UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

LIBRARIANS AND THE EMERGING RESEARCH LIBRARY: A CASE STUDY OF COMPLEX INDIVIDUAL AND ORGANIZATIONAL DEVELOPMENT

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

Doctor of Philosophy

By

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Norman, Oklahoma
2007

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LIBRARIANS AND THE EMERGING RESEARCH LIBRARY:
A CASE STUDY OF COMPLEX INDIVIDUAL AND
ORGANIZATIONAL DEVELOPMENT

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

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ACKNOWLEDGEMENTS

To the members of my dissertation committee, as well as to the faculty in the College of Education: your guidance and encouragement throughout the program and during the writing of this dissertation have been invaluable to my professional growth and scholarship. To Dr. Irene Karpiak, my advisor, your continual challenge to me to seek out new ways of thinking about the world has helped me develop a much deeper appreciation for those things yet to be explored and discovered. Your belief in me and your encouragement of my ideas provided me with a continual source of inspiration and renewal throughout my time in the Ph.D. program.

To the participants in this study, I am deeply grateful for your willingness to engage in conversation with me and for allowing me to share a snapshot of your professional and personal experiences and reflections. You have provided me with many new insights into my thinking about the profession, and I hope I have been able to capture your voices in the spirit of collegiality and critical reflection on practice with which you spoke.

My heartfelt thanks go out to all of the family, friends, and colleagues who are too numerous to mention yet who have supported me throughout the research and writing of this dissertation. Most importantly, to Kathy, Connor, and Kagen: your patience, understanding, smiles, songs, and hugs throughout the writing of this dissertation have kept me focused on the most important things life has to offer me.

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ABSTRACT

The purpose of this case study was to increase the knowledge base of how research librarians experience and cope with the turbulence of change within their library system. This research also examined the issues that surround the organizational structures and leadership of transformative change in one research library. A library belonging to the Association of Research Libraries was selected for case study investigation. Seventeen librarians participated in on-site interviews, utilizing a protocol composed of a clustering technique and semi-structured interviewing. Instrumental case studies of each individual were then developed through a collective case method to present the intrinsic case study of the library system as an organization. Data were analyzed primarily through a complex systems theoretical framework while at the same time were grounded in a broad literature base of organizational, leadership, individual change, and library organizational development theories. The findings of the study include: the competing tensions between the physical and virtual environments, the search for professional meaning, coping with the experiences of professional change, the evolution of the organizational structure, and leadership as a shared experience. Analysis of the findings suggest: the emergence of a hypercritical state, the limiting nature of negative feedback, a complex systems framework for professional thinking, coping in the hypercritical organization, the emergence of disorder in the complex system, the blending of self-organizing systems with structural feedback mechanisms, and the complexity of leadership in the new research library.

CHAPTER ONE: INTRODUCTION

Background of the Problem

Introduction

> Now, think back to the first day on your current job. How did it change from your first job to your present job? How has your current job changed from day one to today? How has it changed from last week? Is the last statement tongue in cheek? Sarcastic? We don't think so. Our jobs are changing so rapidly it may seem as if we are, like Kirk and Scott, hurtling through space at warp speed and we sometimes think, as Scotty was always fond of saying, we "canna take any more." (Osif & Harwood, 1999, p. 224).

It is little secret that research librarians have seen several major changes within their libraries over the past 20 years. These changes have been driven primarily by different external and internal shifts in access to information and expectations by academic and stakeholder communities. Librarians are faced with challenges to their traditional services with the rise in consumer use of virtual resources, the proliferation of search engines that link to gray literature, and new publishing and pricing models for academic research. Research librarians are additionally confronted with decreased funding from federal and state agencies, leading to difficult decisions on which services, programs, and collections to maintain (De Rosa, 2005). Moreover, librarians now use technology to a high degree in the dissemination and diffusion of knowledge among scholarly publishers and users of university research. But the rapid technological integration of new

tools for research while maintaining traditional print collections places demands on librarians for continual learning that sometimes appears both complementary and contradictory. A major difference in viewing these challenges over the past few years from previous decades, however, is the increasing speed and complexity that are now associated with changes in research libraries. Librarians might describe their evolving professional life at the present as an environment of turbulence: a paradox of "commotion, agitation, or disturbance" that concurrently "is of natural conditions" (Simpson & Weiner, *Oxford English Dictionary*, 2001). These rapid and increasing changes have created environments of turbulence and uncertainty for research librarians and suggest radical shifts in professional and organizational thinking.

Changing Roles of Librarians

Roles of librarians now focus more substantially on the need for educating students, faculty, and themselves to keep up with the evolving aspects of research and information resources in a technological environment. The Internet has created increased student reliance on a tremendous amount of gray literature that professionals argue has led to a crisis of quality information (Williams, 2001). At the same time, students, and sometimes even faculty, who are unfamiliar with the critical analysis methods for web-based resources often begin or perform research entirely with search engines such as Yahoo or Google (De Rosa, 2005). And the use of online search engines has led students to rate their academic research skills at much higher levels than their actual ability to perform this research has shown (Dunn,

2002; Maughan, 2001). Many academic libraries now incorporate library instruction and information literacy programs that help students critically analyze and use different mediums of research information. In spite of these efforts, "librarians are put in the unfortunate position of telling people to eat their spinach, that fast food searching isn't enough" (Wilson, 2004, p. 11).

Research librarians are also dealing with the graying of the profession. Fewer younger librarians are matriculating from library science graduate programs. Oftentimes, their absence in these programs reflects general student misperceptions of what the academic library world is like. Potential students sometimes view librarians through stereotypical frameworks of bibliophiles who are concerned with rules and order over access to information through the use of technology. This phenomenon has made recruitment efforts difficult to replace positions that have come open due to retirements (Fennewald & Stachacz, 2005; *Library Journal*, 2003). Moreover, the increased need for librarians to have both broad and specific technology skill sets has led at least one library pundit, James Neal, to argue that "there will be fewer librarians working in academic libraries because of a significant increase in the number of technical staff" (Riggs, 1997, p. 6). In addition to the stress of this uncertain future, while librarians deal with many new changes in their environments, they are frequently working understaffed while trying to fill open positions or are dealing with setbacks from attrition or retrenchment (Rogers, 2004; White, 1985).

There has also been an exponential growth of scholarly information produced by the research community. Higher expectations for publication

among university faculty combined with the power technology brings to conduct and present research contribute to this trend. Managing these growing collections and providing access to the overwhelming amount of new electronic resources that become available on a daily basis has become a daunting challenge for librarians, and traditional models of collection development are, therefore, beginning to crumble. Moreover, escalating subscription prices for scholarly publications, primarily in the hard sciences, have forced librarians to make tough decisions about the maintenance of expensive print collections (Glogoff, 2001). Frequently, this is conflicted with the expectations of those faculty who tend to focus on the maintenance of traditional printed mediums while, at the same time, expect expanded access to electronic resources (Jankowska, 2004; Wisenski, 2005). Librarians additionally struggle with their professional obligation to preserve the human record of scholarly research while trying to lead their libraries into an electronic future. Consequently, these issues bring about a "disconnect between the library's organizational self-understanding and the institution's understanding about the library" (Stephens & Russell, 2004, p. 246).

