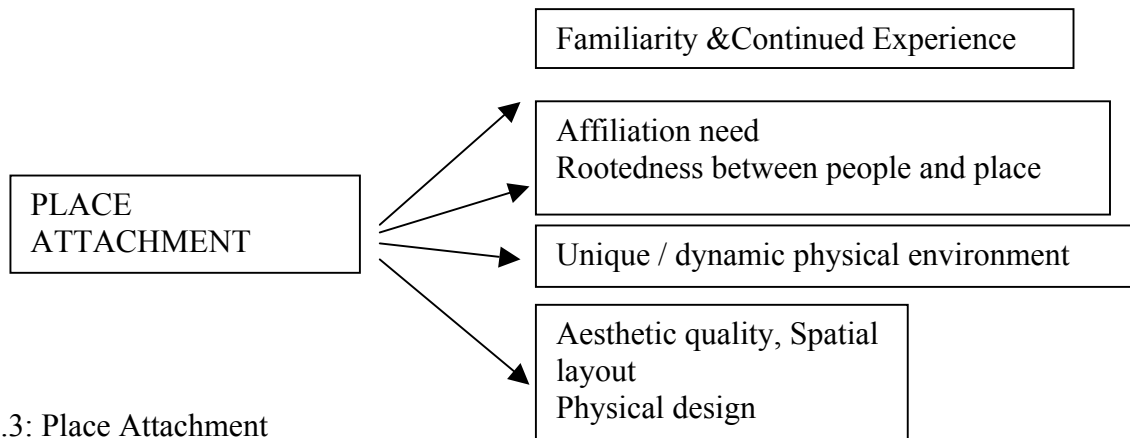


Figure 2.3: Place Attachment

Place Identity

Another concept that has gained renewed vigor in the environmental psychology literature in recent years is “place identity”. When we talk about “place identity”, we are referring to more than just the image of place. The term suggests the meaning (personal and communal) associated and attributed to the space by the user. It is the quality of the space that its users identify with. As well, it is “the extent to which a person can recognize or recall a place as being distinct from other places; in other words, the place is unique and maintains a character of its own that makes it stand apart from other areas” (Lopez 2009)(p.46). “Identity with and connection to place not only informs one’s perception of place, but of oneself” (Ratz 2008)(p.19).

First coined by Proshansky in 1978, place identity is comprised of those “dimensions of the self that develop in relation to the physical environment by means of a pattern of beliefs,

preferences, feelings, values and goals” (Manzo and Perkins 2006)(p.337). It is a dynamic phenomenon that grows and transforms through lived experience (Proshansky, Fabian et al. 1983).

In Tony Hiss’s classic text *The experience of place*, he explains that in some instances, people simply see themselves as observers of their environment, they also look for and “perceive themselves as being connected to or being a part of their surroundings” (Hiss 1991)(p.22). This way people identify themselves with the environment and the environment has meaning to them. Space materializes itself into place and is filled with meaning and identity. “Space has the dual role in creating and holding meaning”(Ratz 2008)(p.12).

Edward Relph also emphasizes the importance of ‘personal meaning’ in achieving place identity. Relph suggests that personal meaning held by individuals or groups will greatly affect their identity of place. He goes further and looks at two aspects of place identity – identity *of* and identity *with* a place. According to Relph identity *of* a place is “a persistent sameness and unity which allows that thing to be differentiated from others” (Relph and Charles 1976)(p.45). The identity a person or group has *with* a place suggests Relph, is dependent on time, experience and purpose of the user. He believes both to be equally important facets of one’s experience and connection to place (Ratz 2008).

Fredrickson and Anderson (1999) point out that, “it is through one’s interactions with the particulars of a place that one creates their own personal identity and deepest-held values” (p.22). This tells us that the physical aspects, which are found in a given place, have the capacity to inform one’s sense of identity with the place.

Similarly, Lopez (2009) writes that, “people have and continue to identify themselves with places, such as calling them home, and use them to provide a kind of symbolic identity that

distinguishes them from others”(p.46). She continues by saying that the various aspects of ‘physical attributes’ that are present in a space also assist in the recognition of places. In doing so, certain groups of people will be able to identify themselves with the space, based on which attributes are present in a given area.

Tuan discusses another important factor in the development of place identity, “continued experience”. He states that places are an expressive manifestation of our personal and collective histories, and the stimuli for human experience. Tuan (1977) writes that, the identity of place is “achieved by dramatizing the aspirations, needs, and functional rhythms of personal and group life”(p.178).

While Tuan focuses on continued experience, Dolores Hayden talks about individual experience and personal associations with place. She says that individual experience creates personal connections with the physical environment. These may not be visibly manifested for everyone to picture, but does indeed inform one’s sense of self and enhance one’s connection to place (Hayden 1997).

Norberg-Schulz (1984) posits his perspective on place identity and the strong connection between our ‘sense of place’ and our ‘sense of self’. He suggests that who we are and how we develop as individuals, our “sense of self” is directly related to our environment and our “sense of place”(p.18). He argues that humans are constantly trying to identify themselves with something and inevitably seek connections to place (Norberg-Schulz 1984).

Brief Summary on Place Identity

A number of studies have emphasized the dynamic nature of relationships to places as a part of identity development. Proshansky suggests that place identity grows through lived experience over a period of time. Tuan also implies the effect of continued experience plays a

role in one's notion of place identity. Since our daily environments are stimuli for human experience, the constant re-visiting of a space strengthens connections and associations its users have with the place. On a similar note, Hayden focuses importance towards individual experiences within a space, saying that this creates personal connections with the physical environment, thereby strengthening one's sense of identity with a place.

Fredrickson, Anderson and Lopez discuss the physical attributes that comprise "place". Lopez explains that the physical attributes present in a space can assist in recognizing and identifying one place from another. According to Lopez, this helps users identify themselves with the space.

According to Relph and Hiss, the personal meaning held by individuals or groups will direct their sense of place identity. Relph highlights that both aspects of place identity (*identity of* and *identity with* place) are equally important. Referring to, the unique quality of place and, the experiences and associations a person or group has with the space. Most importantly, if people's identity and values are indeed informed by places they deem significant, then it is inevitable that people's bonds with those places will impact their engagement in such places, whether it be to maintain them or improve them, respond to changes within them, or simply to stay in that place (Pretty, Chipuer et al. 2003).

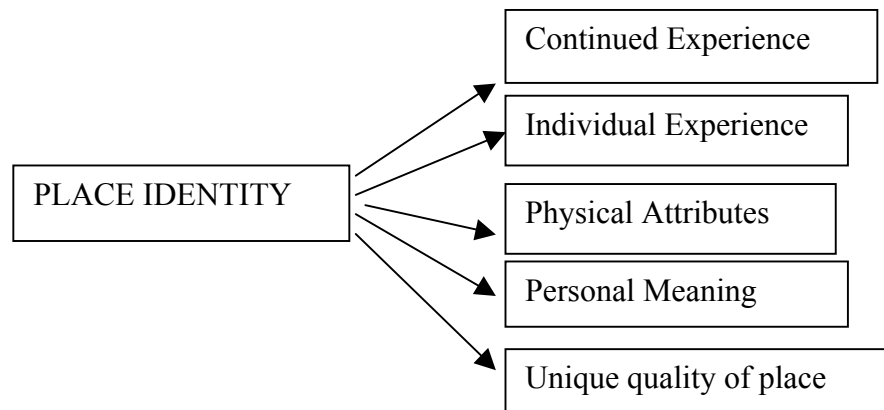


Figure 2.4: Place Identity

Place Experience

Place Experience is a term used frequently by all the authors and is “a cover all term for the various modes through which a person knows his world” (Yi-Fu 1974)(p.151). “We experience place continually, over time, each encounter building upon the last adding to our memories and strengthening our connection with place”(Ratz 2008)(p.16). Lopez writes that, a person’s experience of a place not only revolves around the function of the area’s physical attributes, the characteristics which are picked up by the users senses, their history, and their moods while they are experiencing it also matter (Lopez 2009).

David Canter emphasizes the ‘environmental role’, as he discusses the relationship between person and place. He suggests that a person’s role is what determines the level to which a person relates himself to the place. “People’s perception of a place also varies depending on their purpose or goal for being there as well as their expectations. Their goal or purpose is what links them to the place, helping form a bond between them and the area”(Lopez 2010) (p.48). As a person continues to experience a place over time, this bond becomes stronger.

According to Steele (1981), people “experience a sense of place, given the right conditions”(p.4). Therefore, a space needs to be flexible to accommodate a wide variety of users to allow them to experience a connection with the space. “Spaces need to provide for both the ‘doers’ who actively use the space and the ‘watchers’ who use the space passively” (Lopez 2009)(p.48).

Tuan (1974) relates the visual quality of a space to one’s place experience. He believes that “of the traditional five senses man is more consciously dependent on sight to make his way in the world than on the other senses”(p.6). This way we can relate to space in terms of meaning, appearance, and function.

Anatov further supports the influence of the appearance of a place on user experience. The appearance of a place “affects daily activities by influencing our emotional reactions or affective responses. The aesthetics of an environment can evoke feelings such as pleasure, relaxation, excitement and fear”(Ataov 1998)(p.239). These emotional responses in turn can affect behavioral responses, with people taking favorable or unfavorable actions in accordance to how they feel. “People tend to respond to what they see in relation to a physical form”(Lopez 2009)(p.48).

Entrikin writes that when individuals and groups give space meaning in relation to their experiences, space is transformed into place. Thus embodying the space with unique meaning and character, strengthens their connection to place (Entrikin 1991; Ratz 2008). This connection with place based on experience, is the basis for the enhancement of a sense of community, whereby, social interaction is facilitated.

Brief Summary on Place Experience

In summarizing the key points addressed by various authors, the aspects which are deemed most significant to place experience are: continued experience, physical attributes and visual quality of place, activity associated with place and flexibility, as illustrated by the diagram below.

David Canter stresses the importance of the user’s role in place, the activities they engage in while in the space and their purpose for being there. He also suggests that the bond between people and place becomes stronger as they continue to experience the place over time. The visual quality of a place can also affect a person’s experience greatly because people respond to what appears before them, visual cues in the area, and what they recall of places. Below is a summary of how three authors relate physical attributes to the visual quality of a space.

-Lopez states that the physical attributes present in a space, as well as the characteristics of the space will influence one's experience.

-Tuan believes sight is the strongest of the five senses, and indicates that the visual quality of a space will have the most direct impact on one's place experience.

-Anatov expands on Tuan's viewpoint. Explaining that, the appearance of a place in influencing the users' emotional reactions, in turn affects their behavioral responses.

Steele specifies the importance of flexibility in a space. As user's come to the space with varied expectations, needs and activities to perform, he suggests that a space should be dynamic in nature to cater to the various activities.

It is apparent that people's experience of place has a great influence on their degree of connectedness to that place. It also informs their level of comfort and directs their behavior within that place. In turn this affects the ability and ease with which users can socially interact and form communal ties. This effectively shows a direct connection between individual experiences and the sense of community.

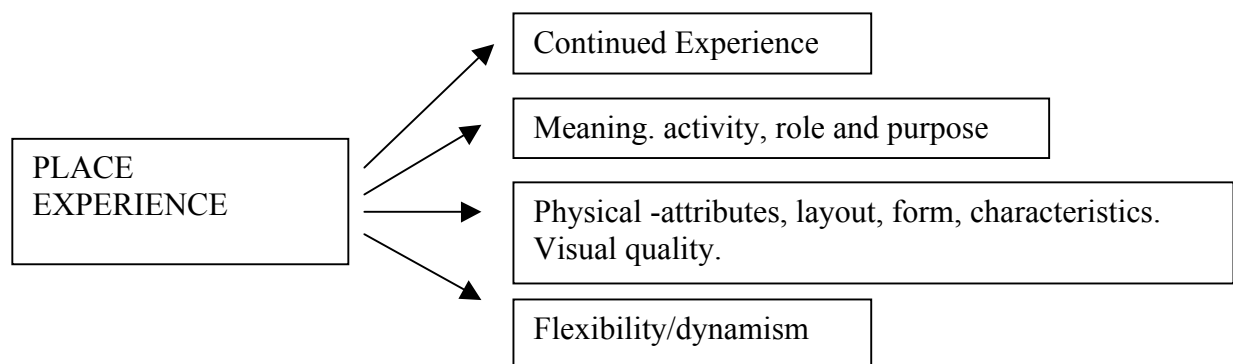


Figure 2.5: Place Experience

Comprehensive Summary of Readings

This chapter demonstrates that sense of place, place attachment, place identity and place experience are critical parts of person-environment transactions that foster the development of community in its physical, social and personal aspects. Place-based theories and research on sense of place, place attachments, place identity and place experience have made critical contributions to the understanding of our relationships to place. Despite the diversity of the terms discussed, all of this research has people's relationships to place at its core. The reason we have spent much time on explaining each of them is because these relationships are a critical aspect of people's involvement in their community. The research not only demonstrates people's relationships with place, but also suggests that together, these concepts can inform a sense of community within campus spaces. Positive experiences, feelings of attachment, comfort, and the unique nature of a space are factors that influence the vibrancy of the space, direct social interaction, and contribute to a sense of community.

While acknowledging that prior theory is important in moving forward with application, Tuan and phenomenologist's interested in place (Relph and Charles 1976; Seamon 1984; Manzo and Perkins 2006) call for a return to the everyday setting in order to gain a complete understanding of how this theory affects the community. The following figure shows how four key aspects of place have been extracted from the research. These four concepts have surfaced most often and been stressed redundantly. They are Familiarity & Continued Experience, Activity & Meaning, Identity and Physical Design.

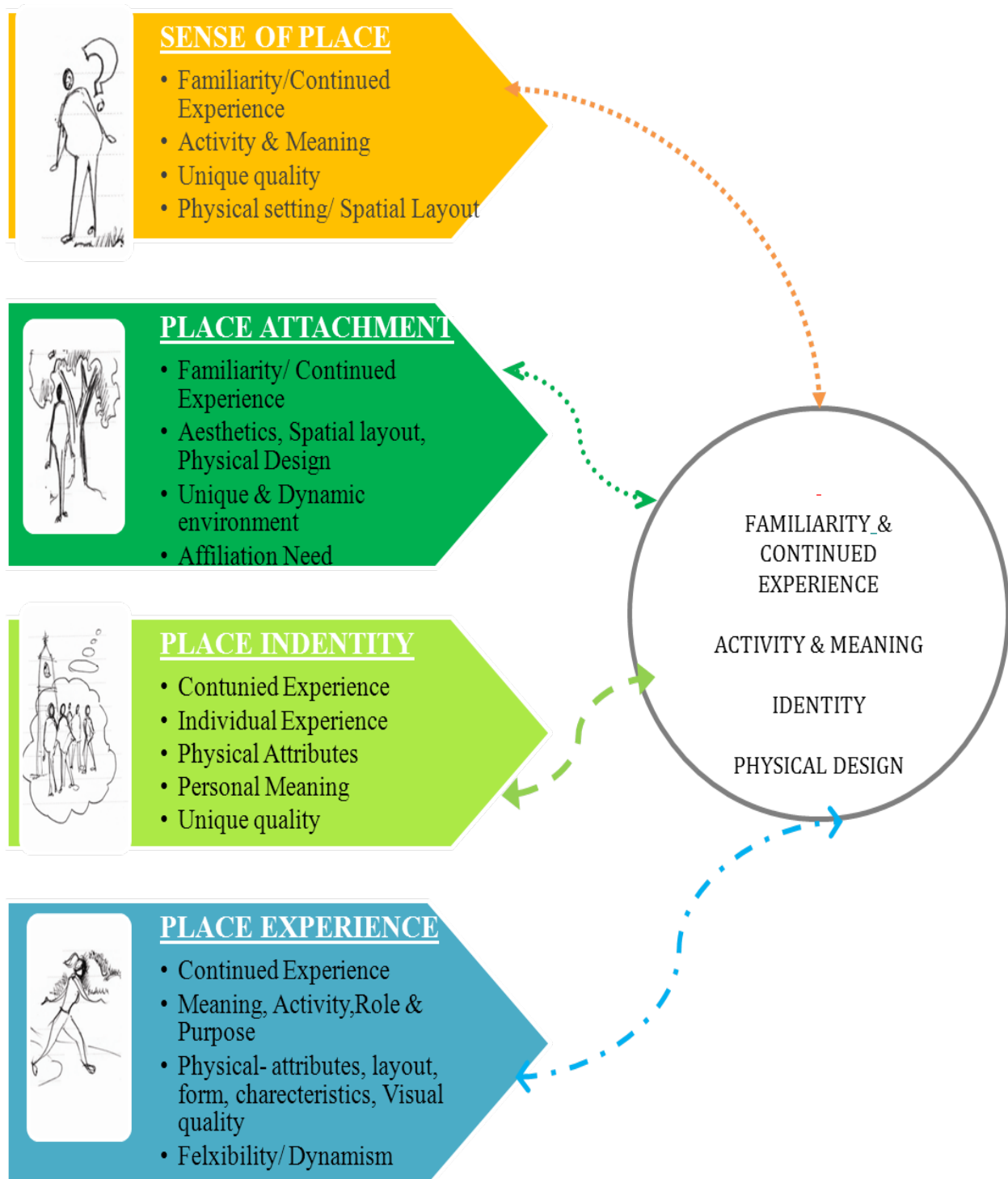


Figure 2.6: Components of place that inform a 'sense of community'

Familiarity and Continued Experience

It has been argued that the context of our everyday lives is so familiar that we essentially relate to it in an unconscious way (Buttimer 1976; Buttimer and Seamon 1980; Seamon 1984). Indeed the role of habit and familiarity are critical elements of our sense of place. Because regularity and routine are part of our way of being in the world, we are not always conscious of our feelings for place (Hester 1993). Moreover, places that provide comfort and security tend to be places with which we are familiar, so we may be attached to them on an unconscious level. We experience place continually, over time, each encounter building upon the last adding to our memories and strengthening our connection with place” (Ratz 2008)(p.18). Ritual and routine associated with place, both personal and communal, enhance one’s affiliation not only to the place but to the community as well. According to Steele (1981), using “a pattern or repetition of specific experiences facilitates a person’s ability to increase their sense of place more than if only a single experience was presented in the area” (p.141). Moreover, the greater the level of familiarity and comfort one has with a place, the easier the facilitation of social interaction and community enhancement. Familiarity and continued experience directly relate back to community, simply because the more you visit and place and see the same people, the stronger your affiliation becomes with that place and its community.

Personal connections form continued experience in most places. At the same time, it is important to note that simply visiting a place time and time again does not guarantee a connection with the place. A high quality physical setting is important in bringing people back repeatedly. Therefore, it is evident that physical design has an essential role to play in strengthening one’s personal and communal connection to place.

Activity and Meaning

Research points out that a multitude of activities and behaviors take place within any given space. It is this variation in activity that contributes to the vibrancy of a place. The activities performed in a particular place have a great effect on community and the level of social interaction. It also influences one's experience of place.

It is also notable that certain activities naturally attract more users and onlookers, facilitate social interaction and community development. The larger the numbers of members in the group engaging in an activity, the more people that are attracted to the space. For example: A group of students studying, eating lunch, and watching something entertaining or simply chatting tends to attract others to the space. This phenomenon has been observed in several other studies.

Each individual user has their own expectations, goals and perceptions, with which he/she comes to a place. Recognizing that places contain more than one use and accommodate many behaviors allows us to understand and design for a greater diversity of people. The way in which the physical form is designed, its spatial organization, furniture and the physical features found within the space, all influence the pattern of activities and behavior of users. "By having choice and variety in an area, accessibility can be increased and an assortment of needs can be met" (Lopez 2009)(p.49). Again this directs us back to the dynamic nature of place and the role physical design has in influencing our behavior individually and communally.

Identity

For the purpose of discussion, this thesis splits the term identity into two: the emotional side and the physical side. On the emotional side, we basically identify with something, someplace or someone when we feel a sense of relatedness to it. It could be a common feature, or it could make us feel in a certain way. A sense of identity basically stems from a feeling of

comfort, security, familiarity, and the ability to be one's self with another person, amongst a group of people or in a given place. Identity is important towards developing a strong connection to place as well as enhancing a sense of community. As users establish a sense of identity with a place and its people, and deem the place as unique, then the manifestation of a lively sense of community follows. "Symbols, physical design features, architectural form and other visual cues representative of group experience and meaning, whether explicitly designed or having acquired significance through time, are essential to the preservation of cultural identity and in strengthening community ties"(Ratz 2008)(p.18).

On the physical side of identity, various authors and researchers discussed in this chapter have stressed the importance of the 'unique quality of place'. This distinctiveness from other spaces endows space with identity. In order for this to occur, researchers and designers rely on the physical setting. The physical setting along with all of its design features and elements renders it unique from other spaces. The physical form and spatial layout is also influential in delivering identity to a space. To avoid confusion, most users favor spaces that are easy to navigate, and are simple and clear to understand. This provides the users with a sense of familiarity and ease with which they can make their way through the space and interact comfortably with fellow community members. This further reinforces the influential nature of the physical setting and design over the sense of campus community.

Physical Design

The most notable aspect of the discussions on Familiarity & Continued Experience, Identity, and Activity & Meaning, are that they commonly stress the role of Physical Design in influencing the place and community experience. A dynamic, comfortable and distinct physical

setting encourages the various activities that could take place in a space, endows the space with a unique identity, and allows its users to familiarize themselves with the environment, by instilling a desire to continually return or simply remain in that space.

Researchers have also found that the visual quality and appearance of a space has a great influence in attracting individuals, groups and community interaction. The visual quality directs the nature of the activities that take place within the space, the level of social interaction and the overall vibrancy of the space. Research also reveals that, users' adapt their activities to the way the physical setting is laid out. This suggests that the physical setting, along with all of its design elements (structural elements, furnishings and landscape), could encourage or discourage certain types of activities from taking place, or be a means of exploring new possibilities as well.

