

1-1-2010

Campus Architecture and Student Culture in American Higher Education

Alexandra R. Troxell
Bucknell University

Follow this and additional works at: http://digitalcommons.bucknell.edu/honors_theses

Recommended Citation

Troxell, Alexandra R., "Campus Architecture and Student Culture in American Higher Education" (2010). *Honor's Theses*. Paper 44.

This Honors Thesis is brought to you for free and open access by the Student Theses at Bucknell Digital Commons. It has been accepted for inclusion in Honor's Theses by an authorized administrator of Bucknell Digital Commons. For more information, please contact dcadmin@bucknell.edu.

Campus Architecture and Student Culture in American Higher Education

Campus Architecture and Student Culture in American Higher Education

By Alexandra R. Troxell

A Thesis Submitted to the Honors Council

For Honors in Education

April 30, 2010

Approved by:

Adviser: Joseph L. Murray

Department Chairperson: Lynn Hoffman

Campus Architecture and Student Culture in American Higher Education

Acknowledgements

This thesis has been a new and challenging experience for me. I would be remiss if I did not thank the very many people who contributed to the actual process of writing the thesis, and offered support and encouragement through the onset to the completion of this project. Professor Joseph Murray, through his thoughtful approaches to research and attention to detail, has influenced my approach to research and writing process in tremendous ways. Not only have I benefitted from his technical skills in writing and research, but from his insight and expertise as a student affairs professional and scholar. While simultaneously writing a thesis and solidifying graduate school plans, he has guided me through preparing for interviews and through the decision process itself as a great mentor. It was a privilege to work with Professor Murray over the past year and I know that in the future I will strive to reach his level of commitment and enthusiasm about the student affairs profession.

I would also like to thank Professor Janice Mann for her feedback on architectural resources and the scoring rubric that was used in the classification system. Her expertise added certainty to the rubric and its inclusion of specific architectural styles. I would also like to thank Professor Katharyn Nottis for answering questions about SPSS during her sabbatical.

I would be nowhere if it were not for the unconditional support from my family and friends. Through these years we have shared many stressful and joyous occasions. You were always willing to listen to me and offer me simple words of advice. You have

all been there for me throughout this process with love and friendship and have made the process more enjoyable by providing an outlet from the occasional frustrating moment. I am indebted to your kindness, support, and interest in my personal and academic endeavors.

Table of Contents

PREFACE..... iv-ix

ABSTRACT.....x

CHAPTER ONE -- INTRODUCTION.....1-9

CHAPTER TWO -- LITERATURE REVIEW10-30

CHAPTER THREE -- METHODOLOGY.....31-41

CHAPTER FOUR -- RESULTS.....42-46

CHAPTER FIVE -- DISCUSSION.....47-59

APPENDIXES.....60-80

REFERENCES81-82

Preface

I knew I wanted to attend Bucknell University before I stepped foot on its campus. At the time, I did not know much about Bucknell other than what I had seen during my travels through Lewisburg as a local high school student who dreamt of becoming college-bound—the campus was beautiful and I felt that I would be at home amongst the shady lawns and brick buildings. Before I had begun researching prospective colleges, I had very limited information about Bucknell’s campus culture and had only heard limited information about its academic prestige; I simply became interested in its physical features through the passenger seat windows of my family’s car.

Much of my initial research on colleges had occurred through the use of the internet. Other than frequenting each college websites’ prospective student page and skimming over admissions information, I also used the campus online tour feature to gain some additional information. What my main considerations were in choosing a campus became what I looked for in the virtual tour. I was looking for an environment that appeared comfortable and academically driven—the perfect fit. For some campuses, their websites were anything but spectacular; their online tours were short and did not provide adequate information for me to form an opinion, which ultimately deterred me from scheduling a visit. On the other hand, some campuses had great websites and tour features, which in one way or another captured my interest and created desire within me that made me want to experience the environment firsthand.

From the list of colleges I initially researched and considered visiting, Bucknell had the best website. Consequently, Bucknell became number one on my list of prospective colleges. Looking back on that period of time, when colleges were only as real to me as images that appeared on a computer screen, I realized that my attraction to the school had not only been due to its informational and accessible website, but to the aesthetically pleasing images that were displayed throughout the website and especially on the tour feature. Once I arrived to Bucknell's campus during the summer of 2005, the picturesque campus I had previously viewed on a screen and passed through on a few occasions came to life before my eyes.

A simple walk around the campus of Bucknell University, using the linear walkways through the symmetrical quadrangles to stroll past the brick buildings ornamented consistently in the Collegiate Georgian style, one is likely to comment on the beauty of the campus. The awareness of Bucknell's visual charm is reflected in the institution's website under the virtual tour feature, with a caption that claims "from historical buildings that reflect a storied tradition to new facilities that take into account the ambition of providing the premier undergraduate experience in American higher education, there is much to discover at Bucknell" (<http://www.bucknell.edu/x19717.xml>, March 4, 2010). Bucknell's rich history is not only reflected in its institutional traditions, such as the ceremonies of Convocation and Commencement activities, which involve memorable customs of candle-lighting, but also in the tradition of its architecture and building materials.

Upon wanting a closer look at Bucknell one is likely to inquire about the type of students who attend the institution and the campus climate. Based on Bucknell University's statistics, such as the demographics of its applicants and cost of tuition, one can surmise that those who are applying to Bucknell are most likely students coming from middle to upper class families. During noontime near the Elaine Langone Center, one can witness a significant proportion of Bucknell students walking from class to the dining facilities. Just as the campus environment is striking in its uniformity in terms of building style and color, so is the student body. By spending only moments on campus, Bucknell's unconscious student dress code and standard of appearance becomes apparent—athletically fit students sporting North Face jackets, Ugg boots and Vera Bradley bags can be seen walking briskly to and from class, the library, and in and out of the gym. Besides the students' physical appearance, the culture itself is also relatively homogeneous. One can find a majority of students who are conforming, high achieving, competitive and members of Greek letter organizations. Although Bucknell promotes a liberal education, most of the students are what one would call conventional, especially considering the prevalence of the fields of Engineering and Management—two of Bucknell's most renowned majors.

While certainly not all students, and even faculty, of Bucknell University can be characterized in this manner, surely the dominant social climate is characterized by many students who fit into this category. While there are opportunities to remain independent from a fraternity or sorority or a sporting team, to major in Creative Writing or Art, and to sit around 7th Street discussing existential philosophy and vegetarianism, these

activities are not openly supported and reinforced by the University or its student body. Thus, those who are a part of the College of Engineering or School of Management, and who are part of Greek letter organizations and who feverously work all day in the library in order to complete their homework so they are able to participate in the evening meetings and social activities are supported by the climate of the dominant culture of the students and the values of the institution.

Through an examination of the uniformity of the student culture and the campus architecture, one may begin to question if architecture and culture are somehow related—whether the Bucknell students themselves saw their own values and culture reflected in the styles and colors of the structures of the institution, which was translated to them as the institutional culture. In other words, do Bucknell students look at the University as sharing values and what is important to them? Does Bucknell's institutional culture reinforce the behavior of the dominant social culture? Imagine this: a group of homogenous Bucknell students living, working and studying in a place where every building is a different color, its architecture ranging from Victorian Revival to post-modern and neo-eclectic. There is something unnatural about that picture. Essentially, the above observations have led me to further question the role of architecture and building design elements in shaping student culture and behavior.

This project has been a full circle experience for me. To begin my undergraduate college career I began looking at the websites of various colleges to gather information. I have ended my undergraduate career by performing the same task, albeit with a different purpose. This thesis has been a completely different experience in comparison to my

initial college search. I have been able to view the selection of a college from an objective position. Looking back, it has enabled me to look at the process I underwent nearly five years ago in a whole different light, realizing that much of what I talk about in the thesis to follow relates to many of the internal thought processes at that time. This realization has driven the completion of this thesis by the way that something as technical as building architecture and color can become so personal when viewing it on an individual level. Talking about this realization with family and friends with no background in the field of higher education or architecture, I have come to realize the universality of the topic and how it causes people to think about their own experiences and reevaluate their decision-making process.

Although I have immersed myself in the academic and social culture at Bucknell University, I still consider myself an outsider in many ways, which allows me to take an objective outlook on the nature of the student body and its surrounding environment. I would define myself as a non-conventional student in comparison to the Bucknell norm, but I can see a marked change in my personality, interests and values from the beginning of freshman year to the present. I believe environmental and social factors account for this. Initially, I viewed my desire for assimilation as a mode of survival—I needed to at least superficially appear similar to my peers in order to survive the social realm of Bucknell University.

This thesis has caused me to question if what I saw through Bucknell's website and a campus tour depicted what I was looking for in an institution. My campus tour occurred in the summer months, when there were no students besides the admissions tour

guides walking around campus. Therefore, I had limited interaction with the student body. I question whether my decision to attend Bucknell would have been different if I toured during the academic year, or if I participated in over-night visits through the Office of Admissions—which would give me a firsthand feel for the student culture. In essence, Bucknell’s physical characteristics—its perfect landscaping, uniform buildings and appropriately designed green spaces—positively overshadowed the incongruence I felt with the student culture.

Abstract

Human-environment interaction theory, as it specifically relates to architectural determinism, has an indispensable impact on student culture on college campuses. Under the assumptions of architectural determinism, this thesis examines the relationship between architecture and student culture on 30 American college campuses. Specifically, this thesis looks at uniformity of architectural style and color and the prevalence of traditional styles of architecture in relation to the institutions' campus cultures. The results of the study found that a significant relationship exists between student culture and uniformity of building color, but not between student culture and uniformity of style or the prevalence of traditional styles on a given campus. The thesis concludes with a discussion of the findings, limitations of the study, and suggestions for further research.

Chapter 1

Introduction

The following thesis is based on the constructs of human-environment interaction theory, which implies that a positive relationship exists between an individual's physical environment and his or her consequent behavior. In essence, human-environment interaction theory examines how an environment can reinforce or discourage specific behaviors from occurring, and how particular environments can be shaped to achieve desired behaviors from their inhabitants. Particularly, this thesis examines human-environment interaction theory as it relates to architectural determinism, a concept defined as the impact that the physical characteristics of the environment, including building architecture and color, have on the student culture in institutions of higher education in the United States.

Due to the correlation between student culture and institutional environment, the study of campus environments is important to the improvement of every college campus and is of particular interest to those who work in or interact with campus environments. The campus environment of any given college is influenced by various factors such as academics, administration, social organizations, safety, and physical characteristics. The goal of those who manage college environments is to establish a system where the various components are able to interact most effectively to produce desired learning and encourage responsible student conduct. In a study of campus environments commissioned by NASPA (Nealson, Kotter, Padilla, Pennington, Pertofsky, Quirolgico,

& Keeling, 2004), it was noted that environmental influences “can be the physical setting or place (features of the natural environment and the man-made environment), human aggregate or characteristics of the people (size and function of organizations), and social climate and/or characteristics of the surrounding community” and that each environmental factor may include several influences that predispose, enable or reinforce behaviors (p. 9).

The link between the physical characteristics of the campus and the behavior within it is known as “architectural determinism,” a form of human-environment interaction (Strange & Banning, 2001, p. 13). The concept of architectural determinism is the focus of this thesis, in which the campus architecture of American colleges and universities is linked to variations in student culture. The study has focused specifically on the concept of conventionality, as it relates to both campus architecture and student culture.

Conventionality has frequently been cited as a point of differentiation among student subpopulations, most notably in an early study by Newcomb, Koenig, Flacks, and Warwick (1967), in which *unconventionality* was defined as “a total or partial rejection of certain values, norms, and behavior patterns associated with the larger society, and especially the middle class and eastern [American] ‘society’” (p. 114). In another influential work, Holland (1997) identified a *conventional* personality type, which was often characterized as “careful, conforming, conscientious, dogmatic, efficient, inflexible, inhibited, methodical, obedient, orderly, persistent, practical, thorough, thrifty, [and] unimaginative” (p. 28). Astin (1993) drew parallels between Holland’s conventional type

and his own *status striver*, a class of student that seeks to attain high levels of occupational recognition and material comfort. In contrast, Clark and Trow (1966) used the criterion of *nonconformity* to distinguish a student subculture in which institutional authority is resisted and intellectual independence is highly valued.