Responding to Change

Research librarians now deal with heightened emotional responses to shifts in the profession. However, these professional shifts might be necessary for the survival of libraries (Glogoff, 2001; Weiner, 2003). Researchers in library science have noted that the changes that are coming in the future will be transformative professional and organizational changes that will challenge the core philosophies and structures of research libraries

(Goble, 1997; Riggs, 1997, 2001;Weiner, 2003). In their view, librarians can no longer react to the changes that are taking place through incremental approaches. Much like is the case with most technology-oriented organizations, "libraries that select comfortable, traditional, but increasingly marginal roles risk becoming more marginalized and increasingly irrelevant to the central focus of information access and scholarly discourse" (Weiner, 2003, p. 70).

Some library organizational development theorists would go as far as to argue that this debate has ensued for most of the twentieth century. Ranganathan (1963) first proposed an organic view of libraries as living systems during the mid-century. Borrowing from the biological sciences, Ranganathan (1963) suggested that libraries function much like an ecosystem, responding to controlling and amplifying feedback. In the Association of Research Libraries (ARL), Webster (1973) developed a guide for library administrators that challenged traditional organizational ways of thinking. Relying on contemporary leadership theorists of the time, such as Argyris (1971) and McGregor (1960), he suggested a transformative approach to organizing libraries and management decision-making that called into question many of the common practices of the time. Yet, libraries were slow to adopt these new systems-oriented concepts until the end of the twentieth century.

Technological advancements in libraries have equally increased the speed of change somewhat exponentially. Some research librarians have managed to face this turbulent environment and lead their libraries into the

technological future. Many librarians have been leaders on campuses in adopting and implementing new technologies, converting their card catalog systems to online catalogs during the 1980s. Research librarians were also some of the first people on campuses to capitalize on web based resources, transferring collections to electronic formats, implementing online databases, and moving technology centers to their own buildings. Evidence of these technological and organizational changes has led some researchers to argue that libraries are actually changing faster than their universities (Riggs, 1997). As Goble (1997) notes, "change is not new to librarians. What is different is that change is no longer intermittent. It is constant, and its pace is accelerating" (p. 151). However, the multitude of disparate changes and competing tensions librarians face are somewhat overwhelming (Osif & Harwood, 1999). Moreover, little is actually known about how librarians experience and cope with these changes.

These factors have led research librarians to respond to this changing environment in different ways. Some librarians have been more reactive, focusing on traditional organizational structures and collection policies as an attempt to harness this changing environment in incremental steps (Stephens & Russell, 2004; Weiner, 2003). Librarians at other institutions have taken more progressive approaches in implementing radical changes in organizational structures, communication patterns, and methods of delivery for library services. These types of changes have often been identified through "fundamental paradigm shifts" that focus on the process of innovation which "has value in providing a means to an end beyond itself"

(Weiner, 2003, p. 74). Some of these librarians have incorporated organizational structures that are more organic in nature and are able to adapt more easily to rapid decision-making (Giesecke, Michalak, & Franklin, 1997; Kascus, 2004; Phipps, 2004).

New Leadership and Organizational Structures

This breakdown in traditional models has precipitated new ways of thinking about the organizational structures of libraries. In the words of one library dean, the leadership of libraries is unique on the university campus:

> Library deans must have a tolerance for chaos because they have the largest, most diverse constituency on campus, closure on most issues is protracted because of so many constituencies, fellow deans on the campus are both colleagues and constituents, library faculty are both colleagues and constituents, [and] the library has no cognate on campus. (Williams, 2001, p. 166).

In light of these conflicting roles, library organizational development researchers argue that traditional or bureaucratic organizational models have severely limited innovative successes, and, therefore, have become obsolete. They contend that traditional models have gone so far as even to limit the discussion of leadership in the professional literature and in schools of library science. Many researchers and professionals prefer to use the terms "administration" or "management" as comfortable euphemisms that avoid the nature of the changing library environment while creating the onslaught of a leadership crisis in libraries (Riggs, 1998, 2001). As a result, these

researchers contend that libraries of the future need to implement systems-oriented, environmentally adaptive, and nonlinear-based organizational structures (Glogoff, 2001; Goble, 1997; Holloway, 2004; Kaarnst-Brown, Nicholson, von Dran, & Stanton, 2004; Phipps, 2004; Riggs, 1997, 2001; Stephens & Russell, 2004;).

Of the radical changes to organizational hierarchies that have taken place in a few academic libraries, many librarians have focused on the concept of leadership as a shared experience among library administrators and various staff (Holloway, 2004). Borrowing heavily from Senge (1994, 2004) in systems theory, this shared leadership often accompanies a shift in organizational culture toward libraries as learning organizations (Kaarnst-Brown et al., 2004; Phipps, 2004; Riggs, 1998, 2001). The nature of the changing roles of librarians has also facilitated a shared leadership perspective, including an imperative for leadership among public services librarians (Dewey, 1998), the inherent leadership roles of instructional librarians (Hurlbert, 1998), and the design and implementation of technology by librarians (Newman, 1998).

This new focus on shared leadership involves the shift from managerial roles to leadership roles. "The postmodernist leader of the twenty-first century organization recognizes that leadership is a collaborative process; the leader at the top is one among many and all staff assume a variety of leadership roles;" and where strategic planning is follows a bottom up approach driven by librarians and staff (Phipps, 2004, p. 78). Some go as far as to argue that, for academic libraries to survive in the future, leadership

must be innovative and come from within all ranks of the library (Dewey, 1998). They contend that in all libraries "there will be no non-leaders. To label a person (or even think of them) as such will be to limit unnecessarily their ability to contribute" (Parker, & Tate, 1995, p. 7; Riggs, 2001, p. 17). This concept of shared leadership is even starting to emerge in the broader higher education literature. A recent study by the American Association of State Colleges and Universities notes that shared leadership will be a defining transformational aspect of the university of the new century (AASCU, 2006).

The shift away from traditional hierarchical organizational models in research libraries is sometimes fostered by an organic view of shared leadership, involving the use of team-based organizational structures. Team models shift focus from the closed systems of autonomous departmental management to the interdependent leadership of individuals in open systems. The traditional linear hierarchy of director to department manager to staff breaks down, while teams work both individually and interdependently to move process goals to the top of the organization (Phipps, 2004; Yukl, 2002;). Although this concept is not new in organizational cultures outside of education, the use of teams for decision-making is a relatively new arrival in research libraries. And the concept of shared leadership in academic libraries is a progressively distinct approach from the traditional hierarchical management structures of the past. All of these issues consequently lead to a very uncertain and possibly radically different future for research librarians.

Statement of the Problem

Research librarians are undergoing turbulent and transformative changes in their libraries. These changes are brought on largely by shifts in scholarly mediums of publication, dissemination, and access to information, but are also influenced by changing educational practices, competing external resources, decreased funding, and conflicting expectations of information needs by students and faculty. As Stacey (2003) has argued, "human emotions... are thus all social processes individually experienced through variations" (p. 326). However, much of the research has focused on libraries as "things" while ignoring librarians as human beings.

At the same time, practices among many research librarians continue not only to focus on but also promote the organizational management concepts of Frederick Taylor (1911), (Stueart & Moran, 2002). This kind of scientific management has emphasized hierarchy, control, efficiency, and stability at the expense of innovation, critical thinking, and an evolutionary view of library systems. As a result, these traditional management concepts are not designed to encourage librarians to lead transformative changes, and they oftentimes limit the ability of librarians to expedite change at the rate needed for long-term, organizational survival (Goble, 1997; Kaarnst-Brown et al., 2004; Phipps, 2004; Stephens & Russell, 2004;). Consequently, there have been many emerging paradoxes in the research librarian community, similar to Morgan's (1997) concept of competing tensions that lead to environments of uncertainty and unpredictability. According to Stephens and Russell (2004), librarians now require models that focus on adaptation to the

environment while studying cases that manifest the connection between individual and organizational transitions. Although there is an increasing amount of new literature recommending a shift in organizational structures and leadership philosophy, research shows our knowledge is extremely limited with respect to how librarians experience and cope with the process of turbulent and transformative change.