Summary

This thesis has categorized 'Sense of Community' into 4 aspects of Place (Sense of Place, Place Identity, Place Attachment and Place Experience) and then further in 4 components of place (Familiarity & Continued Experience, Identity, Activity & Meaning and Physical Setting), which are found to influence both place and community. This process of constant sub-division might be initially complicated to understand. The reason why these four factors are discussed is because they are more quantifiable elements, which can be observed through the case studies and behavior mapping studies that appear in the next chapter. Terms such as Sense of Place, Place Attachment, Place Identity and Place Experience, are vague ideas and involve concepts, which are helpful in the understanding of place and community, but yet hard to physically observe and quantify.

The following diagram serves to better our understanding how these various ideas are linked back to a ‘sense of community’. It is important to remember that the focus of this argument is ‘physical design’ and its influence on the ‘sense of community’ on campus. The supplementary theories, concepts and aspects of place and community, which are discussed, are tools that assist in understanding the nature of this connection. Figure 2.7, illustrated at the end of this chapter, helps in understanding the way in which all the materials discussed in this chapter are connected. In this figure, Physical Design has been demarcated as an inherent factor in enhancing a sense of community. This clarifies the goal of the thesis, the establishment of relationship between: ‘Sense of Community and Physical Design’.

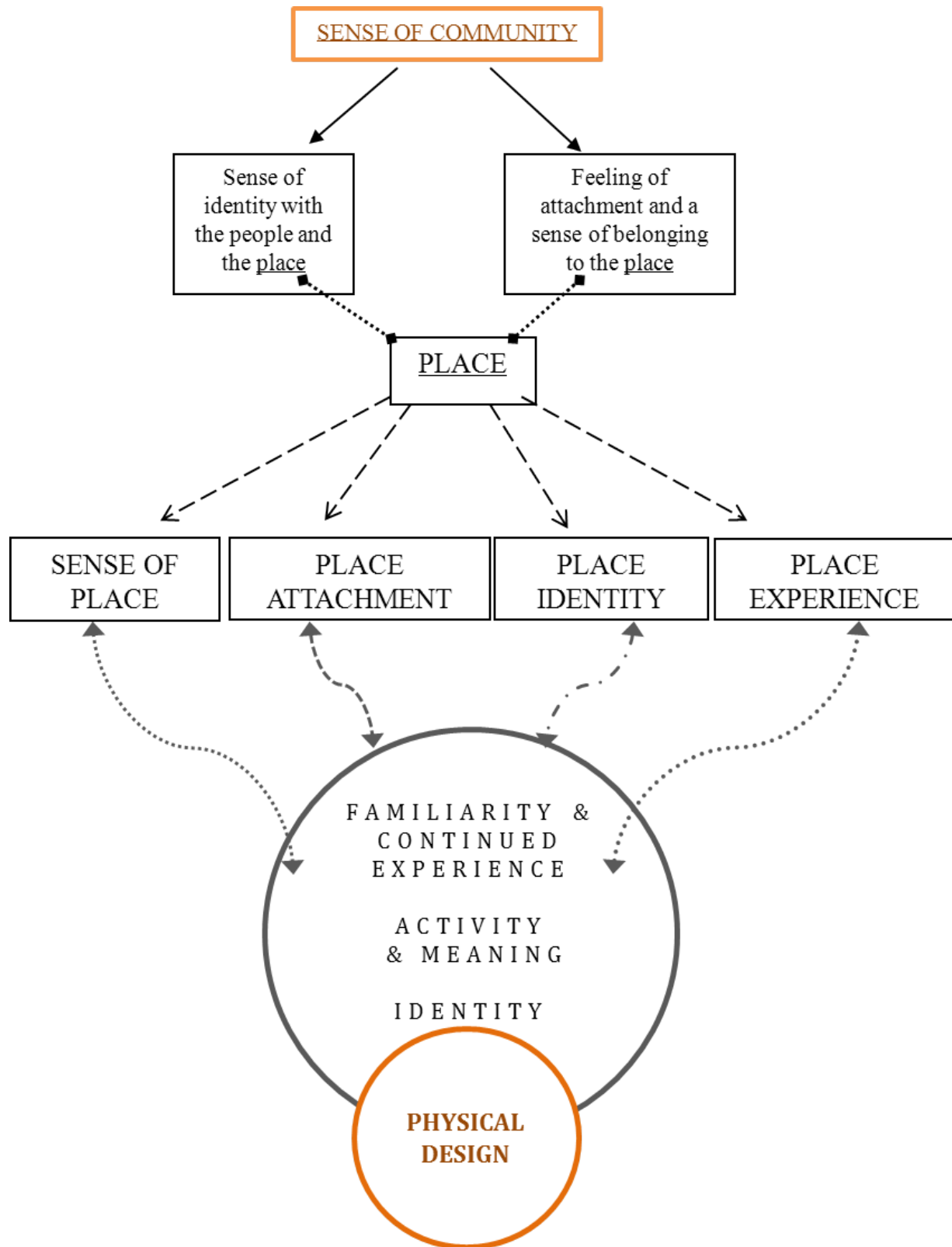


Figure 2.7: Relationship between Sense of Community and Physical Design

CHAPTER 3

CASE STUDY AND STUDENT SURVEY

Taking up the challenge to rejoin the concept of “community” with architectural shape and form requires that we use all analytical and design tools available to us. In *Campus and Community*, Ojeda describes college campuses as the “unique resource” for this work. He explains that American campuses constitute places in which the elusive quality of community has been protected and sustained(Ojeda 1997).

In *People Places*, Clare Cooper Marcus writes that, “a gradual daily familiarity evolves into a sense of home territory” (p.181). As well, it was found that more importantly than in a residential area, people became attached to an area of campus because they used the outdoors as a resting place as well as a pass through space. Marcus’s studies on campus spaces indicate that people became familiar with the sights, sounds, sensations, and visual images of a place while sitting, relaxing, eating or conversing. “It is possible that in a large institutional atmosphere of a major campus, people have a particular need for common spaces where they feel at home and to which they can easily return every day” (Marcus and Francis 1998)(p.181).

In an environment as large as a campus, with its various departments, often this place happens to be amidst one’s own academic department building. Students form an immediate sense of relatedness with their own respective department; a place they have become comfortable with by means of the long hours spent there every day. Students develop a gradual familiarity with the space, its people and sights. Given the amount of time per day students spend in and

around their departments, the space surrounding the department becomes very important in fostering a sense of community. Students often associate themselves with this space; it could serve as a social zone before, after, or between class periods where students pass by, stop to talk to their peers or simply rejuvenate. Therefore this thesis identifies the building entry spaces as a prime location where physical design can enhance the sense of community and the vibrancy of the space.

Lang writes that, “In order to understand the role of design in providing the settings that afford diverse people the opportunities for fulfilling their need for affiliation, one has to understand the nature of the activities that bind people together and also the symbols that give them a sense of belonging. “The concern here is not with the development of kinship systems, but rather with understanding everyday activities and what they mean in terms of potential design actions. The focus here is thus on communal systems” (Lang 1994)(p.256).

Looking back, urban designers (e.g. Le Corbusier, Clarence Stein, and Christopher Alexander) have long sought to enhance a sense of community through a physical design and the location of facilities that provide for social opportunities (C.Stein 1957; Gutman 1966; Michelson 1976; Saarinen 1976; Newman 1980a; Lang 1980b, 1987a; Brill 1989). In doing so urban designers have tended to rely on the notion that the creation of institutions and public places will bring people together. Prior to any design action, there needs to be “a clear understanding of the nature and interrelationship of organizational design and spatial arrangements, the nature of communities, the needs of the individuals and groups within that community and their relationship to the neighboring layouts” (Lang 1994)(p.256).

Similarly, Canter suggests that “ what a place ‘is’ cannot be fully recognized until we know what behavior is associated with it, what the physical parameters of the setting is, and what

the description, or conception, which people have of that physical environment is” (Canter and Victor 1977) (159-160). Hence, it is understood that before going any further, behavior and activity on a particular physical setting on campus needs to be observed, documented and analyzed. In order to understand how physical design elements make a difference in the level of social interaction on campus, this thesis identifies a two-part study.

Site Selection

The site chosen for the purpose of this study is the entrance porch and lobby space at The University of Georgia’s College of Environment and Design - Caldwell Hall.

Caldwell Hall is home to more than 200 undergraduate students of Landscape Architecture and is often used by graduate students in the same discipline. Additionally, this building accommodates classes for UGA’s business students. Caldwell Hall is located at the University of Georgia’s historic North Campus and is adjacent to the University’s Law School and Terry School of Business, and just a minute’s walk from downtown Athens. The entrance porch of the building is situated off one of the main pedestrian circulation corridors that connect the various buildings on North Campus. This prime location of Caldwell Hall, alongside one of the most vibrant pedestrian corridors at UGA, with the vast population and traffic that this corridor caters to was one of reasons for selecting this building entrance as the case study for this thesis.

Brief Description of the Study

The research study was designed to map behavior around the main building entrance porch and lobby space of Caldwell Hall. The behavior mapping study consists of two parts, namely the pre-design intervention study and the post-design intervention study. The first part of

the study is a simple observational study. This was conducted to understand the context and current standing patterns of behavior associated with the entrance corridor to Caldwell Hall and the surrounding open space.

The study was conducted over 10 consecutive working days in the month of February. Specifically, the two-week study was conducted on the 14th -18th and the 21st-25th of February. The study was conducted during the morning, afternoon and evening, during the following time periods: 8a.m-11a.m, 12p.m-2p.m, and 3p.m- 5p.m.

The study consisted of the following exercises:

- a) Mapping of behavior and activity through the day.
- b) Documenting footfall count and traffic flow through the various time periods.
- c) Observations of social and community patterns of movement: (i.e. looking at the number of students gathering in pairs/ groups to interact, study, meet and socialize).
- d) Photographs of the current use of this space, particularly looking at the ways in which the physical design features were being used.
- e) Questionnaire: a brief questionnaire was designed to understand students' needs from campus spaces (indoor and outdoor), the factors that influence their sense of attachment to a place, and the physical design features they seek from a space. The questionnaire was also designed to gauge the student's opinion of Caldwell Hall's entrance porch and lobby space.

The second part of the study consists of a simple design intervention. The design intervention involves a slight alteration to the space, which was developed after gathering student input and conducting observations of the space. After the design intervention, the same behavior-mapping exercise was repeated for another ten days. Behavioral analysis was conducted based on the changes discovered during the pre-design intervention and post-design intervention.

Participant Selection

A total of 40 participants, selected at random, were involved in responding to the questionnaire for this study. Participants were both male and female, and within the age group of 19 to 25. Twelve participants also engaged in a face-to-face interview, where their feelings about the space and what they sought from Caldwell Hall's entrance porch and lobby space was discussed. Initial contact was made with participants on site by the author. The participants approached on site were informed about the study and were asked for their feedback on the space.

The results and discussion that follow encompass the findings from the pre-design intervention study. In order to analyze results from the questionnaires, tables were created that organize the data question by question across all 40 participants. These tables facilitated the comparison of data across participants, and yielded critical themes in the data. The questionnaire was split into three sections, namely, student data, broad questions pertaining to campus spaces in general, and site specific questions (refer to appendix A).

Student Data

From the Student Data section we were able to gather the following information:

- 50% of the students who responded, use Caldwell Hall; 3 to 4 days a week, while 40% of the students uses Caldwell Hall every day of the week.
- The maximum usage (33%) occurs in the mornings- between 8am to 12 pm, and in the afternoons (31%) between 1pm and 5 pm, with lighter traffic at noon (17%) and in the evenings (19%).

- When asked about the duration of stay, 58% of the respondents answered that they used Caldwell Hall's entrance porch and lobby space for more than 20 minutes. 32% of the students said that they used the space between 0 to 5 minutes, while the remaining 10% responded that they used the space between 5 to 20 minutes per visit.
- 75% of the participants in the study expressed that they find themselves using the space alone, while 25% find themselves using the space in groups.

Participants were asked to select the activities they engage in while using the space; the following chart shows the percentage break down of the usage of Caldwell Hall's entrance porch and lobby space.

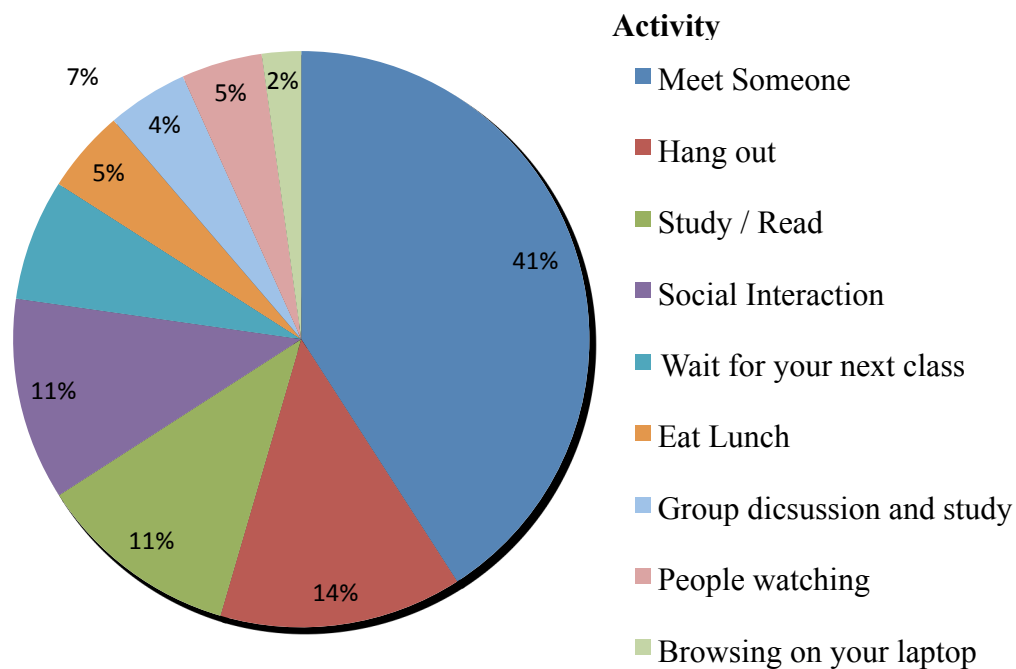


Figure 3.1: Activity chart

Broad Questions

While most of the questions within this section of the survey are not directly related to the space being studied, it offered insight towards understanding what students look for in spaces (both indoors and outdoors), the importance students placed on the various elements that comprise a physical setting, and how they develop attachment to various places. These questions were especially useful in determining which physical design elements are more desired in a given space.

1. When students were asked to name their favorite space on campus, 54% favored outdoor spaces, while 46% favored indoor spaces. In addition, the students had to indicate the factors that made a space their ‘favorite’. The following chart outlines the results of this particular survey. The distribution of the responses depicts the most popular spaces.

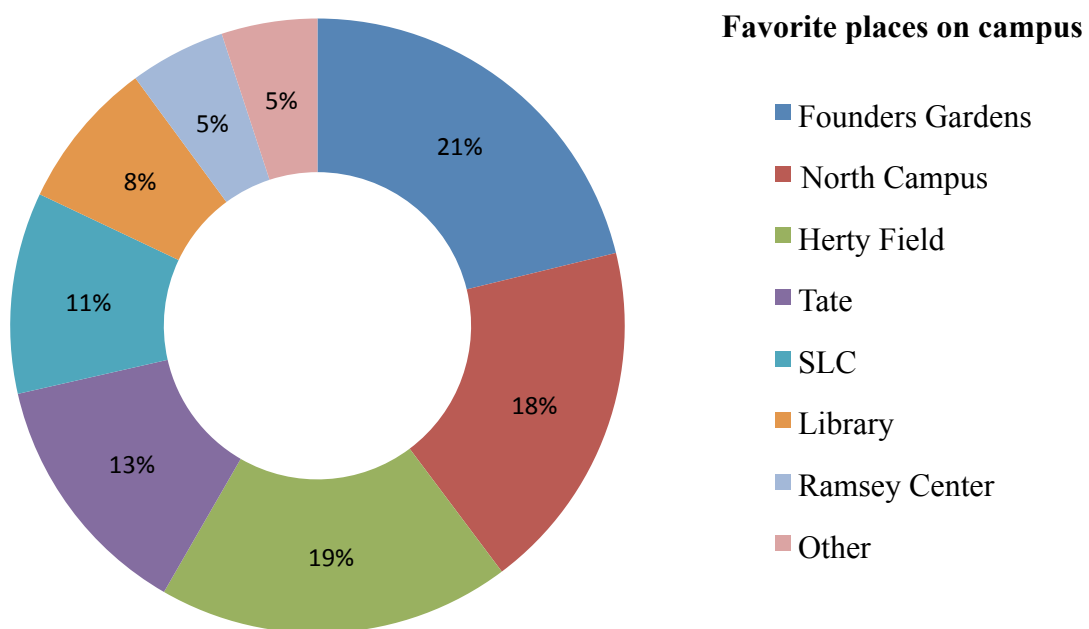


Figure 3.2: Most favored spaces on campus

The following list shows student responses when asked: “Which is your favorite space on campus? What factors make it your “favorite?”

- a. Founders Garden: “Nice and quiet”; “natural space”; “green”; “peaceful”.
- b. North Campus: “Plants”, “lawn; screening & trees”; “fountain”; “cozy”; “pretty”; “green”.
- c. Herty Field: “Open”; “fountain”.
- d. Tate Student Center: “Cubicles”; “lots of my friends are there”; “lots of social interaction”; “couches”; Grand lobby-“huge, natural lighting and seating”, “lots of different things are going on”; Bulldog café- “food and relaxed atmosphere”.
- e. Student Learning Center: “Coffee shop- tables”, “openness of the space”; “social interaction”; “clean”, “natural light”; “availability- coffee and computers”; “quiet area”.
- f. Library: Café; “space to work”.
- g. Ramsey Center: “Social aspect”.
- h. Coke Lounge: “Convenient location”, “aesthetics”, “lots of seating and plug points for laptops”.

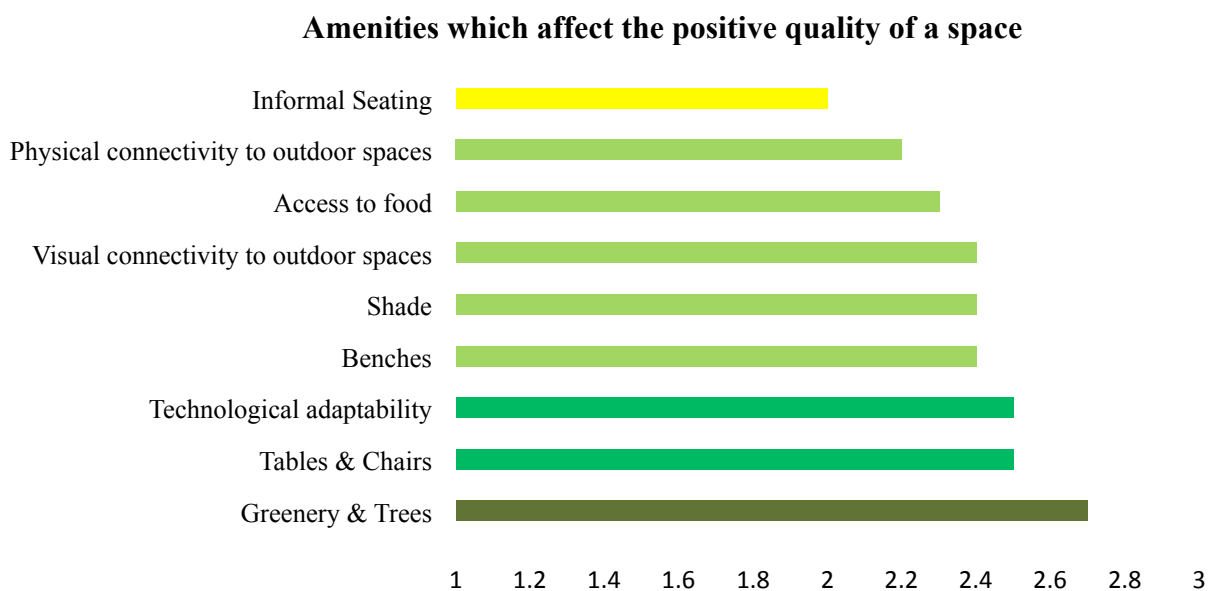
2. For the following two questions students were asked to rate the level of importance they gave to the various attributes of a physical setting on a Likert scale. A Likert-type scale, is a psychometric scale commonly used in questionnaires, and is the most widely used scale in survey research.

The Likert scale was 1 to 3, with a ranking as follows: 1- Not important, 2- Somewhat important and 3- Definitely important. The results were then calculated to indicate the mean value, to better capture the range of responses. These mean values are diagrammatically represented in the following bar charts, for each individual element.

A. Which of the following amenities affect the positive quality of a space?

Physical Design Element	1	2	3	Mean
Benches	8.3%	41.6%	50%	2.4
Tables and chairs	8%	32%	60%	2.5
Sufficient greenery and trees	2%	21%	77%	2.7
Shade	8%	42%	50%	2.4
Informal seating (steps, ledge, retaining wall, seat walls)	13%	66%	21%	2
Access to food (nearby café or vending facilities)	5%	36%	49%	2.3
Technological adaptability (Wi-fi, plug points)	10%	21%	69%	2.5
Visual connectivity to surrounding outdoor spaces	5%	50%	45%	2.4
Physical connectivity to surrounding outdoor spaces	11%	58%	31%	2.2

Table 3.1: Amenities that affect the positive quality of a space.



Level of importance : 1-Not important; 1- Somewhat important; 3- Definitely important

Figure 3.3: Amenities, which affect the positive quality of a space

B. Which of the following would add to your level of attachment with a space thereby persuading you to spend more time there?

