EDUCATIONAL IDEALS VS. ARCHITECTURAL EXPRESSION: THE GENESIS OF BUILDING EXCELLENCE

Chapter 1: Introduction

How education is articulated, understood or comprehended, in the vocabulary (expressive techniques or devices) of architecture provokes a certain fascination and intrigue for those interested in methods of pedagogy and cognition at institutions of higher education. This research will enter the discussion about architectural expression in the university setting with a focus on the educational aspects in the programming, planning and design of new buildings on campus, the physical form of institutions of higher education. The purpose is to understand the process by which the educational ideal translates into architectural expression in building projects on campus.

Educational ideal refers to the character or "self-image," i.e., the goals of colleges and universities, whether large or small, private or public, research-based or liberal arts-based. Whether character has been expressed architecturally with parklands or a central axis with a complex pattern of cross-axes or with a domed library or with a central campanile as focal point, the distinction of each campus reflects the educational goals inherent in its character. In addition to the manifestation of what makes a university unique, while reflecting general trends in American education throughout its history (Turner, 1984), the educational ideal reflects the growth of its community while planning for centuries to come.

> As institutions, they have purposes and ideals, whether explicit and specific (such as the doctrinal creeds of early American colleges), or more general (the search for truth, the training of people for careers, or the fostering of 'college spirit'). The campus serves the institution not only by satisfying physical needs, but by expressing and reinforcing these ideals or goals (Turner, 1984, p. 304).

Campus is defined by author Paul Venable Turner (1984) as, " . . . its *genius loci*, as embodied in its architecture and grounds. *Campus* sums up not only the distinctive physical qualities of the American college, but also its integrity as a self-contained community and its architectural expression of educational and social ideals" (p. 4).

Architectural expression refers to design or the determination of form which includes every aspect of every quality of a building, including size, shape, materials, texture, color, ornamentation, etc. In addition, design must support the function of the building, appropriate for its intended use with appropriate materials, construction techniques, and quality workmanship. Architectural expression communicates through suitable vocabulary the ideas that define the building and its use. The interactions of the function of the building and the design techniques transform the building into physical reality.

Several concepts enter into design decisions, such as size, scale, proportion, harmony, unity, balance, rhythm, emphasis, pattern and ornament as a means toward communication. These communication tools can carry expressive techniques and convey its purpose. Different concepts can be tested and options can be evaluated during the programming phase of a building project.

Programming refers to the building requirements, the hard requirements necessary to state the needs of the project. It is a process of collecting, analyzing,

and documenting the requirements of the building prior to beginning design. In addition, programming benefits the buyer and " . . . provides a forum to debate what should be included in a project; . . . can build consensus and cause decisions to be made in a logical sequence; . . . will separate 'needs' from 'wants' with respect to space, equipment, and other related issues" (The University of Texas System, 1995, ii, p. 3). The resulting program document communicates the following:

- Strategic and master planning requirements for the project
- Space and functional relationships
- Site selection
- Determination of the cost and schedule for the project
- Intermediate and final recommendations
- Required expertise for the project team
- Investigation of the permit process
- Concerns of all interested parties to the project scope, cost, schedule and plan of execution . . . (ii, p. 5).

The programming may include meetings and workshops to gather data, site visits, and presentations of a variety of ideas. In addition, charettes may be utilized in programming building projects. A search on the website for Masterplanning.com produced a definition of *charette* as, " . . . an intense effort to solve any architectural problem within a limited time" (Christensen Design Management, Inc., 1997, ¶1). Charettes are collaborative efforts and allow for the participation of everyone involved with the project. Charettes are usually used in the initial stages of a project and tend to keep costs down, "while also moving forward quickly to take advantage of changing situations and often prohibitory deadlines" (¶2).

Feedback and interaction are inherent in the programming process. Roles and responsibilities of each participant in the project are determined. Typically after the roles and responsibilities are determined, a schedule of tasks is developed. Then a project goal or a statement of purpose is described and written, including objectives for the outcome of the project.

Once the team is assembled and the roles and responsibilities determined, a summary and discussion of detailed space requirements are documented. Existing site studies are conducted and existing buildings in the area of the site are detailed to be included in the document. Codes and a list of agencies with jurisdiction over the project are determined. Finally a preliminary cost estimate and schedule are constructed with a plan of implementation.

The influential roles and interactions of the diverse individuals involved in the process of planning new building projects on campus are the subjects of this study. Analysis of the processes or systems used in planning and designing new buildings will provide data to understand and explain underlying meanings influencing decisions. This research will examine how the process develops and will focus on the basic characteristics of executing building projects and plans.