The concept of conventionality has, likewise, emerged as a critical element in the study of architecture. Conventionality can be measured in a variety of ways, but most commonly by the prevalence of uniform design elements on a single campus and the conventionality of styles themselves. A *monoform* design (Dober 1991) is a single style of architecture applied to a campus, marking “a sense of finite unity” (p. 88), where all of the buildings incorporate particular design elements. In contrast, a *mosaic* design defines campuses with no distinct style, where buildings do not conform to a particular pattern of design, thus defying convention. Historical styles, such as Georgian and Gothic, represent a “mortmain on values and nostalgia... ripe with readily understandable historic associations” (p. 49). Styles common from the 20th century often manifest a “rejection of traditional sovereign styles as the rationalization of industrialism” (p. 88), and a defiance of architectural norms of prior years. For purposes of this thesis, conventionality of campus architecture is defined as encompassing two factors: (1) uniformity of design elements among the various buildings on a single campus, and (2) conformity of campus buildings to prevailing architectural norms, as measured by the absence of atypical design elements and the prevalence of traditional architectural styles.

The central hypothesis of this thesis is that a positive relationship exists between the conventionality of the architecture on American college and university campuses and

the conventionality of the student cultures that emerge on those same campuses. This hypothesis is grounded in the theoretical construct of *person-environment congruence*, defined as “the degree of fit between persons and environments” (Strange & Banning, 2001, p. 52). A number of prominent theorists have posited that individuals are drawn to environments with which they feel a sense of compatibility and ultimately find satisfaction in these environments to the degree that their initial perceptions prove to be accurate over time (Holland, 1997; Strange & Banning, 2001; Tinto, 1993). Thus far, person-environment congruence has been conceived primarily in relation to *human aggregates*, meaning the various populations that inhabit the environment and that share certain collective characteristics. This study focuses instead on the physical environment of the campus to which students often attach symbolic meaning (Strange & Banning, 2001). It is hypothesized that prospective students draw inferences about the culture of a campus, based in part on the characteristics of its architecture, and that these inferences in turn inform their judgments of their own compatibility with the institution.

To test this hypothesis, comparisons were drawn between two lists of colleges and universities, which were generated by the editors of the Princeton Review’s *The Best 366 Colleges* (Franek, Meltzer, Maier, Olson, Doherty, & Owens, 2007). The lists represent opposing categories of American colleges and universities, which were chosen based on students’ political persuasions and religious affiliations, as well as the prevalence of marijuana and hallucinogenic drug use, popularity of student government, and level of acceptance of the gay community on campus. Institutions with conventional student cultures were retrieved from the list entitled “Future Rotarians and Daughters of the

American Revolution” (p. 48). The campuses with unconventional student cultures were retrieved from the list entitled “Birkenstock-Wearing, Tree-Hugging, Clove Smoking Vegetarians” (p. 49).

The architecture on each of the campuses was reviewed, using the on-line tour feature of its website, and information was recorded on the style and color of each building. From these data, ratings were calculated for each campus on three variables: (1) uniformity of style, (2) uniformity of color, and (3) level of traditionalism in terms of building architecture. After all of the buildings on a given campus were classified on the basis of style and color, the predominant style and color for each campus was determined and used to calculate its uniformity score. The uniformity of style score was calculated for each campus by dividing the percentage of buildings in the most common style found on that campus by the total number of styles found on that same campus. This same procedure was then repeated, using data on the colors of campus buildings. The resulting numbers were the ratings for uniformity of style and color respectively. The resulting numbers were used to establish rankings of uniformity in style and color, where higher scoring institutions were ranked higher on their levels of uniformity and lower scoring institutions were ranked lower on their levels of uniformity. The traditionalism score for each institution was then calculated as the percentage of its campus buildings classified in historical styles, as opposed to modern styles. This score was used to rank the institutions, with more traditional campuses ranked above less traditional campuses.

Since an existing instrument to classify campus buildings could not be located, an original classification scheme was created, using an adaptation of an existing list (Dober,

1991, pg. 40) for the purposes of this study, as were guidelines that informed the classification of style and color for the scorers. The model incorporates two variables on which buildings can be classified—style and color. A pilot study was then completed in order to establish the practical utility of the instrument. A stratified random sample (n = 44) was drawn from *U.S. News and World Report's* list of National, Master's, Baccalaureate and Liberal Arts Universities, separated by the regions, North, South, Midwest, and West. The 44 institutions' buildings were classified, using virtual tours, interactive maps, campus photos, and other media available on-line.

In the final version of the instrument, there were eight categories under the style variable: (1) American Federal/Colonial, (2) Classical Revival, (3) Gothic Revival, (4) other historical, (5) historical/repurposed, (6) definably modern, (7) other modern and (8) modern/repurposed. The “other historical” category included the styles Beaux Arts Classicism, Tudor Style, and Mission Revival. The historical/re-purposed and modern/re-purposed categories included historical and modern buildings respectively, which were originally built for purposes outside of the college (e.g. neighborhood houses) and were subsequently adapted for use as a part of the campus. The “modern” category included any of the following styles: International Style, Regionalism, Chicago School, Post-modern, Art Deco, Deconstruction, Contextual, New Brutalism and High-Tech. All modern styles were consolidated into one category because too few buildings in the pilot study fell into each category to warrant distinctions among them.

Under the second variable, color, there were ten categories: (1) degrees of brown, (2) white, (3) degrees of gray, (4) transparent, (5) concrete, (6) steel, (7) Non-earthen

colors, (8) multicolored (2 or more neutral colors) and (9) multicolored (2 or more non-earthen colors). Building color was determined by the color that dominated the building. If the building was covered equally by two different colors, then the color of the first or main floor of the building would determine the building's color.

Provisions were made to determine the test-retest and inter-rater reliability of the instrument, based on the scoring of the 30 institutions identified by the Princeton Review that had usable websites. To ascertain the test-retest reliability of the instrument, the principal investigator scored each of the institutions once, and scored the first five institutions on each of the two lists again two weeks later. Using data from the 10 campuses that had been scored twice, the correlation between the two rounds of scoring was calculated. A second reviewer also scored the first five campuses on each list once. His scores were then correlated with the principal investigator's first-round scores as a basis for determining the inter-rater reliability of the instrument.

The principle investigator's first-round scores were used to test the following three hypotheses:

1. Institutions with conventional student cultures will be characterized by more uniform styles of campus architecture than will institutions with unconventional student cultures.
2. Institutions with conventional student cultures will be characterized by more uniformly colored campus architecture than will institutions with unconventional student cultures.

3. Institutions with conventional student cultures will be characterized by a higher level of traditionalism in their campus architecture than will institutions with unconventional student cultures.

The study is significant because there has been only limited research done on campus architecture as it relates to students. Furthermore, there has been virtually no research done on campus architecture and student culture on a national scale. The results of this study serve to influence institutions of higher education, making college personnel aware of the contributions of campus architecture to the creation of educational environments where students can grow and learn in the most constructive way possible. More importantly, the findings of the study will contribute to the field of student affairs and to specific departments on campuses, such as housing and residence life, admissions, and first year programs.

The findings themselves are particularly relevant to college admissions, for campus architecture and color may predict what type of student is attracted to a given campus. The findings could potentially inform housing projects, especially those involving the design of new buildings to accommodate special interest communities. The study is of potentially great interest to administrators on campuses that are undergoing expansion. In general, this thesis's purpose is to highlight the importance of campus architecture, particularly as it relates to student culture, health and psychological well-being. As John Dewey stated, "we never educate directly, but indirectly by means of the environment. Whether we permit chance environments to do the work, or whether we design environments for the purpose makes a great difference." (Dewey, 1916, p. 2).

The following chapters will explain the underlying research, methodology, and results, followed by a discussion of the results as they relate to the three hypotheses proposed in this chapter, pertaining to student culture, uniformity of style and color of campus buildings, and the measure of traditionalism in building style. Chapter Two is a literature review, where an overview of prominent theories and concepts in the realm of person-environment interaction, student culture, and architecture is discussed in detail. Chapter Three is an explanation of the methodology used in the development of an original instrument to classify building architecture and color, the application of the classification system, and the analysis of data used to find results. Chapter Four presents the results of the analyses used to test the three hypotheses. Chapter Five discusses the findings in detail, reveals limitations, and offers suggestions for further research.

Chapter 2

Review of the Literature

Architecture is one of the most visually provoking characteristics of a college campus, among its other external features such as the general placement of its buildings, green spaces, and parking lots. The uniformity or non-uniformity of the architectural styles used on the campus sends the prospective members of an institution certain messages about the values of the institution which are encapsulated by the dominant cultural groups present on campus. According to Boyer (1987), the physical appearance of a campus is a factor that prospective students are most attracted to when first viewing a campus. A well planned campus, in terms of architectural design and building layout, can leave a lasting impression on the prospective student, arguably influencing his or her decision to apply to that particular institution or to choose another institution to which he or she is more attracted. Whether the prospective student finds the campus to be aesthetically appealing or visually off-putting, the campus environment places a lasting impression in the minds of its current and future inhabitants and can inadvertently shape the behavior within that environment. Thus, environments can be shaped in order to attract a certain student population and contribute to the behavior of the student within that environment.

Colleges and universities, in order to establish their institutional prestige, which in turn enables them to attract students, are continuously working to establish environmental and social conditions that “retain students for the purposes of challenging them to

develop qualities of the educated person, including a capacity for complex critical reasoning, communication, leadership and a sense of identity and purpose” (Strange & Banning, 2001, p. 2). During the initial contact by a prospective student with the institution, whether prior to or during the admissions process, the individual is establishing his or her initial impressions of the campus’s social and intellectual climate. These impressions are likely to influence the student’s decision to apply to the institution. Furthermore, these initial impressions establish criteria for the individual’s expectations of what the he or she is likely to experience once matriculation occurs (Tinto, 1987). The initial experience of the college campus and the consequent feelings concerning the visit are often indicators to the way the prospective student views a campus as, in common jargon, a good fit or not a good fit.

The individual’s attraction or repulsion with the campus is due in part to *person-environment congruence*, which is defined as “the degree of fit between persons and environments” (Strange & Banning, 2001, p. 52). If an individual does not experience the campus with the conclusion that the particular institution is a good fit for the individual, the individual is likely not to return to the campus. In contrast, if the individual’s initial experience with the campus determines that he or she is a good fit, it is a good indicator that the student will want to enroll and remain at the college. Thus, the extent to which the individual is likely to adapt to, withdraw from, or change the physical environment of a campus is dependent on the characteristics of the environment, namely its academic and social culture, and the degree of fit between the person and that environment.

Person-environment interaction theories are based off the initial work of Kurt Lewin, a psychologist and a pioneer in the field of organizational and social psychology. The equation known as “Lewin’s equation” states $B = f(P \times E)$, in other words, behavior is a function of the person and environment. Lewin’s equation serves as a basis for person-environment interaction theories and has since influenced works of research in the field of college student development, including the major theoretical works of Astin, Holland, and Tinto. Person-environment interaction theory has also served as a basis for the campus ecology movement. The campus ecology movement is characterized by an analysis of all the aspects of campus environments, including the physical space and its inhabitants. Furthermore, the campus ecology movement has drawn consciousness to the ways in which campus environments impact student development. Consequently, campus environments have been designed to increase positive student development (Kuh, 2000).

The many benefits of creating a satisfactory campus environment have implications far beyond one’s first impression of the institution. Strange and Banning (2001) suggest that creation of an effective campus environment is important to the institution’s “environmental capacity to encourage and sustain learning” as measured by “the degree to which it provides the conditions (in real and virtual form) for students’ inclusion, safety, involvement, and full membership in a community” (p. 200). These factors are indicative of an ecology of learning, where student culture and the students’ physical environment combine to support the academic endeavors of the institution.