Physical Design Element	1	2	3	Mean
Comfortable site furniture	5.7%	31%	62.8%	2.6
Degree of privacy it offers	14%	23%	63%	2.5
Familiarity with the space, its surrounding environment	14%	28%	58%	2.4
Presence of known faces	12%	48%	40%	2.3
Frequency of visit	16%	36%	48%	2.3
Proximity to your department building.	10%	35%	55%	2.4
Views of the surrounding open spaces	20%	40%	40%	2.2

Table 3.2: Factors which influence the level of attachment with a given space

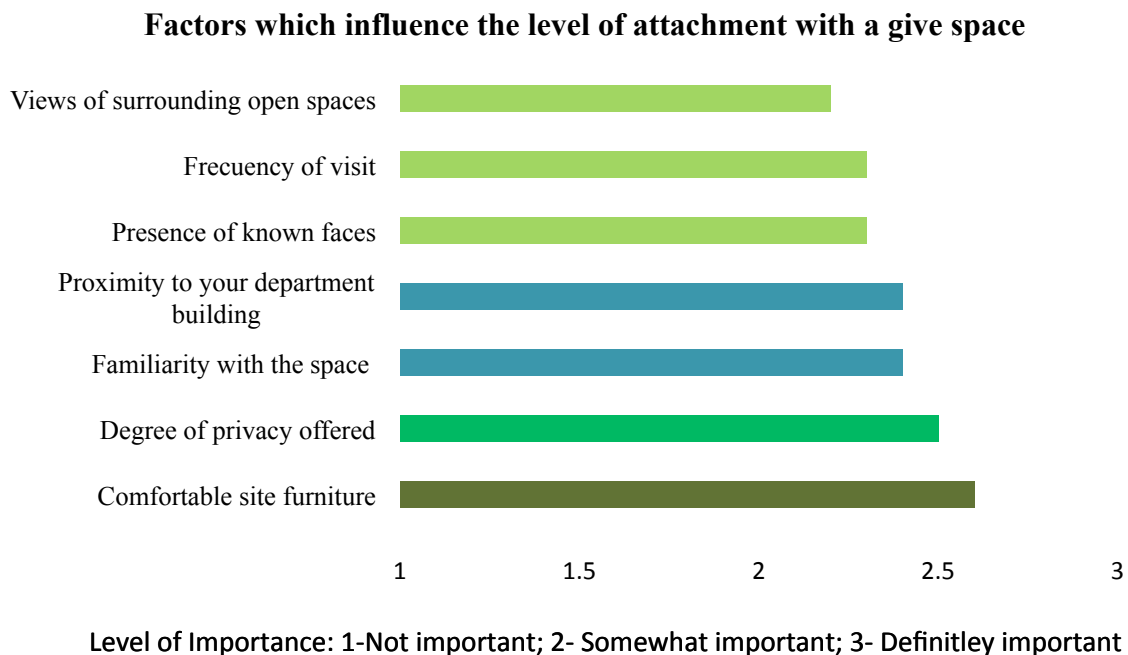


Figure 3.4: Factors, which influence the level of attachment with a given space

Site Specific Questions

The goal of the site specific questionnaire was to understand the following:

1. Student perception of the space.
2. The most ‘popular’ activities engaged in while at Caldwell Hall’s entrance porch and lobby space. (These results are critical in designing to cater to the activities this space is most widely used for).
3. The design features that students would like to see more of in order to render the space ‘user-friendly’ and more sociable.

For the following survey, 43 students were given a Likert scale (a psychometric scale commonly used in questionnaires). When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a agree-disagree scale of 1 to 4 for a series of adjective pairs. Students were asked to rate Caldwell Hall’s entrance porch and lobby space according to an adjective pair. Thus the scale captures the intensity of their feelings. Table 3.3 lists the values of the responses, and the following chart diagrammatically points out the mean value on the given scale.

1. How would you rate Caldwell Hall’s entrance porch and lobby space using the following adjective pairs?

	1	2	3	4		Mean
Inviting	3	10	16	11	Uninviting	2.9
Comfortable	2	12	18	7	Uncomfortable	2.7
Social Space	4	13	15	8	Anti-social	2.8
At Home	2	14	16	6	Foreign	2.7
Secure	13	21	9	0	Unsafe	1.9

Familiar	14	16	8	2	Unfamiliar	1.95
Convenient	13	14	9	3	Inconvenient	2
Offers Privacy	4	7	17	8	Lacks Privacy	2.8

Table 3.3: Adjective pairs

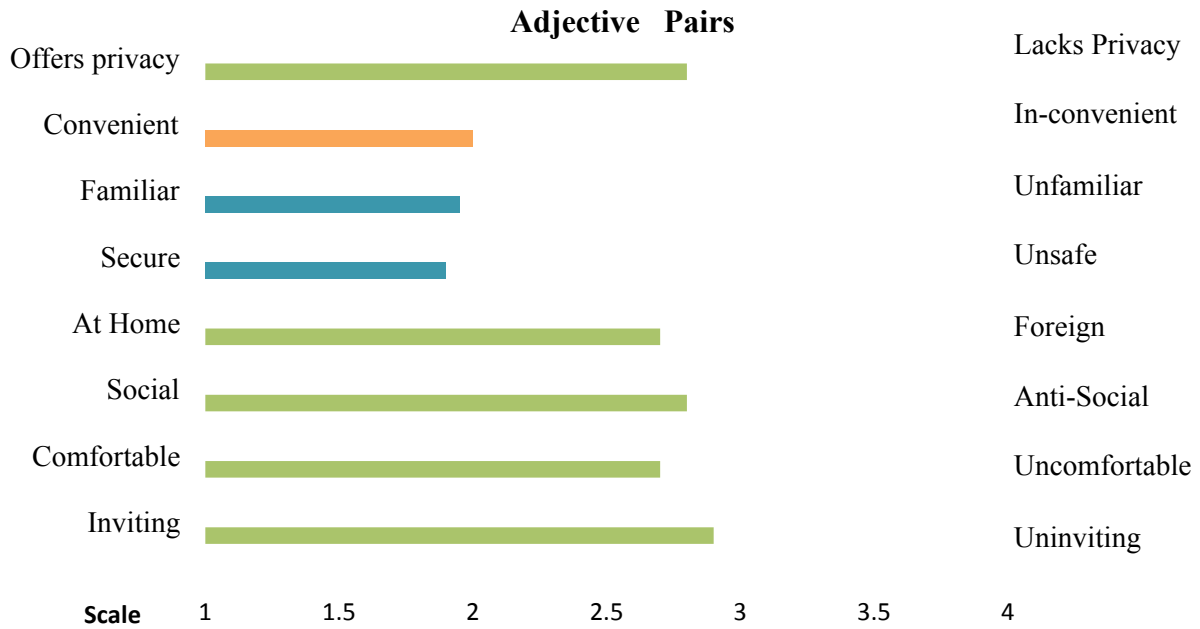


Figure 3.5: Rating of Caldwell Hall’s entrance porch and lobby space using adjective pairs

2. Do you think Caldwell Halls entrance porch and lobby space is a good place to hang out between classes, meet friends / colleagues, study, relax, and for social interaction? 35% of the respondents answered “Yes”, while 65% answered “No”.
3. Do you identify with Caldwell Hall’s entrance porch and lobby space?
28% of the students said that they did identify with the space, one of the common reasons given was this was “Yes, I am here everyday”. The remaining 72% said that they did not identify with Caldwell Hall’s entrance porch and lobby space.

4. Do you think Caldwell Hall's entrance porch and lobby space provides enough, in terms of physical design requirements and comfort for the activities you engage in (hang out/ meet colleagues/ study/ socially interact)?

20% of the students answered, "YES", while 65% of the students answered "NO", and 15% did not respond.

5. Which of the following activities do you participate in while visiting Caldwell Hall's entrance porch and lobby space?

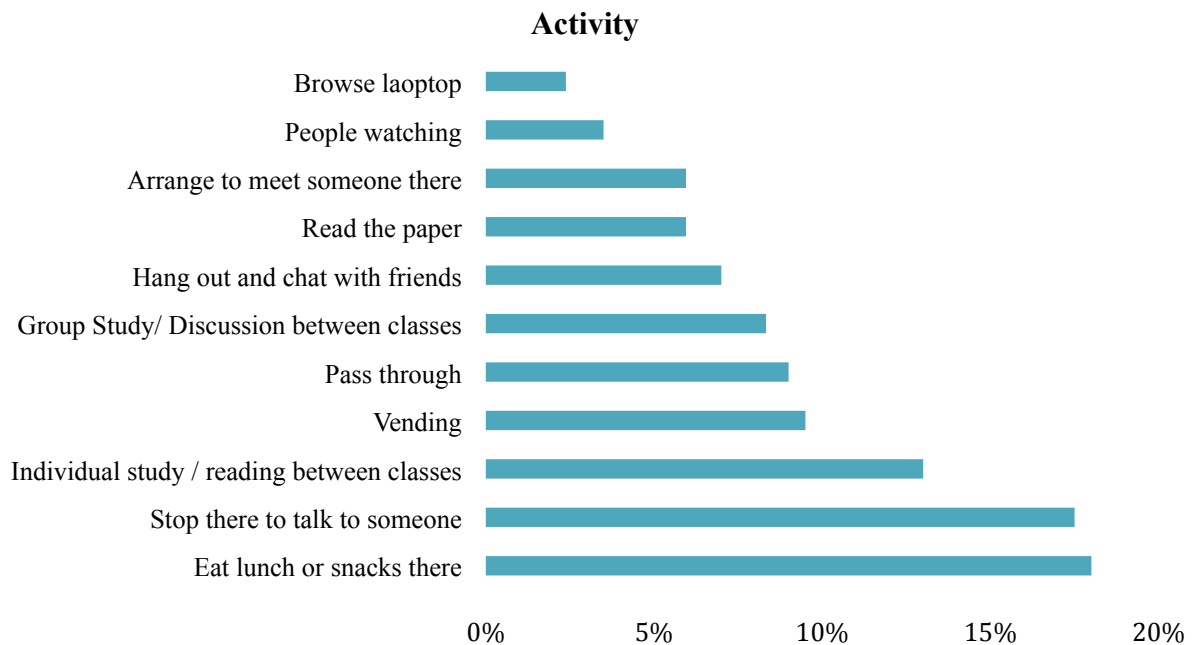


Figure 3.6: Activity analysis chart

6. Which of the following amenities do you find lacking and would like to see more of? Please circle one or more.

- a. Benches – 13%
- b. Tables and chairs-23.3%
- c. Sufficient greenery and trees -17%
- d. Shade-3.8%
- e. Informal seating like steps, ledge, retaining walls and seat walls- 10%

- f. Access to food (nearby café or vending facilities)- 9.7%
- g. Technological adaptability (Wi-Fi, plug points)- 5.8%
- h. Visual connectivity to the surrounding outdoor spaces-10.6%
- i. Physical connectivity to surrounding outdoor spaces-6.8%

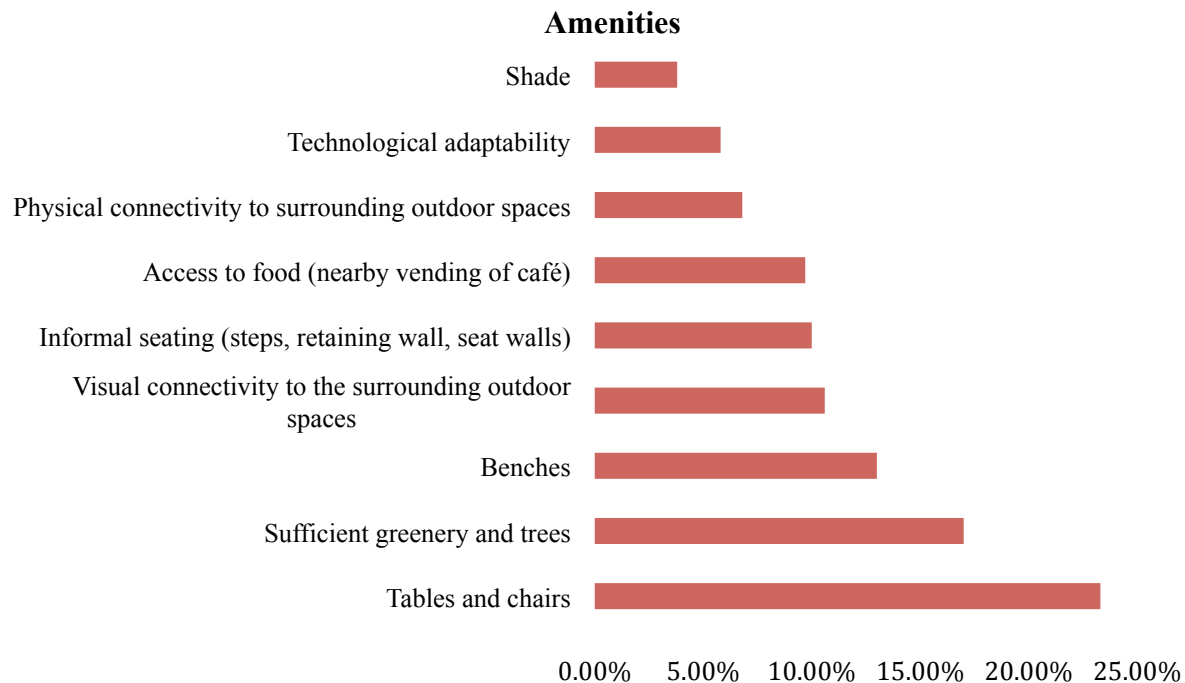


Figure 3.7: Most desired physical design features

7. If you could what change / additions would you make to Caldwell Hall's entrance porch and lobby space?

- Visual Appearance / Aesthetics: 22%
- Addition of a café/ coffee shop: 14.5%
- Addition of more furniture: 42%
 - Tables & chairs: 18.5%
 - Seating: 18.5%
 - Couches: 2.5%
 - Benches: 2.5%
- More Space/ Openness: 19%
- Better access to restrooms: 2.5%

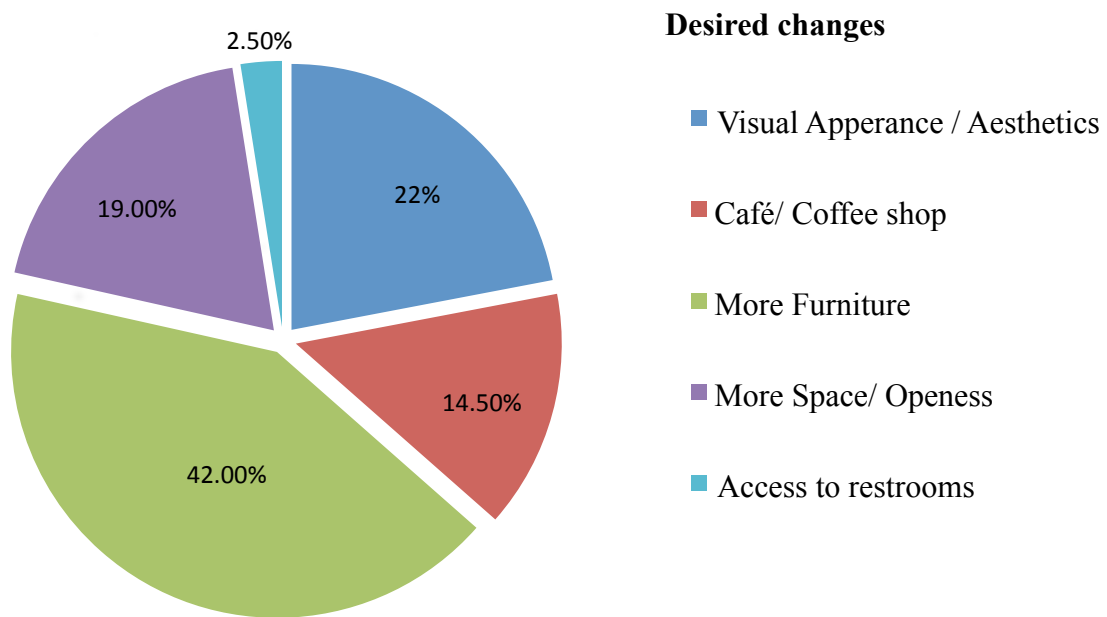


Figure 3.8: Changes desired around Caldwell Hall's entrance porch and lobby space.

Student's responses when asked "If you could what change / additions would you make to Caldwell Hall's entrance porch and lobby space?"

1. "Some place to eat at".
2. "Create a more visually appealing view to the outdoors. And I would like to see more seating that encourages social interaction".
3. "How good it looks, put in a café, get rid of some brick, and add tables / couches".
4. Coffee shop
5. More seating
6. Wider doors/ archway
7. More seats and plants
8. "Need more openness".
9. "In General Caldwell is just an ugly building, not inviting- needs to improve this".

10. “The brick wall is disturbing, it does not inspire or encourage creative thinking”.
11. Tables and chairs
12. Benches
13. Seating
14. Rocking chairs
15. “Remove the walls, expand the lobby into the porch area, windows everywhere, and change the block facing on the interior walls. Modify the elevator space- more openness. Add a café and POD seating”.
16. “Make it look newer”.
17. “Our building lacks exclusive identity”.
18. “Ugly-needs to look better”.
19. “Bigger and access to restrooms”.
20. “More tables and chairs for students to do homework”.
21. “Add more indoor room/ study area”.
22. “More chairs and tables”.
23. “Space”.
24. Size of out-door “rooms”.
25. “Needs more landscaping to show it’s a landscape architecture school”.
26. “I want to be able to interact with people”
27. “More green space”.
28. “More tables and chairs- I often see people sitting on the floor ☹”
29. “Aesthetic value that reflects that it is a design school”

30. “Need more tables and chairs, not so many vending machines that provide the same stuff”.
31. “Offer more informal seating away from the entrances- utilize the existing space at more popular gathering areas more efficiently by providing easier methods of meeting. Something not so drab in color”.

Discussion

Current usage of the space

As per the survey (figure 3.1), the most prevalent use of Caldwell Hall’s entrance porch and lobby space are: waiting for class (41%), studying and reading in-between classes (14%), meeting someone (11%), and eating lunch (11%). It is useful to note that each of these activities have a social aspect attached to them, whether it is waiting for class amongst other students, group study / discussion, meeting a friend, and especially eating lunch. Given that these are the three most prevalent uses of the space, the social nature of these activities could be enhanced by adequately providing the space with physical design elements.

Favorite places on campus

While the question regarding favorite places on campus was not directly related to the space being studied, it helped gain a better understanding of what students looked for in indoor and outdoor spaces and how they develop attachment to various places. When students were asked if their favorite places on campus were indoor or outdoor, the results showed only an 8% difference in the preference of indoor spaces vs. outdoor spaces (54% of the respondents voted for outdoor spaces, while 46% went with indoor spaces). This difference was much less than

expected, as prior studies and research have shown that students preferred outdoor spaces to indoor spaces by a vast difference. For instance, a casual experiment with a large class of Berkeley environmental design students revealed a marked difference between inside and outside. Students were asked to spend five minutes somewhere inside Wuster Hall (College of Environment and Design at Berkeley) “recording stream of consciousness impressions of what they were sensing and feeling; then repeated the exercise outside”. Words inside recorded were “enclosed”, “bored”, “frustrated”, “anxious” and “un relaxed”. When outside the sensations readily surfaced were “quiet”, “calm”, “relaxed”, “peaceful”, “green”, “comfortable”, and “serene” (Marcus and Francis 1998)(p.179).

Figure 3.2 illustrates the most favored spaces on campus, followed by reasons provided by the students in support of their preference. The responses showed that students look for the following qualities in indoor and outdoor spaces respectively:

- When outdoors there is an expectation of beautiful, natural, green and well-landscaped spaces. Students seek quiet, peaceful and intimate spaces. As well, this expectation comes with the desire for a certain level of privacy, provided by plants, trees and sufficient screening. It is evident from the responses that having an architectural feature such as a fountain or water body, automatically attracted users toward the space.
- While indoors students seek a relaxed and comfortable atmosphere that promotes sociability. Indoor spaces, which are spacious, open and have plentiful natural lighting, are the most desired indoor spaces. During a face-to-face interview, one of the student’s stated, “natural light congregates people”.

- From these responses the most common factors that allow students to foster a sense of attachment to a given space and favor that space over others are: the level of sociability that the space offers, the popularity of the space amongst their peers, the aesthetics of the space, the convenience it offers in terms of being able to work, study or hang out. The presence and accessibility to food also plays a major role in contributing to as sense of attachment as does the degree of comfort.

Amenities that affect the positive quality of a space

Question 2A of the broad survey indicates that on a scale of 0 to 3, the three amenities given a highest rating of importance (with a rating between 2.5 to 3) were: Sufficient greenery and trees (2.7/3), Tables and chairs (2.5/3), and Technological adaptability (Wi-fi, plug points) (2.5/3). These three amenities were considered ‘most important’. Table 3.2 lists the percentage and mean values for each amenity; Figure 3.3 illustrates the various amenities in order of increasing importance.

The following set of amenities fell into the second most important category (with a rating that ranges from 2.3 to 2.5). This category comprised of: Benches / Shade / Visual connectivity to outdoor spaces (2.4/3), and Access to food (2.3/3).

Lastly, the amenities that were ranked as ‘somewhat important’, with a rating between 2 and 2.2 were: Physical connectivity to outdoor spaces (2.2/3), and Informal seating (steps, ledge, retaining wall, seat walls).

Based on the statistics from this survey, students give a high level of importance to greenery, landscaping and comfortable site furniture. This comes from a need to have a physically comfortable and visually appealing environment. This fact along with a technologically friendly environment is most sought after by today’s student community.

Factors that influence the Level of Attachment with a space

According to the student responses for question 2B the factor that is most important in adding to their level of attachment with a space is, comfortable site furniture (tables and chairs, benches and informal seating) (2.6/3). Table 3.2 lists the percentage and mean values for each of the factors; Figure 3.4 illustrates the various factors responsible for influencing the level of attachment with a space in order of increasing importance.