Case studies of particular building projects yield results that are cumulative in nature. "Throughout its history, American higher education has largely adhered to the 'collegiate' ideal rooted in the medieval English universities, where students and teachers lived and studied together in small, tightly regulated colleges" (Turner, 1984, p. 3). Paul Venable Turner (1984) examined the relationship between ideas and physical environments in selected

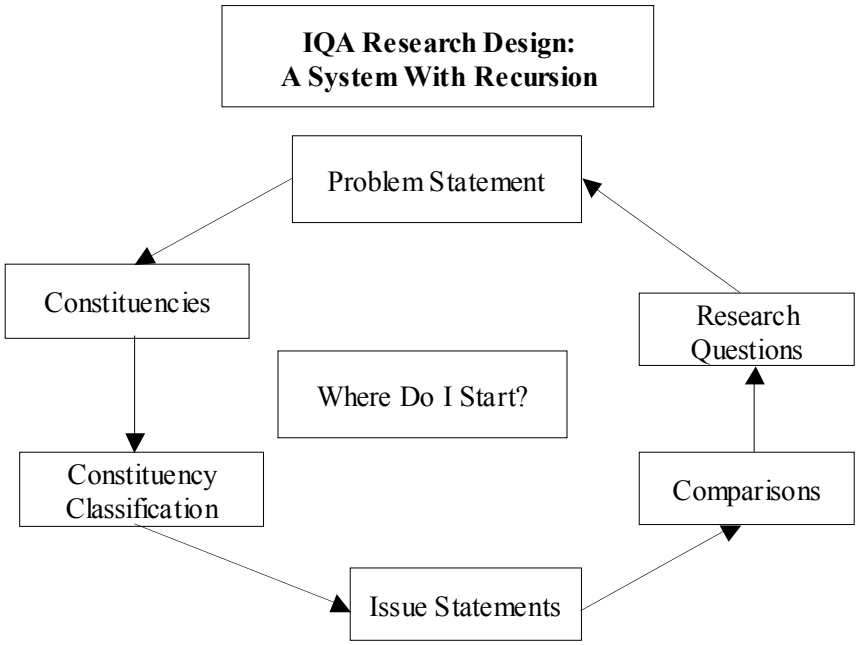
cases of college planning throughout American history that expressed the correlation of educational ideals to physical planning. Until Turner's book was published in 1984, "nothing was published on the history of campus as a distinct subject" (p. 4).

Following Turner's (1984) historical account, this research will examine and describe the issue of the ideal or the idea of perfection in building design or how the educational ideal translates into architectural expression at institutions of higher education. Rather than looking back at historical examples, as Turner's study examined, this research will look forward to what building philosophy might extend into the future.

Complex planning issues or understanding the many influences on human activities will require qualitative research methods and data to interpret the information. Measuring human activities can explain efficiency or other implications in building projects or programs; however, to understand the interactions and dynamics of individuals and the processes utilized in decision-making, various sources of information--qualitative information about context, implementation processes, experiences, and programs and policies will be required.

Qualitative data will be analyzed in this study from a systems point of view utilizing *Interactive Qualitative Analysis, IQA*. Northcutt and McCoy (2004) describe the IQA research design as a system with recursion. The circular system can be entered at any point. (See diagram below.) For example, it can be entered with the problem statement which leads to constituency considerations,

constituency classification, issue statements, comparisons, research questions, and further refinement of the problem statement which, in turn, further refines constituency considerations and so on. The visual diagram depicts the flow as follows:



Note: From *Interactive Qualitative Analysis: A Systems Method for Qualitative Research* (p. 57), by Norvell Northcutt and Danny McCoy, 2004, Thousand Oaks, CA: Sage Publication. Copyright 2004 by Sage Publications.

In their book, *Interactive Qualitative Analysis: A Systems Method for Qualitative Research*, authors Norvell Northcutt and Danny McCoy (2004) define the IQA method as:

> . . . an approach to qualitative research grounded in systems theory whose primary purpose is to represent the meaning of a phenomenon in terms of elements (affinities) and relationships among them. IQA exploits the traditional ethnographic tools of observation and interview, but it also combines these with others borrowed from market research, notably the focus group. IQA focuses not just on techniques of fieldwork, but also recognizes design, data collection, and especially analysis (hence the "A" in the name) as the handmaidens to interpretation (p. xxi).

In IQA studies, the problem is stated as a set of research questions. Northcutt and McCoy (2004) explain:

> The research question as a form of discourse is particularly suitable for IQA studies for two reasons: IQA studies describe systems, and there are only a finite number of ways to query systems:
> 1. What are the elements of the system (What are the affinities)?
> 2. How are the elements configured in a system of perceived influence?
> 3. How do different systems compare (p. 297)?