Purpose of the Study

It is the purpose of this research to increase the knowledge base of how research librarians experience and cope with the turbulence of change within their library. This research can also examine the issues that surround the organizational structures and leadership of transformative change in a research library.

Research Questions:

- What experiences do research librarians associate with an environment of rapid change, uncertainty, and turbulence?
- What specific changes do they regard as having the most profound effects on their work lives?
- How do research librarians respond to their organizational structure?
- In what ways do librarians as individuals contribute to the leadership of the library?

Theoretical Orientation of the Study

Organizational theory encompasses broad frameworks for understanding the many diverse elements involving human interactions. Although it is common to see the terms management and leadership used

interchangeably in the popular literature on organizations, there is a distinct difference in the use of the term leadership in this study. Hersey and Blanchard (1993) note that management is "the process of working with and through individuals and groups and other resources to accomplish organizational goals" (p. 5). Leadership in their view, however, conveys a much broader meaning, relying on the reoccurring concept of "organization." They define the term leadership as occurring "any time one attempts to influence the behavior of an individual or group, regardless of the reason. It may be for one's own goals or for those of others, and they may or may not be congruent with organizational goals" (Hersey & Blanchard, 1993, p. 5). Yukl (2002) adds to this emphasis on organization and summarizes the views of many major leadership theorists with an identification of the importance of relationship building in the leadership process. Particularly in bureaucratic organizational settings, "most definitions of leadership reflect the assumption that it involves a process whereby intentional influence is exerted by one person over other people to guide, structure, and facilitate activities and relationships in a group or organization" (p. 2).

Several other leadership theorists have recognized the importance of relationships in the definitions that distinguish leadership from management. Most notably, Burns (1979) identifies leadership through sociological, political, intellectual, power, and moral legitimacy issues of leadership. In his search for a general theory, Burns (1979) describes leadership as a more evolutionary process where reciprocal relationships between leaders and followers include both transactional and transformational aspects of leadership. He notes, "we always find a stream of evolving interrelationships

in which leaders are continuously evoking motivational responses from followers and modifying their behavior as they meet responsiveness or resistance, in a ceaseless process of flow and counterflow" (Burns, 1979, p. 440). Furthering this view of an evolutionary process, Schein (1992) argues:

> Leadership is the ability to step outside the culture that created the leader and to start evolutionary change processes that are more adaptive. This ability to perceive the limitations of one's own culture and to develop the culture adaptively is the essence and ultimate challenge of leadership. (Schein, 1992, p. 2).

This concept of an evolutionary process of change and adaptability expands upon our current understanding of the change process in organizations. Scientists studying the natural world, such as Prigogine and Stengers (1984), Jantsch (1981), and Bak (1996), have found an evolutionary model in the physical and biological sciences in which systems in turbulence become nonlinear, far-from-equilibrium, and unpredictable. In many cases, the chaotic and complex nature of such systems leads individual units to self-organize and facilitate transformative development of the system, where increasing complexity emerges. Several other scientists, ranging from cosmologists to computer scientists, have shared similar observations in the natural world in a new science that has come to be referred to through the general term "complexity theory" (Applegate, Douglas, Gursel, Hunter, Seitz, & Sussman, 1985; Applegate, Douglas, Gursel, & Sussman, 1986; Capra, 1997; Gell-Mann, 1995; Gleick, 1987; Holland, 1998; Nicolis & Prigogine, 1989; Petersen, 1993; Waldrop, 1992).

Researchers in organizational theory have also shown that private-sector organizations undergoing nonlinear and far-from-equilibrium turbulence exhibit many of the features found in the physical and biological sciences. They argue that individuals within these organizational environments act in manners similar to the observations described by scientists studying the natural world (Gilstrap, 2007; Lichtenstein, 2000; MacIntosh and MacLean, 1999, 2001; Morgan, 1997; Newman, 2000; Pascale, Millemann, and Gioja, 2000; Stacey, 1992a, 1992b). As research librarians face exponentially greater challenges for the future, their environments seem to parallel those studied in the private sector through complexity theory.

This study, therefore, aims to utilize an interpretive framework of complex systems to analyze and interpret the phenomena that emerge from case study investigation of librarians working within a research library. Complexity theory, it is assumed, can be used as an interpretive framework to describe and analyze the rapidly changing and transformative environment of one research library in particular and the experiences and responses to change among librarians within this setting. The interpretive framework of complex systems can serve metaphorically as a lens through which data are viewed and analyzed as a way to answer the stated research questions within the context of a complex environment of change. It is expected that this approach can contribute to our knowledge of research librarians, concerning how they experience, cope with, and contribute to the leadership of change within their library. Broad coverage of organizational and leadership theories, as well as library organizational development theory, will also be drawn from to enhance the complex nature of individual and

organizational dynamics while grounding the study within the library profession.

Definition of Terms

Several of the terms incorporated throughout this work borrow from their usage in scientific and social and behavioral sciences literature. These terms have been operationalized to convey meanings that can be transferred into this study. Differences in usage will be noted throughout the text, but their general usage will follow these definitions.

- **Chaotic system--**a system where nonlinear processes move the organization or parts of the organization away from stability while maintaining boundaries or parameters where sensitivity to initial conditions or small fluctuations over time can lead to large and transformative changes.
- **Complex system--**an often unpredictable open system that exhibits qualitatively different behaviors or variation among individuals, which, in turn, enable the system or organization to adapt to its external environment.
- **Emergence--**a process where individuals in a simpler system interact in self-organizing ways that lead to more complex system behaviors or structures.
- **Equilibrium-oriented--**a system or organization that is highly stable and responds slowly, negatively, or with difficulty to change and turbulence.

- **Leadership--**"a process whereby intentional influence is exerted by one person over other people to guide, structure, and facilitate activities and relationships in a group or organization" (Yukl, 2002, p. 2). This definition also implies that leaders simultaneously can be followers and vice versa.
- **Self-organization--**during far-from-equilibrium conditions, individuals act through interconnected, self-managing, and self-producing ways that lead to higher development or further complexity.
- **Transformation--**a process whereby either or both the individual and the organization shift to higher levels of personal and professional development. Transformation in this study is used metaphorically similar to the scientific concepts of bifurcation, mutation, or metamorphosis.
- **Turbulence/Far-from-equilibrium--**semi-random and random actions that are the result of an organization or individual moving away from equilibrium or stability.

Assumptions

Some basic assumptions underpin this study. To begin with, it is assumed that the research library under investigation exhibits, by definition, some characteristics of complex or chaotic systems, considering the librarians have been involved with transformative changes amidst the turbulence within and surrounding their environment. It is also assumed that this library operates with an organizational philosophy where librarians support

the views of constant change and shared leadership. Moreover, as Osif and Harwood (2000) note, "ideas and theories being used or studied by the private sector may be more profitable to librarians than continuing to search for answers in their own backyard" (p. 41). Therefore, it is assumed that literature on complex systems in organizational dynamics and leadership can cross over into the environment of an academic library.