The following set of factors ranked as ‘definitely important’ with a rating between 2.3 and 2.5 are: Degree of privacy offered by the space (2.5/3), Proximity to their department (and) Familiarity with the space (2.4/3), Presence of known faces (and) Frequency of visit (2.3/3). Following the need for a comfortable environment, it is evident that students require a degree of privacy while they carry out their daily activities and therefore privacy and space are important factors to consider while designing to encourage a sense of community on campus. Students also are attached to spaces they are familiar with, that they visit on a regular basis and where their friends and peers are.

Adjective pairs

The participants of this survey (site specific question 1) were given a scale of 1 to 4 and asked to rate Caldwell Hall’s entrance porch and lobby space. Table 3.3 indicates the ratings given by respondents for each of the adjective pairs, followed by the mean value for each pair. Figure 3.5 diagrammatically illustrates the mean of each adjective pair on the scale of 1 to 4. The results of this question are useful in understanding student’s perceptions of Caldwell Hall’s entrance porch and lobby space and understanding the elements and characteristics of the space

that possibly informs their perception. Given that the scale ranges from 1 to 4, the mid point of the scale is 2.5. The following list highlights the most notable deviations from the mid point.

Positive deviations:

Secure Vs Unsafe (Mean=1.9; Deviation= .6): This pair showed the highest deviation from the mid point, with 79% of the responses falling below the mid point. It is also notable that in this particular pair of adjectives, none of the student's responses reached the value of 4 (indicating that he/she felt the space was unsafe). Judging by the percentage of favorable responses, it is fair say that Caldwell Hall's entrance porch and lobby space is associated with a feeling of safety and security.

Familiar vs. Unfamiliar (Mean=1.95; Deviation= .55): Following a sense of security, this adjective pair had the highest deviation from the mid-point. 75% of the participant's responses fell below the mid-point, indicating that majority of the students felt a strong sense of familiarity with Caldwell Hall's entrance porch and lobby space. Given that this was a place students returned to everyday, the development of a sense of comfort and familiarity is inevitable.

Convenient vs. Inconvenient (Mean=2; Deviation=. 5): The third most favored perception of the space is its convenience. With nearly 70% of the student's ratings falling between 1 and 2.5, it is evident that Caldwell Hall's entrance porch and lobby space is viewed as a convenient space by majority of its students. This is possibly due to its prime location, proximity to other buildings and downtown, surroundings, handling capacity and the availability of food and drink options.

Negative deviations:

Inviting vs. Uninviting (Mean= 2.9; Deviation= .4): The highest negative deviation found was that Caldwell Hall's entrance porch and lobby space was perceived as 'uninviting'. 67% of the responses favored the 'uninviting' aspect of the space. From students' responses to the questionnaire the most common reason for this was the lack of aesthetic appeal the building exteriors and lobby space had for its users. This is evident by statements such as "In General Caldwell is just an ugly building, not inviting- needs to improve this".

Offers privacy vs. Lacks privacy (Mean=2.8; Deviation= .3): The general trend in the data indicates that students feel a 'lack of privacy' within the space. Possible reasons for this are the continuous halls and barren nature of the lobby space, as well as the lack of openness inside the lobby. The inclusion of subspaces and the strategic layout of furniture could break the space up and marginally improve the degree of privacy offered.

Social vs. Antisocial (Mean=2.8; Deviation= .3): While a number of student's use this space to congregate, wait for class and to meet somebody, it is a space with high potential that unfortunately does not promote sociability. This was felt by more than half of the respondents of this survey. Some of the responses in the questionnaire strongly support this finding. For example: "I want to be able to interact with people" and "Create a more visually appealing view to the outdoors, and "I would like to see more seating that encourages social interaction" are three example.

Comfortable vs. Uncomfortable (Mean=2.7; Deviation= .2): While the deviation from the mid point in this case showed only a .2 rise, the percentage of students that rated the space 'uncomfortable' was 64%. Through the interviews and questionnaire, students expressed that the space is uncomfortable due to the lack of openness within the building, lack of comfortable

seating, insufficient number of tables and chairs to study/read, difficulty to do homework efficiently and difficulty working in group settings. Most of the time students are often found sitting on the floor reading, studying, eating, chatting or simply waiting. This fact is supported by the following comment made by a student in one of the questionnaires “More tables and chairs. I often see people sitting on the floor ☹”.

At home vs. Foreign (Mean=2.7; Deviation= .2): The responses for this adjective pair showed the most even distribution amongst the entire set, with 75% of the responses found to be geared toward the mid point. This is a reasonable balance given that Caldwell Hall hosts students from other departments and visitors, apart from the Landscape Architecture student population. In order to get the best assessment of the space, data was collected from a mixture of students from other departments as well as students of Landscape Architecture, hence the space might be considered as a visiting space and not necessarily as a home base to all students.

Activity Analysis

While, Figure 3.6 shows the complete list of activities in order of increasing popularity, this discussion highlights the most popular activities. The four most popular activities were found to be: Eating lunch (18%), Stop to talk to someone (17.5%), Study between classes (13%), and to use to vending machine (9.5%).

Most desired physical design features

The physical design features which are lacking and which students desired to see more of are represented in figure 3.7. The features found to be ‘most wanted’ by majority of the respondents are: Tables and chairs (23.3%), Greenery and trees (17%), Benches / Seating (13%).

Therefore a total of 46.3% of the participants desired more site furniture (including 10% that desired informal seating like steps and seat walls). The features which derived the lowest percentage of responses are: Shade (3.8%), Technological adaptability (5.8%), and Physical connectivity to outdoor spaces (6.8%).

Desired changes / additions to Caldwell Hall's entrance porch and lobby space

Figure 3.8 illustrates the breakdown of the changes desired around Caldwell Hall's entrance porch and lobby space. In question 7 of the site specific survey, students were asked "If you could, what change / additions would you make to Caldwell Hall's entrance porch and lobby space?" The question was left open-ended and did not provide a fixed list of options to select from. Students were given the freedom to write down their thoughts and ideas. The responses that surfaced showed a striking trend and a commonality in the desired changes. The following list surfaced as the most 'desired' additions / changes to include in Caldwell Hall's entrance porch and lobby space:

Addition of more furniture: Interestingly the majority of students who took part in this survey responded that they would like to add more furniture around the space. With a total of 42% of students who favored the addition of more furniture, 18.5% responded that the space needed "table and chairs", 18.5% responded that the space needed "more seating", 2.5% responded, "benches" and 2.5% responded, "couches". Some reasons given for these were: that the students needed "some place to eat at" and "more tables and chairs for students to do homework". Students wanted "to see more seating that encourages social interaction", another reason given was to include more informal seating away from the entrances, in order to "provide

for easier methods of meeting”. Due to the lack of furniture around Caldwell Hall’s entrance space another reason mentioned was, that students were “often seen people sitting on the floor”.

Improve the visual appearance / aesthetics: 22% of the respondents expressed their feelings about the lack of aesthetic appeal posed by Caldwell Hall’s entrance porch and lobby space. While interviewing students, 10-12 felt that Caldwell Hall lacked the ‘identity’ of a design school. One of the comments made in the questionnaire was that the entrance to Caldwell Hall lacked visual appeal and needed to improve its “Aesthetic value that reflects that it is a design school”. Due to this, a number of students perceived the space as ‘uninviting’, one of the respondents wrote “In General Caldwell is just an ugly building, not inviting- needs to improve this”.

More space and openness: 19% of the students that took part in the survey felt that Caldwell Halls entrance porch and lobby space needed to be more spacious and open. Some of them expressed that the space was crowded at certain periods of time, wherein there was insufficient space and furniture to use the space comfortably. This perception also comes from a desire for a certain amount of privacy and space for each individual or a group of students. This can be achieved if Caldwell Hall’s entrance porch and lobby space is articulated in a better manner, ensuring a ‘sense of space’ for its users.

Summary

The two survey methods employed in this study have attributes that make them particularly suitable as an evaluation for design study. The questionnaire serves a dual purpose: it not only provides a means for user response, but also serves an educational role to inform future design process.

The un-obtrusive observation used in this study is particularly important to provide a crosscheck to the non-random questionnaire data. As well, the recording of behavior and photographs can be returned to again and again for additional or more detailed analysis.

The observations made through this case study as well as the survey, support the theory and ideas that this thesis is founded on. This thesis argues that physical design does have an influence on the 'sense of community' around campus spaces. The theory discussed in chapter two summarizes four key components that have an impact on a sense of community (i.e., familiarity and continued experience, activity, identity and physical design). Interestingly, the data collected from the responses to the questionnaire and the interviews indicate the same components are regularly mentioned and identified as key factors related to the quality of the space.

CHAPTER 4

BEHAVIOR ANALYSIS ON CAMPUS

Chapter Four discusses the findings from the behavior mapping exercises pre-design intervention, as well as post-design intervention. The goal is to establish themes in behavioral patterns and to understand the change that occurs after slight additions and alterations are made to the physical environment.

Pre-Design Intervention

Behavioral mapping exercises were conducted at Caldwell Hall's Entrance porch and lobby space. The study was conducted over ten consecutive working days at three time slots per day, morning (9 am- 11am), afternoon (12 pm- 2pm) and evening (3 pm – 5pm). During each of these time slots, three to four behavior maps were generated.

Peak times

The peak times during which there is a drastic increase in traffic flow and an increased volume of students were found to be: 10:30am to 11am, 12:00pm to 12:30pm, and 3:00pm to 3:30pm. During these time slots there were large numbers of students either leaving class or entering the building to wait for a class. During these times, students were found to engage in interaction with fellow students. Approximately 20 to 30 minutes before class starts, there is a burst of activity in Caldwell Hall's entrance porch and lobby space, with a number of students

socially interacting, studying in groups and individually, waiting for friends, reading the paper, refueling on snacks, eating lunch or talking on the phone. Approximately 25 to 35 students use the open space around the building and the entrance porch and 50 to 60 students use the entrance hallway and lobby space. During these peak times the halls are overcrowded with people standing around haphazardly and many students sit on the floor, as there is insufficient seating. The space though large, is not properly designed to accommodate students' needs. While class is in session, and at times during which there is less traffic through the spaces, the average number of people is 15 to 20 students outside Caldwell Hall, and 7 to 15 students inside the building.

The following discussion describes the current standing patterns of behavior that occur within the study site and the accompanying plan (figure 4.1) delineates the various sub-spaces within Caldwell Hall's entrance porch and lobby space that will be discussed.

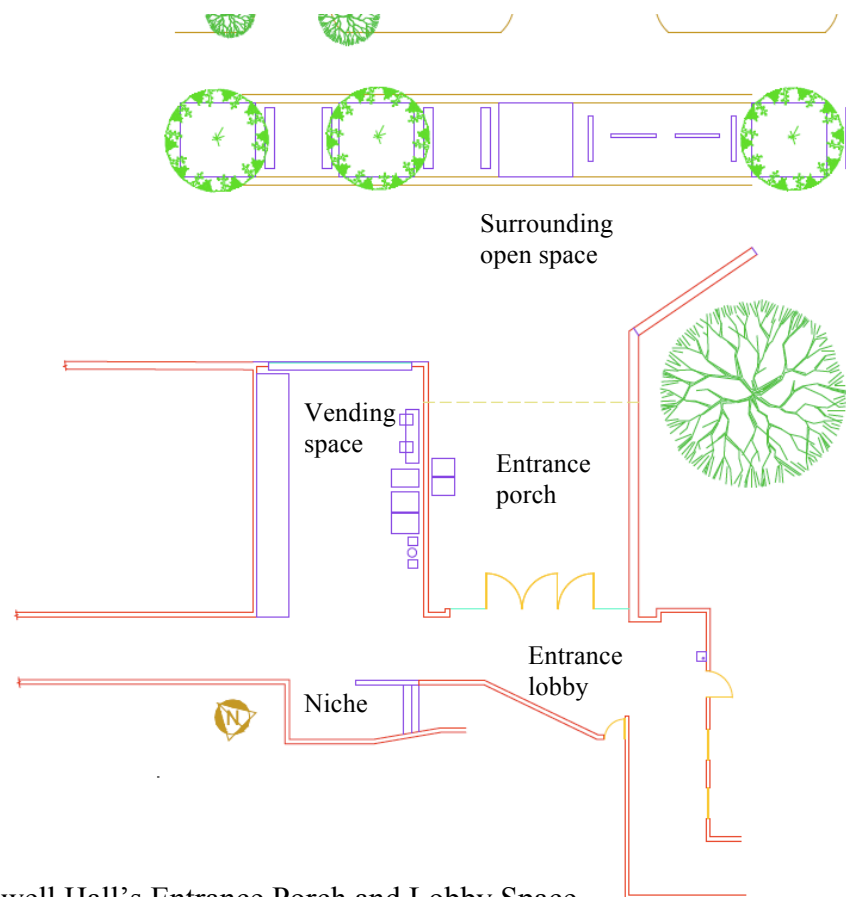


Figure 4.1: Caldwell Hall's Entrance Porch and Lobby Space

Surrounding open space and Porch

The open space surrounding Caldwell Hall's entrance is used extensively during the afternoons and mid-morning to eat lunch, relax, talk to friends, read or study, use laptops, discuss homework, and get some sun (when the weather permits). The opportunity the outdoors provides for people watching is one of the factors that drives students to sit outside while they study, work, or simply relax (refer figure 4.2). Students studying in pairs and exchanging notes commonly use the benches before and after class. A number of students come together to talk after class and end up having to stand in groups outside to interact (refer figure 4.2). This space is also used as a 'waiting' area to meet those coming out of class.

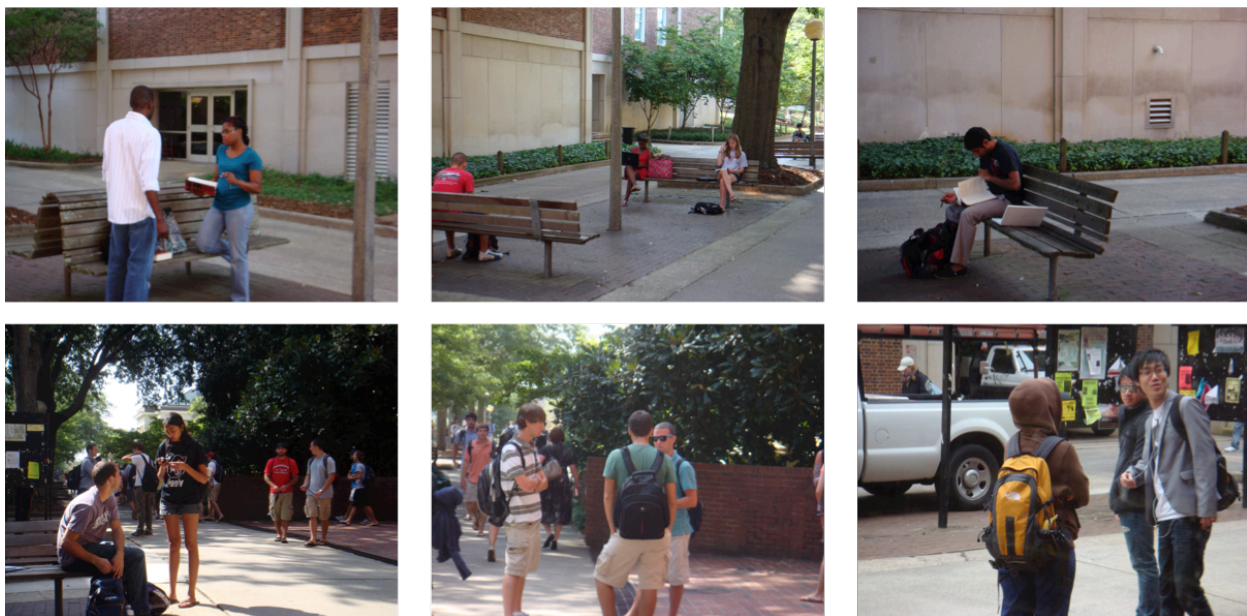


Figure 4.2: Caldwell Hall: Surrounding open space

Caldwell Hall's porch is a popular location to hang out before, after and between classes. At 12pm when class is out, students leave the building for lunch and use the porch to hang out, talk to friends or wait for someone, before heading out to lunch. If the entrance porch provided comfortable seating for students to hangout, it would be a positive step toward establishing a vibrant social situation. The retaining wall at the porch is frequently used to sit on and hang out

with friends, talk on the cell phone, smoke, use the laptop, and read the paper. It serves as a popular form of informal seating. Students lean against or sit on the retaining wall to talk and hang out with one another while looking for possible seating (refer figure 4.3).

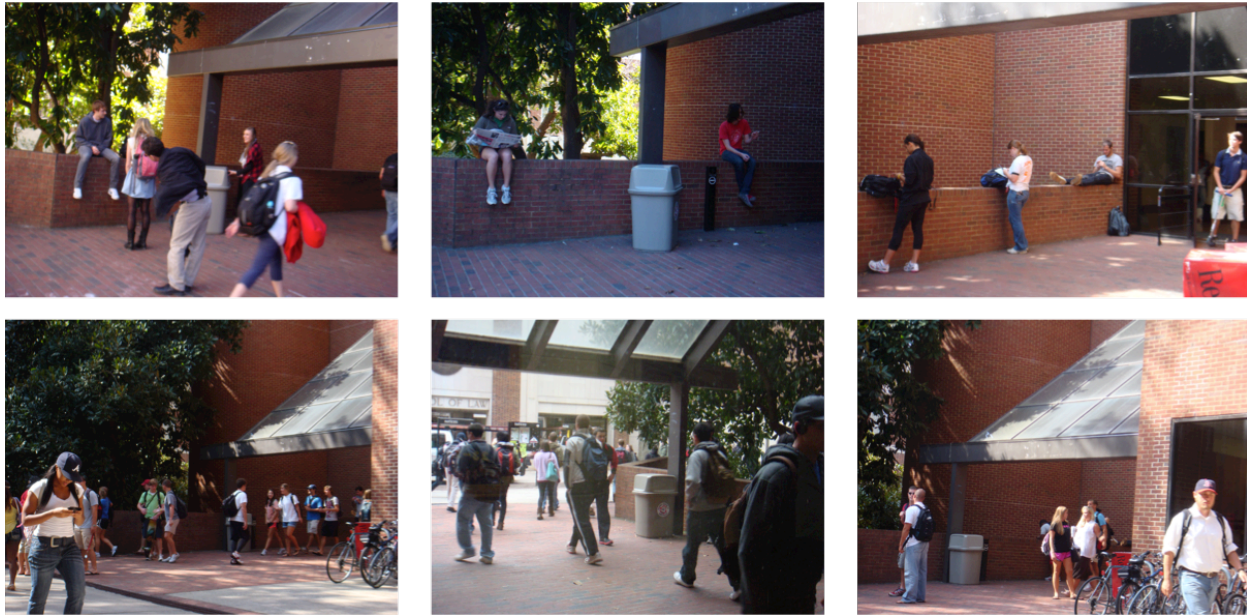


Figure 4.3: Caldwell Hall: Entrance Porch

Entrance Lobby

Upon entering Caldwell Hall, one would observe students sitting on the floor (studying, reading or trying to interact with friends). This is not very welcoming for those entering the building or very comfortable for those inside the building, trying to find some space to sit (refer figure 4.4).



Figure 4.4: Caldwell Hall: Main Entrance

The Pre-design intervention found a number of students in the entrance lobby were waiting to meet someone and since there is no space to hang out and meet, Caldwell Hall's entrance is used simply as a 'meeting point' and is not utilized as a sociable space.

Vending space

The availability of food is a major attraction of students to the space. As well, the wide and recessed space is offset from the main corridor and provides students space to hang out. The vending machines are used through the day. People often run into someone they know and stop to talk to them (refer figure 4.5).



Figure 4.5: Students interacting at the vending space between classes

The vending space is often used during class by students to get food and in between classes to talk and hang out in groups, while standing or sitting on the floor. The windowsill is often used to sit on while interacting in groups, while eating lunch / snacks, and while talking on the phone (refer figure 4.6).



Figure 4.6: Students using the windowsill as a form of seating

Only one study desk and two chairs occupy the vending space and are used by students to do their homework and study before class (in groups and individually, refer figure 4.7). This is the only form of seating available within Caldwell Hall's entrance porch and lobby space. Out of all the participants in this study, 37% of the students complained that there were only two chairs and one table to use.

Typically one person sitting attracts another person to stop begin a conversation. Due to a lack of seating options, they sit on the floor or use the windowsill to sit and talk. In addition, when there were groups of two or more students' interacting, it always attracted more people toward them, as shown in figure 4.7 (bottom left hand corner).



Figure 4.7: Study tables at the vending space

Interestingly, on at least 15 to 20 occasions, students orient the chair to face the window and engage in people watching as they continue on with their activities (refer figure 4.10).

Niche area

Since this space is located right in front of the main lecture hall and since this area is somewhat enclosed, it is used to study most of the time. Students sit on the floor and lean against

the wall while reading the paper and studying. The steps leading out of the lecture hall is a popular informal seating area used to study. Along the corridor, students sit on the floor and lean against the wall to study, or stand in groups to socialize (refer figure 4.8).