Following the IQA example, the problem of how the educational ideal translates into architectural expression will be stated as a set of research questions: What factors (affinities) influence the process by which the educational ideal translates into architectural expression on university campuses? How do these factors relate to each other in cause-and-effect terms? How do the different systems compare? What are the similarities and differences in the processes utilized in planning and designing new buildings at private vs. public institutions?

Subject Institutions

To understand the distinctions between private vs. public institutions, a small, private research institution and a large, public research institution will be

selected. In this study, the small private institution will be represented by Rice University and the large public institution will be represented by The University of Texas at Austin. Focus group participants will be selected from those individuals with experience in building projects at Rice University and at The University of Texas at Austin.

Rice University and The University of Texas at Austin were selected because of their similarities and differences. Both institutions are located in Texas, have mature campuses, and have campus building histories that date to the early 1900s. In addition, Rice University and The University of Texas at Austin have new buildings identified on their respective master plans with new buildings currently under construction.

Cesar Pelli & Associates, New Haven, revised the campus plan for Rice University in 1983 and designed Herring Hall in 1984 at Rice. In 1994, Cesar Pelli & Associates were appointed by the Board of Regents to design a campus plan for The University of Texas at Austin and designed the new building for the Department of Psychology and Human Ecology's Division of Human Development and Family Sciences, the first building constructed under the new campus master plan.

The two institutions differ in size and complexity, with different student populations and different physical plants. Rice University, with about 5,000 students, is located in Houston, Texas. The University of Texas at Austin, with about 50,000 students, is located in Austin, Texas.

In 1911, the cornerstone was laid for the Administration Building, now Lovett Hall and The Rice Institute opened in 1912. President Lovett commissioned the Boston firm of Cram, Goodhue & Ferguson to design a master plan and all the major buildings of the new Rice Institute. In 1960, The Rice Institute was formally renamed William Marsh Rice University. Rice University offers undergraduate and graduate degrees (Office of Institutional Research, Rice University 2000, History, ¶3-4).

Undergraduate life at Rice University differs from that at many universities because of Rice's tradition of residential colleges. Each of the university's undergraduates, by random assignment, becomes a member of one of nine residential colleges, which have their own dining halls, public rooms, and dorms on campus. A faculty master is assigned to each college and lives in an adjacent house to cultivate a variety of cultural and intellectual interests among the students, as well as supporting an effective system of self-government (Office of Public Affairs, Rice University, 2004, ¶1-3).

The University of Texas at Austin formally opened in the new first Main Building on September 15, 1883. "The campus of The University of Texas at Austin originally consisted of the forty-acre tract on College Hill set aside when Austin became the state capital. In 1921, additional land adjacent to the original Forty Acres was purchased, and other lots were acquired totaling about 350 acres" (Handbook of Texas online, 2004, s.v. "UNIVERSITY OF TEXAS AT AUSTIN," ¶5).

Between 1910 and the early 1920s, Cass Gilbert drew up a number of development plans for the University of Texas campus. None of the plans was implemented, but Paul P. Cret adopted some aspects of Gilbert's proposals in the 1930s. Gilbert designed two buildings for the Austin campus, Sutton Hall (1918) and Battle Hall (1911). The two buildings became the stylistic basis for the later expansion of the university in the 1920s and 1930s and helped popularize the Spanish-Mediterranean style throughout the state (Handbook of Texas online, 2004, s.v. "CASS GILBERT," ¶2).

In this study, one focus group of higher education administrators and one focus group of professional architects will explore the case study of Rice University. One focus group of higher education administrators and one focus group of professional architects at The University of Texas at Austin will explore the case study of The University of Texas at Austin. Information and data gathered from the focus groups will be compared for similar and divergent viewpoints.

Important issues at Rice University, as opposed to important issues at The University of Texas at Austin, will explain the differing approaches to the processes involved in new building projects and after analysis, permit conclusions to be formed. These conclusions can then be formulated with the essence of the process, including understanding and explaining the meanings within the process.

Chapter 2: Literature Review

There is a considerable quantity and variety of literature applicable to campus architecture, planning, and facilities. Four categories have been selected

to organize the literature according to topic similarities: *campus physical and architectural forms* (campus planning, campus space, campus facilities); *the American university in transition; campus and community* (the university and the city); and *campus and American history*.

Paul Venable Turner (1984) in his book, *Campus: An American Planning Tradition*, identifies a correlation between educational ideals and architectural expression on university campuses. Other authors have written on the planning tradition of American campuses; however, all studies are historical approaches and provide examples from several specific case studies in retrospect.

Little has been written since the early 1980s on the subject of the relationship between educational ideals and architectural expression on university campuses, and nothing has been written on the processes required to translate educational ideals into architectural expression. Regardless, a wide variety of literature is applicable to this research; but most of what has been published predates the 1960s.