Significance of the Study

There are several important aspects of this research that are significant to the field of higher education studies and library science. Understanding the catalysts for change should help librarians and administrators prepare for and respond adaptively to transitions in academic libraries that exhibit turbulent environments. Consequently, understanding how librarians experience rapid and turbulent changes should help further our knowledge of the evolving library profession and address broader issues in the higher education environment that are similar in nature, such as the use of technology for teaching and learning. Additionally, this study should help expand our knowledge of how librarians contribute to change in an environment utilizing a non-traditional library hierarchical organizational structure. This broader understanding of the library as a complex system should also increase the theoretical development of higher education studies, leadership theory, complexity theory, and library science.

The study of librarians at an academic library that has been identified as leading the transformative change process through a non-traditional organizational structure might also benefit other libraries. This can include discussion on their own practices in response to those at the library under

investigation. Higher education institutions might also be able to draw upon these ideas in ways that help utilize existing resources, both tangible and intangible, to expand organizational development and that serve as models of organizational structure and change at the institutional level. Equally, library science programs that focus on training future research librarians should benefit from the knowledge gained in this study, recognizing how their educational practices might evolve toward methods that embrace these types of organizational development.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The literature review that accompanies this study contains a broad theoretical base, including complexity theory, organizational theory, leadership theory, and library organizational development theory. The intent of the author is to incorporate a wide range of theories that can help in understanding and interpreting the complex phenomena that emerge while studying a research library. A brief history of the evolution of these theoretical frameworks is included to develop the contextual and philosophical foundations from which the theories chosen for this study draw critiques and propositions. Equally, these theoretical frameworks address the research in the relevant areas of higher education studies, organizational and leadership theory, systems theory, complexity theory, and library organizational development theory.

When trying to understand the phenomena that surround organizations going through change, it is important to note that there is a long history of both management and leadership that focuses on the works of Taylor (1911) in the early part of the twentieth century. Taylor's (1911) theory of scientific management focused on the clear division of labor and how each part can be scientifically analyzed. This theory led to an emphasis on efficiency and the elimination of redundancy through time and motion studies in industry. Through the use of deductive reasoning, scientific managers in theory could reduce a job task to a prescriptive amount of time for completion and could identify a single way to complete these tasks most efficiently. As a product of early twentieth-century industrial practices, the

scientific management theory tended to view humans much like machines. Although the theory was met with resistance from Taylor's contemporaries (Nelson, 1980), organizational theory through the remainder of the century struggled to move beyond this frame of reference and incorporate more humanistic approaches that take the needs and behaviors of individuals into account. And it is still common to see aspects of scientific management theory in higher education institutional mission statements, policy documents, and procedures manuals, suggesting this theoretical premise of efficiency still holds strongly to the value and belief systems of some twenty-first century organizations (Birnbaum, 2000).

Complexity theory has evolved in the scientific community as a result of inconsistencies in the laws of classical mechanics. Organizational development and leadership theorists argue that much of the management and leadership research in the early part of the twentieth century was taken from classical economic theory that found its principles and origins in the classical mechanics of the physical sciences (Carr-Chellman, 2000; McGregor, 1960; Morgan, 1997; Pascale, Millemann, & Gioja, 2000; Stacey, 1992a). However, Fourier's (1822) development of thermodynamics, Poincaré's (1809) work that uncovered deterministic chaos, Einstein's (1921/1956) creation of the General Theory of Relativity, and Bohr's (1934) development of quantum mechanics all challenged the universality of classical mechanics. This led to more investigations of phenomena that could not be explained fully through Newtonian Laws.

In the philosophical community, writers such as Bergson (1911), Dewey (1925/1958), and Dewey and Bentley (1949/1975) began to challenge

traditional interpretations of human dynamics and experiences early on through ideas such as vitalism, creative evolution, naturalistic empiricism, and transactionalism. Jantsch (1983), Maturana and Varela (1980), and Gould (1982) found several new ways to study and explain unpredictable phenomena in the biological sciences through further evolutionary views, such as autopoiesis and punctuated equilibrium. And Prigogine (1967, 1980), Lorenz (1963), and Mandelbrot (1975) found concurrent anomalies in physical and mathematical systems, further developing theories on dissipative structures, chaos, and fractals. This research has been extended into the study of economics, computer science, medicine, and cosmology (Bak, 1996; Holland, 1998; Peterson, 1993; Waldrop, 1992) with the creation of several university and private research centers for the study of complexity sciences around the world.

Most recently, complexity theory has become a new source of attention in the social sciences communities. A shift in how we view human experience takes into account multiple interactions among individual agents as the basis for system wide phenomena. Complexity theory has evolved into a critique of reductionism, and, therefore, views the social and structural aspects of human behavior and experience as more natural phenomena rather than as individuals as static agents that can be studied in the confines of a vacuum. The incorporation of this theory in this research is, therefore, used to develop an interpretive lens of the questions under investigation. Since research librarians have entered a very turbulent, and perhaps chaotic, period of their profession, this theory can help to explain in more natural and human focused ways how the complex phenomena within one library emerged and

led to transformative change. Other theories, including organizational theory, as well as library organizational development theory, are used throughout this study to enhance our understanding of the complex phenomena that contribute to organizational change.

Many researchers in leadership and organizational dynamics theory have argued that leadership is a process that contains simultaneous and sometimes competing or conflicting phenomena. In their view, therefore, it is often hard to narrow acts of organizational interaction or leadership into one theory, since there are many variables that come into play during the process (Argyris, 1990, 1992; Argyris & Schön, 1978; Burns, 1979, 2003; Hersey & Blanchard, 1993; Morgan, 1997; Yukl, 2002). Organizational and leadership research for this dissertation has incorporated a large base of theoretical frameworks, including Theories X, Y, and Z, normative and transactional theories, and charismatic and transformational theories. Theories of individual and organizational change used in this study include: systems theory, with its shift toward organic and learning focused views of organizations; transition theory, which focuses developmentally on individuals going through change; and chaos and complexity theory, which incorporates evolutionary and adaptive frameworks of organizations that have the capacity to exhibit phenomena such as self-organization, transformation, and emergence. And, finally, organizational development theory in library science is included, focusing on evolutionary and adaptive models of organizational dynamics while incorporating the concept of leadership as a shared experience.

Theories of Chaos and Complexity

Introduction

The study of complexity theory includes three main branches of systems: dissipative structures, chaotic systems, and complex adaptive systems. Each of these systems can be viewed as separate theory, yet all three theories typically have the potential to emerge within a complex system. As a result, these theories can be integrated into a more general theory: complexity theory (Stacey, 2003). For the purposes of this study, I will use the term complexity theory to refer to each interacting system, and I will differentiate between the systems and theories when it becomes necessary for distinguishing differences in meaning.

Dissipative Structures

Ilya Prigogine, who won the Nobel Prize in Chemistry in 1977 for his work on thermodynamics and irreversible processes, "is one of the grandfathers of chaos and complexity theory" (Rothman, 1997, p. 26). Thermodynamic systems can include electrical, thermal, and chemical reactions where the beginning system is changed irreversibly into a new, higher order system, known as the process of emergence. Entropy is a related concept in dissipative structures, as it is a measure of random, unused energy in systemic processes (Gilstrap, 2007). Prigogine (1967, 1980) found that closed thermodynamic systems attempt to lower the effects of entropy while moving toward equilibrium and stability, as do most systems observed under the rules of classical dynamics. However, Prigogine (1967, 1980) also showed that changes that occur within an open system, such as temperature and

electrical fluctuations, move the system towards a nonlinear, far-from-equilibrium state where entropy production actually increases. This presented a paradox within the scientific community, as entropy production is normally considered to be destructive rather than as a catalyst for creating further structure (Gilstrap, 2007; Rothman, 1997).