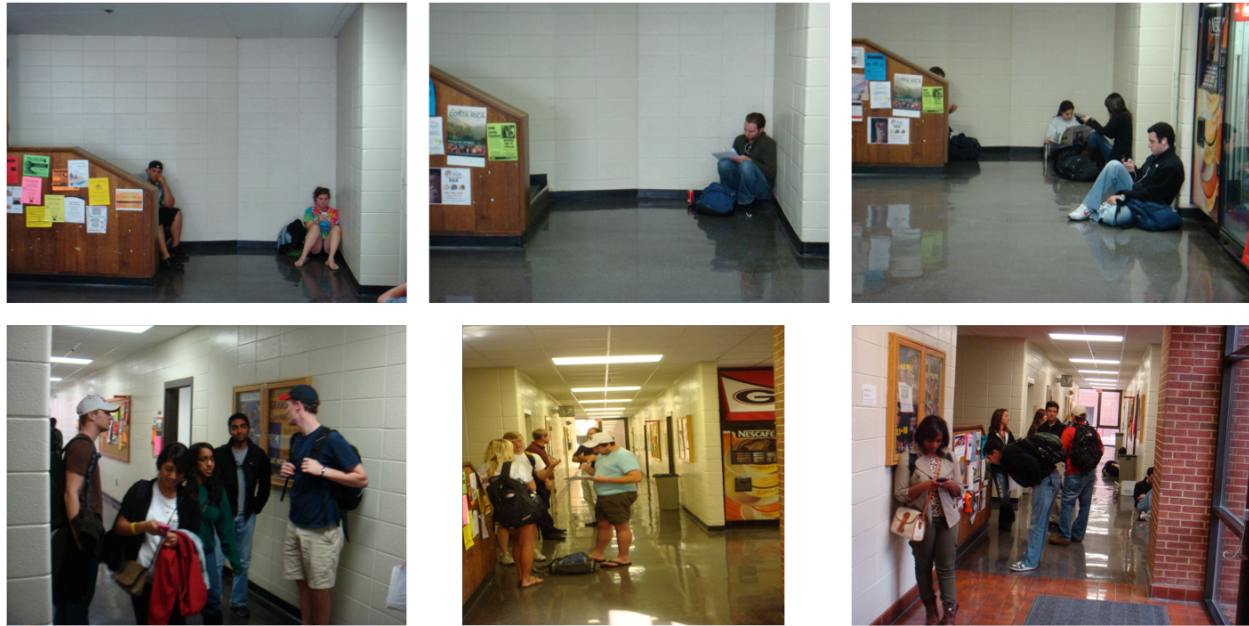


Figure 4.8: Usage of the corridor and niche area

Discussion of findings from pre-design intervention behavior analysis

There is a marked difference between the way various campus spaces function, which is based on their layout, shape, level of comfort, degree of privacy, availability of site furnishings, and through the sense of familiarity which one feels with the given place. The layout of furniture often influences the level of interaction between users. For example the benches outside Caldwell Hall's entrance porch often have one or more people sitting by one another, but not interacting at all. On the other hand when students do tend to interact there is always one sitting down and the other standing or kneeling in order to engage in conversation (as shown in figure 4.9). Therefore, this layout does not offer the best opportunity for social interaction amongst its users.



Figure 4.9: Influence of furniture layout on the level of social interaction

It is evident from the behavior analysis on Caldwell Hall's entrance porch and lobby space that students who sit alone, enjoy and need a sense of privacy and space. Nevertheless, they seem to want this sense of space within a community setting (refer figure 4.10). This behavior comes from a need for affiliation and sense of security of being connected to the community. While there are a number of places on campus that could provide for our needs, most are seldom used.



Figure 4.10: The need for a sense of privacy while remaining part of the community

Caldwell Hall's entrance is located off one of the prime corridors of UGA's North campus. Although, students run into people they know here, the linear layout of the site furnishings and landscape elements direct a mundane and linear pattern of movement that provides little opportunity for social interaction and community involvement.

As well, those who come together after class to hang out and interact, have nowhere to sit or stand and have to move to another space due to the existing conditions (refer figure 4.11). Thus, the physical environment works as an obstruction to the development of social interaction.



Figure 4.11: Lack of physical design features as a deterrent to sustaining community interaction

In summary, Caldwell Hall's entrance porch and lobby space is a prime and popular location on campus that is used by a number of students from The College of Environment and Design as well as other departments around North Campus. Findings from the behavior mapping exercises show that there are attempts to socialize and interact (refer figure 4.12). People are most often trying to find a 'space', 'territory', or 'zone' for themselves and their peers. This is especially true when the desired features do not exist, and the physical environment can satisfy their needs. This was obvious by the manner in which students looked for forms of seating on the floor, retaining walls and the windowsill as a means to carry out their activities (reading, studying or socially interacting, refer figure 4.13).

This points toward the idea that there is a need amongst the student community for social interaction, and in order to satisfy this interaction they seek cues from the physical environment.



Figure 4.12: Attempts toward social interaction around Caldwell Hall's entrance porch and lobby

People have certain expectations of the physical environment and if the environment meets these needs people would certainly use them.



Figure 4.13: Students using the physical environment to satisfy various needs

Due to the lack of well-planned community spaces, students are suffering a loss of connectivity with one another. Thus, many behaviors happen in an individualistic and isolated manner and even when the community tends to come together, the physical environment does not provide the physical design elements to hold it together for a sustained period of time (refer figure 4.14).



Figure 4.14: Loss of connectivity: Various activities taking place in an isolated manner

It is evident from these observational studies that sufficient interactive, study, social and gathering space is needed between classes both inside and outside Caldwell Halls entrance space. The following design intervention provides a change to the space, based on the behavior observations from the pre-design intervention and on the physical limitations of altering the actual built environment. The intervention enhances basic student needs, which allows opportunity to observe how the changes influence patterns of movement and social behavior.

Design Intervention

The design intervention was conducted over 5 consecutive working days, i.e. 11th to 15th April 2011. Behavior mapping exercises followed similar time periods as the pre-design intervention behavior mapping exercises. This ensured that the traffic flow through the building and the volume of usage of the space remained more or less similar thereby, eliminating bias that might exist. During each of the time periods, three to four behavior maps were generated.

Limitations

The challenge facing this study was the feasibility and extent to which physical design alterations could be made. Since no permanent and drastic changes could be made to the space, the study was carried out with the resources available and permissible to use. This limited the extent to which this thesis could test physical design influences on community. Nevertheless it provides valuable and measurable feedback, which serves as a starting point to analyze the influence physical design elements have on community interaction.

Elements comprising the design intervention

After analysis of the student feedback, the results (figure 3.8) indicated a 42% majority of students desired more furniture (tables and chairs, seating and benches) to work, study, and interact. This included adding study tables and chairs in addition to the existing study table within the space, adding an additional 16 chairs to form casual seating inside the building and around the porch space, and adding 4 solid blocks / pedestals to accommodate a variety of uses.

This design intervention study also incorporated a class project carried out by twelve BLA (Bachelor of Landscape Architecture) students from Professor Cecile Martin's design

studio. The project involved setting up of ‘installments’ in the form of thresholds, portals and gateways, around Caldwell Hall’s entrance porch and surrounding open space. The installments were built using reclaimed materials found in the studio, which were manipulated and recycled into a sculptural form that occupied and announced a certain ‘space’. These installments were set up in three locations, around Caldwell Hall’s main entrance, within relative proximity to one another. The installations added another layer of interest to the intervention study, where the behavior associated with the presence of the ‘installments’ was analyzed.

Layout and design of the intervention

The design intervention incorporated two different layouts for the study. The initial layout comprised of the site installments (as described above), solid blocks in the form of pedestals and additional site furniture. The modified (second) layout excluded the site installments and utilized the solid blocks and additional site furniture to form more defined social spaces (by changing the arrangement of furniture and varying the use of the solid blocks, refer figure 4.15).

The three site installments were set up in front of Caldwell Hall (refer figure 4.15). The first installment was set up along the walkway leading to Caldwell Hall and depicted an archway with an arrow on the ground leading to the second structure; the second installment was set up in front of Caldwell Hall’s entrance porch with parts of it overflowing into the entrance porch and along the exterior walls of the building. This installment was designed to be interactive in nature, consisting of a series of lines that connected visually when viewed through a frame like structure. The third installment was located in the midst of the main corridor and between Caldwell Hall’s entrance porch and the Law school. This installment displayed the look of a rustic and

naturalistic portal.



Figure 4.15: Site installments outside Caldwell Hall

Initial furniture arrangement

In addition to the three site installations, the initial furniture layout consisted of two additional study tables and chairs facing each other and were set up alongside the window in the vending space, a couple of chairs in a circular layout at the center of the vending space, two chairs in the niche area, two chairs alongside the lecture hall, three chairs in front of the main entrance, and six chairs placed in three's along the opposite corners of entrance porch. The solid blocks were used as pedestals for the initial layout, in order to allow the users to interpret their own use of these blocks. One of the large pedestals was placed in the entrance porch, the second was placed outside the lecture hall in the main entrance hallway; the other two were placed opposite one another framing the entrance to the vending space. The following plan (figure 4.16) illustrates the initial layout of the design intervention.

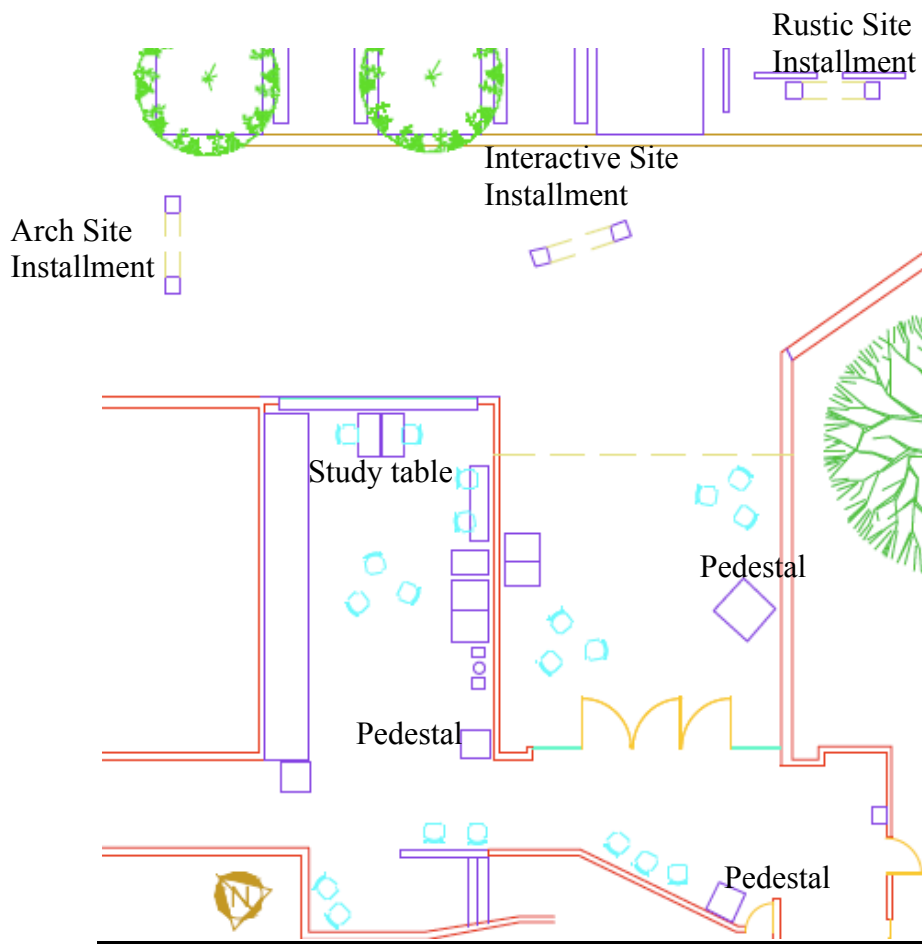


Figure 4.16: Design intervention: Initial Layout

Findings from design intervention initial layout

Given that the number of users and the traffic flow through the building remained similar to that as the pre-design intervention study, the following description outlines the changes that were observed due to the presence of the site installments and the alterations made to the indoor and outdoor spaces of Caldwell Hall's main entrance space.

There was a marked difference in the social dynamics of the space surrounding Caldwell Hall's entrance due to the presence of the site installments. The site installment placed in front of Caldwell Hall's entrance porch gained the most attention, due to its interactive nature. The 'arch like' installment, furthest away from the other two and placed in a linear format, was noticed but did not cause any change in the pattern of movement and didn't encourage social interaction.

The ‘interactive’ site installment brought about a large increase in the level of social interaction around Caldwell Hall’s entrance porch. It served like a magnet to passers by, drawing strangers together to engage in conversation with one another (refer figure 4.17). The findings from the behavior maps indicate that there was continuous social interaction taking place in front of this installment throughout the day. It is fair to say that the presence of an interesting or interactive feature certainly induces social interaction amongst those surrounding the space or simply passing by. The third ‘leaf-like’ installment also raised significant curiosity and interest amongst the users and passers by of the space, due to its rustic and mysterious aesthetic appeal (refer figure 4.18). The presence of the installments afforded an increase in the number of users by approximately 10 to 15 people during each time period. There was an overall increase in outdoor activity and level of interaction especially during the non-peak times, as compared to the pre-design intervention study. Figure 4.17 illustrates the described behavior.

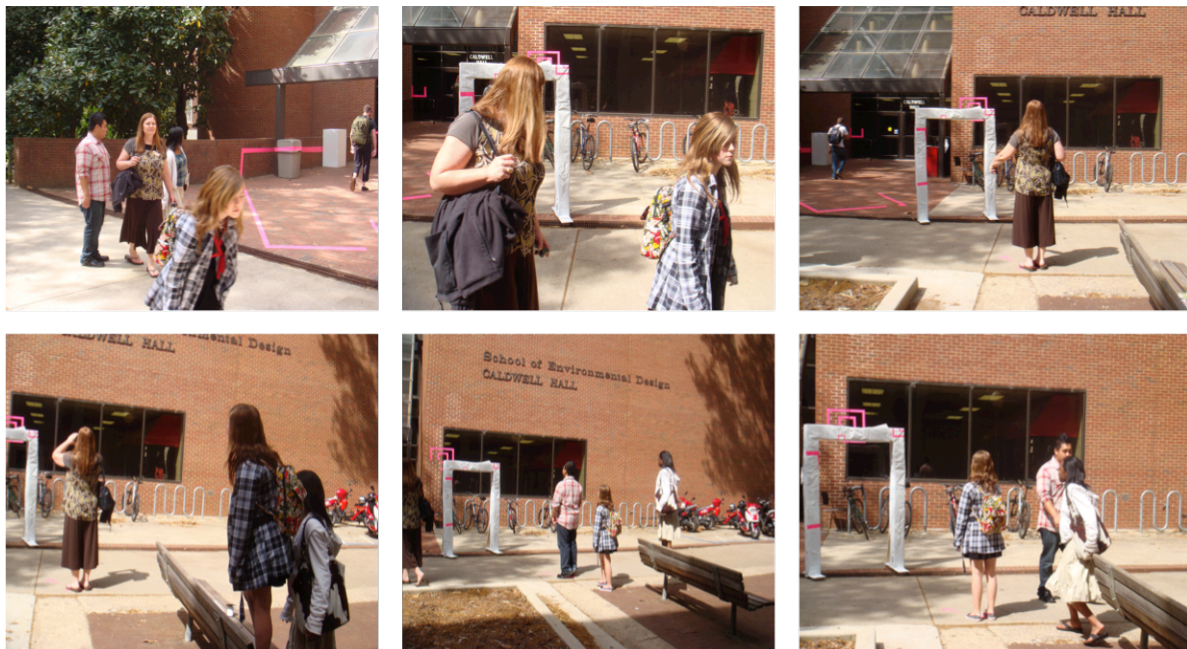


Figure 4.17: Influence of the interactive installment on patterns of movement and behavior



Figure 4.18: Rustic installment

Effect of installments on the surrounding open space

The most noticeable changes in the open space surrounding Caldwell Hall's entrance porch was the increased level in activity during the non peak times, as compared to the pre-design intervention data. There were approximately 20 to 30 more students chatting on the benches, viewing the site installments, eating lunch, contemplating the installments and enjoying the outdoors due to the heightened activity and energy outside (refer figure 4.19).

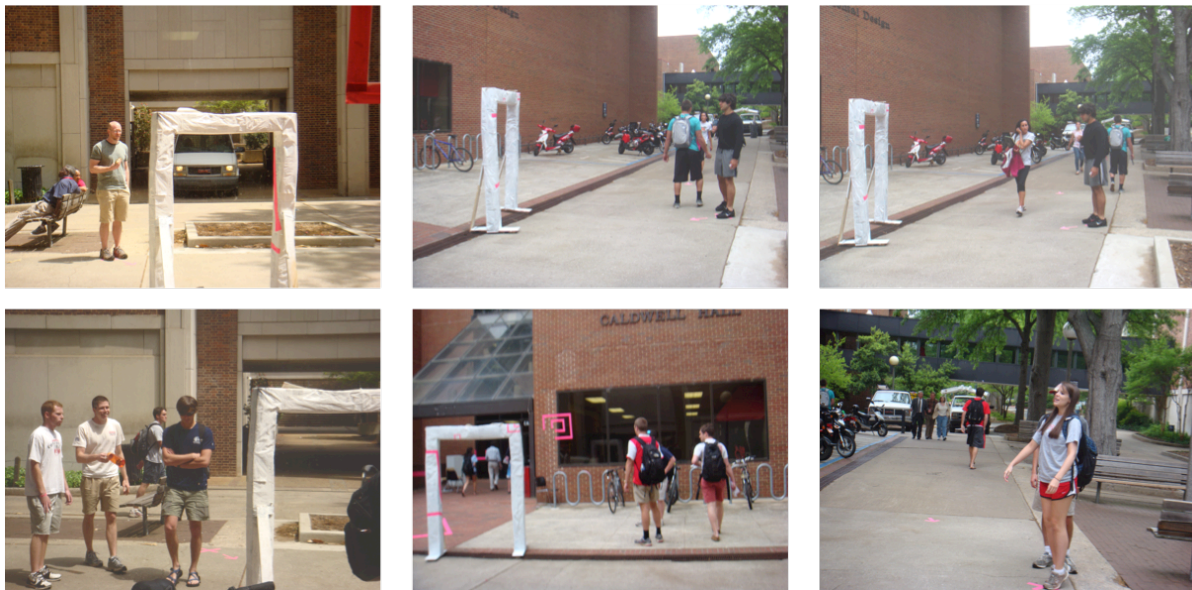


Figure 4.19: Influence of the site installment on social interaction

During peak times and at lunch there were a number of people talking around the installments and interacting on the benches. Due to insufficient space, a number of students were kneeling on

the ground or standing in front of the benches in order to continue interacting with their friends (refer figure 4.20).



Figure 4.20: Increased level of community interaction outdoors

Entrance porch

In addition to the interactive site installments, six chairs were added to the entrance porch in groups of threes, and a large block was placed vertically as a pedestal against the retaining wall. Students looked curious about the presence of these objects and often looked at the pedestal closely, but it was barely used or touched. A handful of students used it to lean against while talking on the cell phone or used it as a surface to temporarily place their books (as shown in figure 4.21).



Figure 4.21: Use of the vertical pedestal

During times of peak traffic through the building, students exchanging notes after class and discussing class work used the chairs in the entrance porch. Even so, it was not heavily used to hang out at for a long period of time. The majority of users of this space stood around the entrance porch socializing and used the retaining wall as a seat. During each time slot, approximately 2-3 students were found using the seating in the entrance porch to talk on their cell phones (refer figure 4.22).



Figure 4.22: Entrance Porch: Design Intervention (initial layout)

Entrance hallway and lobby space

The seating around the entrance hallway and lobby served the needs for students to study, wait for class, wait to meet someone and to talk to friends. This seating eliminated the need for students to sit on the floor. The pedestal that was placed outside the lecture hall, similar to the one in the entrance porch, was looked at curiously but went unused.



Figure 4.23: Entrance lobby: Design Intervention (initial layout)

Additionally, the chairs placed alongside the main lecture hall and in the niche area were used for quieter, individual purposes. These were used by an average of 3 students during each time slot, especially before and in-between classes to read and study individually.



Figure 4.24: Niche area: Design intervention (initial layout)

Vending space

The study tables placed facing each other along the window recorded the maximum usage in this space. Each day that data was collected, an average of 20 students used the tables through the day, especially 20 to 30 minutes before class. During peak times and in between classes, these study tables were in constant use, which suggests that this space requires more study, reading and lounging space. The tables were often used for individual and group study sessions, which included students in groups of two or threes. Because of its location by the window and its orientation (tables were facing one another), it afforded both social and studious uses. The orientation and layout of these tables encouraged conversation and interaction amongst its users; this was especially evident when two users occupied the space for their individual purposes and were subsequently found engaged in conversation (figure 4.25).



Figure 4.25: Study tables: Design intervention (initial layout)

Interestingly, the chairs set up in the center of the vending space were used only temporarily (between 5-10 minutes) as students waited while heating their food, socializing or eating, but the chairs were not used at a comfortable ‘hang out’ zone for an extended period of time. This was due in part to the fact that the layout offers little privacy and is left open, rendering it slightly formal and uncomfortable to use (refer figure 4.26).



Figure 4.26: Vending space: Design Intervention (initial layout)

Discussion of observations from the design intervention- initial layout

The presence of the installments created opportunity and reason for social interaction, as well as causes passersby's to stop and become a part of the social environment. Having something 'new' and interesting, placed at 'key' social spaces on campus is sure to arouse curiosity, facilitate interaction and physically manifest community around that given space. Also, in order to function as installments that drive socialization, it is important that the displays or objects are noticeable to students; otherwise people tend to continue along their own path. This observation was made due to the lack of interest observed around the arch-like site installment as well as the poor use of the vertical pedestals. Therefore, having an interesting and interactive feature attracts people, instigates curiosity, while simultaneously encourages conversation and interaction amongst its users.

While having the chairs out in the porch was useful for some to temporarily interact and exchange notes or talk on their mobile phones, it did not create a change in the pattern of movement or a create a noticeable change in the social setting. The solid blocks, when placed vertically as 'pedestals' served almost no purpose. This is presumably due to its very formal appearance when placed vertically. They aroused interest and curiosity, however they did not take on any significant role in the physical setting and generally went unused. This behavior could also be due to the unfamiliarity associated with the new objects and furniture around the space. People tend to react and use objects that have been around and that are comfortable to use. Sometimes when new objects are incorporated, which are not suggestive of any particular use, people often hesitate using them.