The mutual relationship between student and environment was first captured in the *campus ecology model*, which incorporates eight themes that balance the forces of student and campus:

1. A campus environment consists of all the stimuli that impinge upon the students' sensory modalities, including physical, chemical, biological, and social stimulation.
2. A transactional relationship exists between college students and their campus environment, i.e., the students shape the environment and they are shaped by it.
3. For purposes of environmental design, the shaping properties of the campus environment are focused on; however, the students are still viewed as active, choice-making agents who may resist, transform, or nullify environmental influences.
4. Every student possesses the capacity for a wide spectrum of possible behaviors. A campus environment may facilitate or inhibit any one or more of those behaviors. The campus should be intentionally designed to offer opportunities, incentives, and reinforcements for growth and development.
5. Students will attempt to cope with any educational environment in which they are placed. If the environment is not compatible with the students, the students may react negatively or fail to develop desirable qualities.
6. Because of the wide range of individual differences among students, fitting the campus environment to the student requires the creation of a wide

variety of campus subenvironments. There must be an attempt to design for the wide range of individual characteristics found among students.

7. Every campus has a design, even if the administration, faculty, and students have not planned it or are not consciously aware of it. A design technology for campus environments, therefore, is useful for both the analysis of existing campus environments and the design of new ones.
8. Successful campus design depends on input from all campus members including students, faculty, staff, administration, and trustees or regents. (Kaiser, 1975, p. 33).

The above model can be utilized in order to provide efficiency for campus environment planning by eliminating dysfunctional design plans and resulting structures. This ecological approach to campus planning allows one to examine aspects of the physical environment, aspects that are directly related to student attrition, by discussing adjustments that can be made in order to sustain conditions that keep students stable within the campus environment. In turn, the model promotes structuring of an environment that facilitates intellectual and social growth for students (Aulepp & Delworth, 1976).

Based on this *campus ecology model*, Strange and Banning (2001) have created a *campus design matrix* that focuses on the interaction of the components of a campus environment (including the physical, aggregate, organizational and constructed components), as well as the campus design's positive or negative impact on the campus community and the purpose that the physical environment serves (including community,

involvement, inclusion and safety purposes). The *campus design matrix* addresses three questions, related to the *campus ecology model*, which are essential to campus design:

1. What components are involved in this particular environmental assessment or action?
2. What is the impact of the current design?
3. What is the intended focus or purpose of this design? (p. 203)

The utilization of this matrix can help guide campus planners as they incorporate new buildings into their existing design schemes and, more importantly, measure the desired effects of campus design against the reality of its implementation.

Aulepp and Delworth (1976) have created a seven-step tool for evaluating the design process occurring on a given campus in order to assess a variety of impacts the design has on the environment:

1. Designers, in conjunction with community members, select educational values.
2. Values are then translated into specific goals.
3. Environments are designed that contain mechanisms to reach the stated goals.
4. Environments are fitted to students.
5. Student perceptions of the environments are measured.
6. Student behavior resulting from environmental perceptions is monitored.
7. Data on the environmental design's successes and failures, as indicated by student perceptions and behavior, are fed back to the designers in order that they

may continue to learn about student/environment fit and design better environments. (p. 8).

The emphasis of Aulepp and Delworth's (1976) evaluative model is on the perceptions of students in the environment. Most campus environments already have an established design plan and an equally established set of values, where most of the changes will occur on a micro-level. This truth about the nature of American colleges and universities enables student viewpoints to be of great value to future design endeavors. The above model attempts to gather information on student perceptions, asking "how students view the translations of these values and goals, that is how [sic] they perceive what is happening to them in the environment, and equally important, why [sic] they have these perceptions" (p. 9).

The *student/environment fit* (Aulepp & Delworth, 1976) is a concept that is directly related to *person-environment congruence*, which predicts the likelihood of an individual's attraction to and satisfaction or stability within an environment, which in turn impacts the individual's decision to remain in that environment (Strange & Banning, 2001). Therefore, establishing *person-environment congruence* is a way to prevent *student departure* from institutions of higher education, as discussed by Tinto (1987). Congruence is dependent on a variety of factors, including verbal messages sent by the environment, compatibility with existing student culture, and the aesthetics of the overall design of the institution and its structures.

Banning (1993) states that informal learning about the campus environment and cultural messages can occur when a student walks through campus during a tour. The

perspective of a campus walker can shed light on messages about what cultures the environment ignores, abuses, or supports. For example, a building that displays homophobic graffiti may send the cultural message that homosexuals are not welcome on a particular campus, suggesting that a student who belongs to this culture might not feel supported on the campus. This message might, therefore, deter such a student from attending the particular institution. Banning (1993) states that “there are many negative non-verbal cultural messages that teach campus pedestrians about themselves and others on such topics as self and group-esteem, cultural group stereotypes, and group exploitation and intolerance” (p. 4). Banning goes on to ask “How safe, how convenient, how pleasurable can the campus pedestrian environment be with the presence of these negative messages?” (p. 4).

Tinto (1987) explains that individuals attending a particular institution view and experience the character and social climate through a series of formal and informal interactions with those who they come in contact with in relation to the institution, as in faculty members, classmates, and the individuals constituting one’s residence hall. Defined by Moos (1976), *social climate* is the “mediator between background factors and behavioral outcomes” (p. 285), where those with differing background factors create contrasting social climates, which account for variation in behavior and values. If the individual is at odds with the dominant social climate of the institution, he or she is likely to experience *incongruence*. The individual comes to understand this *incongruence* in one of two ways: academic and social. Academic incongruence occurs when an individual is at odds with the intellectual environment of the institution. *Social incongruence* “tends to

mirror a mismatch between the social values, preferences and/or behavioral styles of the person and those which characterize other members of the institution, expressed individually or collectively” (p. 56). Thus, if an individual experiences *social incongruence*, he or she is unlikely to establish personally meaningful friendships within the institution.

It goes without saying that certain campuses are perceived as having a nearly homogeneous student body, where an overwhelming majority fit into one social or intellectual culture. When the student in question perceives his or her own culture to be contrary to that of the norm, he or she is likely to be at risk of withdrawing from the institution. In other words, the person’s perceived *incongruence* with the institution’s social or intellectual environment can become grounds for withdrawal (Tinto, 1987). However, if the student achieves *person-environment congruence* with the institution and identifies with the dominant student culture, “the person is likely to be encouraged for exactly those behaviors, values, attitudes, and expectations that attracted him or her to the environment in the first place, thus reinforcing person-environment similarities” (Strange & Banning, 2001, p. 52). In turn, this reinforcement increases the likelihood that the person will remain in the environment. As *person-environment incongruence* is often a factor in student withdrawal, it bears directly upon the institutional problem of student attrition.

Although incongruence occurs when the individual is at odds with the dominant social climate of the institution, it is not necessarily the case that the individual must fit perfectly into the institutional environment (Tinto, 1987). For example, at large, highly

populated colleges and universities, there exists a variation in student culture, where subgroups differ in academic pursuits and social interests. This variation leads to an array of contrasting groups, which differ in their “own distinct patterns of intellectual and behavioral interaction” (p. 58). Therefore, a person may be in conflict with a large social or academic group on the campus while at the same time finding companionship adequate for persistence in a smaller group. Thus, the current research suggests that it is more important for an individual to find her or his niche within the institution than to identify with the dominant social culture, or the social climate of the institution as a whole (Tinto, 1987). In order to promote persistence, it is important for admissions processes “to portray as accurately and fully as possible the sorts of students, faculty, and staff and types of social and intellectual communities which exist on campus and which are likely to be experienced by students after entry” (p. 143). This would enable prospective students to receive the most accurate perception of the university in order to identify their potential congruence or incongruence.

Nonetheless, students entering a given campus will likely experience a variety of personality types based on the environment within that campus. According to Strange and Banning (2001), “environments are transmitted through people, and the dominant features of a particular environment are partially a function of the collective characteristics of the individuals who inhabit it” (p. 35). Student typologies serve as a means of understanding the collective characteristics of student groups on a given campus. A typology is a classification system that accounts for the “uniqueness and individuality of students as personalities by utilizing information on their values, attitudes

beliefs, self-concept, and behavior” (Astin, 1993, p. 36). According to this definition, it is important to note that typologies are meant to describe characteristics of various groups of students and not to prescribe a hierarchical order to the categories, as would be found in cognitive developmental stage theories.

The behavior of an individual is likely to reflect his or her orientation towards perception or judgment, the defining aspect of personality type (Briggs, 1980). According to Briggs (1980) there are 16 basic personality types, each characterized by a unique way of viewing the world and attendant attitudes and behaviors. Although this typology, known as the Myers-Briggs model, has perhaps been most frequently used to identify one’s preferences towards careers, relationships and learning styles, it has also been applied to various aspects of the college experience, including issues of student attrition and design of residence halls (Strange & Banning, 2001).

Conventionality has frequently been cited as a point of differentiation among student subpopulations, most notably in an early study by Newcomb, Koenig, Flacks, and Warwick (1967), in which *unconventionality* was defined as “a total or partial rejection of certain values, norms, and behavior patterns associated with the larger society, and especially the middle class and eastern [American] ‘society’” (p. 114). Based on this study of the experimental Bennington College of the early 1960s, the authors defined the culture found on any given campus as comprised of the following factors: “(1) the history of the college and its formal traditions, (2) its current administrative policies, and (3) the background characteristics of the students who find themselves attracted to it” (p. 107). Bennington College promoted individualized routes of study (there were no major

requirements, only a course-plan made with the help of a counselor to tailor to the students' interests), which in turn fostered student unconventionality, intellectualism and personal growth.

In another influential work, Holland (1997) identified a *conventional* personality type, which was often characterized as “careful, conforming, conscientious, dogmatic, efficient, inflexible, inhibited, methodical, obedient, orderly, persistent, practical, thorough, thrifty, [and] unimaginative” (p. 28). According to Holland, the conventional individual tends to choose an occupation that involves an orientation towards systematic duties dealing with data manipulation and often expects to be rewarded for conformity and reliability. On the other hand, those with a conventional personality type are not likely to show interest in exploration or ambiguity in job matters, exhibiting a deficiency in artistic capabilities. Thus, conventional individuals are more often drawn to professions that favor conformity, such as accounting, banking and computer programming.

Likewise, those with a conventional personality type are more likely to be attracted to and are consequentially found in conventional environments, where they are more likely to find conditions that favor the conventional characteristics described above. Conventional organizations are likely to operate in ways that reward “people for the display of conventional attitudes and values (e.g. money, dependability, conformity, etc.)” (Holland, 1997, p. 47). These outcomes, in turn, affect the people within these organizations in a series of secondary effects that cause those people to become: “(a) more susceptible to materialistic influences (e.g., money position, and power); (b) more

attracted to conventional occupations and roles; (c) more prone to cope with others in a conventional manner (i.e., to be controlling, conforming, and practical); and (d) less open to new beliefs and practices” (p. 48).

Astin (1993) designed a study to create a typology focused specifically on college students. Based on data from the Cooperative Institutional Research Program (CIRP) annual survey of incoming first year students, Astin scored participants on 60 questions that measured their values and behavior, regardless of their backgrounds and choices of a major. From the resulting data, Astin categorized seven groups of students in his typology: (1) the *Scholar*, (2) the *Social Activist*, (3) the *Artist*, (4) the *Hedonist*, (5) the *Leader*, (6) the *Status Striver*, and (7) the *Uncommitted Student*.

Astin (1993) drew parallels between Holland’s conventional type and his own *status striver*, a class of student that seeks to attain high levels of occupational recognition and material comfort. Major life goals of the status striver typically include “being successful as an owner or operator of a business, having administrative control over others, being financially successful, obtaining recognition from co-workers for accomplishments in their field and gaining respect from authority within their field” (Astin, 1993, p.39). The interests of these students often relate to power and monetary gain, which contribute to the attainment of their overall goal—to achieve higher status over others. The status striver is mainly drawn towards careers in the fields of business and accounting, while occasionally entering the fields of physical education, architecture, and agriculture. There are also a high number of status strivers who enter the military. In contrast, status strivers are disproportionately underrepresented among those preparing to

become clergy, teachers and writers. Social and leisure activities of the status strivers often include partying, watching television and taking part in Greek life. Status strivers tend to have relatively low grade point averages, rarely graduate with honors, and do not typically spend much time studying.