In physical and life sciences, Prigogine (1980) defined these types of systems as dissipative structures, as they dissipate or exchange energy and entropy generated by the system in order to advance the complexity of the system state or structure [See Figures 3.1, 3.2]. Linear systems typically try to control the dissipation of entropy and move a system towards equilibrium. When systems are near-equilibrium, they exhibit features of and can be measured through the traditional linear deterministic methods of classical mechanics. In nonlinear systems, however, external or internal stress can create system fluctuations and lead to instabilities of a chaotic and unpredictable nature (Gilstrap, 2007). Yet, this chaos is not complete system confusion and disorder. Prigogine (1980) observed that "chemical instabilities involve *long-range order* through which the system acts *as a whole*" (p. 104), or *self-organization*, which will be discussed in further detail later. In effect, chaotic systems contain simultaneous order and disorder. Moreover, in dissipative structures, transformative changes take place at both the microscopic and macroscopic levels not as a result of randomness, but rather because the system's microscopic diversity has been amplified (Stacey, 2003). It is at this bifurcation point where self-organization leads system agents to choose collectively the next irreversible path for the system.

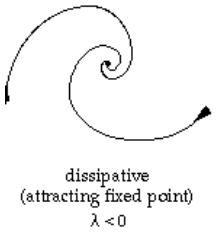


Figure 3.1 – Dissipative System with Lyapunov Attracting Fixed Point Exponent

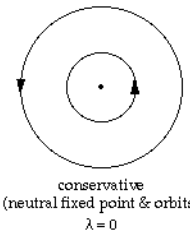


Figure 3.2 – Conservative System with Lyapunov Neutral Fixed Point Exponent

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Furthering this concept, when a system is driven into a far-from-equilibrium state, it has the potential to dissipate enough increased energy to move toward the edge of chaos into a bifurcation point [See Figures 3.3, 3.4]. These bifurcations constitute a transformative split of the system where one or more higher level ordered structures emerge (Prigogine, 1980; Prigogine & Stengers, 1984). As an example, when heat is applied to water, increases in temperature create convection cycles as the water gets closer to boiling. Right at the point before boiling, these convection cycles then bifurcate: the cycles split, and water molecules join in such a way that the water contains a series of hexagonal structures (Nicolis & Prigogine, 1989; Prigogine, 1980). This phenomenon of emergence shows the turbulence and nonlinearity leading up to bifurcation, where the system has been irreversibly changed. The split of convection cycles into hexagonal structures cannot be replicated by reversing the process (Nicolis & Prigogine, 1989), as is the case in classical systems.

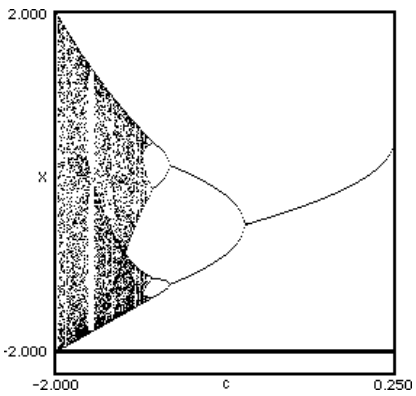


Figure 3.3 – Bifurcation in a Dissipative Structure

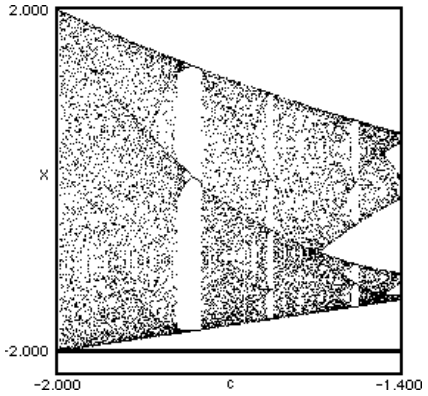


Figure 3.4 – Magnification of Bifurcation Diagram Showing Periodicity in Chaotic Activity

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Osberg and Biesta (2007) describe this process in human events as strong emergence. Weak emergence, they argue, is the result of any chaotic system, even deterministic chaotic systems. Although some chaotic systems exhibit what appears to be completely incoherent turbulence, they are in fact fluctuating at deterministic levels where the results of the fluctuations are weak (Favre, Guitton, H., Guitton, J., & Lichnerowicz, 1995). Osberg and Biesta (2007) further the concept of weak emergence, showing that, although the system has changed, it does so in small, incremental steps. However, Osberg and Biesta (2007) also contend that in the dissipative systems Prigogine explores, the bifurcation is the mark of a system that has the ability to transform to a higher level. In this way, something novel is created from the system process, and no amount or specificity of measurement could predict this bifurcation or the results of the emergence. At the same time, Favre et al. (1995) note that the totality of the chaotic system exists before the components of the system. Therefore, every chaotic system contains the potential for strong emergence, and the higher order development that

emerges as a result of bifurcation is inherent within the system. (Favre et al., 1995).

Chaotic Systems

Chaos theory has evolved from the mathematical and geometrical investigations of Lorenz (1963) and Mandelbrot (1975) and has recently been mainstreamed in the scientific community and popular literature by Gleick (1987). Although the term is often used as a pejorative in Western thought, chaos in its scientific sense is a description of bounded, simultaneous patterns of order and disorder. In near-equilibrium systems, a very large shock to the system is needed to move it into a non-equilibrium state. However, when a system operates in a chaotic state, the system becomes highly sensitive to initial conditions. Over time, very small fluctuations in a system can lead to unpredictable, complex structural changes (Smitherman, 2005).

This concept is exemplified through the Lorenz Butterfly Effect. Lorenz (1963), studying meteorological patterns to develop predictive weather models, left a computer running a simulated algorithm. He returned to run the program again, but, instead of going through the entire simulation, he input specific trajectories of the algorithm in time. These very small differences, at the 100,000th decimal place, led to completely different weather patterns, showing a chaotic system's sensitivity to initial conditions. A common metaphor to explain this phenomenon is also that of subtle turbulence in changing weather patterns, where a butterfly flapping its wings leads to a stampede of cattle that move dust into the atmosphere, creating conditions for heavy rainfall.

Mandelbrot (1975) Sets have shown the fractal nature of chaotic systems, where random and iterative calculations can exhibit high level geometric order. Moreover, complex patterns evolve through scale independence, where complexity emerges at both the micro and macro levels [See Figure 3.5]. Davis (2005) describes this recursive process, inherent in many complex and chaotic systems:

> Fractal images are produced by establishing a rule, applying that rule to generate a result, reapplying the rule to that initial result, and continuously reapplying the rule to results as they are determined in an unending, reiterative process… fractal images don't get simpler when you magnify them, nor more complicated when you pull back from them. Said differently, there is a scale independence to complex phenomena… Closing in on any aspect of this web, or pulling back from the image, reveals another web that is similar in detail and form to this image. Each moment is a node, connecting and collecting a new weave of associations. There is no line joining birth to death. Rather, life is presented as a complex unfolding that is always renewed, always brimming with detail. (Davis, 2005, pp. 124-126).

Davis (2005) argues that this scale independence focuses on the concept of self-similarity, where individual parts of fractals contain similar images to the entire system. This self-similarity that emerges at each level of complexity, serves as a reference point for the complexity of the entire system and relates to Favre's et al. (1995) argument for the capacity of a chaotic system to exhibit inherent traits of its complexity.