An interesting observation made from the furniture arrangement was that there are certain types of behavior associated with each of the sub-spaces within Caldwell Hall's entrance porch

and lobby space. For example, the chairs placed immediately in front of the entrance seem to have been used for more social purposes such as: to wait for someone, talk on the cell phone, or to interact with a friend. The availability of seating in this space provides the opportunity for students to meet and continue socializing, as opposed to having to stand around the lobby. This is in contrast to the chairs around the lecture hall / niche area which were used for more studious purposes, to sit and study or read before class. Therefore, it seems a certain behavior/ activity is associated with a particular location. This is an unspoken trend and a common pattern of behavior. Interestingly, the tables placed along the window in the vending space were used to study, as well as to socialize, whereas the chairs at the center of the vending space were hardly used at all.

The take home message from this observation is that the physical layout and environment does provide cues to its users and has the power to influence and direct behavior in many ways. Based on the use intended by the designer, he or she can manipulate the physical environment to encourage the desired type of behavior. The findings from the initial layout of the design intervention were interesting, as they indicated that certain spaces and design features were utilized while others were not used at all. This observation informed the design of the 'modified' layout, which sought to collect data that would help understand the ways in which a change to the layout could alter behavior.

Design intervention- modified layout

The modified layout comprised of a simple shift in the orientation and placement of the furniture and the solid blocks, and excluded the site installments. The poor use of the vertically oriented pedestals, the seating at the entrance porch and the seating at the center of the vending

space, motivated a change in the layout of the intervention. With the vertically placed pedestals bearing no use, the solid blocks were placed horizontally against the retaining wall, with the seating arranged around it (refer figure 4.27). The idea was to create more defined pockets for social interaction and study, which offered a sense of ‘space’, yet in a casual and informal manner.



Figure 4.27: Design Intervention- Block Layout

This layout was implemented at three places around Caldwell Hall’s entrance porch and lobby space; the largest block was placed in the entrance porch against the retaining wall with four chairs arranged around it. Two other layouts were set up inside the building. The first was set up against the display wall in the entrance lobby, and the second was set up against the column bordering the entrance to the vending space (refer figure 4.27). Aside from this, the study tables were moved from the window and placed facing each other against the wall (refer figure 4.32), and a few extra chairs were left at the corner of the vending space. The seating along the lecture hall and in the niche area remained as they were. Figure 4.28 illustrates the design intervention modified layout.

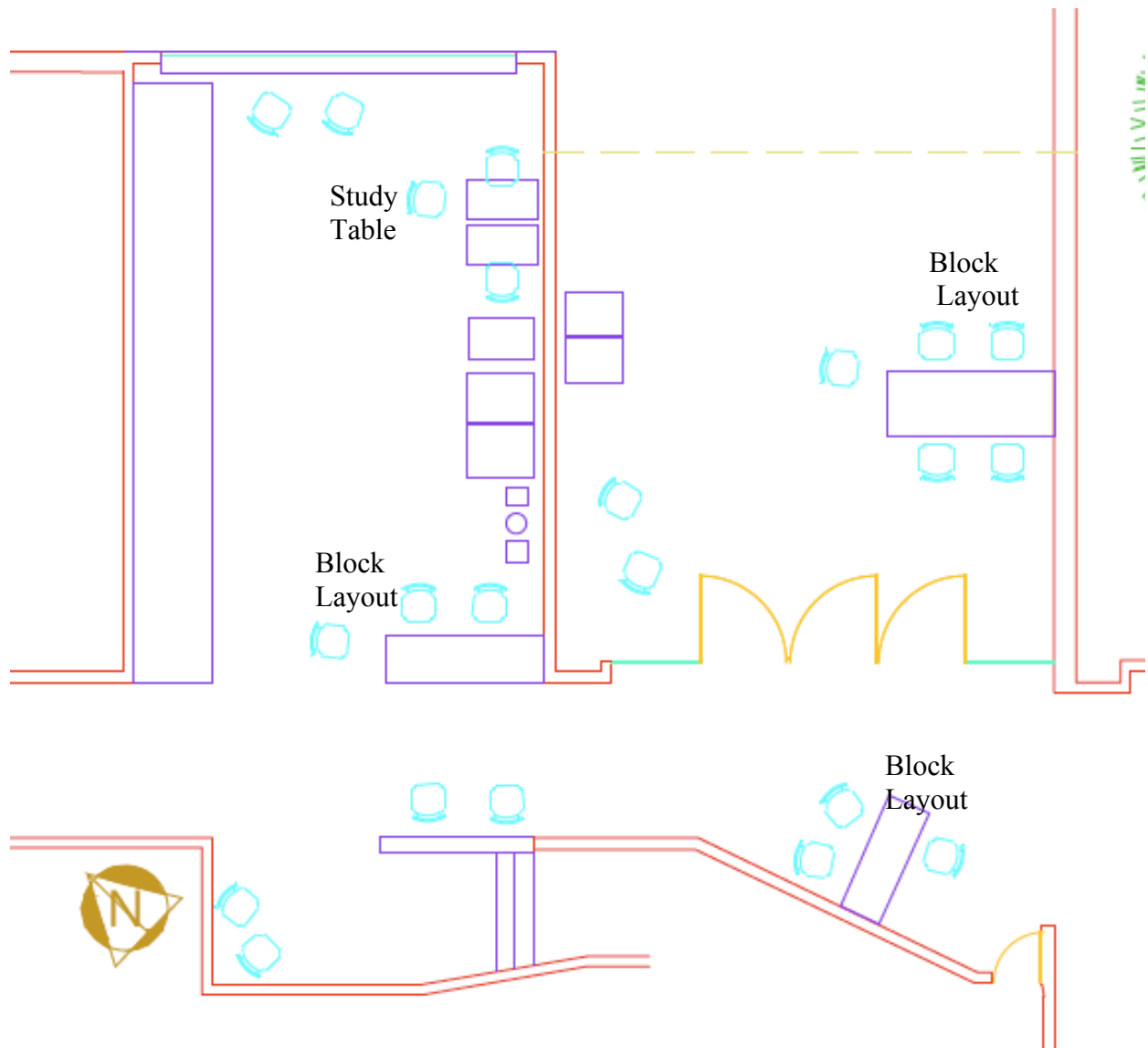


Figure 4.28: Design intervention: Modified Layout

Findings from design intervention-modified layout

The sudden change in the layout of Caldwell Hall's entrance porch and lobby space triggered reactions of surprise and excitement on the students that were coming out of class. They were curious about "how space changed so drastically in such a short span of time" (Venkat 2011), and they seemed to automatically understand the social intent of the layout. This

was evident by the manner in which the students almost instantly began using the space. One of the first reactions was “this is so much more comfortable than how it was before” (Venkat 2011). The modified layout served a number of physical and social uses. The horizontal blocks helped break down the large and continuous lobby space, thereby providing private niches of space for users. Additionally, the horizontal block functioned as a table around which students gathered and interacted as a group while maintaining their sense of space and privacy. The block was used as a laptop desk and allowed students to do their work or check mail and interact at the same time (refer figure 4.29). Additionally, the block was often used as a charging station where students sat down to charge their phones and laptops (refer figure 4.30). The modified layout attracted and contained students before and after class and allowed them to interact socially (refer figures 4.29, 4.30, 4.31 and 4.32).

Specifically, as some students exited class as others were waiting for another class to begin, the dynamics of the following social situation was particularly noticeable (refer figure 4.29). As two male students were leaving, they were instantly drawn to use the blocks at the entrance to the vending space as a space to sit and hang-out. Shortly afterwards, another male student, upon entering the building, used the chairs opposite this block to interact with the two friends that were already sitting there. Afterwards, a female student passed by the three students, stopped and sat down to join the group. A fifth student, leaning against the wall and reading the paper gradually moved toward the group of students and eventually engaged in conversation, thereby adding to the energetic social situation. Thus, the modified arrangement of the space attracted more people, contributed to social interaction and, a casual atmosphere. The following image sequence illustrates the text description of this situation (figure 4.29)



Figure 4.29: Influence of the modified layout on social interaction

Students coming into the building or leaving the building were constantly using the block and seating arrangement in front of the main entrance. Approximately 15 to 20 students were found using this layout through the day (especially during the peak-times). This layout also served as a laptop table and a phone charging station during the non-peak times. Data from the behavior maps show 7 to 10 students using the horizontal blocks for this purpose (figure 4.30). Having a technologically friendly space with wi-fi and plug points renders a more functional space for the student community. During non-peak times students that were using the computer, writing, reading, or charging their cell phones, also used this layout in an individualistic manner.

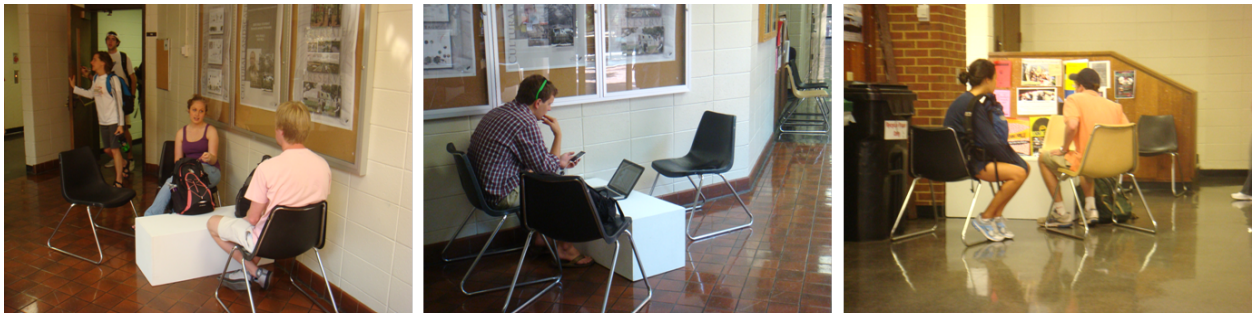


Figure 4.30: Entrance lobby: Design Intervention (modified layout)

The block arrangement on the front porch found little use in the morning, as most of the students populated the interior of the building. However this layout gained popularity as the day progressed, especially in the afternoons and evenings. During the afternoons it was used as a ‘lunchtime’ hangout spot, wherein approximately 10 to 13 students were found using this space in the afternoons. Notably, after students heated their lunch in the vending space, they gradually moved toward the outdoor space to sit and interact with their friends as they ate lunch. This layout created a similar social situation, as did the layout by the vending space.

With the horizontal block and seating arrangement at one end of the vending space and the study tables at the other corner, this space was constantly thriving with activity, while serving both social and studious purposes. The front end of the vending space was used socially and the

back end was used for group discussion and study. Interestingly, the physical design elements and their placement broke down the space in terms of use and activity.



Figure 4.31: Front end of the vending space used as a social space (modified layout)

The study tables that were placed facing each other against the wall were extensively used (average of 3 to 5 students during each time slot and 20 to 25 students through the day) for group study and discussion. Students that came to this space with the intent to study usually walked to the desks in groups of twos and threes to engage in-group work (refer figure 4.32). At times, the sight of two students engaging in-group study would encourage a third to pull up a chair and join the discussion. This typically occurred at the peak times 20 to 30 minutes before class. At non-peak times the study desks were used by students to eat lunch, use their laptops, or study.



Figure 4.32: Rear end of the vending space used as a study space (modified layout)

Extra chairs were left at the vending space to see where they would be displaced. Interestingly, these chairs were pulled up in front of the window. Students that visited the space individually pulled the chairs up in front of the window to sit and watch people outside. The ledge was used as a support for food while students sat in front of the window and ate lunch (refer image 4.33).



Figure 4.33: Seating in the vending space displaced in front of the window

The seating in the niche area continued to be used for quieter purposes such as reading and studying. The seating often caused a student exiting the class to run into, stop and talk to his/her friend sitting down in the niche area. Conversely, the seating alongside the main lecture hall found a more social purpose as it was facing the horizontal block layout (at the entrance to the vending space). The same seating took on a ‘study and reading’ role in the initial layout of the design intervention (refer figure 4.24).

Discussion of design intervention-modified layout

This section highlights the social and behavioral changes brought about by the design intervention and modified layout. The modified layout acted as an immediate catalyst to a dynamic social setting. With students leaving the building immediately after class, entering the building and heading straight for class, there is little opportunity left for students to run into a

friend. What would have simply been a pass through space was converted to a space that was able to retain students that were on a continuously moving path, allowing them to occupy the space and socially interact with fellow students. A stationary person always posed as a magnet to a friend passing by, thereby physically manifesting community interaction. While going in and out of class, students would occasionally and momentarily stop to talk to a friend. On the other hand with comfortable and appropriate physical design elements, social interaction is provided for and encouraged. This increases the probability of a vibrant and energetic student community on campus.

The modified layout was indicative and instantly used by the students as a social space. This behavior strongly contrasts the observations from the initial layout of the design intervention, where some of the furniture and spaces created were unused. The results from the behavior maps show a 20 to 25 person increase in the number of students using the space during peak times and a 7 to 10 person increase during non-peak times, as compared to the findings from the pre-design intervention study. This finding suggests the importance of the design, its orientation and layout as devices that suggest the nature of activities and behavior to take place within the space

The horizontal blocks subdivided the open and continuous space to create several subspaces. People enjoy a sense of privacy, especially when it contained a block or a pedestal with chairs around it. The space is clearly demarcated, forming a temporarily ‘owned’ space. According to Lopez (2010), an optimal place is that which offers semi-private niches within the designed space, where one can carry on with his/her activities without being disturbed and without being in anyone’s way. This aspect of the layout is what made it a more favored layout than the initial layout.

It was interesting to observe how a specific activity was associated with specific space during the design intervention. Furthermore, based on the changes in its surrounding layout (refer figures 4.24 and 4.29) there was a change in the activity associated with the exact same space and furniture. This change in behavior and activity owing to the spatial layout shows that physical design does have an influence on user's perception and use of the space.

In addition to the layout and orientation of the physical design elements, it was noticeable that the placement and location of these elements had significant influence over the use and behavior associated with the space. For example, the tables and chairs placed toward the back end of the vending space were used for group or individual study, the seating in the niche area was used to study and read, while the block and chairs at the front end of the vending space were used for social purposes.

Students have expectations of the built environment to satisfy their needs. The data from the surveys, student feedback and the behavior maps show that the most sought after aspects of the physical environment are: physical comfort, security and privacy, and the ability to socialize and interact with fellow students (refer figure 3.4). The modified layout allowed each of these activities to develop. The design intervention helped create a break in the students' movements to encourage social interaction and allowed for a range of spatial and social experiences. Therefore, the flexibility and versatility provided by the space in terms of being able to cater to various activities, renders it user-friendly. As a result of this the space becomes more popular and vibrant.

Another major contributor to a sense of community is food. One student interviewed during the design intervention stated, "This is great! If you also keep food and drinks around here, I bet almost everyone would come around here to hang out". Due to limitations, it was not

possible to test levels of interaction by including a café/ food stall within the space. However, the modified layout did provide casual ‘hang out’ spaces where students got together to eat lunch.

The numbers in which students visit the space (whether individually or group) also affects the layout and usage of the space. For instance, students that came to the space individually tend to pull up a chair in front of the window as they engage in people watching and larger groups of students tend to use the block layouts at the entrance porch and vending space to hang out.

It is important to keep in mind that due to the changes in traffic flow, physical and social activity through the space continually changes, which in turn causes variations in the use and behavior associated with the space. Ensuring that the physical design elements allow flexibility and variability is the best way to maximize on functionality of the space.

Summary

This chapter illustrates the ways in which behavior is influenced by physical design and spatial layout. This helps to attach practical and ‘real world’ behavioral data to the concepts discussed in chapter two and the statistics shown in chapter three.

The behavioral study undertaken in this thesis proved to be extremely useful in more ways than one. First, the results from the behavior mapping exercises pre-design intervention and post-design intervention validated the hypothesis of this thesis that ‘physical design does have an influence on the sense of community on campus’. Second, observing and analyzing individual and group behavior within a specific space, helps clarify how this fits into the broader construct of ‘community’ and ‘place’. Third, having site-specific data on user’s perception of the space, patterns of movement and socialization, behavior and activity guide future design applications.

CHAPTER 5

DISCUSSION

This chapter ties together the various parts of the thesis toward real world design application. The overarching theme of this chapter is the physical design application. Wherein the theory discussed in Chapter Two, the data gathered from the student surveys and the behavioral study are translated into a framework for a design application to strengthen the sense of community on campus. This chapter reminds us of the theoretical knowledge assimilated in Chapter Two and focuses on the four components derived at the end of Chapter Two as key components to the sustenance and development of a sense of community on campus. Following this discussion, this chapter is concluded with a conceptual site design for Caldwell Hall's entrance porch and lobby space.

Having conducted extensive research around Caldwell Hall's entrance porch and lobby space it made sense to include a design proposal in this thesis to alter the design of the space in order to encourage community interaction. However, it is important to remember that the site selected in this thesis (Caldwell Hall's entrance porch and lobby space) was selected as a tool that could be used to study and test the hypothesis of this thesis and this thesis still remains one that is concerned with and applicable to building entries and their surrounding open spaces around campus in general.

Familiarity and Continued Experience

Based on Manzo's (2005) study that was conducted on people's relationships to places, she writes that, it is not simply the places themselves that are significant, but rather what can be called "experience-in-place" that creates meaning. The experiences which people find important and meaningful often lead to significant bonds with the places in which these experiences occur. Manzo (2005) suggests that place can become meaningful for the social opportunities one finds there, and at the same time spaces need to afford people the opportunity for privacy, introspection, and self-reflection. The results from the student surveys also indicate that when students had to select a 'favorite' space on campus and provide their reason for the selection, a number of students favored a space because their friends would often go there (Venkat 2011).

Referring back to the theory in Chapter Two, J.B Jackson stressed the idea of the continued experience of a place. He introduced the term "shared experience" and writes that people's sense of place is concerned with "a lively awareness of the familiar environment, a ritual repetition, a sense of fellowship based on shared experience"(Jackson 1994)(p.159). While admitting the fluid nature of human emotions and perceptions of various places, he reminds us that with everything around us constantly changing, people seek something known and familiar that they can return to. This provides people a sense of stability and a sense of self.

It is possible that in the large institutional atmosphere of a major campus, people have a particular need for outdoor spaces where they feel at home and to which they can easily return every day. In Manzo's (2005) study on people's relationships to places she explains that, the places which people found meaningful were not extraordinary. They were not of award-winning design or fame. Rather, they were ordinary places that are "routine, experienced in everyday life" (Riley 1992) (p.13). In fact while conducting the student survey, when asked about identifying

with Caldwell Hall's entrance porch and lobby space, one of the students responded "Sure! I am here every day" (Venkat 2011).

Given the amount of time per day students spend in and around their department, the space around it becomes very important in fostering a sense of community. It is the immediate space, which surrounds the building, and students associate themselves with that space. Therefore it is a prime location where physical design can provide for the chance to develop a strong sense of affiliation to the place, and to one another. Being aware that this component fosters a sense of comfort and attachment to place over time, the space should be designed to capture the population of students that regularly visit the space, and be designed suitably to cater to their activities and also have interesting features that encourage students to hang out and use the space after class.

Activity and Meaning

While discussing activity and meaning, it is important to understand the dynamic nature of the term activity. From the behavioral study conducted around Caldwell Hall's entrance porch and lobby space it is evident that a broad range of activities take place within a given space and there is a constant change in the nature of the activities that takes place through the day. This change in activity through the day is dependent on a number of factors, including the layout and design of the physical environment. For example: The seating placed in front of the vending space in Caldwell Hall was used for quieter and more studious purposes during the initial layout of the design intervention. However, the same furniture brought about a change in activity when the surrounding layout was modified, wherein it was used for more social purposes (refer figures 4.24 and 4.29). Designers need to recognize that places contain a wide variety of uses and need

to accommodate for a multitude of behaviors. This awareness helps in designing to accommodate diverse groups and individuals in a given place (Lopez 2010).

Time also influences the level of activity within a space, depending on the time of day; places may have a burst of activity or could feel empty. Going back to the theory in Chapter Two, Lopez (2010) writes that, “people’s perception of a place also varies depending on their purpose or goal for being there as well as their expectations” (p.48). Having more variety and choice available within a given space, increases usability and a wide range of needs can be met. Therefore while discussing activity, the most important aspect to keep in mind is flexibility.

According to Lund, the social aspect of the environment influences people’s perception of their sense of community. This was also witnessed during the behavioral study conducted at Caldwell Hall. Usually this is the reason why more numbers of people are attracted to a space when they notice their friends or others socially interacting. This sense of community promotes “social cohesion by aiding the movement of information and ideas within the community and increasing access to resources and opportunities”(Lund 2002) (p. 302). It is well known that people need to be socially active and have a sense of privacy at the same time, the designed space should consist of a variety of subspaces in order to provide different levels of interaction. This includes intimate spaces for internal reflection, personal spaces for individuals and smaller groups of people, as well as public and communal space for larger groups of people. This includes natural greenery and vegetation, interesting walkways, comfortable seating (individual and group spaces), design features, food, and permeability between the open and built spaces. “One can conclude that providing some key features along with a meaningful combination of design elements, a designer can help both visitors and community members to interact more or less intensely with the built environment. Creating these different levels of interaction enhances

the users' connection to a specific area, thus recognizing it as a specific 'place' with a specific character, which, in their minds, is distinct from other places" (Lopez 2010)(p.51).

Identity

Identity refers to the unique and individual character of a space. Ratz (2008) writes, "It is also identity with and connection to place which not only informs one's perception of place, but of oneself" (p.19). According to Relph this is dependent on time, experience and purpose of the user (Relph and Charles 1976). Man has been seeking to identify with something, someone, or someplace ever since the beginning of time. The larger the population of an institution, the greater the desire to seek identity with a group of people, place, and with one's self.

In an environment as large as a university campus, having various departments and buildings, it is important that each department creates its own unique identity. This way students and passersby can relate to and identify with their respective departments, neighboring departments and campus buildings in general. The students of the College of Environment and Design at UGA felt this way while responding to the surveys. Students complained that the building lacked identity as a design school and that the building looked dull and did not stand out (Venkat 2011). This tells us that today's student community is conscious and aware of the physical attributes of the spaces they spend their time in. Moreover, they are conscious about the identity that their departments possess, as it is something that they relate to. The results from the surveys indicate that (28%) of the students responded that they did identify with Caldwell Hall's entrance porch and lobby space, while (78%) responded that they did not identify with the space.