Clark and Trow (1966) contend that the relationship between the student and the institution is influenced by two factors: (1) the student's position in society and the resources available to him or her, both of which are highly dependent on the social status of his or her parents, and (2) the nature of the institution, including its history, climate, structures, and environment. Clark and Trow discuss how student subcultures are shaped by both factors. The authors emphasize, however, that student subcultures are not meant to represent specific types of students, for many students participate in multiple subcultures on campus, even if one subculture dominates the individual's social and intellectual life. Clark and Trow (1966) identified four categories of student cultures: (1) *collegiate*, (2) *vocational*, (3) *academic*, and (4) *nonconformist*. These subcultures materialize from the combination of two factors: "[1] the degree to which students are involved with ideas and [2] the extent to which students identify with their college" (p. 24).

Of particular importance to this study is the nonconformist category. In contrast to Holland's conventional type and Astin's status striver, Clark and Trow (1966) used the criterion of nonconformity to distinguish a student subculture in which institutional authority is resisted and intellectual independence is highly valued. This subculture is highly involved with ideas, but does not identify strongly with the college or university as

an institution. According to Clark and Trow (1966), “the nonconformist subculture eludes easy characterization. It may, in fact, constitute a residual category, concealing within it quite different kinds of attitudes and orientations, some of which are on the rise, some of which are declining in their importance” (p. 24). Thus, within the nonconformist subculture, there may exist a variety of individual distinctions, which can contribute further to the nonconformist nature of the subculture as a whole.

The existing literature on the concept of *architectural determinism*, a facet of *person-environment congruence*, explains that physical characteristics of an environment impact behavior, which is directly related to human satisfaction and retention within that environment. *Architectural determinism* is based on the principle that physical characteristics of an environment can predict behavior in a direct and causal manner. Beyond this basic definition of architectural determinism, two related concepts have emerged to clarify the complex interactions between the physical environment and human behavior. The first related concept, *architectural possibilism* represents the notion that the physical environment creates possibilities for human behavior, which limit, but do not restrict, behavior. For example, an institution may lack tennis courts, which limits students who wish to play tennis. Conversely, architectural possibilism can be used to encourage certain behaviors. A second related concept, *architectural probabilism*, acknowledges the probability that a desired behavior can be increased using a complimentary design of the physical environment. An example of this is an academic building that has open space with couches and tables, which would encourage students’ collaboration with others in their major (Strange & Banning, 2001).

In a study of campus environments commissioned by NASPA (Nealson, Kotter, Padilla, Pennington, Pertofsky, Quirolgico, & Keeling, 2004), the environmental factors of physical setting or place, human aggregate, and organizational groups of inhabitants, among other influences, were studied in terms of their effects on student health and wellness. These factors are directly related to architectural possibilism and probabilism, for they concern themselves with the causal relationship between architecture and behavior. Concerning the influence of architecture, the authors of the report created a series of questions to evaluate the effect of architecture on campus environments:

1. What does campus architecture convey about the value placed on human comfort and diverse needs of the community? Does form follow function or function follow form?
2. Are larger, more impersonal residence halls more conducive to risk-taking behaviors than apartment-style buildings? What influences on behavior result from old, outmoded residence halls?
3. How does the design of the student union or campus center lend itself to healthy or unhealthy behaviors?
4. How does the design of the campus impact student safety? Are the walkways, parking lots, and building entrances lighted and secure? (p. 10)

As previously stated, physical environments can impact human behavior within the context of the campus. Physical environments can also impact the lifestyles and values of their inhabitants (Moos, 1987). Human or social interactions and physical

characteristics of the environment mutually impact each other to create a behavioral setting that is specific to the individual campus. The physical attributes of the campus can be categorized as either natural or synthetic, and can greatly impact the social interaction on campus. Synthetic objects are usually placed specially to warrant a desired behavior from the people who occupy that space. According to Strange and Banning (2001) the physical characteristics of the campus that exert a determinant influence on human behavior are known as *artifacts*. Artifacts send strong verbal and cultural messages to those who view them and are usually pointed out on campus tours and in admissions brochures. Artifacts can be categorized “in one of four forms: [1] signs and symbols; [2] art work or posters; [3] graffiti; and [4] specific physical structures” (p. 21). The more effectively these artifacts are created or placed throughout the campus environment, the stronger the cultural and verbal messages will be.

There are several deliberate actions that campus designers can perform to create a campus environment that is appealing to its inhabitants, both current and potential. These actions include structuring the campus environment in a way that is attractive and memorable, utilizing the inclusion of distinctive structures and a consistent design scheme, which serves to connect a series of buildings in a communal manner. Dober (1991) defines the activity of campus design as a utilization of components of *placemaking* and *placemaking*. One method of creating an effective campus environment, other than designing physical space in an aesthetically pleasing way, is to create distinctive and appealing features, such as building style, material, landmarks and the effective utilization of the existing landscape. Dober (1991) coined the term

placemaking to describe the act of creating a sense of place on a campus, where varying attributes, such as buildings and landscape architecture, combine to produce a visual uniqueness (pg. 5).

Dober (1991) contends that architectural style is an important *placemaker* that is “charged with allegorical significance and perceptual connotations and meaning” (p. 5). The use of architectural style as a placemaker can reflect a number of significant messages about the institution, including traditions rooted in its regional, national or international location. Architectural styles can either be consistently applied to the entire campus, or vary across individual buildings in order to contribute to campus placemaking. The variation of architectural styles throughout one campus minimizes the impact of conventional design elements and imposes a strongly eclectic physical appearance. The utilization of placemaking through the element of style, using either traditional styles, modern styles or a combination of both, sends messages that are consequential to the culture of the surrounding area, the campus, and its students (Dober, 1991). Placemaking, on the other hand, is defined as the overall pattern of a campus, the broad framework used to plan and implement design. Placemaking, in more simplistic terms, can be defined as the campus plan, which can involve the use of a unified scheme that meets the overarching objectives of the institution, including the “programmatic, functional, and visual” goals of the overall design (p. 4). So while placemaking involves the overarching campus plan, or the skeleton of the physical features of the campus, placemaking involves providing the campus with definition and a visual individuality through the orchestration of its various physical attributes in a deliberate manner.

Beyond the functions of placemaking and placemarking, the uniformity or non-uniformity of design elements within a college campus can contribute to its physical appeal. While uniformity of design elements creates an *undifferentiated* environment, non-uniformity produces a *differentiated* environment (Strange & Banning, 2001). Undifferentiated environments, through a consistency of design elements, actively reinforce their own consistency over time, where later building projects are likely to reflect the design elements of the buildings erected earlier. In contrast, differentiated environments are said to “stimulate a broad range of behavior and provide ambiguous guidance” and unless “one particular type becomes dominant, a wider range of behaviors, values, attitudes, and expectations will be accommodated and encouraged, contributing further to the environment’s variegated image” (p. 50). Thus, the social climate of the constituents of the differentiated environment is more difficult to interpret because of its varying nature, as characteristic of Clark and Trow’s (1966) nonconformist student subculture described previously. Needless to say, one can conclude that the differentiated environments are likely to support a variety of social and academic cultures.

Just as conventionality is a significant aspect of student culture, it has likewise become of particular importance to campus architecture. An *institutional metaphor*, according to Dober (1991), is created by the use of either a consistent architectural style, whether it be modern or traditional, or a combination of styles that are dispersed throughout the entire campus. A *mosaic* design, like Strange and Banning’s differentiated environment, is defined by the absence of uniform architectural style. On a *mosaic* campus, inhabitants are likely to find a variety of architectural styles, colors, and

building materials. In contrast, a *monoform* design, similar to Strange and Banning's undifferentiated environment, is characterized by a single style of architecture applied to the entire campus, marking "a sense of finite unity" (Dober, 1991, p. 88), where all of the buildings incorporate particular design elements. On a *monoform* campus, inhabitants are likely to find little variation in architectural styles, as well as consistent use of building material and color. The presence of either a *mosaic* or *monoform* design plan can send certain messages about the history, traditions, and future directions of the institution.

Building materials can also send messages about institutional values. A single building material can be consistently used to achieve the same effect as a *monoform* design plan, or more importantly, to incorporate buildings with differing styles into a uniform image of the campus environment. Use of a consistent building material serves the purpose of creating not only a uniform textural theme, but also a uniform color scheme throughout the campus. Dober (1991) used the term *referential architecture* to identify "design concepts in which consistency and continuity in materials on the building exteriors helps create a sense of place" (p. 94). Referential architecture becomes reverential architecture when building materials are considered emblems specific to the institution, which prompt recollection of the institution's values and traditions.

Building materials may also capture metaphoric interpretations of the institution's attitudes and values. Often a consideration is given to how new, and more modern, buildings can be incorporated into a campus with traditional architecture. Older buildings may serve as a model for the future design of the campus, providing cues for new design elements that may reference or compliment the older existing buildings.

Instead of a consistent architectural design scheme applied throughout the entire campus, uniformity can be achieved through the use of similar building materials that create a common texture and color throughout the university environment.

The synthesis of building materials, architectural design, and the physical layout and dimensions of the buildings coalesce into the institutional metaphor of the college or university campus. The extent to which the institutional metaphor influences student behavior is reflected in the types of student culture present on a given campus. In theory, the campus environment can therefore be used to attract certain student populations in a direct and causal manner. Additionally, the campus environment may serve to discourage or prevent certain cultures and behaviors within the institutional setting. The individual's intent to accept or decline invitation to a certain institution is often influenced by his or her initial interaction with the institution's environment. For all these reasons, the importance of architectural design, including ways in which new buildings can be incorporated into existing design schemes, has become more apparent in recent years. As collegiate institutions become more purposeful in shaping both their physical environments and their student cultures, the importance of campus architecture can be expected to grow even further within the coming years.

Chapter 3

Methodology

The central hypothesis of this study is that a positive relationship exists between the conventionality of the architecture on American college and university campuses and the conventionality of the student cultures that emerge on those same campuses. To test this hypothesis, comparisons were drawn from two lists of colleges and universities, which were generated by the editors of the Princeton Review's *The Best 366 Colleges* (Franek, Meltzer, Maier, Olson, Doherty, & Owens, 2007). The lists represented opposite categories of American colleges and universities, which were chosen based on students' political persuasions and religious affiliations, as well as the prevalence of marijuana and hallucinogenic drug use, popularity of student government, and level of acceptance of the gay community on campus. Institutions with conventional student cultures were retrieved from the list entitled "Future Rotarians and Daughters of the American Revolution" (p. 48) which is comprised of 20 colleges that have students with conservative political thought, low acceptance of the gay population, popularity based on participation in student government and high levels of religious affiliation. The campuses with unconventional student cultures were retrieved from the list entitled "Birkenstock-Wearing, Tree-Hugging, Clove Smoking Vegetarians" (p. 49), which is made up of 20 institutions where students are said to have highly liberal political viewpoints, high acceptance of the gay population, low levels of popularity based on participation in student government and low religious involvement.

Development of the Instrument

Since an existing instrument to classify campus buildings was not located, an original classification scheme was created for the purposes of this study (Appendix A). The instrument was adapted from a list of “American College and University Architectural Styles” (Dober, 1991, p. 40), which was based on 18 American architectural guides published between the years of 1975 and 1990. Modifications were made from this original list by consolidating architectural styles in order to optimize the size and specificity of categories. Based on a review of the architectural literature (Upton, 1998; Roth, 1992), guidelines (Appendix B) were constructed for classifying buildings into the eight architectural styles displayed in the instrument. The model incorporates two variables on which buildings were classified—style and color.

A pilot study was then completed in order to establish the practical utility of the instrument. A stratified random sample ($n = 44$) was drawn from *U.S. News and World Report's* list of National, Master's, Baccalaureate, and Liberal Arts Universities, separated by the regions, North, South, Midwest, and West. The 44 institutions' buildings were classified, using virtual tours, interactive maps, campus photos, and other media available on-line. Only institutions with a minimum of 25 buildings were included in the pilot study. For institutions with exceedingly large numbers of buildings, a stratified random sample of at least 25% of the buildings in each of three categories (academic, residential, and other) was selected. If a particular building was not pictured,

or if its features could not be determined from the given photo, no data were recorded for that building and another was randomly chosen.