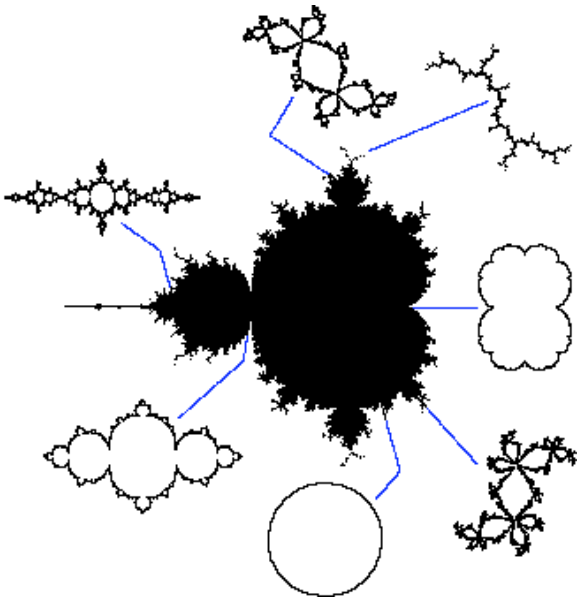


Figure 3.5 Mandelbrot Set with Accompanying Julia Sets
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Chaotic systems usually move toward basins of attraction within strange attractors which exhibit similar patterns of behavior that are never repeated exactly with each iterative system loop [See Figures 3.6, 3.7]. Similar to scale independence, continuing microscopic or macroscopic observations of the chaotic system lead to infinite levels of observable, complex order, known as bounded infinity, since measurement is bounded by the system's parameters (*Complex Systems*, 1999; Smitherman, 2005). As an example, when measuring the circumference of an island coast, the more detailed the observation, the more complex the calculation of distance becomes. As the observation moves from the macro to the micro level, or the converse, there are infinite levels of measurement that can take place [See Figure 3.8].

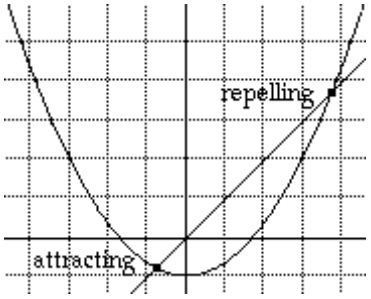


Figure 3.6 - Grid Placement of Attraction Cycle

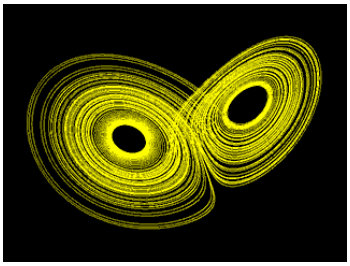


Figure 3.7 – Lorenz Attractor

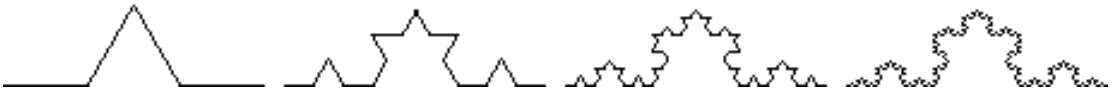


Figure 3.8 – Koch Coastline of Micro and Macro Observations
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Complex Adaptive Systems

Complex adaptive systems are systems that have structure with variation. They are typically nonlinear, and only a limited explanation of a complex system's properties is obtainable by studying its component parts (*Complex Systems*, 1999). Complex systems are oftentimes bounded by simple rules which lead to patterns and relationships during the phenomenon of self-organization, frequently occurring at the point just before entering a chaotic phase (Bak, 1996; Waldrop, 1992;). As an example, when a flock of birds or a school of fish encounters an obstacle, the entire group corrects its path in order to avoid the obstacle. During this process, no individual element determines systemic outcomes; rather the emergence of a system's further complexity takes place when system agents interact collectively.

Observations of complex systems are typically bounded by the parameters of the researcher. This concept implies that the researcher becomes a participant in the complex system through observation, similar to Schön's (1971, 1991) focus on reflective practice. Since differences exist qualitatively between and within complex systems, methods for studying them are normally limited to phenomenological description. Additionally, while observing a complex system, the more one tries to control the processes or structures of the system, the less descriptive his/her qualitative understanding of these systems becomes (Complex Systems, 1999).

Conclusion: Chaos and Complexity Theories in the Social Sciences

Although the scientific community has been moving toward complexity theory during the past forty years, philosophers in the behavioral sciences opened the door for the evolution of complexity theory during the earlier part of the twentieth century. Bergson (1911) broached the scientific inconsistencies of the natural sciences through a metaphysical interpretation of evolution known as vitalism, which he poignantly labeled creative evolution. Bergson (1911) and Dewey (1925/1958) integrated theories pertaining to both knowledge and life, arguing that the two were inseparable. Their use of natural systems as a metaphorical construct showed that knowledge creation followed a developmental cycle of creation and growth that leads to higher levels of thinking. Later, Dewey and Bentley (1949/1975) would challenge the epistemological failures of reductionism in the search for truth through transactionalism. As observers interact with objects in a system, their picture of reality becomes a systemic whole, or a transaction. In Dewey and Bentley's (1975) view, the observer cannot, therefore, separate the

object from the system, and cannot separate the system from time and place. To do so subsequently leads to the creation of multiple realities of both the object and the system.

The works of Bergson (1911) and Dewey (1925/1958) on this evolutionary view of human experience and knowledge creation paved the way for more contemporary researchers. Doll (1993, 2005a, 2005b) and Fleener (2002, 2005) have expanded the use of chaos theory in higher education research, arguing the theory provides a metaphorical framework for the critique of the reductionism found in classical mechanics. Chaos theory in group settings focuses on creativity and communication which lead to emergence and nonlinearity. Through the lens of chaos theory, learning processes become recursive and occasionally improvisational, where the learner and teacher both continually participate in regenerating knowledge. This recursivity is similar to Davis' (2005) description of fractals, where information is created by a system and then fed back into the system to re-create new information. Doll's (1993) model is perhaps most widely recognized in higher education studies, drawing on four main elements of the learning process: 1) Richness – the learning has depth; 2) Recursion – every ending becomes a new learning opportunity, distinguished by a focus on critical reflection by the learner; 3) Relation – pedagogical or interdisciplinary connections exist within and between the studies under investigation; and 4) Rigor – learners intentionally seek out alternative views in an effort to challenge their individual assumptions.

In educational settings that incorporate chaos and complexity theories, critical reflection by the learner on his/her experiences is a self-referential

aspect of learning. Doll (1993, 2005b) contends that teaching becomes ancillary within the process of learning, while individuals learn to explore what is unknown rather than focusing on what is absolutely known. Fleener (2002) argues that generative metaphors can be used to facilitate dialogue among learners on the interrelations and plurality of diverse views, and chaos theory provides a method for recognizing emerging paradoxes in conflicting individual behaviors. As a result, chaos theory in education research relies on a process description of complex order and is a shift from discrete to relational forms of knowledge generation (Fleener, 2005; Doll, 2005b; Smitherman, 2005).