One example in the category of *campus physical and architectural forms* is the work of Richard P. Dober (1996). His book, *Campus Architecture: Building in the Groves of Academe*, covers all aspects of campus building and landscape planning, from the revitalization of existing architecture to planning innovative new buildings. He offers advice on integrating campus buildings with their landscapes and incorporating educational trends into designs. In addition, he presents design strategies for different types of buildings including campus housing, research facilities, and libraries, and discusses budgeting. All aspects of

campus buildings and landscape planning are discussed, including environmental, conservation, and aesthetic considerations.

In the category of *the American university in transition*, another author, an architect, Thomas A. Gaines (1991), in his book, *The Campus as a Work of Art*, defines the factors that contribute to an ideal college campus, and then evaluates over 100 campuses throughout the United States, by those standards. He includes a list of his 50 favorite campuses, with scores for urban space, architecture quality, landscape, and overall appeal. Gaines' book presents the total physical world of the college campus as a *bona fide* art form. He analyzes the aesthetic elements involved in the "spawning and savaging" of college grounds. Variables, e.g., regional differences, historical perspective, expansion, and visual focus, figure into his evaluation.

Categorized as *campus and community*, Charles Carney Strange and James H. Banning (2001) provide a comprehensive review of environmental theory and practical strategies for enhancing student learning. Many books explore the effects of environments on people, but there are few that examine the complexities of campus settings and how they contribute to student learning and success. *Educating by Design: Creating Campus Learning Environments That Work* by Strange and Banning, (2001) provides a comprehensive model for creating student-friendly and learning-supportive campus environments. In addition, Strange and Banning (2001) describe the key concepts defining effective person-environment interactions and examine how these principles work through four different environmental components: physical environments or the role of

design and space; aggregate environments or the impact of human characteristics; organizational environments or how institutional goals are achieved; and socially-constructed environments or the differing views through different eyes. They also discuss four conditions for successful learning: promoting safety and inclusion; encouraging participation and involvement; building a community of learners; and designing for education with campus assessment. They focus on the many complexities of campus settings and how they contribute to student success and the quality of learning experiences.

An example in the category of *campus and American history*, authors, such as Stefan Muthesius (2001) in his book, *The Post-War University: Utopianist Campus and College*, examine the post-war educational building boom and the rhetoric that surrounded it. Muthesius (2001) focuses on the period's utopianist belief that good planning and distinguished architecture could bring academically mature and socially adjusted citizens. Muthesius (2001) describes the diverse approaches to the creation of new campuses in the United States, England, Canada, West Germany, and France, as each country dealt with the agendas of its own educators, sociologists, politicians, campus planners, and architects. He explores the full range of responses to the utopian dreams, from the initial boundless enthusiasm for the new university as an ideal and total environment, to the public's dislike of extravagant architecture and modernist buildings. As university planners today address the need for new buildings, this book reconsiders architectural achievement in a period of intense replication.

Also in the category of *campus and American history*, is Paul Venable Turner's (1984), *Campus: An American Planning Tradition*. He explains the American collegiate ideal rooted in the medieval English universities while pointing out that historians have given little attention to American college planning. This historical account takes an in-depth approach from colonial America prior to the American Revolution through the transformation after World War II, a time of rapid increases in student enrollment because of the GI bill for education. In addition, Turner (1984) discusses the "baby boomers" entering higher education institutions in the 1960s, and provides contemporary examples in the early 1980s.

Author Turner (1984) identified the correlation between educational ideals and architectural expression without explaining how educational ideals translate into architectural expression, the rationale for this research. This study intends to further research in higher education administration by understanding the process involved in planning and designing new buildings on campus.

This dissertation will contribute to an extensive body of literature with a tribute to interdisciplinary approaches, involving educational and architectural studies. In addition, the study will supply current data and information to supplement the antecedent works published prior to 2004.

Chapter 3: Methodology

The qualitative data generated in this study will define the process of planning and designing new buildings and will identify the factors driving and influencing decisions. Identification of the factors or “affinities” by focus groups

appears to be the logical approach for this research; therefore, the IQA is the preferred methodology.

> Interactive Qualitative Analysis (IQA) data collection/analysis techniques originated from Total Quality Management (TQM) techniques, which were designed to capture knowledge from organizational members to solve problems and improve industrial processes. A major TQM assumption is that people who are closest to the job best understand what is wrong and how to fix it (Northcutt and McCoy, 2004, p. 81).

The TQM philosophy will be utilized to ask higher education administrators and professional architects to describe and label their experiences and arrange those experiences into cause-and-effect relationships. This method will eliminate the researcher from the process and focuses on the group determination. The role of researcher in IQA studies is group facilitator.