According to Lynch, legibility within the designed space is an important aspect that renders a space enjoyable for its users (Lynch 1960). Legibility helps users relate strong mental

images to the place. Legibility relates to “the way objects in a scene come together to form some sort of context” (Kopec 2006) (p 31). This means that a place needs to be recognizable to increase its use. The same theory is applicable to campus environments and the campus buildings themselves. The two other qualities to be considered in the successful design of a place are complexity and mystery (Lynch 1960). Complexity refers to the variety of elements that can be found within a space. "By having a variety of elements, the area is able to relate to a wider variety of people and maintain their interest" while catering to various activities (Lopez 2010)(p.50). Mystery is “the degree to which a scene contains hidden information” (Kopec 2006)(p.31). Mystery encourages movement through the space and exploration of the area. This was particularly noticeable during the study of Caldwell Hall’s entrance porch while observing people’s reaction to the 'site installments'. The site installments were new and instigated curiosity, mystery and interest. The presence of the installment not only created interest and curiosity amongst its user, it also facilitated community interaction (refer figures 4.17 and 4.18). Lopez (2010) suggests that, within a given place there needs to be a balance between new and old, in order to prevent the place from becoming unrecognizable. "People tend to create and relate strong mental images to sense of place" (p.50). Taking these qualities into consideration enables an area to maintain a unique character and enhances the connection it has with its users and the connection the users have amongst themselves, thereby "strengthening a sense of community by guiding design and development in a more suitable direction"(p.51-52).

Therefore, in order to maintain an area’s sense of place, it needs to have its own unique character and be distinguishable from other places. The area needs to be well articulated and be comprised of features that will enable its users to make a connection with the environment (Lopez 2009).

Physical Design

The theory discussed in Chapter Two states that the physical design, if properly manipulated, has the greatest influence over the sense of community on campus. The design intervention was planned to test this theory, and the changes observed from the behavioral study pre-design intervention and post-design intervention strongly support this argument. This does not always mean that physical design will encourage community interaction; in fact the layout and appearance of a space can also discourage a lot of activities from taking place there. For example, in Chapter Two, Antaov's explanation of the influence of appearance on the users experience states that, "The appearance of a place...affects daily activities by influencing our emotional reactions or affective responses" (Ataov 1998)(p.239). These emotional responses in turn affect behavioral responses, causing people to take favorable or unfavorable actions based on how they feel (Ataov 1998; Lopez 2009).

Prior research and the findings from the behavioral study conducted for this thesis strongly implies that sometimes users' adapt their activities to the way in which the physical setting is laid out. This suggests that the physical setting along with all of its design elements (structural elements, furnishings and landscape) could encourage or discourage certain types of activities from taking place.

Since the campus is constructed sequentially through individual projects that precisely define new elements of building, open space, and landscape, the whole is affected every time the smallest physical change takes place. Experiences of varying scales tend to interact in complex ways. For example, a small resting place along a stair or corridor can interact with a large gathering space. Such relationships can enhance the richness of community as a collection of diverse individuals and groups (Ojeda 1997). This theory was reflected in the findings from the

behavior mapping exercises conducted at Caldwell Hall's entrance porch and lobby space, especially with the changes that the modified layout of the design intervention created. Due to a mere re-arrangement of the furniture layout, there was an immediate change in the overall dynamics of the space encouraging more social interaction and community engagement in various activities (refer figure 4.29).

The behavioral study conducted at Caldwell Hall tested various layouts, upon comparing the findings, it seems as if the users of the space expect the layout of the physical setting and its elements to convey or direct their use. If the elements in the physical environment do not convey or indicate any use, then it is left untouched and unused, just as the vertical pedestals were in the initial layout of the design intervention. This is also why the seating provided in the initial layout of the design intervention was unused; however, when it was incorporated into a more casual and defined layout along with the horizontal blocks, it was used as a space to hang out. The study indicated that certain activities were associated with certain spaces based on their layout, orientation, the surroundings, and the physical design elements that comprised the layout itself. For instance, the space at the rear end of the vending space was used for group study (figure 4.32), the seating at niche area was used for individual study (figure 4.24) and reading, the layout at the entrance to the vending space was used as a space for social gathering (figure 4.31), the layout in front porch was used to eat lunch and hang out, and so on.

Rapoport (1977) found that people act according to their reading of the environmental cues that surround them. The design of the environment might be understood as “a process of encoding information, then the users can be seen as decoding it” and “if the code is not shared, understood or is inappropriate, the environment does not communicate” (p.3). Spaces that are linear and have a high level of complexity tend to encourage dynamic activities because of the

heightened sense of excitement created by hidden views and the lack of accommodation to rest. On the other hand, rest spaces tend to be more static and wider, frequently contain greenery and openness along with seating. These areas provide users with places to eat at, hang-out, sit, and watch others (Lopez 2009).

According to Mehta, “streets are an important part of public open space...[and]...people depend on streets for functional, social and leisure activities”(Mehta 2007)(p.165). Typically, areas that have been designed with the street are full of life and activity; they also have a greater sense of community. The same theory is applicable to campus environments and the campus buildings themselves- wherein the major outdoor pathways can be considered as the ‘street’, the students as the pedestrians, and the building entries as the ‘designed space’. The key point to remember is to provide variety within the designed site in order to cater to users of differing needs, activities and interests.

Tuan (1974) believes that “open space signifies freedom...while an enclosed space signifies a cozy, secure and private place” (p.27-28). When it comes to open space, two aspects are important in enhancing the user’s experience. The first aspect is security; the user’s sense of security in a public space needs to be “spatially anchored” (Hiss 1991)(p.87-88). Each individual user or groups of users have to be able to find their own space within the overall place. This makes it important to have semi-enclosed spaces, such as seat walls and benches surrounded by vegetation placed to the side of a pathway. Lopez (2010) suggests that, it is also important for a space to have designated edges. "Providing known edges lets people know where one space ends and another begins, such as through pavement patterns to designate walkways from seating areas"(p.49). The need for designated edges is most likely the reason why students were instantly drawn to the modified layout of the design intervention, while the initial layout was less popular.

This need arises from the need for a sense of security. Understanding these preferences is an extremely helpful tool for the designer in planning meaningful, practical and successful designs that get utilized.

The second aspect to consider is incentive. People need reasons for going to a place and the more reasons they have, the more time they'll spend there, the more frequently they will visit and the longer they will stay (Hiss 1991; Lopez 2009). This emphasizes the importance of having flexibility and variety within any designed space. The space should provide its users with variety of different levels of interaction, especially when the social goal of a design is to promote and encourage community interaction. The findings from the study conducted at Caldwell Hall shows evidence that people come to a space with a wide variety of needs. The variety of reasons why people come to a space are drastically different from each other. While some come to a space and like to find the opportunity to socially interact and meet fellow students, others prefer to find a niche where they can remain 'physically' part of the community, yet engage in silent observations of the surrounding.

Therefore it should be emphasized that, "people tend to respond to what they see in relation to a physical form"(Lopez 2010)(p.49). With a range of aesthetic qualities, design features, and services, users can be attracted to a designed space for diverse reasons. There has been research on how the aesthetic qualities of spaces plays a significant role in the well-being of people (Lopez 2009). Taking the aesthetics qualities, design features and elements that comprise a place into consideration can help direct design and planning in a positive direction to evoke a sense of identity, attachment and belonging. With this comes a feeling of comfort. Being comfortable within a space in turn promotes and facilitates community engagement and social interaction.

The main point that this research conveys is that the physical setting does have an influence on the community using the space, and if the physical design is manipulated and designed in the right manner then it certainly can encourage a sense of community on campus. The ‘right manner’ will vary from site to site, which is why it is important to conduct behavioral studies on site prior to implementing any design action. It is also important to understand the needs and expectations of groups and individuals, along with the trends of the community that the designer is designing for. Aside from minor variations (that are site specific in nature), much of the research and findings documented in this thesis can be applied to designing for the development of a sense of community on campus in general.

The following design illustrates a schematic and conceptual scheme for Caldwell Hall’s entrance porch and lobby space and how it might be modified to improve the sense of community and encourage social interaction around the space. Some of the key ideas the design addresses are: flexibility and variety, a sense of space and territoriality, maintaining a sense of identity, and aesthetic and visual appeal. The goal is to provide a visual tool that translates the theory and research in this thesis into a design application.

Design Process

The design for Caldwell Halls entrance porch and lobby space is based on the four key components discussed in this thesis: familiarity and continued experience, activity and meaning, identity and physical design. Each of these components contributed to the design program, goals and objectives.

List of Goals and Objectives

Familiarity & Continued Experience:

- The design needs to offer the opportunity for privacy and introspection.
- Sufficient space to meet and hang out with one's own circle of friends.
- The space should periodically have new and interesting elements to maintain the user's interest over time.

Activity & Meaning:

- The space should be designed to accommodate various activities and behavior that occur.
A list of activities that take place within the space needs to be developed and the space should be designed to fit these activities.
- The physical design elements should offer choice and variety in order to increase accessibility.
- Variety of spaces: intimate, personal, social and public should be included within the designed space to accommodate different levels of interaction.
- The design should encourage visitors and community members to interact with the built and natural environment.

Identity:

- Each department on campus should have its own identity that communicates something about the school.
- New interactive elements should be included within the space.
- The design should establish a balance between the new and old features of the site.
- The designed space should be easily navigable and legible for its users.

Physical Design:

- Users adapt their activities to the way the physical environment is laid out. Hence, the kind of activities desired for each space needs to be well thought and appropriate design actions should be made to encourage those activities.
- The designed space should have certain key features (for example: a water feature, a mural, or a café etc.).
- Outdoor spaces should include vegetation, seating and interesting walkways.
- There should be permeability between the built and open space.
- While designing open spaces it is important to remember that the user's sense of security needs to be spatially anchored.
- The designed space and its sub-spaces should have designated edges, segregating seating areas from walkways.
- Indoor spaces should be designed to maximize on natural lighting and openness.
- The overall designed space should provide for activities of dynamic nature.

After the above list of goals and objectives were drafted, each of them was translated into possible design actions for Caldwell Hall's entrance porch and lobby space. The understanding of the space, its users and the behavior associated with the space helped strengthen the concept and facilitated planning ideas and decisions for Caldwell Hall.

Design

The following text, plans and illustrations explain the design of Caldwell Hall's entrance porch and lobby space (refer figure 5.1).

Surrounding Open Space

The main goal for the open space surrounding Caldwell Hall was to preserve the existing trees and incorporate additional landscaping to reflect the values and identity of the College of Environment and Design. The existing benches and outdoor seating are transformed into semi-private niches of space, ensuring a degree of privacy from pedestrians. The design of the outdoor niches includes combinations of raised planting (as a means of visual screening), seat walls and benches shaded by the existing trees. Each of the 'outdoor-courtyards' is designed with slight variations in layout, design and paving materials to keep them from looking redundant. These niches serve as social spaces for groups of students, as well as private / semi-enclosed spaces for quieter purposes (refer figure 5.2).

To address the lack of identity around this space, additional signage is implemented facing the entrance porch and along the pathway leading to Denmark Hall (CED Graduate School). The idea is that students and visitors would know they were walking through the College of Environment and Design as they approached the school. The walkway leading to Caldwell Hall is designed to be an interesting and appealing space to walk through, including courtyards, landscaping and groundcover along the walk. A variation of paving patterns is employed to designate walking areas, from seating and recreation areas. An interesting feature implemented in the design is the tree form pattern that grows out of the walkway leading to Caldwell Hall and flows onto the entrance porch. This is intended to symbolize the 'identity' of a landscape architecture school (refer figure 5.4).

The student display kiosk is located in front of Caldwell Hall's entrance porch (refer figure 5.5). This is designed to facilitate interaction between students, visitors and passerby. Additionally, it serves as an interactive feature where people can post comments related to the

work occurring within Caldwell Hall and also motivates students from The College of Environment and Design to generate designs that are selected for public display. The idea is that the displays periodically change and there is always something different to see. This is also intended to encourage a group and community spirit amongst the CED students to work in teams and produce creative ideas that can be displayed outside the school.

To avoid conflicts with vehicular traffic, the design proposes that vehicular entry is restricted within these walkways. And since ‘food’ was identified as an element that brought community together, the design suggests including a “food truck”, that is stationary and permanent. This serves as a fun, casual, and quick way for students to grab a bite and hang out around the café space or the outdoor niches.

Entrance Porch

Results from the design intervention indicate that the block seats and tables were a popular form of casual seating. Hence, combinations of block seat layouts separated by raised planting and seat walls (to serve dually as screening and as a casual form of seating) were incorporated in the redesign (refer figure 5.8). The other forms of seating include fixed bar tables and stools that flow into the surrounding open space. The concept was to create an outdoor café ambience while integrating the porch space with the pedestrian corridor (refer figure 5.3).

Caldwell Hall Student Lounge

The guiding design concept for Caldwell Hall’s interior was to include more natural lighting and openness within the overall space, to have a well-articulated space that allows various activities, supports the needs of its users, maintains transparency and connectivity

between the built and open space and to improve the overall visual and aesthetic quality of the space. The design calls for the students of The College of Environment and Design to have their own lounge (refer figure 5.3). This would be an area they could spend time in before, after or in-between classes.

The structural change this design implements is a ten foot extension of the rear wall that overlooks the open space (refer figure 5.6). This wall is transformed into an aluminum and glass curtain wall that is double floor height. The double storied glazing runs along the exterior wall of the building allowing more natural light and openness into the interior of the lounge, while displaying a bold and contemporary façade on the outside. Since students that visited this space individually often sat by the window and engaged in people watching, the glazed surface is designed to include a wide bar table and seats to provide for this activity in a comfortable manner. Students can use this space to work on their laptops, eat lunch, read, talk on the phone, etc. The idea is to provide space for those who would like to spend time by themselves while they remain a part of the community (refer figure 5.6).

In order to transform the previously known 'vending space' into a lounge, the vending machines are relocated into a niche (refer figure 5.7). The interior portion of the lounge is designed with semi-enclosed cubicles to create a quieter semi-private space for group study and discussion (refer figure 5.6). The front end of the lounge includes block seats, tables and couches to serve as a social hangout space. The variations in the type of design features employed and the layout of furniture effectively articulates the space and provides for various uses. One of the interesting features implemented in this design is a "glass board" located at the center of the student lounge (refer figure 5.7) This glass board is intended to serve as an interactive feature

where students can write notes, draw or post messages. This allows users of the space to interact with the physical environment and also add to the experience of the space.

The continuous brick walled surfaces are replaced with a combination smooth wall finishes, aluminum and glass (refer figure 5.7). The glazing visually connects the indoor spaces to the people and the activities taking place in the entrance porch and surrounding open space. Student work is displayed around Caldwell Hall's Lobby and Lounge to break the monotony of the wall surfaces and to add a casual ambience to the space. This allows the students to feel a sense of identity with the space and develop a sense of belonging and ownership to the space. The dark tiled flooring is replaced with a light marble surface. This visually makes the space appear larger and wider and also adds to the visual and aesthetic appeal of the space. The design proposes a second entrance directly into the student lounge to increase accessibility and connectivity between the built and open spaces.

Entrance Lobby

The entrance lobby is designed to be an extension of the entrance porch and vice versa, and allows free flowing circulation between the built and surrounding open space. The main entrance to Caldwell Hall is replaced with automatic sliding doors, as it is more space efficient and also more convenient for students coming in and out of the building carrying academic materials. The entrance lobby is left open to serve as a gallery and a meeting space. Upon entering, one finds a mural on the front wall of the lobby. This mural is intended to reflect the design values of The College of Environment and Design and to symbolize the identity of the school.

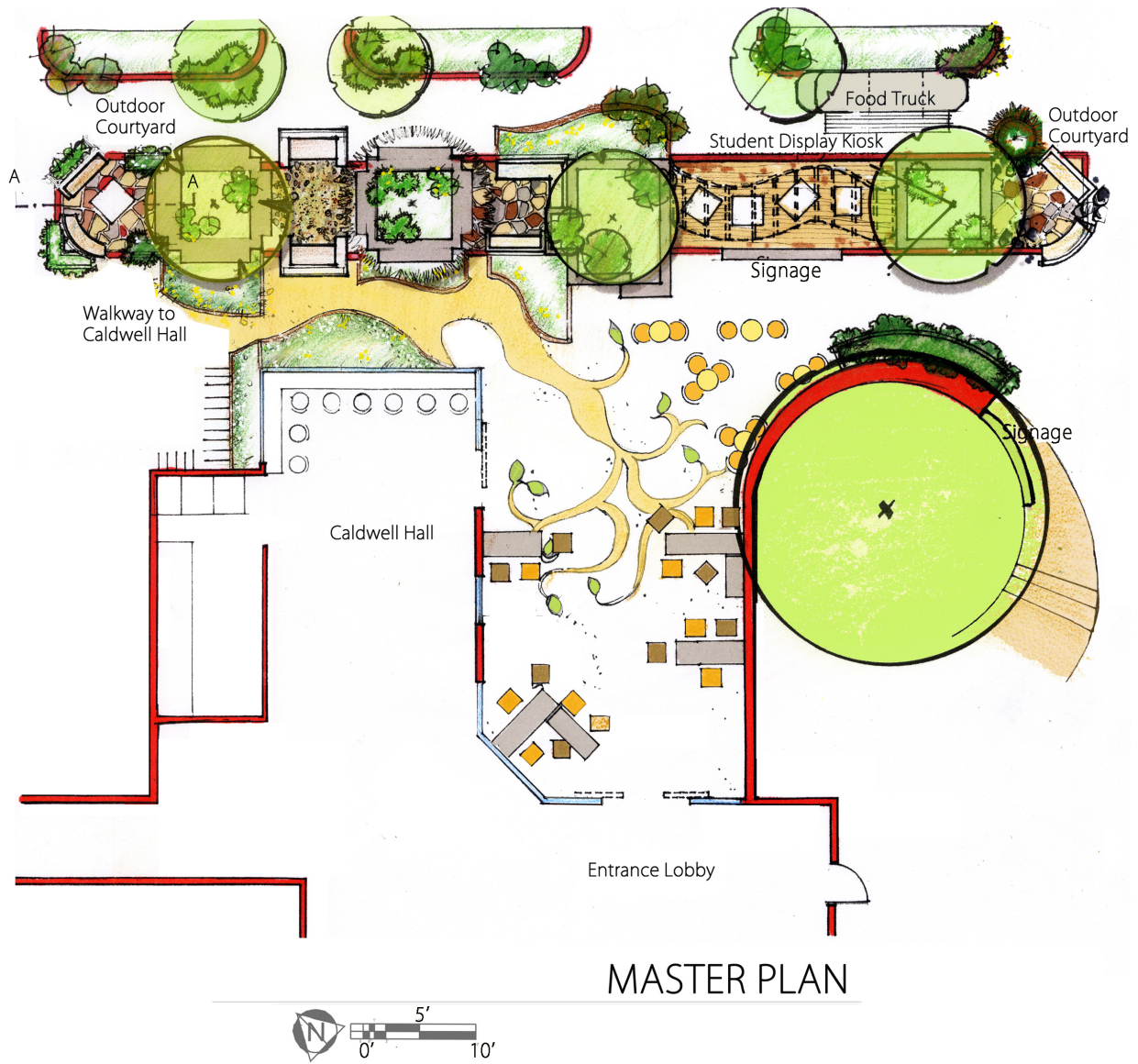


Figure 5.1: Master Plan

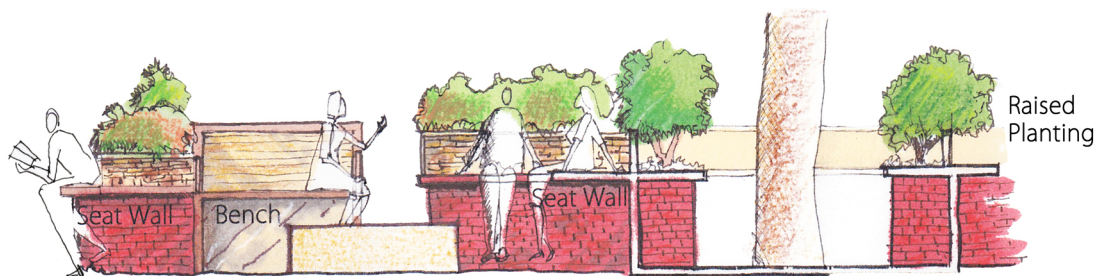


Figure 5.2: Section A-A through the Outdoor Courtyard

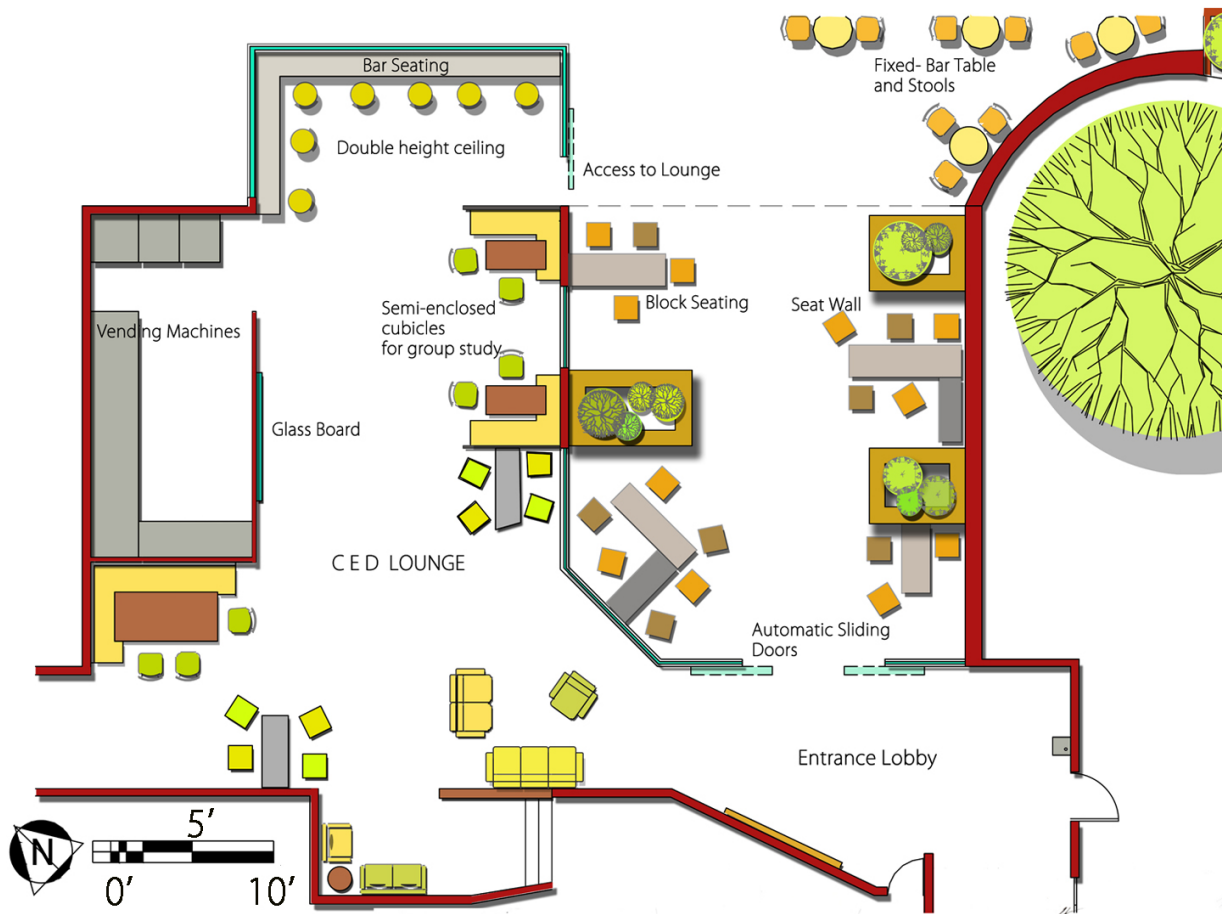


Figure 5.3: Interior Plan- Caldwell Hall Student Lobby and Lounge

The following exterior and interior views of Caldwell Hall are schematic and conceptual in nature to convey the ideas described in the text; some of these figures are not designed to be exact depictions of the above plans.