Theories of Organizational Development and Leadership

Introduction

As was discussed previously, there is also a long history of both leadership and management that focuses on the works of Taylor (1911) in the early part of the twentieth century. His theory of scientific management led to an emphasis on efficiency and elimination of redundancy, so that each job task could be completed in a prescriptive amount of time. As a product of classical mechanics, the theory tended to view humans much like machines. Leadership theorists through the remainder of the century have struggled to move the discipline beyond this frame of reference and incorporate more humanistic approaches that take individual behaviors and needs into account.

The first commonly developed theories of leadership focused on behavioral and trait aspects of leaders and followers. Behavioral theories evolved from the Ohio and Michigan Leadership Studies of the 1950s and

investigated how a leader spends his/her time and what behaviors contribute to effective leadership (Yukl, 2002). Similar in nature, trait theories focused on identifying effective leadership traits compared to ineffective traits. If a good leader could exhibit the effective traits, then s/he would be successful.

This section will focus on several of the main leadership and organizational theories that have emerged over the past century. Many researchers in organizational development and leadership have argued that these processes contain simultaneous, and sometimes competing, phenomena. In their view, therefore, it is often hard to narrow observations of organizations or acts of leadership into one theory, since there are many variables that come into play during the process (Argyris, 1990, 1992; Argyris & Schön, 1978; Burns, 1979, 2003; Hersey & Blanchard, 1983; Lewin, 1951; Morgan, 1997; Yukl, 2002). Research for this dissertation incorporates a large base of theoretical frameworks, including Theories X, Y, and Z, normative and transactional theories, and charismatic and transformational theories.

Theory X , Theory Y, and Theory Z

> And the general public, business leaders, and politicians are left with the implication that mankind is an unorganized rabble upon which order must be imposed. (Mayo, 1945, p. 50)

Expanding upon Mayo's (1945) earlier work in psychology where individuals strive toward self-interest when the organization's social structures do not meet their needs, McGregor (1960) and Argyris (1957, 1960) developed almost concurrently the earliest theories of organizational development and leadership that break from the scientific management

belief systems of the early twentieth century. McGregor's Theory X was a description of the consequences of common managerial beliefs: followers typically do not like to work, do not want responsibility, and prefer to be directed. McGregor admits that there are studies that support this phenomenon, as well as scientific management in bureaucracies, which is why Theory X has been supported in the work place for so long. However, McGregor (1960) notes that, just as with Theory X, "it was not until the development of the theory of relativity during the present century that important inconsistencies and inadequacies in Newtonian theory could be understood and corrected" (p. 35). As a result, McGregor contends there is a growing body of evidence that contradicts this view of human motivation in the work place.

Whereas Theory X deals largely with transactional and contingent reward approaches to leadership, McGregor (1960) suggests a more integrative conceptualization of work life known as Theory Y. In organizational development, Theory Y holds that:

1. The expenditure of physical and mental effort in work is as natural as play or rest.
2. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
3. Commitment to objectives is a function of the rewards associated with their achievement.
4. The average human being learns, under proper conditions, not only to accept but also to seek responsibility.

5. The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in the solution of organizational problems is widely, not narrowly distributed in the population.
6. Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilized. (McGregor, 1960, pp. 47-48).

Theory Y, therefore, focuses on the creation of an integrated environment where each individual can self-direct and seek responsibility for his/her own potential while leaders help guide each person toward the success of the organization. As a result, leadership in Theory Y emphasizes relationship building that fosters individual "initiative, ingenuity, and self-direction" (McGregor, 1960, p. 132).

Very similar to McGregor's (1960) work on the transition from Theory X to the Theory Y, Argyris (1957) centers on immature and mature models of organizational behavior. He contends that individuals in an organization have the potential to move through a developmental cycle. Immature organizations are bureaucratic, where passivity, dependence, and hierarchy are expected among employees. This type of organizational environment leads to a preference of both leaders and followers to adopt Theory X behaviors. In Argyris' (1957) opinion, organizations have bureaucratic and autocratic structures so ingrained within the system, due to the scientific management philosophies imposed during the early twentieth century, that most operate within the immature side of the continuum. However, Argyris (1957, 1960) contends that, if leaders and followers embrace approaches similar to Theory Y, the organization is able to move towards a human-

democracy model. As the organization becomes mature, individuals subsequently can become more active, independent, and egalitarian.

Ouchi (1981) adds to the evolution of Theory X and Y in his work *Theory Z*, where he compares Japanese to American business cultures. In Theory Z, Ouchi (1981) argues what makes Japanese firms different and successful is that they rely on non-specialized career paths, integrative decision-making, and collective values. Ouchi (1981) finds that American firms have a tendency to promote fields of specialization, and career moves are typically made externally within the same field. Conversely, in Japanese firms, employees move between jobs within the same firm, gaining new knowledge in a different area with each transition. Whereas in most American firms the focus is on consensus among small, selected groups in the decision-making process, in Japanese firms, everyone who would be impacted by the decision is involved in the process. Ouchi notes that the emphasis is placed not on the actual decision, but rather on employees' level of being informed and their commitment to the decision. This leads to a focus on collective values in Japanese firms, where employees recognize that the values of the group are more important than their own individual wants and needs through the emergence of "clan" egalitarianism (Ouchi, 1981).

Normative and Transactional Theories

The attribute theory of Blake, Mouton, and William's (Blake & Mouton, 1978; 1981; 1985; Blake, Mouton, & Williams, 1981) normative decision model is perhaps the most widely known behavioral theory. Blake and Mouton (1981, 1985) contend that effective and ineffective leadership styles can be separated on a quadrant grid, and effective leadership behaviors

can be plotted at specific areas of the grid in relation to the leader's concern for institutional performance and concern for people. This theory relies on the idea that certain behaviors lead to effective leadership. Yukl (2002) contends that relying only on behavior tends to focus too broadly and discounts too many other complex variables in the leadership process unless used in combination with many other factors. However, Blake, Mouton, and Williams' (1981) normative decision model viewed as a group phenomenon can lead to a better understanding of how individuals within groups converge towards the formation of group norms and group pressures to conform. In their view this convergence is manifested more in emotional and behavioral responses than on assessment data that lead to effective decision-making (Blake, Mouton, & Williams, 1981).

The power-influence theories of leadership focus on the use of leadership power and how followers respond to this behavior. Burns (1979) discusses in great detail the use of power in political and cultural situations, incorporating several historical analyses of significant leaders. Although power-influence approaches can include authoritarian or autocratic approaches, quite commonly--in Western, democratized countries--power-influence theories are discussed more humanistically as transactional leadership. Burns (1979) contends that transactional leadership relies on the concept of reciprocity: a give and take relationship between leaders and followers where leaders must realize their power can quickly diminish if the needs of followers are not met. Transactional leadership theories cannot be discounted, as Burns (1979, 2003), Avolio and Bass (1998, 2000), and Yukl (2002) argue that any process of leadership contains the potential for both

transactional and transformational approaches. In some situations, these theorists contend, both transactional and transformational theories can actually complement one another.

Situational Leadership

Situational theory has been most highly developed through the work of Hersey and Blanchard's (1969/1993) Situational Leadership. This model relies on a number of contextual factors that take into account a leader's actions in relation to the readiness and willingness levels of the follower or group. Important leadership behaviors identified in this model are task and relationship. Task behaviors are described as the amount of direction a leader gives to employees while relationship behaviors describe the level of socio-emotional interaction the leader exhibits with followers. Hersey and Blanchard (1993) then describe the readiness level of followers based on their motivation, knowledge base, and the experience needed to achieve individual and group goals.