To address the research questions, focus groups that are apt to have knowledge and experience in planning and designing new buildings on campus will be assembled to share their insights for comparisons. A *focus group* or a *constituency* is " . . . a group of people who share some common experience, work or live within some common structure, or have a similar background" (Northcutt and McCoy, 2004, p. 47).

Many constituencies involved in new building projects or programs are prospective focus groups for a study of this nature because of their knowledge and experience on the subject and their influence on the decision-making process. Utilizing IQA research design, constituencies were identified and categorized into four basic types for consideration as potential focus groups for this study. After further analysis, the four constituencies were typed according to role and were

labeled as higher education administrators, professional architects, students, and the university community.

The constituency labeled as *higher education administrators* includes university presidents, Boards of Regents or Trustees, executive officers, faculty committees, university planners, university architects, physical plant directors, and faculty. Higher education administrators are involved in the planning process in various capacities.

The constituency labeled as *professional architects* includes architects, planners, landscape architects, and architecture faculty in private practice. Professional architects compete for design projects and if hired, design solutions and are involved in planning and programming new buildings. Even if professional architects are not directly involved in the design *per se*, they can influence design and decisions in various ways.

The constituency labeled as *students* consists of undergraduate students, graduate students and post-professional students. Students are the end users of facilities on campus. Students are interested in whether building programs meet their requirements or not, and are capable of influencing decisions.

The constituency labeled as *university community* consists of staff, alumni, and the larger community. The larger community includes the extension into the city in which the university exists. Like students, the university community is interested in whether building programs meet their requirements or not, and is capable of influencing decisions.

The constituencies had to be classified further to understand which groups are most likely to be involved in the daily decisions or with "hands on" experiences in the planning and design process. Higher education administrators and professional architects are closest to the daily decision-making process and oversee new building projects from beginning to end.

Students and the university community are far from and have the least influence over, the daily decisions. Since these two groups are not generally included in the daily decision-making process, they were eliminated as possible focus groups from this study. Students, as a constituency, deserve consideration and are important for more meaningful comparisons; however, six constituencies with 15 possible comparisons are not feasible for this study.

Constituency considerations include distance and power considerations. The assumption is that reality, or meaning, is socially constructed and, " . . . two important factors of social construction are, (1) the extent to which a constituency directly experiences the phenomenon (distance) and (2) the extent to which a constituency has power over the phenomenon" (Northcutt and McCoy, 2004, p. 66).

Higher education administrators and professional architects are closest to program considerations or guidelines with the most power over the programming stage of building design. They are the ones making decisions at several steps throughout the process. Once the design phase is entered, opinions are collected in many ways to guide the design. Ultimately, higher education administrators

and professional architects influence decisions to accept, change or decline the building project or design.

As each focus group, one comprised of higher education administrators and another comprised of professional architects, will ponder, identify, express, and explain their views, then comparisons between individuals and between the two professional groups can be made. Issues, called *affinities*, such as economics, politics, building community, human scale, principled leadership, power struggles, to name just a few, pose interesting possibilities that might surface from the focus groups.

Northcutt and McCoy (2004) described an affinity as similar to the quantitative research concept of a variable. It is a named theme that represents meaning as " . . . only one unit of analysis" (p. 82). In this study, the affinities will be identified by each focus group. Then each focus group will explain or label their interactions, processes, and the dynamics of those interactions and processes for analysis and interpretation.

According to Northcutt and McCoy (2004), the qualitative data-gathering and analysis process, IQA, depends heavily on group process to capture a socially constructed view of the respondent's reality. Focus groups in this research will identify the affinities through a silent, brainstorming session. After the brainstorming session, participants will group the affinities through *inductive coding*. This grouping or categorization process is the logical operation in the early stages of analysis (p. 97). For example, the focus group might identify three

affinities representing several similar concepts or meanings as depicted in the diagram below:

Affinities Identified (Inductive Coding)

Affinity 1	Affinity 2	Affinity 3

Then through *axial coding*, the participants will label the affinities and will refine the range of meaning within each affinity (Northcutt and McCoy, 2004, p. 98). For example, in this study the group might label the affinities as follows:

Affinities Labeled (Axial Coding)

Affinity 1: Politics	Affinity 2: Budget	Affinity 3: Building Community

This axial process combines or divides affinities into subaffinities until the meaning of the affinities are given titles. "A well-identified affinity has several characteristics. . ." (Northcutt and McCoy, 2004, p. 99)." A paragraph description is written about the characteristics of affinities either by the researcher or the participants. The narrative is detailed and includes actual quotes of what the affinity is and what the affinity is not (p. 100).