Explanation of the Classification System

In the final version of the instrument, there were eight categories under the style variable: (1) American Federal/Colonial, (2) Classical Revival, (3) Victorian Revival, (4) other historical, (5) historical/repurposed, (6) definably modern, (7) other modern, and (8) modern/re-purposed. The other historical category included the styles Beaux Arts Classicism, Tutor Style and Mission Revival. The historical/re-purposed and modern/re-purposed categories included historical and modern buildings respectively, which were originally built for purposes outside of the college (e.g. neighborhood houses) and were subsequently adapted for use as a part of the campus.

The definably modern category included any of the following styles: Art Nouveau, International Style, Regionalism, Chicago School, Post-modern, Art Deco, Deconstruction, Contextual, New Brutalism, High-Tech and Prairie School. All modern styles were consolidated into a single category because too few buildings in the pilot study fell into each discrete category to warrant distinctions among them. Additionally, the use of a broader classification scheme was expected to produce more reliable scoring, for modern styles are subject to multiple interpretations, where a single building can sometimes be described using two or more styles depending on the viewpoints of each scorer. The other modern category included buildings that were clearly modern, but for which no distinct style could be determined.

Occasionally, on the web-page containing a building image, there was corresponding text with a description of the building's history, architect or style. When available, the description of the building was used in deciding the style and color classification. For example, if the text below a building explained that the building was built in a "Classical Revival style" then the building was classified as such, regardless of the scorer's original assumption.

Under the second variable, color, there were ten categories: (1) degrees of brown (including off-white and tan), (2) white, (3) degrees of gray (including black), (4) transparent, (5) concrete, (6) steel, (7) non-earthen colors, (8) multicolored (2 or more earthen colors), (9) multicolored (2 or more non-earthen colors). Building color was determined by the color that dominated the building. If there were two or more colors present on the building, the scorer assessed whether or not one color could be considered the dominant color. If one dominant color could not be determined then the building color was considered multicolored.

There were two categories to classify buildings with two or more colors: multicolored (2 or more earthen colors) and multicolored (2 or more non-earthen colors). If a building consisted of multiple colors that were considered both neutral and non-earthen, then the building's color would fall into the multicolored (2 or more non-earthen colors) category by default. For multicolored buildings in which one of its two or more colors was transparent, the building's color was classified as multicolored (2 or more non-earthen colors) as well. In comparison, only buildings that consisted of multiple

colors that could each be classified as earthen were classified as multicolored (2 or more earthen colors).

Accent colors, such as colors that framed windows, covered doors, banisters or columns, did not count as main colors and were not considered when deciding what color category the building should fall into. Therefore, only colors that were on the exterior surface of the structure itself were considered for classification. In order to determine if the majority of the building's color was transparent, it was required that the transparent material comprise at least half of the main part of the building and consist of a series of connected panes of glass or windows. Therefore, a building with many windows that appeared to dominate the surface could not be considered transparent if they were separated by opaque surfaces, regardless of how narrow those surfaces were. A decision was made to include off-white in the "white" category because the distinctions between the two colors were too minute to warrant the creation of a separate category and both colors were markedly different from the degrees of brown category.

Recording the Data

When using the classification system to record data, the scorer would review architecture and building color on each of the campuses, using visual media features of its website. Information was recorded on the style and color of each building. Visual media used to review campus architecture included interactive tours, interactive maps, photo tours, and lists of buildings. In rare cases, the institution's search engine was used to find images of specific buildings that were visible on a campus map or building list

that did not include access to a photo. The institution's website was the only resource used to review buildings; no external websites or media were consulted. A given building was included in the study if there was an image sufficient to determine its style and color. In some cases, partial images of buildings were permissible, because the style and color were clear enough to determine a classification. This was a judgment made by the principal investigator, who served as the official scorer. If the scorer was not able to view the building by way of an online tour, photos, or interactive map, then its style and color were left blank and the building was not used in the scoring process. If the scorer was not able to determine the style or color of a given building, provided the picture was unclear or did not capture the essence of the building, then the scorer left the style and color blank and that building was not included in the final scoring.

Only buildings that existed as a part of the campus were considered for scoring. Landmarks, museums, and such, which were sometimes displayed on the campus map, virtual tour or other visual media, but did not exist as a part of the campus, were not classified. These images were usually featured on the website because of the structures' historical or cultural importance and their proximity to campus, but actually had no direct relevance to the institution itself. Structures that were used in the scoring included academic buildings, residence halls, dining halls, bookstores, cafes, special interest houses, administrative offices, athletic facilities, and day care centers. Buildings that were deemed too inconsistent to be classified, meaning the buildings were inconsistently represented as a part of the main campus, included the President's house and physical

plant facilities respectively. Therefore, the style and color of physical plant facilities and President's houses were not included in the scoring of any campus.

Residence halls were classified on the same basis as academic buildings, administrative buildings, athletic facilities, and other structures. However, careful consideration was made within the historical/re-purposed and modern/re-purposed categories for residence halls. Many campuses have houses where communities of students live, such as Macalester College's Cultural Houses and Cottages, which are considered on-campus apartments, but are placed on a residential street and appear to be small family homes. There is no indication as to whether Macalester built the Cottages for the purpose of student housing or if they were previously used as family residential homes and then bought by Macalester to use for student housing. This history cannot be determined by simply looking at the Cottages in their current form. Therefore, the buildings' original purpose must be extensively researched to reach an appropriate conclusion. Houses such as these, which typically looked like residential homes, were not considered "repurposed," because there was often no indication as to whether or not the house was originally built for the purpose of a residence hall. Thus, the building would be treated as if it existed for the original purpose of housing students unless some other distinction was made in the caption of the photo. In the absence of such information, the buildings fell into any of the other categories besides "historical/re-purposed" and "modern-repurposed". However, if the residence hall had clearly been converted from some structure other than a house, such as a barn, then the building would be considered repurposed. Any building other than a residence hall on the campus could

be considered to belong in one of the “re-purposed” categories if it appeared that it existed as a residence or home in the past.

Scoring the Data

After all of the buildings on a given campus were classified on the basis of style and color, the predominant style and color for each campus were determined and used to calculate scores for uniformity. The uniformity of style score was calculated for each campus by dividing the percentage of buildings in the most common style found on that campus by the total number of styles found on that same campus. This same procedure was then repeated, using data on the colors of campus buildings. The resulting numbers were the ratings for uniformity of style and color respectively. On each variable, a higher score reflected a greater degree of uniformity among the buildings on a given campus.

The level of traditionalism was determined by calculating the percentage of buildings on a particular campus that had traditional architectural styles. These styles included American Federal, Classical Revival, Victorian Revival, historical/re-purposed, and other historical. A higher score on this variable reflected a greater prevalence of traditionalism in the architectural styles represented on a given campus.

Reliability Testing

Provisions were made to determine the test-retest and inter-rater reliability of the instrument, based on the scoring of the institutions identified by the Princeton Review.

To ascertain the test-retest reliability of the instrument, the principal investigator

classified the buildings on each of the campuses once, and classified the buildings on the first five campuses on each of the two lists again two weeks later. From both sets of data, institutional scores for traditionalism and uniformity of style and color were calculated, using the procedure explained in the previous section. A correlation was then calculated for corresponding first and second round scores of the ten campuses that were reviewed twice. Because scores on the three variables were not presumed to be normally distributed, nonparametric tests were used in both the reliability analysis and subsequent hypothesis testing.

A Spearman rank order correlation was performed to determine the test-retest reliability of the classification system for purposes of measuring uniformity of style, uniformity of color, and traditionalism. Results of the analysis yielded figures of $r = 0.855$ ($p < .002$) for uniformity of style, $r = 0.957$ ($p < .001$) for uniformity of color, and $r = .801$ ($p < .005$) for traditionalism.

In order to calculate the inter-rater reliability of the instrument, a second reviewer classified each building on the first five campuses of each list once. Based on the results of this classification, institutional scores for uniformity of style, uniformity of color, and traditionalism were again calculated, using the established procedure. Prior to classifying individual buildings, each scorer consulted an architectural guidebook (Cunliffe & Loussier, 2006) in order to clarify the individual's understanding of the style and also for the purpose of establishing a consistent visual point of reference between the two scorers, regarding the styles used in the classification system. In addition to consulting the architectural guidebook, the scorers were provided a set of original guidelines (Appendix

B) to use as a reference point when reviewing the scoring rubric (Appendix A) and while the actual classification process was taking place. While the rubric and guidelines were used throughout the classification process, the architectural guidebook was only consulted when the scorer initially viewed the rubric and guidelines prior to classification. The scorer was instructed not to use the architectural guidebook during the classification process, because it was feared that the guidebook would not be used consistently between both scorers and therefore might create inconsistencies in the data.

Once the second reviewer's scores were calculated, they were correlated with the original scorer's corresponding first-round scores for the first five campuses, as a basis for determining the inter-rater reliability of the instrument. An inter-rater reliability analysis, using the Spearman rank order correlation statistic, was performed to determine the level of consistency between raters in their use of the instrument. The results of the inter-rater reliability analysis showed figures of $r = 0.778$ ($p < .008$) for uniformity of style, $r = 0.794$ ($p < .006$) for uniformity of color, and $r = .988$ ($p < .001$) for traditionalism.

Hypothesis Testing

The principal investigator's own first-round scores were used as the basis for all hypothesis testing. The variable of student culture was defined in terms of two dichotomous categories, which were based on the Princeton Review lists. These categories were labeled conventional and unconventional.

The Mann-Whitney U statistic was used to test the significance of the relationship between conventionality of student culture and each of the three architectural variables.

The following three hypotheses were tested, using a probability level of .05 to establish statistical significance.

1. Institutions with conventional student cultures will be characterized by more uniform styles of campus architecture than will institutions with unconventional student cultures.
2. Institutions with conventional student cultures will be characterized by more uniformly colored campus architecture than will institutions with unconventional student cultures.
3. Institutions with conventional student cultures will be characterized by a greater prevalence of traditional campus architecture than will institutions with conventional student cultures.

Chapter 4

Results

The purpose of this study was to examine the proposition that a positive relationship exists between conventionality of student culture and conventionality of campus architecture. Three specific hypotheses were tested, each pertaining to a different aspect of conventionality in architectural design. These three variables – uniformity of style, uniformity of color, and traditionalism – were compared across two groups of campuses, one characterized by conventional student cultures and the other by unconventional student cultures. Because all hypotheses were directional, a one-tailed test of significance was used in each analysis. In all tests of significance, a .05 level of probability was used as a basis for rejecting the null hypothesis.

The hypothesis that institutions with conventional student cultures would be characterized by more uniform styles of campus architecture than would institutions with unconventional student cultures was tested using the Mann-Whitney U test. This test was used to draw comparisons based on the nominal variable of student culture, as defined by the Princeton Review, and the ordinal rankings of uniformity for building style. As displayed in Table 1, mean rankings based on uniformity of architectural style for the conventional and unconventional groups were 13.03 and 17.97 respectively. As displayed in Table 2, the distributions in the two groups did not differ significantly ($U = 75.5, p < 0.126$). Based on this result, the hypothesis that institutions with

conventional student cultures would be characterized by more uniform styles of campus architecture than would institutions with unconventional student cultures was rejected.

Table 1

		Ranks		
	Student Culture	N	Mean Rank	Sum of Ranks
Style	Conventional	15	13.03	195.50
	Nonconventional	15	17.97	269.50
	Total	30		

Table 2

Test Statistics ^b	
	Style
Mann-Whitney U	75.500
Wilcoxon W	195.500
Z	-1.536
Asymp. Sig. (2-tailed)	.124
Exact Sig. [2*(1-tailed Sig.)]	.126 ^a

a. Not corrected for ties.

b. Grouping Variable: Student Culture

The hypothesis that institutions with conventional student cultures would be characterized by more uniformly colored campus architecture than would institutions with unconventional student cultures was also tested using the Mann-Whitney *U* test. The analysis was done to draw comparisons based on the nominal variable of student culture, as defined by the Princeton Review, and the ordinal rankings of uniformity based

on building color. As displayed in Table 3, mean rankings based on uniformity of building color for the conventional and unconventional groups were 9.4 and 21.6 respectively. As displayed in Table 4, the distributions in the two groups differed significantly in the anticipated direction ($U = 21.0, p < 0.01$). The findings indicate that student culture and uniformity of color are not independent of each other. Thus, the hypothesis that institutions with conventional student cultures would be characterized by more uniformly colored campus architecture than would institutions with unconventional student cultures was accepted.