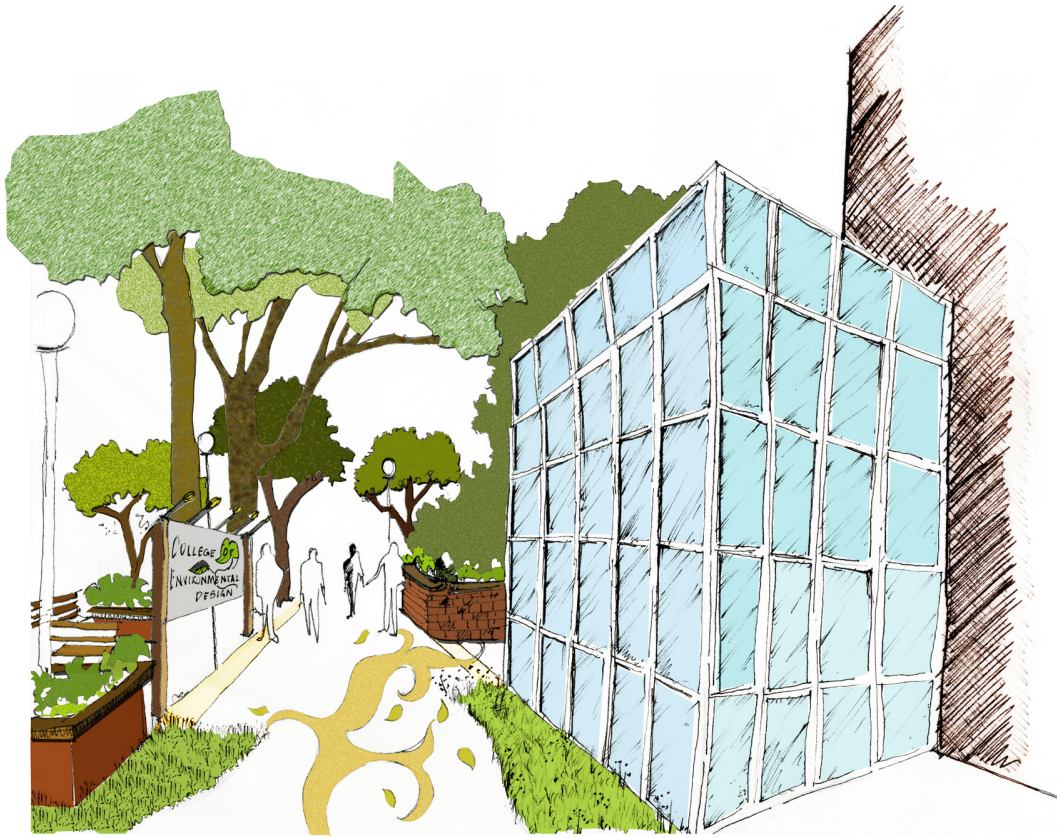


Figure 5.4: Exterior view of Caldwell Hall

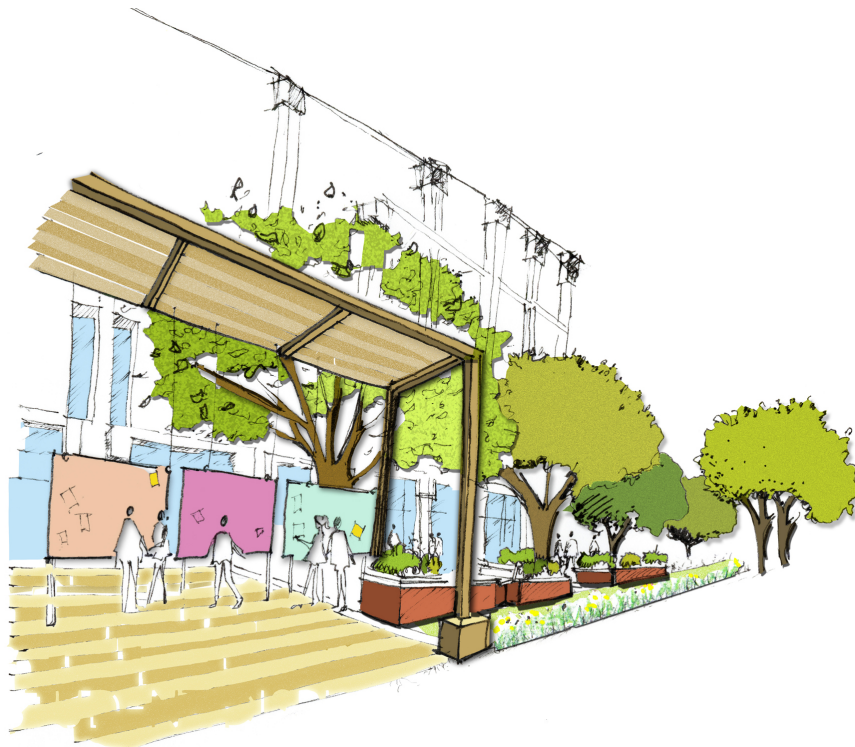


Figure 5.5: Student display kiosk

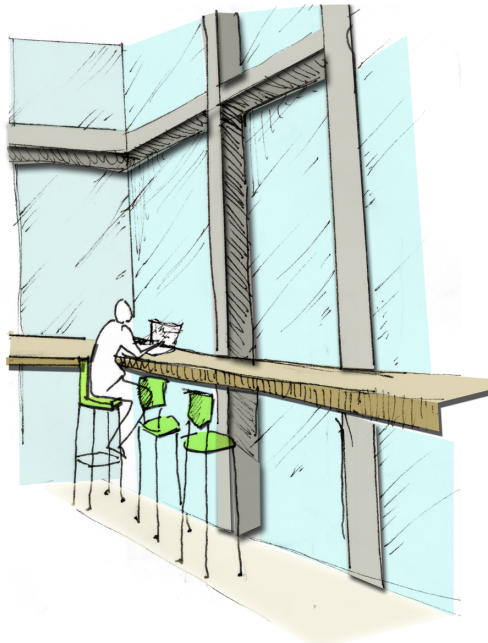


Figure 5.6: Interior View of the Student Lounge-1



Figure 5.7: Interior View of the Student Lounge-2

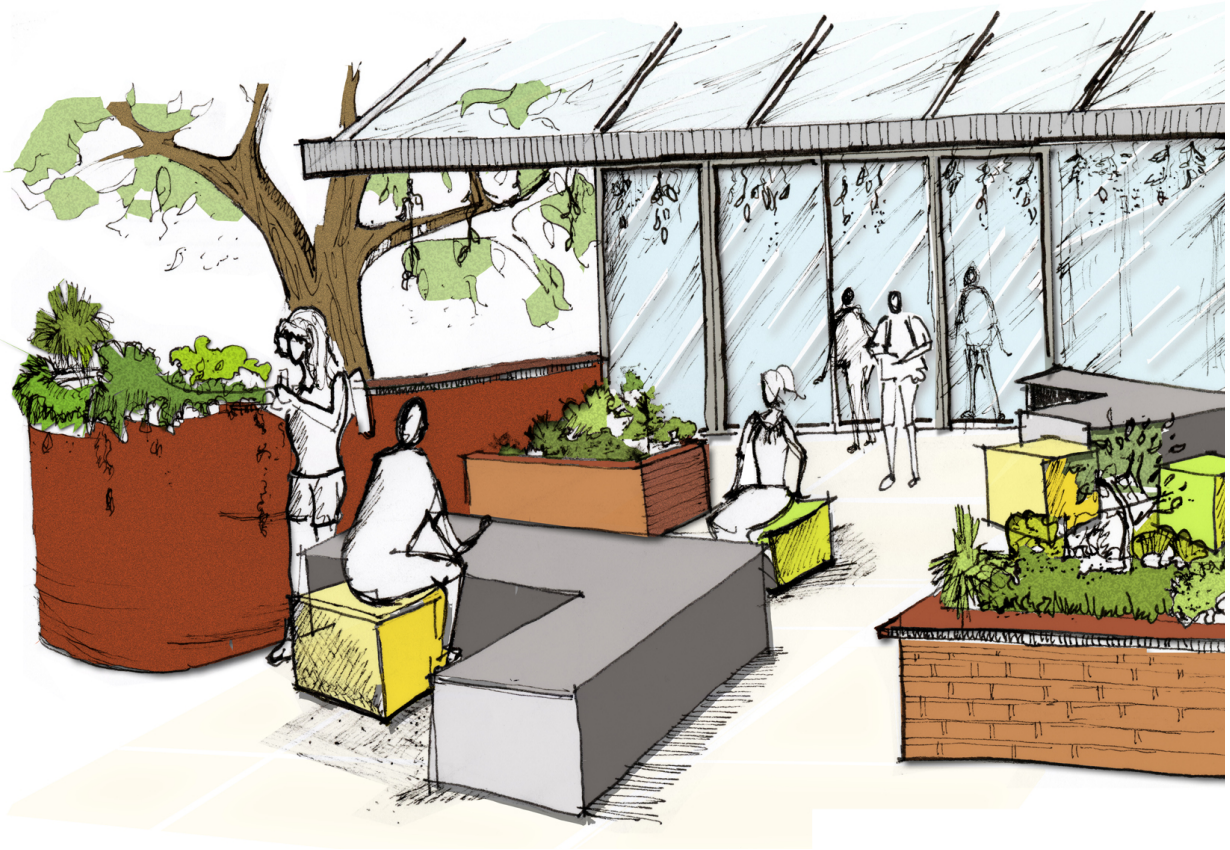


Figure 5.8: Entrance Porch

CHAPTER 6

CONCLUSION

The final chapter of this thesis will briefly discuss the following: the importance of designing for the development of a sense of community, future directions in research and an overall conclusion of the relationship between physical design and a sense of community.

The importance of designing for the development of a sense of community on campus

The purpose of this study was to examine how physical design and the layout of the physical environment influences students' perceived sense of campus community. Astin's Theory of Involvement (1984) posits the more involved students are with the campus community, the more they learn. Kennedy (2000) found that students with indicators contrary to persistence were able to be successful because of social involvement on campus. Thomas (2000) suggested that students involved in activities that provided broader social networks were more likely to persist than students exclusively involved with their peer group. It is well-established that involvement with out-of-class activities enhances development and is a significant factor in retention (Tinto 1993; Thomas 2000). Student involvement and engagement in educationally purposeful activities is essential in developing a sense of campus community (Kinzie and Schuh 2008). Brazzell and Reisser (1999) assert that "the greater the opportunity for students to participate in a range of activities, the more likely they are to feel a part of their community and to become productive contributors" (p.173).

Cheng examined aspects of students' lives in order to identify items that contribute to the sense of community. He found that students' sense of being cared about, valued as an individual, and being accepted as part of the community were most directly associated with a sense of community. Notably, the layout and design of the physical environment itself can encourage or deter the development of community. Cheng also suggests that out-of-class involvement provides students with opportunities for rich social lives, which are closely associated with sense of campus community (Cheng 2004).

Being aware of the immense importance of the development of a sense of community on campus, the designer's goal should be to provide spaces that encourage various activities and social opportunities outside class. The layout and design of the physical environment does have the capability to influence the activities that take place there. And the tool available to architects, landscape architects and planners is physical design; hence designers should make the most of physical design to promote social interaction and community engagement to the best ability possible.

Future direction and importance of behavioral studies

Findings of behavioral studies will help us understand the underlying reasons why different places are highly utilized while other places are used at a lower frequency or not at all. It will also guide visioning and design development in a direction that maintains the sense of place of an area, enhances users' experiences and connections, and utilizes design to improve the users' assessments of the place. Overall, this understanding of place will help prevent generic designs from being implemented while helping planners and designers create and maintain unique environments.

Therefore, design decisions that are made should be looked at in the future tense. Some questions that should be addressed include “What will happen? What is better? Better for whom? And how can better design be achieved and improved?”(Rapoport 1977)(p.81). In order to answer these questions, design must be based on knowledge and that knowledge should be concerned with environment-behavior interaction. Norberg-Shulz (1979) writes that design means to “visualize the genius loci, and the task of the designer is to create meaningful places, whereby he helps man to dwell” (p.5). The design should then relate human needs and expectations to environmental features, making them “congruent” with one another (Lopez 2010).

It is important to encourage research into the relationships between people and their surrounding environment, and to utilize these findings to direct design planning and decision-making. For planners and designers, it is essential to go beyond “site-analysis”, and really understand the place and the community they are designing for. Design decisions should be directed toward satisfying the needs of the community and not just what the designers want to accomplish for their own identity.

Future research should also focus on behavior analysis around a variety of spaces on campus and compare them to one another in order to closely examine the influence of the physical environment on students’ sense of campus community. As well, the results from the student surveys and the knowledge gained from prior theory imply that the aesthetics and visual quality of a space has a strong influence on the user’s perception of the space, and the overall sense of community. Due to various limitations, this research could not test this relationship. However it shows signs of being a highly useful and promising area of research to move toward

in the future. It would have immense applicability and would be tremendously useful to campus planners, architects and landscape architects.

Elkins (2011) explains the importance of collecting accurate information about patterns of behavior and student involvement in various activities outside class, and how they contribute to the development of a sense of community. This is important not only for student success and persistence, but also in informing the policy decisions of an institution as to how and where institutional resources should be allocated. “In difficult economic times, it is essential that policymakers and administrators have information as to the types of campus activities that positively contribute to a strong sense of campus community”(Elkins 2011)(p.2). This information not only provides a focus of encouragement to increase student involvement in community, but also confirms that resources allocated to student activities are worthwhile institutional investments.

Conclusion

“Places, both built and natural, have an effect on how we feel and act, impacting our sense of self, sense of safety and the ways we interact with other people”(Lopez 2010)(p.49). Place based theories and research on sense of place, place attachments, place identity and place experience have made critical contributions to our understanding of peoples relationships to place. In articulating the roles and meanings that places have in our lives, this thesis has validated important aspects of the human experience.

This thesis uses prior theory and research on place and community to arrive at certain key concepts that seem to be promising tools in encouraging a sense of community on campus. These are: Familiarity and Continued experience, Activity and Meaning, Identity, and most importantly

Physical Design. Designers and planners can help ensure the success of a place by taking these concepts into consideration; by learning about and understanding a place, they can create better designs that are fitting for that place and meaningful to the community.

This study suggests that campus planners may want to take advantage of programming building entries and the open space surrounding main building entries as a means for encouraging a sense of community through a well-designed physical environment. Rather than taking an approach of developing a sense of campus community by looking at community on the macro level, the results of this study suggest that student affairs professionals should focus on the specific areas of campus where the campus community tends to regularly come together or pass through. Student activity and behavior analysis should be documented with an understanding of how this involvement contributes to an overall sense of campus community. And this knowledge should be translated into physical design action that captures the student community, maintains and encourages various forms of student interaction and community engagement.

Finally, the results provide information in determining how to focus programming or opportunities for student involvement so that students' involvement in these targeted activities can contribute to a sense of community. On a practical level, the results suggest involvement contributes to a sense of community, and that the layout and design of the physical environment acts as a catalyst of student involvement in various activities such as social interaction, casual meeting, group study and collaboration etc. Therefore, on a whole, physical design does have the capability to influence the sense of community on campus.

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APPENDIX A

The Role of Physical Design on the Campus Community: Questionnaire

Student Data:

1. How often do you visit Caldwell Hall's entrance porch and lobby during an average week?
 - a. Every day (Monday to Friday)
 - b. 3-4 times a week
 - c. Once a week
 - d. Other

What time of day do you visit Caldwell Hall?

- a. Morning 8am-12pm
- b. Noon
- c. Afternoon 1-5pm
- d. Evening 5-10pm

Approximately how long is the duration of your stay?

- a. 0 – 5 minutes
- b. 5- 10 minutes
- c. 10- 20 minutes
- d. More than 20 minutes

2. Do you often use Caldwell Hall's entrance porch and lobby to:
Please circle more than one if applicable.

- a. Meet someone
- b. Hang out
- c. Study / read
- d. Social interaction?
- e. Wait for your next class
- f. Eat lunch
- g. Group discussion and study
- h. People watching
- i. Working or browsing on your laptops

- b. Does you find yourself using it more often in (groups) / (alone)? Please circle one.

3. Do you think Caldwell Halls entrance porch and lobby space is a good place to hang out between classes, meet friends, study, relax, and for social interaction? Yes / No
4. Do you identify with Caldwell Hall's entrance porch and lobby space? Yes / No

Broad Questions:

1. Which is your **favorite space** on campus (indoor or/and outdoor)?
What factors make it your "favorite"?
2. For the following two questions please rate the options listed below on a scale of 1 to 3 according to level of importance. (Wherein 1- **NOT** important, 2- **Somewhat** important and 3- **Definitely** important)
 - A. Which of the following amenities affect the **positive quality** of a space? Please circle.
 - a. Benches 1 2 3
 - b. Tables and chairs 1 2 3
 - c. Sufficient greenery and trees 1 2 3
 - d. Shade. 1 2 3
 - e. Informal seating like steps, ledge, retaining walls and seat walls. 1 2 3
 - f. Access to food (nearby café or vending facilities) 1 2 3
 - g. Technological adaptability (Wi-Fi, plug points) 1 2 3
 - h. Visual connectivity to the surrounding outdoor spaces. 1 2 3
 - i. Physical connectivity to surrounding outdoor spaces. 1 2 3
 - j. Other (Please fill in)

 - B. Which of the following would add to your **level of attachment** with a space thereby persuading you to spend more time there? Please circle.
 - a. Comfortable site furniture 1 2 3
 - b. Degree of privacy it offers 1 2 3
 - c. Familiarity with the space, its surrounding environment. 1 2 3
 - d. Presence of known faces. 1 2 3
 - e. Frequency of visit 1 2 3
 - f. Proximity to your department building. 1 2 3
 - g. Views of the surrounding open spaces. 1 2 3
 - h. Other (Please fill in)

Site Specific Questions:

1. How would rate Caldwell Hall's entrance porch and lobby space using the following adjective pairs?

Inviting	1	2	3	4	Uninviting
Comfortable	1	2	3	4	Uncomfortable
Social space	1	2	3	4	Anti social space
Homely	1	2	3	4	Foreign
Secure	1	2	3	4	Unsafe
Familiar	1	2	3	4	Unfamiliar
Convenient	1	2	3	4	Inconvenient
Offers privacy	1	2	3	4	Lacks privacy
2. Which of the following activities do you participate in while visiting Caldwell Hall's entrance porch and lobby space?
 - a. Group Study / Discussion between classes.
 - b. Individual study / reading between classes.
 - c. Stop there to talk to someone.
 - d. Arrange to meet someone there.
 - e. People watching.
 - f. Eat lunch or snacks there.
 - g. Read the paper
 - h. Work / browse on your laptop
 - i. Hang out and chat with friends.
 - j. Other (Please list)

3. Do you think Caldwell Hall's entrance porch and lobby space provides enough, in terms of physical design requirements and comfort for the activities you engage in (hang out/ meet colleagues/ study/ socially interact)? Yes / No.
4. Which of the following amenities do you find lacking and would like to see more of? Please circle one or more.
 - a. Benches
 - b. Tables and chairs
 - c. Sufficient greenery and trees
 - d. Shade.
 - e. Informal seating like steps, ledge, retaining walls and seat walls.
 - f. Access to food (nearby café or vending facilities)
 - g. Technological adaptability (Wi-Fi, plug points)
 - h. Visual connectivity to the surrounding outdoor spaces.
 - i. Physical connectivity to surrounding outdoor spaces.
 - j. Other (Please fill in)
5. If you could what change / additions would you make to Caldwell Hall's entrance porch and lobby space?