In this study, focus groups will then identify how each affinity relates to the other affinities in cause-and-effect relationships, through *theoretical coding*. "Theoretical coding refers to ascertaining the perceived cause-and-effect relationships (influences) among all the affinities in a system" (Northcutt and McCoy, 2004, p. 149). According to Northcutt and McCoy (2004), in IQA

studies, an additional narrative description is written about how each affinity relates to (or influences) the other affinities.

The analysis in the theoretical coding stage is " . . . the 'If . . ., then . . .' or hypothetical construction. Hypotheses are recorded on a protocol, in IQA terms, the *Affinity Relationship Table (ART)"* (Northcutt and McCoy, 2004, p. 150). The ART shows the direction of the relationship between affinities. Affinities are numbered and participants decide if, for example, Affinity 1 influences Affinity 2; or Affinity 2 influences Affinity 1; or there is no relationship.

Continuing with the example used in the explanation of inductive and axial coding, the Affinity Relationship Table (ART) in the diagram below depicts the same scenario of one possibility from one participant:

Affinity Relationship Table (ART)

Affinity Name
1. Politics
2. Budget
3. Building Community

Possible Relationships
A→B
A←B
A<>B (no relationship)

Affinity Pair Relationship
1→2
1←3
2<>3

Note: In the above example, the participant suggests that politics influences the budget; building community influences politics; and there is no relationship between the budget and building community. The information can then be translated into "If . . ., then . . .." sentences. For example, the participant might state: If a political agenda did not exist, then budget setting would be a practical matter and an easy task.

In IQA studies, the focus group is dismissed, after the theoretical coding. Then, to track the information, the *Pareto Principle* is applied.

> Put in systems terms, the Pareto Principle states that something like 20% of the variables in a system will account for 80% of the total variation in outcomes (such as productivity or profit).
>
> . . . it is quite likely that there will be some disagreement among either individuals or subgroups about the nature of a given relationship. IQA uses the Pareto rule of thumb operationally to achieve consensus and analytically to create a statistical group composite. The Pareto Cumulative Frequency Chart provides an efficient and—to group members who find themselves in an initial stage of disagreement—satisfying method for achieving consensus (Northcutt and McCoy, 2004 pp. 156-157).

The prior three-affinity example might show the frequencies of agreement among a group of 41 participants as follows:

Frequencies in Affinity Pair Order

Affinity Pair Relationship	Participant Response
1→2	15
1←2	2
1→3	3
1←3	14
2→3	7
2←3	0
Total Frequency	41

Then, in the same three-affinity example, the totals would be shown in *The Pareto Cumulative Frequency Chart* as diagramed below. The affinities are shown in descending order of frequency, with calculations of cumulative frequencies, including a column for percentages in terms of both the total number of relationships and the total number of votes.

Affinities in Descending Order of Frequency
With Pareto and Power Analysis

Affinity Pair Relationship	Frequency Sorted (Descending)	Cumulative Frequency	Cumulative Percent (Relation)	Cumulative Percent (Frequency)	Power
1→2	15	15	16.6	36.6	20
1←3	14	29	33.3	70.7	37.4
2→3	7	36	50.0	87.8	37.8
1→3	3	39	66.6	95.1	28.5
1←2	2	41	83.3	100	16.7
2←3	0	41	100	100	0.0

Total Frequency 41

Northcutt and McCoy (2004) suggest using Microsoft Excel or similar tools to manage the data. They define the entries in each column as follows:

- *Cumulative Frequency.* Entries in this column contain the running total or cumulative frequency. Each entry is the frequency of votes cast for an affinity pair added to the previous total. Based on the table above, in this case, that is, 15+14=29, 29+7=36, etc.
- *Cumulative Percent (Relation).* This is a cumulative percentage based on the number of total possible relationships, in this case, 6. Each relationship represents 1/6 or approximately 16.67% of the total possible number, that is, in this case, 16.67+16.67=33.34, then 33.34+16.67=50.01, etc. This cumulative percentage is one of the two factors in the Power index.
- *Cumulative Percent (Frequency).* This is a cumulative percentage based on the number of votes cast (41). Each entry

is the percentage of votes cast for an affinity pair added to the previous total, that is, in this case, 15/41=36.6%, then 29/41=70.7% and 36/41=87.8%, etc.

- *Power*. Power is an index of the degree of optimization of the system and is simply the difference between Cumulative Percent (Frequency) and Cumulative Percent (Relation) (p.160), that is, in this case, 36.6-16.6=20 and 70.7-33.3=37.4, etc.

The *Interrelationship Diagram (IRD)* is a summary of the theoretical codes produced by the focus group and " . . . rationalizes the system. Output of the focus group hypothesizing activity is summarized in an IRD: a matrix containing all the perceived relationships in the system. The IRD displays the arrows that show whether each affinity in a pair is perceived as cause or effect, or if there is no relationship between the affinities in a pair (Northcutt and McCoy, 2004, p. 170)."