Table 3

Ranks				
	Student Culture	N	Mean Rank	Sum of Ranks
Color	Conventional	15	9.40	141.00
	Nonconventional	15	21.60	324.00
	Total	30		

Table 4

Test Statistics ^b	
	Color
Mann-Whitney U	21.000
Wilcoxon W	141.000
Z	-3.797
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000 ^a

a. Not corrected for ties.

b. Grouping Variable: Student Culture

The hypothesis that institutions with conventional student cultures would be characterized by a greater prevalence of traditional campus architecture than would

institutions with unconventional student cultures was tested, again using a Mann-Whitney U test. This test was done to draw comparisons based on the nominal variable of student culture, as defined by the Princeton Review, and the ordinal rankings of traditionalism of architectural style. As displayed in Table 5, mean rankings on traditionalism of architectural style in the conventional and unconventional groups were 15.07 and 15.93 respectively. As displayed in Table 6, the distributions in the two groups did not differ significantly ($U = 106.00, p < 0.806$). The hypothesis that institutions with conventional student cultures would be characterized by a greater prevalence of traditional campus architecture than would institutions with unconventional student cultures was rejected based on these results.

Table 5

		Ranks		
	Student Culture	N	Mean Rank	Sum of Ranks
Traditionalism	Conventional	15	15.07	226.00
	Nonconventional	15	15.93	239.00
	Total	30		

Table 6

Test Statistics ^b	
	Traditional-ism
Mann-Whitney U	106.000
Wilcoxon W	226.000
Z	-.271
Asymp. Sig. (2-tailed)	.787
Exact Sig. [2*(1-tailed Sig.)]	.806 ^a

a. Not corrected for ties.

b. Grouping Variable: Student Culture

Chapter 5

Discussion

The basic proposition that a positive relationship exists between conventionality of student culture and conventionality of campus architecture gained limited support from this study. The hypothesis that institutions with conventional student cultures would be characterized by more uniform styles of campus architecture than would institutions with unconventional student cultures was rejected. However, the hypothesis that institutions with conventional student cultures would be characterized by more uniformly colored campus architecture than would institutions with unconventional student cultures was supported by the results. Just as the level of uniformity in style did not significantly correlate with student culture as hypothesized, the level of traditionalism did not significantly correlate with student culture as hypothesized. A campus with a high percentage of buildings in historical styles was not consistently associated with a conventional student culture. Likewise, a campus with a low percentage of buildings in historical styles was not necessarily associated with a non-conventional student culture.

It is interesting to consider possible reasons for the presence of a correlation between student culture and building color, despite the absence of a comparable relationship between student culture and architectural style. While there are undoubtedly multiple explanations for this occurrence, the findings appear to reflect the ideas behind *referential architecture*, a concept first discussed in the literature review, which is defined as “design concepts in which consistency and continuity in materials on the

building exteriors helps create a sense of place” (Dober, 1991, p. 94). Using a consistent material on building exteriors is essentially the same as unifying campus buildings on the basis of building color, because unless the material is painted over with a contrasting color, a consistent material will most likely provide a consistent color throughout the campus.

Because many personnel working at institutions of higher education are concerned with the importance of placemarking in order to create a consistent image that attracts potential students, referential architecture may be the easiest and most effective way to achieve this effect. To achieve a placemarking effect through the uniformity of architecture alone, it would be necessary to ensure that new and renovated buildings fit into the existing style scheme. As a result, only a limited number of possible building designs can be employed in future projects. On the other hand, by attempting to achieve uniformity through referential architecture, an institution is able to incorporate a modern styled building on a campus with mostly historical buildings by simply using the same material.

For example, Bucknell University’s Fitness Center would be classified in the “other modern” category, but the color of its exterior brick surface contributes to Bucknell’s institutional metaphor, which is made up of brick buildings in the American Federal style. Although the Fitness Center is built in a style that is markedly different from that of the rest of the campus, it still relates to the other buildings through its exterior color, causing the campus to look unified despite the presence of different architectural styles.

Additionally, it is important for an institution, whether defined as conventional or non-conventional through its student culture and campus architecture, to establish a memorable image of itself. A memorable image is essential in enabling potential students to remember it distinctly from the rest of the institutions that are included in their college searches. A strong institutional metaphor can be achieved through some type of uniformity across campus buildings, whether in style or color. Therefore, it is not entirely surprising that, whether their campuses are predicted to have eclectic design features or uniform features, most institutions attempt to create some form of consistency through the use of either architectural styles or colors.

Recalling Strange and Banning's (2001) discussion of the *undifferentiated environment*, a campus that is characterized as having a non-uniform collection of design elements is said to provide ambiguous guidance and to encourage a wide range of behaviors within its student population. Such a varied environment, which would predictably attract a variety of cultures, may lack the consistency necessary to form a stable and memorable institutional metaphor. On the other hand, an institution that is characterized as having an undifferentiated environment is constantly reinforcing its uniformity over time through the traditions of its design elements and the type of student the institution attracts. Therefore, it is likely that even institutions with a non-conventional student body would attempt some form of uniformity in order to achieve a memorable effect.

It is possible to hypothesize that an undifferentiated environment is more memorable, because one is viewing not only the buildings that are in front of him or her,

but also the combined effect of a unified campus and its historical traditions of style and culture, in turn representing a solid institutional metaphor. On the other hand, a differentiated environment lacks focus and is more difficult to classify, thus creating an environment that lacks a clear metaphor.

It is possible for an institution to have such an extreme variation in building style and color that its institutional metaphor may be strongly eclectic. Mirroring Clark and Trow's (1966) nonconformist subculture, which is by nature nonconformist, there could be multiple types of people within the subculture. No two nonconformist subcultures are necessarily the same—for each contains its own eclectic mix of people. The same is true for the building architecture on the Princeton Review campuses in the study. Each campus on the Princeton Review list that was characterized as having low uniformity in style and color had very different styles and colors represented. Therefore, it would be difficult to classify any of the low uniformity campuses together into one group based on specific styles and colors. Each of these institutions, which were characterized as having low uniformity in style and color, was unique in its use of historical and modern styles. The problem with the wide range of eclectic possibilities is that potential students are not likely to gain a clear and concise picture of the campus and may pass it off as lacking organization and careful design.

It is important to characterize the type of potential student this thesis is referring to when speaking of college choice. Not every student or family has the economic means to travel to various campuses across the country, and make calculated decisions based on these tours. Many first generation college students, and students from the working class,

are likely to pick colleges that are close in proximity to their homes so that they are able to still live at home, work part-time, and stay near their immediate families. In these cases, assumptions that cause a student to choose one institution over another may not apply. Therefore, choice as it were is reserved for middle and upper class students and those working class students who have the cultural capital, in whatever form, to choose between the options of attending two or more institutions. Regardless of the notion of choice that was introduced in the literature review, each student, whether entering an institution because it was the only viable option or one that was chosen from among many, is making assumptions regarding his or her congruence with the institution.

A recognized limitation of the study was the use of the Princeton Review lists to sort the institutions based on student culture. Comparative college guides, in general, are controversial in part because of various biases in the methodologies employed in their construction (Burness, 2008). The Princeton Review surveys students on each of the campuses included in its guide every three years, using a series of open-ended questions. The primary shortcomings of its approach are that students are not randomly selected and there is some variation in the methods by which the survey instrument is administered. Additionally, the guide includes only a relatively small percentage of the colleges and universities in the nation, which were chosen based on their outstanding academic reputations (Franek et al, 2007). Nevertheless, the two lists drawn from the college guide were deemed suitable for use in this study, given the constricted time frame in which it was to be completed. The 20 institutions on each list were chosen to represent the extremes of conventional and unconventional student culture from among the 366

institutions included in the guide. Therefore, it seems highly likely that the institutions on the two lists would indeed contrast sufficiently, based on the established criteria.

The usage of the Princeton Review lists also presented a limitation concerning the sample size. The original two Princeton Review lists had only 20 institutions each. The lists were further narrowed down to 15 institutions each, due to a lack of sufficient data on the remaining institutional websites. Therefore, a total of only 30 institutions were scored and represented in the results. It is possible that a significant relationship between student culture and uniformity of building style and between student culture and traditionalism would have been detected if a larger sample size had been used.

A second limitation concerns the validity of the classification system used to determine architectural style. The principal investigator had no background in the study of architecture prior to the onset of this project. Much of the initial research that was conducted was done to achieve a broad understanding of architecture in order to create a classification scheme. While every effort was made to establish a valid classification system, informed by the literature on campus architecture and consultation with a faculty expert in the field, an individual with a more thorough background in architecture would likely have been better equipped to perform the classification. Furthermore, the second scorer had even less background in the field of architecture than did the principal investigator, having spent less time reviewing the architectural literature. His classifications were based solely on a guide that was compiled for this study, as well as a published work designed to provide an introduction to the field of architecture for non-experts (Cunliffe & Louissier, 2006). Given this limitation in the scorers' backgrounds,

there is a high probability that errors occurred in the classification of specific buildings, which only a trained eye in the field of architecture would have been able to detect.

Although the researcher's minimal experience in the field of architecture may have posed a limitation to the validity and the precision of the classification scheme, it is important to note that many potential students who are coming into contact with the institution in order to form opinions about its campus culture are not experts on architecture either. Therefore, the subtle distinctions between certain architectural styles, such as American Federal and Victorian Revival, might escape the untrained eye of a typical eighteen year old, for both styles appear distinctly historical. Potential students may see both historical styles as very similar and classify them in the same manner, rather than noting the subtle differences between them. Likewise, if a campus is characterized as having many buildings that fall into the post-modern category, a potential student with no background in architectural styles might not see the buildings as post-modern, but rather as simply modern. Therefore, a potential benefit of the broad categories of the classification scheme used to sort buildings in this study was that the results were not unduly influenced by subtle distinctions that would not typically be noticed by someone who does not have a background in architecture.

Limitations in the ability of those who are untrained in the field of architecture to detect subtleties in style offer a possible explanation for the seemingly discrepant results of this study, which showed a significant positive relationship between student culture and building color but not between student culture and building style. These results indicate that the level of uniformity of building color is more closely related to the type of

student the institution tends to attract than is the level of uniformity in the style of its architecture. Therefore, it would seem that building color is more important to the development of student culture than is building style. The creation of a consistent campus design by means of building materials is perhaps easier to detect than is the establishment of a consistent campus design by means of building style, especially to those lacking a background in architecture. Conceivably, one of the reasons for this difference may be that buildings in one particular style can be built using a multitude of materials and colors. Thus, the image of a campus with a uniform architectural style, but built with different materials and colors appears less unified than a campus that has a variety of architectural styles, but uniform building materials and colors.

Furthermore, as characteristic of any art form, architecture is difficult to classify because of the possibility of multiple interpretations. Thus, limiting a building's architecture to a single category may be more difficult than expected, because the building could potentially fall into two or more categories, depending on which of its features the individual scorer emphasizes. For example, there may be a building that has historical elements in doorways and windows, but a modern style in its exterior walls and rooftop.

A third limitation to this thesis was the reliance on the virtual tour and photo tours of the respective websites. As previously stated in the introduction, many websites have exemplary tour features, with all buildings identified with clear pictures from which an architectural style and color could be determined. In other cases, websites had poor tour features where only select buildings were featured. In other cases, the internal features of

the buildings, such as classrooms and students, were displayed in the photos, making a classification based on style and color of the building impossible. Therefore, some institutions that appeared on the two Princeton Review lists did not have adequate tour features from which their buildings could be classified. On each list, there were five buildings that were excluded from the final study, due to a lack of adequate information. In order for the research to be conducted in a reasonable time, the online tour feature was the only viable option for gathering information to conduct the classification. However, if one wanted a more precise image of each building, it would be best to visit the campus in order to accurately classify each building.