One participant, using the same example, suggests that politics influences the budget; building community influences politics; and there is no relationship between the budget and building community; therefore, the IRD of that participant would be diagramed as follows, utilizing the rules for calculating *delta* (Δ):

- Count the number of up arrows (↑) or *Outs*.
- Count the number of left arrows (←) or *Ins*.
- Subtract the number of *Ins* from the *Outs* to determine the (Δ) *deltas*.
- Δ = *Out* – [minus]*In* (Northcutt and McCoy, 2004, p.172).

Interrelationship Diagram (IRD)

Tabular IRD

	1	2	3	Out	In	Δ

1		↑	←	1	1	0
2	←			0	1	-1
3	↑			1	0	1

Tabular IRD: Sorted in Descending Order of Δ

	1	2	3	Out	In	Δ
3	↑			1	0	1
1		↑	←	1	1	0
2	←			0	-1	-1

The *Ins* and *Outs* determine *the Primary Driver; Secondary Driver; Pivot; Secondary Outcome;* and *Primary Outcome*. According to Northcutt and McCoy (2004), any affinity with no *Ins* is always a Primary Driver; affinities with the same number of *Outs* and *Ins* are Circulators or Pivots; and any affinity with no *Outs* is always a Primary Outcome.

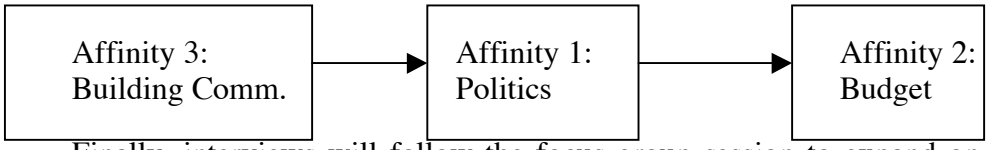
The example produces the tentative SID assignments as follows:

Tentative SID Assignments

Affinity 3	Primary Driver
Affinity 1	Circulator/Pivot
Affinity 2	Primary Outcome

IQA's purpose, according to Northcutt and McCoy (2004) is to provide a visual account or "picture" of the system, termed a *System Influence Diagram or SID*, that represents the perceptual terrain of the mindmap of a participant or a group with respect to a process represented by the issue statement. Utilizing the same example, a visual picture or SID would be produced, as diagramed below:

System Influence Diagram (SID)



Finally, interviews will follow the focus group session to expand on the description of the affinities. A semi-structured interviewing process will be utilized for consistency and a level of detail. The interview will be structured from the results of the focus group sessions. At this point, the affinities will have been identified and the cause-and-effect relationships will be understood. The information will be used to develop the interview protocol to guide the dialog.

Each individual interviewed will construct the Affinity Relationship Table (ART) to explain how each affinity relates to the other affinities in cause-and-effect relationships. Transcripts will be coded theoretically and axially. The visual account or mindmap, System Influence Diagram (SID), will be constructed for each participant, and then summarized, tabulated, and combined for a composite mindmap, even though, the information will probably be different. Enough information will be assembled from the different sources to proceed to the interpretation phase.

To summarize, there will be a focus group mindmap (SID); individual interview mindmaps; and a composite interview mindmap. Comparisons will be made for an understanding of the similarities and differences. The results will be documented and described with the applied IQA to flesh out the information for visual interpretation.

In this study, potential participants for the focus groups will be recruited by mail with a cover letter and explanation of the study. Higher education administrators and professional architects will be identified as those who have experience in building projects at Rice University and at The University of Texas at Austin. The cover letter and explanation of the study will be sent to identify interested participants, and explain the time commitment. (See Appendix 1.) These materials will ensure that participants are prepared for the group participation meeting and an individual meeting, approximately three hours for the group meeting and approximately one hour for the individual interview.

Each focus group requires 12-20 participants.

> Although the researcher may be tempted to use fewer than 12 participants in a focus group . . ., every attempt should be made to avoid using smaller focus groups. Smaller groups are not as serious a problem during affinity production but can skew data when it comes [to] theoretical coding. . . . note that a focus group of five participants would mean that one person can influence the data by 20% (Northcutt and McCoy, 2004, p. 87).

Once participants of the focus groups commit to the obligations of the research, a place for the meetings will be scheduled and arranged at an appointed time. Each of the four groups will be assembled independently on four different dates. One group of higher education administrators and one group of professional architects will meet at the Rice University campus. One group of higher education administrators and one group of professional architects will meet at The University of Texas at Austin campus.

Each focus group meeting will begin with a 15-minute ambiguous overview of "the problem" in general terms, without positive or negative

overtones and a brief explanation of the IQA process. (See Appendix 2, Presentation of the Problem and IQA Process.) In addition, participants will be assured of how confidentiality will be protected; given an awareness of freedom of expression without penalty; assured of explicit protection of identity; and assurance that participation will be without reprisals.

After the brief overview, each focus group will discuss "the problem" until the group agrees on a description of the issue. Participants will receive markers and blank note cards, about 25 per participant, to silently record their thoughts and reactions to "the problem."

Higher education administrators will be asked to think about the issues, i.e. about resources, about their experience as administrators, and their approach to new building projects. They will be asked to think about their interactions with professional architects, and about the students and other end users of the buildings.

Architects will be asked to think about issues, such as design, the approach to design, and architectural expression. In addition, architects will be asked to think about their interactions with higher education administrators, about the students and other end users of the buildings, and the processes required in new building projects.

Participants will be encouraged to "brainstorm," to not censor or edit their thoughts and reactions, and to record those thoughts on the note cards. The data (the note cards) will then be displayed on the wall or walls for all participants to see, discuss, and clarify the meaning. Participants will sort the cards into

categories, arranging and rearranging the note cards on the wall until a shared understanding of the meaning or the patterns emerge.

Discussion of why certain cards are placed together will lead to a common understanding of the underlying meaning of the group of cards. Determined by consensus, each group of cards will be labeled with the names of the affinities. After some refinement, participants will redefine the labels for the groups of cards. Opinions will begin to surface in the process.

After a break, participants will return to see the cards arranged in a circular manner with only the affinity names. Participants will explore the relationships and the group will be asked to prioritize the affinities. Judgments will be made about the relationships between the affinities. During a short break, a tabulation of the information, represented by the labels or titles, will be entered into a computer, rationalizing the system to produce a group mindmap. The mindmap is the visual picture for participants to review upon their return from the break.

Group discussion will determine the drivers or primary causes and the progression toward outcomes. Participants, then, will exercise the system with examples from their experiences, completing the focus group session.

Interview questions will be designed and based on the affinities developed by the focus groups. Focus group participants, with narrative examples, will define variables. "An affinity is similar to the quantitative concept of a variable: Both are homogeneous—they are reflections of one thing or construct. Both have a range, which is to say that just as a variable must exist in at least two states in

order to vary, an affinity must have a range of meaning in order to be useful" (Northcutt and McCoy, 2004, p. 82). Northcutt and McCoy (2004) go on to explain that affinities are different, in that, affinities do not labor under the constraints of the strict rules of operationalization and measurability.

Interviews will then enable the construction of individual mindmaps. The individual mindmaps will be combined to represent a composite of the experiences.

Highly structured interviews provide consistency, while open-ended interviews provide a level of detail; however, interviews in this study will utilize a semi-structured interviewing process for consistency and a level of detail. The transcripts will be coded axially and theoretically with the count of each theoretical code being entered into a frequency table.

The report on the results will name and describe the elements of the system, and will explain the relationships among elements in a system, providing a comparison of systems. "The product of an IQA study is a visual representation of a phenomenon prepared according to rigorous and replicable rules for the purpose of achieving complexity, simplicity, comprehensiveness, and interpretability" (Northcutt and McCoy, 2004, p. 41).

In this study, the four focus groups will allow six different comparisons. The results produced by administrators will be compared to those architects from The University of Texas at Austin; Rice University's administrators will be compared to Rice University's architects; The University of Texas at Austin's administrators will be compared to Rice University's administrators; architects at

The University of Texas at Austin will be compared to architects at Rice University; higher education administrators at The University of Texas at Austin will be compared to architects at Rice University; and architects at The University of Texas at Austin will be compared to higher education administrators at Rice University.

Conclusion

Techniques for interpretation will include focused observation, note taking, semi-structured interviews, organization of data, open and focused coding, analyzing the qualitative data, and writing to respond to criticism. In addition, literature will be reviewed again in the interpretation stage of this study. "IQA encourages the investigator to engage with literature at two major points in the study: in the design (the 'traditional' lit review) or proposal stage, and again in the interpretation stage" (Northcutt and McCoy, 2004, pp. 297-298).

Multiple comparisons will assume that meaning is socially constructed; therefore, these multiple meanings will be compared and contrasted, highlighting any conflicts. The data from several individuals will indicate general factors influencing building projects at higher education institutions. In addition, the comparisons of the four focus groups will result in an understanding of general factors influencing the process.

In conclusion, relevant design issues will be tested to answer the question of how the educational ideal translates into architectural expression in building projects on campus. The study seeks to reveal the challenge for administrators, policy makers, and architectural firms in planning and designing new buildings on

campus. Conclusions will outline symptoms or systemic problems that will allow a better understanding of the planning process to devise plans to enable change and reduce conflict.

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