The virtual tour feature of a website can also be influenced by the personnel in charge of its design and reflect certain agendas that may not accurately portray the institution's image. For example, undesirable aspects of a campus may be excluded from the virtual tour and photos, while aesthetically pleasing areas may be accentuated. This leads to an inaccurate view of the campus, causing inaccurate classification and possibly misleading prospective students to draw incorrect conclusions about the campus climate. Areas of campus that are in need of improvement can be excluded from the website in order to maintain the institution's prestige and desirability. Therefore, the results of the classification may reflect the image that the institution is trying to attain by what it chooses to display through its visual media, rather than its actual image.

Although using the virtual tour feature of a website can be seen as a limitation, the method of viewing digital media to classify building style and color is one that remains true to how a potential student is likely to conduct a college search. The online tour

feature could be the first image of the campus that a potential student views. Therefore, the image of the buildings represented via the online tour may be the best way to score these campuses, because prospective students' judgments are often based on this initial encounter, which typically occurs before a campus visit. Once the student visits campus, he or she is likely to evaluate these initial impressions in light of the firsthand images experienced on the campus tour, to check whether or not the initial impressions formed through the use of virtual media are reinforced by what is viewed firsthand.

Over the course of this investigation, many questions have emerged that might serve as a basis for further research on the topic of campus architecture as it relates to student culture. One topic that is of particular interest to the field of student affairs is the potential impact of exterior color on students' attitudes toward academic buildings and special interest residence halls, such as those housing living learning communities that are organized around particular majors or extracurricular interests. Based on the findings of this study, individuals who are interested in the creative arts, a group broadly characterized by Holland (1997) as unconventional, may prefer to be housed in a building with a multitude of exterior colors. Individuals who are interested in special interest housing focused on fields such as accounting, however, may prefer to be housed in a building with exterior colors that match the rest of the buildings on campus.

The same is true for academic buildings and other facilities on campus. If an institution's goal is to attract a wide range of interests to support a variety of educational majors, it is in the interest of the university to take risks when designing buildings to accommodate diverse interests. For example, if a campus has a majority of its buildings

in a historical style with red brick exteriors, it might be worthwhile to design a new art building in a Deconstructivist style with a glass facade, which would distinctly set it apart from the rest of the buildings on campus. This design implementation makes sense in terms of Holland's (1997) definition of the artistic personality type, which is characterized by nonconformity and chaos. Adding an element to the campus architecture that evokes images of nonconformity and chaos may serve to attract a specific student subculture, while still not detracting from the recruitment of other subcultures in the process.

Conducting further research on the interrelationship between the design and function of a building and the characteristics of the students who utilize the space would potentially shed further light on the findings reported here. By dichotomizing buildings as academic or residential, for example, one would be able to see if there is a correlation between student culture and architectural design that is particular to one type of building rather than another. Additionally, focusing future studies on simply one type of building, such as residence halls or academic buildings, would be beneficial to examining a specific aspect of a subgroup's inclinations, for it may pinpoint specific features that attract a certain type of individual to the institution.

To gather more specific information concerning the student perspective on the role that architecture plays in one's decision to attend an institution and what institutional values one seeks to ascertain through its architecture, a qualitative study would be appropriate. It would be interesting to hear student perspectives on the degree to which their anticipated experiences at a particular institution were borne out in their actual

experiences, particularly in relation to their interaction with the student culture. For example, it would be interesting to see how accurately judgments based solely on the institution's physical features predict experiences once matriculation has occurred.

As previously stated, the quality of the institutions' virtual tour features had a major impact on the execution of the research portion of this thesis. Many websites, especially in the pilot study, did not have an adequate design that made the process of locating a virtual tour easy. In many cases, the search for a virtual tour was reminiscent of what a prospective student might go through—clicking back and forth through pages in order to locate a simple map or photo album, even resorting to the search feature on the website only to come up empty handed. Seeing that many of the institutions on the two lists from the Princeton Review were reputable and popular, most of the tours were satisfactory. However, there were still many images that were unclear and lacking vital information that may be important when making a decision. Although few prospective students would study the images of buildings to such a degree as was characteristic of this study, it is important to consider the ways an inaccessible tour feature can influence the individual's decision to attend an institution. A poor tour feature or website design may send negative messages to the potential student.

Today's college student is adept at using the internet, often it being the first resource one uses when seeking information. It is likely that today's, and more importantly, tomorrow's college students will place a high value on institutional websites. Therefore, it is almost a given that colleges and universities should devote more attention to the institutional messages that their websites are relaying, not only to current students

and faculty, but also to the outside world, including prospective students and their families. Although focused on the context of one-on-one interaction in university residence halls, Banning (1997) observed that the use of the internet can exist as an “in between” that represents neither total seclusion nor face-to-face interaction with one’s peers in the college setting. To view the function of the web as an “in between” for prospective college students is also appropriate, for although it is not full contact with an institution, it is often one of the first places an individual will look to gather information, whether facts about majors and student run organizations or the number or email address to schedule a campus tour. The prospective student page and its virtual tour is an important mediator of facts that, when executed correctly, can influence one’s perceptions of the place itself. Just as the physical environment of the campus has been found to play an important role in the impressions formed by prospective students, the virtual environment will likely emerge as a feature of significant importance to college recruitment in the years ahead.

Appendix A

Scoring Rubric

Building Styles

1. Colonial/American Federal
2. Classical Revival
3. Victorian (Gothic) Revival
4. Historical/re-purposed
5. Other Historical
 - a. Beaux Arts Classicism
 - b. Tudor Style
 - c. Mission Revival
6. Definably Modern
 - a. Art Nouveau
 - b. International Style
 - c. Regionalism
 - d. Chicago School
 - e. Post-modern
 - f. Art Deco
 - g. Deconstruction
 - h. Contextual
 - i. Brutalism
 - j. High-Tech
 - k. Prairie School
7. Other Modern
8. Modern/re-purposed

Building Color

1. Degrees of brown
2. White
3. Degrees of gray
4. Transparent
5. Concrete
6. Steel
7. Non-earthen colors (ROYGBIV)
8. Multi-colored (neutral)
9. Multi-colored (non-earthen)

Appendix B

Scoring Rubric Guidelines

General Guidelines

1. Only buildings that are visible via campus map, interactive campus map or virtual tour available on the college or university's website can be considered.
 - a. Additional searching may be required using the college or university's search engine if media is down or unable to be located.
 - b. All buildings on original spreadsheet have an available picture located on the college or university's website.
 - c. Partial images of buildings can be scored if there is enough of an image to determine the buildings' style and color. If only the main entrance or main section of the building is visible then the building is able to be scored on that criterion (see 4, 4a).
2. If the visual media displays a building on campus and denotes that it is one of 8 buildings on campus with the same name (this usually occurs in apartment complexes and residence halls), the scorer can assume that the 7 other buildings are uniform and thus they can be giving the same style and color of the pictured building.
3. *Architecture Styles Spotter's Guide* should be used as a reference point prior to the scoring process. The scorer should review this reference guide in conjunction with reading and reviewing this guide in order to clarify the scorer's

understanding of the style. The book should not be used during the actual scoring of buildings, for it may skew results.

4. Only academic buildings, residence halls, dining halls, bookstores, cafes, special interest houses, administrative offices, athletic facilities and day cares that exist as a part of the main campus should be scored.
 - a. The President's House, if pictured, of a given college or university should not be scored.
 - b. The Facilities Buildings/Physical Plant should not be scored as it is often not part of main campus.
5. Only the main part of the building should be considered when making a classification. Therefore, additions or annexes should not be considered when making a classification. If a building has multiple sections or wings that differ in style and color than the main part of the building (causing it to look like separate buildings), only the main part of the building where there is a central entrance should be considered. The main part can be determined by locating the building's main entrance.
 - a. The only way an addition or annex can be considered for classification is if the college or university's website has an entry for it on the campus map, interactive campus map or virtual tour. Thus, if the college or university makes a distinction between buildings, then so will the scorer.
6. Buildings may have a mix of modern and historical styles. For example, a building may appear to be in the "other modern" style where the building is very

plain and does not appear to have a definably modern style, yet it has an entrance way that is clearly “American Federal” style. This building would fall into the “American Federal” style because one of its characteristics is a part of this style.

- a. Therefore, any contemporary building that is attempting to emulate a single historical style will fall into that historical style’s category.
7. If the scorer is not able to view the building by way of an online tour, photos or interactive map then its style and color should be left blank and the building will not be used in the final scoring.
 - a. If scorer is not able to determine the style or color of a given building given the picture is either unclear or does not capture the essence of the building then the scorer should leave the style and color blank and that building will not be included in the final scoring.
 8. There will occasionally be a text which describes the building’s history, architect and style. These descriptions of the building should be used when deciding what style and color the building is. For example, if the text below a building explains that it is in the “Classical Revival style” then the building should be classified as such, despite the scorers’ original assumption.
 9. Residence Halls should be scored on the same basis as academic buildings, administrative buildings, athletic facilities, etc. However, a distinction should be made within the historical/re-purposed and modern/re-purposed categories for Residence Halls. Many campuses have “houses” where communities of students live. These houses, which typically look like residential homes, should not be

considered “repurposed”, because there is often no distinction whether or not the house was built for the purpose of a Residence Hall.

- a. However, if the Residence Hall was converted from another structure, such as a barn, etc. then the building can be considered repurposed.
- b. Any building other than a Residence Hall on the campus can be considered in one of the “re-purposed” categories if it appears that it existed as a residence or home in the past.

Style Guidelines

American Federal buildings are categorized based on the following criteria:

Buildings have a square, symmetrical shape and straight lines of windows on the first and second floor.

There is a central door with decorative crown situated above the door frame, and sometimes flattened columns to either side of it. These decorative crowns and columns are usually white.

Buildings are usually brick.

Classical/Greek detailing of entryway

Buildings sometimes have Palladian windows (three part window, middle arched window flanked by two sometimes smaller, square windows).

Roofs are steeped pitched with chimney(s).

Variations (English Colonial, Shaker Architecture, Pennsylvania Dutch, French and Dutch Colonial) within this category can be found in *Architecture Styles Spotter's Guide* pg.112-124.

Classical Revival buildings are categorized based on the following criteria:

Buildings are of monumental size and are symmetrical.

White columns that protrude from the main surface of the building (i.e. the columns are not part of the exterior surface of the building).

Buildings emulate a classical Greek form with occasional Roman influences.

Building surfaces appear are smooth and polished.

Usually there are plain carvings on the surface and a plain roof line, low-pitched triangular gable (triangular from the view of the front).

Variations (Palladian and French Neoclassical) within this category can be found in *Architecture Styles Spotter's Guide* pg.138-141.

- i.* You will likely find buildings that are comparable to both American Federal and Classical Buildings. For the purposes of this study, if the scorer finds a building that has white columns that protrude from the exterior surface of the building and have a triangular gable, the buildings should be defined as Classical Revival. For example, a building with the columns and gable described above may have an

entrance-way with a decorative crown that is similar to the American Federal style. This building, despite these features, should be classified as Classical Revival because of its protruding columns and gable.

Victorian (Gothic) Revival buildings are categorized based on the following criteria:

Building surface can be characterized by having pointed arches, steep gables, tall and narrow windows with decorative tracery.

Sometimes windows are shaped in the form of a quatrefoil or a clover.

Sometimes windows project from the wall, but do not extend to the ground (known as Oriel windows).

The building usually has multiple towers.

The top of buildings sometimes has battlements and shaped parapets, which are structures built into the surface of the building from which one can shoot a gun through.

Chimneys are often grouped together.

Pinnacles which usually exist as a cap to a buttress.

For an example of the Gothic Revival Style see *Architecture Styles Spotter's Guide* pg.156-177.

Historical/Re-purposed buildings are categorized based on the following criteria.

A building that falls into one of the above categories (e.g. American

Federal, Classical Revival, Gothic Revival or Other Historical) where

its original purpose was not intended for the use of a college campus.

The most common example is a house that is renovated to be used as an office building or academic building.

The building must clearly emulate one of the above historical styles.

Any additions should be disregarded, such as a screened porch, porch or

garage. Therefore classification should be categorized by the style of

the main part of the building (often where there is a door which exists

as the main entrance or exit).

Other Historical buildings are categorized based on the following criteria:

Buildings that fall into the “other historical” category must fall into one of

the following categories or be a combination of any of the above or

following categorizes.

If buildings are clearly historical, but do not fall into any other category on

this rubric.

Beaux Arts Classicism

The surface is symmetrical. The first floor is usually rusticated and raised.

The windows and doors are arched. Sometimes the doors are pediment, which means they have a triangular piece over the top.

The style often, although it has classical detailing, references multiple styles and has a tendency to eclecticism.

- ii. Classical architectural details are as follows: banisters, pilasters (columns built into the wall), garlands, richly detailed clasps and supporting brackets.

Building surface sometimes has sculptures and mosaics.

The building surface, although dominated by a single color, usually has a subtle use of multiple colors.

Tudor Style

The building is framed by timber and filled in with contrasting colors.

The roof is usually thatched or tiled and steeply pitched.

The overall look is “homespun”.

For an example of the Tudor Style, see *Architecture Styles Spotter's Guide* pg. 84-85, 188-189.

Mission Revival

- a. Unadorned surfaces, smooth with limited ornamentation.
- b. Notably appears ethnic, and usually appears in the Southwestern states.
- c. Structure is wide, with low pitched roofs usually made of clay.
- d. Buildings are adorned with curved arches and gables.
- e. Buildings sometimes have exterior corridors.

Definably Modern buildings are categorized based on the following criteria:

Art Nouveau

Building structure is harmonious and organic.

Building surface usually has carvings of nature, insects, leaves, curving characteristics.

Use of arches and curved forms, such as in the door way and entrance.

International Style – Bauhaus style – Meisian

- a. Structure expresses volume rather than mass, balance rather than symmetry. Structure has little ornamentation. Surface of metals and glass. Mostly tower buildings that appear simple, or “skin and bones”.
- b. Building always has a square or rectangular base or “footprint”.
- c. Windows run in broken horizontal rows forming a grid.
- d. All facade angles are 90 degrees.

- e. For an example of the International Style/Bauhaus style, view *Architecture Styles Spotter's Guide* pg. 228-231

Chicago School

- f. Structure is commercial in appearance with steel or cast-iron frames.
Buildings are very tall.
- g. Buildings are steel framed with terra cotta masonry, sometimes depicting floral motifs for ornamentation.
- h. Windows are usually 3-paned, where one large piece in the center flanked by two smaller pieces.
- i. The bottom stories have little to no ornamentation, whereas the top floor may have cornice (ledge).
- j. For an example of the Chicago School, view *Architecture Styles Spotter's Guide* pg. 200-201.

Post-modern

- k. Building design is characterized by diverse aesthetics, which are often conflicting.
- l. Buildings have ornamentation which reference older styles, but are usually witty in doing so.

- m. For example, AT & T/Sony building, or a building that may appear to have Greek/Classical elements such as columns, but the columns would be made of steel or an unusual material
- n. Surfaces are unusually and have non-orthogonal angles.
- o. For an example of the Post-modern style see *Architecture Styles Spotter's Guide* pg. 252-253.

Art Deco

- p. Building surfaces uses aluminum, stainless steel and inlaid wood.
- q. Building is streamlined and simple and use geometric forms.
 - i. For example, the Chrysler building.
- r. Building design usually has motifs such as sunbursts, steeped forms and sweeping curves.
- s. The buildings often appear rich and festive.
- t. For an example of the Art-Deco style see *Architecture Styles Spotter's Guide* pg. 220-223.

Deconstruction

- u. The style rejects ideas of modernism/postmodernism in that it rejects reference to earlier architectural styles and uses ornamentation only as an after-thought.

- v. The surface usually appears manipulated, causing it to look unnatural and distorted.
- w. Use of materials that are not common, such as aluminum or chain-link.
- x. For an example of the Deconstruction style see *Architecture Styles Spotter's Guide* pg. 254-257.

Contextual – Organic Architecture

- y. Buildings appear to fit into the surrounding environment.
- z. Its structure emulates the functional use of materials into consideration by means of the surrounding area's culture and socio-economic status.
 - i. i.e. log cabin
- aa. Building blends into the surrounding of the environment by means of external materials or structure. For example, a house situated in a wooded area may be low to the earth and appear as if camouflaged with a wooden exterior.
- bb. For an example of the Contextual/Organic Style view *Architecture Styles Spotter's Guide* pg. 258-259.

Brutalism

- cc. Buildings are usually concrete, but can be made from other materials such as brick, glass, steel and stone, all of which give the appearance of a rough or raw surface. The shape is massive.
- dd. Some buildings can be said to have the appearance of “poured concrete”.
- ee. Surfaces appear “fortress-like”.
- ff. The exterior is bland, sometimes concrete stained.
- gg. For an example of the Brutalism style see *Architecture Styles Spotter's Guide* pg. 242-243.

High-Tech

- hh. Its structure is usually a concentration on internal metal structure rather than external concrete wall.
- ii. The surface is usually glass, with steel beams exposed behind it, causing the technical features to become externalized.

Prairie Style

- jj. Planes are arranged at horizontal right angles and are composed of woodwork or repeating courses of masonry, usually brick and concrete.

kk. Low-pitched rooflines, sometimes broken by a rectangular chimney.

ll. Unornamented surfaces.

mm. Exterior is built so that little of its interior is revealed from the outside. The exterior shelters entranceways, windows and terraces.

nn. For a picture of the Prairie Style see *Architecture Styles Spotter's Guide* pg. 204-205.

Other modern buildings are categorized based on the following criteria:

A building that does not seem to fall into any “modern” category. The building may be representative of a mix of modern styles or its style may not be readily apparent.

Some of the buildings will not have a style, but are obviously contemporary. These buildings are brick with four 90 degree angles and no ornamentation. Buildings in this category are characterized by square windows, flat exterior surfaces, no detail on entryways and symmetrical façades.

Modern/Re-purposed buildings are categorized based on the following criteria:

A building that falls into one of the above categories (e.g. Definably modern, other modern) where its original purpose was not intended for the use of a college campus. The most common example is a house that is renovated to be used as an office building or academic building.

Color Guidelines

10. Degrees of tan

- a. Includes brown, dark brown.

11. White

- a. A distinction has been made to include off-white in this category.

Therefore, a buildings' color may not be purely white, maybe because it was painted as off-white, or maybe because over time the color has faded into a white that is not bright anymore. Therefore, if a building has an off-white hue to it, meaning that it cannot be considered light tan, than it can be classified as white.

12. Degrees of gray

- a. Includes black.

13. Transparent

- a. As is characteristic of building materials such as windows or glass.

- b. The transparent material must comprise at least half of the main part of the building and exist in a series of unconnected panes. A building with many windows that appear to dominate the surface cannot be considered transparent if they are separated by opaque surfaces, regardless of how narrow those surfaces are.

14. Concrete

- a. The concrete must be uncolored, so it is not to be confused with building material. If the concrete material is painted, then it belongs to the color that it was painted.

15. Steel

- a. This is not to be confused with building material. See note above.

16. Non-earthen colors (ROYGBIV)

- a. Note which color the building is in parenthesis after the category “non-earthen colors” is listed.
- b. For example “non-earthen color (Blue)” is what should be read in the color category if a building warrants this distinction.

17. Multi-colored (2 or more neutral colors)

- a. If two colors equally dominate the surface then the building color will fall into this category. However, if one color clearly dominates, either by surface area that the color covers or by the location of the color, i.e. if the first floor and entrance way are one color, while a wing has is accented by another color.

- b. If there are three or more colors present on the building, then the scorer must assess if one color covers the majority of the building or if the color is used on the main part or entrance way of the building.
- c. Accent colors, such as colors that frame windows, cover doors, banisters or columns do not count as a main color and should not be considered when deciding what category the building should fall into. Therefore only colors that are on the surface, the exterior walls, of the main structure itself can be considered.
- d. If a building has one earthen color and one-non earthen color that equally dominate the building, then the building will fall into the “multicolored (2 or more non-earthen colors) category, not this category.

18. Multi-colored (2 or more non-earthen colors)

- a. See items a-c above.
- b. If a building has one earthen color and one-non earthen color that equally dominate the building, then the building will fall into this category.
- c. If a building has an earthen color and transparent color equally representative in the building, then the building will fall into the “multi-colored (2 or more non-earthen color)” category.

Appendix C

Princeton Review's *The Best 366 Colleges*

"Future Rotarians and Daughters of the American Revolution" (p. 48)

Baylor University

Brigham Young University

Calvin College

College of the Ozarks

Furman University

Grove City College

Hillsdale College

Pepperdine University

Samford University

Texas A & M University

Thomas Aquinas College

United States Military Academy

United States Air Force Academy*

United States Coast Guard Academy*

United States Merchant Marine Academy*

United States Naval Academy*

University of Dallas*

University of Notre Dame

* Not included in final sample

Wheaton College

William Jewel College

“Birkenstock-Wearing, Tree-Hugging, Clove Smoking Vegetarians” (p. 49)

Bard College

Bennington College*

Emerson College

Eugene Lang College – New School for Liberal Arts*

Evergreen State College

Hampshire College

Lewis and Clark College

Macalester College

Marlboro College

New College of Florida*

Oberlin College

Pitzer College

Reed College

Sarah Lawrence College

Simon’s Rock College of Bard*

State University of New York (SUNY) – Purchase

University of California – Santa Cruz

* Not included in final sample

Vassar College

Warren Wilson College*

Wesleyan University

* Not included in final sample

References

- Astin, A. W. (1993). An empirical typology of college students. *Journal of College Student Development, 43*, 36-46.
- Banning, J. H. (1993). The pedestrian's visual experience on campus: Informal learning of cultural messages. *The Campus Ecologist, 10* (1), 1-4.
- Banning, J.H., & Cunard, M (1986). The physical environment supports student development. *The Campus Ecologist, 4* (1), 1-3.
- Boyer, E. (1987). *College: The undergraduate experience in America*. New York: Harper Collins.
- Burness, J. F. (2008). The rankings game: Who's playing whom? *The Chronicle of Higher Education, 55* (2), A80.
- Clark, B. R. & Trow, M. (1966). The organizational context. In T. M. Newcomb & E. K. Wilson (Eds.), *College peer groups* (pp. 17-70). Chicago: Aldine.
- Cunliffe, S., Loussier, J. (2006). *Architecture styles spotter's guide: classical temples to soaring skyscrapers*. San Diego, CA: Thunder Bay.
- Dewey, John (1916). *Democracy and education: an introduction to the philosophy of education*. New York: Macmillian.
- Dober, R. P. (1991). *Campus design*. Hoboken, NJ: Wiley.
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments*. Odessa, FL: Psychological Assessment Resources.
- Kuh, G. D. (2000). "Understanding campus environments". In Barr, M.J., Desler, M.K.

- & Assoc. *The Handbook of Student Affairs Administration* (p.50-72). San Francisco, CA: Jossey-Bass.
- Myers, I. B. & Myers, P. B. (1995). *Gifts differing: Understanding personality type*. Palo Alto, CA: Davies-Black.
- Nealson, S., Kotter, M., Padilla, R., Pennington, K., Pertofsky, C., Quirolgico, R., & Keeling, R. (1994). *Leadership for a healthy campus: an ecological approach*. CA: National Association of Student Personnel Administrators (NASPA).
- Newcomb, T. M., Koenig, K. E., Flacks, R., & Warwick, D. P. (1967). *Persistence and change: Bennington College and its students after twenty-five years*. New York: Wiley.
- Chapman, P.M. (2006). *American places: in search of the twenty-first century campus*. Westport, CT: Praeger.
- Franek, R., Meltzer, T., Maier, C., Olson, E., Doherty, J., & Owens, E. (2007). *The best 366 colleges* (2008 Ed.). New York: Random House.
- Roth, L. M. (1992). *Understanding architecture: Its elements, history, and meaning* (Icon Editions). New York: HarperCollins.
- Strange, C. C. & Banning, J. H. (2001). *Educating by design: Creating campus learning environments that work*. San Francisco: Jossey-Bass.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
- Upton, D. (1998). *Architecture in the United States* (Oxford History of Art). New York: Oxford University Press.