In Situational Leadership, leaders identify the readiness level of followers and then modify leader behavior to accommodate the situation on a continuum. If followers' readiness levels are low, Hersey and Blanchard (1993) contend leaders need to exhibit high task and relationship behavior, directing followers in the initial stages of a process. As followers' readiness level develops to moderately low, the leader continues to exhibit high task behavior and moderately high relationship behavior, moving towards an approach of coordinating organizational dynamics. As followers' readiness develops to higher levels, the leader then decreases his/her task and relationship behavior, moving from coordinating to finally delegating group

behaviors. It becomes apparent how this model can take into account balancing the regard for organizational effectiveness of Theory X while recognizing the need for human satisfaction in Theory Y (McGregor, 1960); and at the same time attempting to move organizations from an immature to a mature level (Argyris, 1960).

Shared Leadership and the Team Approach

Carew, Parisi-Carew, and Blanchard's (1986) Situational Leadership II model, expands on the directing and supporting roles in the leadership behaviors of the Situational Leadership model. In Situational Leadership II, more emphasis is placed on understanding group dynamics over individual behaviors in a team approach to organizational development through collaborative leadership. In this model, Carew, Parisi-Carew, and Blanchard (1986) argue that "managers and workers at all organizational levels must have knowledge about group development and skills in effective group leadership" (p. 50). Although the authors have found positive correlations between increased leadership direction and structure during early stages of a change process, a shift towards participative and supportive leadership behaviors must take place at later stages of the change process in order to sustain the high levels of group performance. In their opinion, "there is more and more evidence that high performing systems are characterized by worker participation, cohesive work teams, and worker/management collaboration" (p. 50), stressing the growing importance of shared leadership in organizations.

Yukl (2002) calls attention to shared leadership through his analysis of several different types of organizational teams. He cites numerous

companies in the private sector who have incorporated team organizational structures to some degree. Yukl (2002) notes that teams vary in their composure and charge, but they commonly fall into one of these descriptions:

1. **Functional operating team**–since members of the team usually come from the same field of specialization, team membership and longevity is relatively stable, and the leader of the team is given great authority.
2. **Cross-functional teams**-these teams focus on an interdisciplinary approach, while work assignments from different areas are interdependent. The team usually disbands upon completion of projects.
3. **Self-managed teams**-these types of teams absorb much of the work of traditional management hierarchies. Team members share and trade off task responsibilities, and there are numerous opportunities for new learning. (Yukl, 2002).

Yukl (2002) emphasizes the role of self-managed teams over the functional and cross-functional teams, because self-managed teams have much more autonomy and have a larger capacity for group learning.

However, Yukl (2002) contends that, unless "collective empowerment" is shared by the self-managed team, it may revert to more directive and controlling roles. For the same reason Argyris (1978, 1990) explains the paradox of leading Model I organizations, Yukl (2002) relates that "giving authority to a self-managed team rather than to an individual leader does not necessarily result in collective feelings of empowerment. The team may

replace an autocratic supervisor with social pressure on members to conform to group norms and procedures" (p. 314). Taken in light of the Situational Leadership II model (Carew, Parisi-Carew, & Blanchard, 1986), there appears to be the potential to integrate Yukl's (2002) description of self-managed teams into the leader-follower task and relationship behaviors with readiness levels. At the same time, the Situational Leadership II model provides no indication as to whether teams evolve from functional to self-managed as the role of leadership behaviors develop from directing to delegating.

Integrative and Charismatic Theories of Leadership

Integrative theories are described by Yukl (2002) as those that incorporate aspects of trait and behavior, power-influence, and situational theories of leadership. This integrative theoretical approach is somewhat new and needs further investigation to become more commonly accepted among researchers of leadership theory. Shamir, House, and Arthur's (1993) self-concept based theory of charismatic leadership holds promise as an integrative approach, and Yukl (2002) contends it is one of the only integrative leadership theories that have been studied with any depth. The theory takes into account how charismatic leadership influences behavior and individual self-concepts of social values, motivation, esteem, and defense mechanism (Shamir, House, & Arthur, 1993). An advantage to this theory is that it takes into account how individuals within organizations tend to identify with charismatic leadership, particularly in times of crisis. The weakness of this theory, however, is that it focuses methodologically on charismatic leadership which is only one aspect of the leadership process (Yukl, 2002).

Bass (1998) has developed the Full Range of Leadership Model, which also takes an integrative approach. In this model, he identifies both transactional and transformational characteristics of leaders. Transactional approaches tend to include laissez-fair leadership, contingent reward, and management by exception. Conversely, transformational leaders exhibit charismatic leadership, inspirational motivation, intellectual stimulation, and individualized consideration, and Bass (1998) views charismatic leadership as the most important element of transformational leadership. However, Bass (1998) equally admits that relying solely on charismatic leadership is not sustainable, because, eventually, the leader will not be able to continue to fulfill the needs and desires of followers if the organizational environment changes, particularly during highly stable periods.

Transformational Leadership

Burns (1979) argues that leadership is a reciprocal process between leaders and followers that spans a wide breadth of issues, including power, moral/ethics, psychology, sociology, and intellectualism. Leaders can use transactional techniques, which focus on contingent reward systems: "if you do this for me, I will do this for you." Burns (1979) strives to define leadership, however, as something more than this, arguing the ultimate goal of leadership must be to eventuate social or organizational change. In this respect, Burns (1979) suggests that individuals move beyond Maslow's (1954) concept of self-actualization, which describes stability driven organizations that are isolated from their external environment and where individuals strive toward their own inherent potential.

In Burns' (1979) view, leadership must evolve toward transformational attributes that encourage followers to find purpose beyond individual wants and needs while searching for collective transformation of the organization through their interaction and learning with others. "It is in the transformation of human wants and needs that leadership first occurs" (Burns, 1979, p. 68). In his more recent work, Burns' (2003) places even more emphasis on transformational leadership, argues it is often not focused on by leaders, and contends that leadership should continually move toward a transformational theory which motivates people to recognize the collective needs of the group.

Argyris (1990), however, argues the organizational norms that drive individual behavior point towards the limitation of the transformational leadership discussed by Burns (1979). In Argyris' (1990) view, transformational leadership, as well as many other leadership theories, does not deal with defensive mechanisms or organizational malaise. He admits leaders recognize the occurrence of this phenomena, but transformational leadership offers little advice on how to reduce negative performance or resistance to change.

Bass's (1998) and Avolio and Bass's (2002) research, using the Full Range of Leadership Model, expands on the importance of transformational leadership, however. The combination of the Multifactor Leadership Questionnaire and the Organizational Description Questionnaire measures leadership attributes against follower perceptions of leadership based on both transactional and transformational characteristics. Avolio and Bass' (2002)

case study research showed that in organizations with cultures that are either transactional or transformational, individuals will validate the dominant culture through positive scores and invalidate the sub-dominant culture with negative scores. However, in contrast to Argyris (1990), transformational leadership tended to receive higher scores overall, as Avolio and Bass' (2002) studies have shown there is a high correlation between subordinate ratings of leaders in relation to their transformational attributes.

Theories of Individual and Organizational Change

Introduction

The following section introduces theories of change at the individual and organizational levels--also considered the micro and macro levels. The individual plays a critical role in organizational change, as collective actions bring about group dynamics. However, the individual transition period can sometimes be difficult. Systems theories of organizational change are included to provide a system-wide view of the complex organization, as well as to develop methods for helping foster learning environments of change. Chaos and complexity theories of change are also included, showing feedback mechanisms, organizational paradoxes and conflicts, and providing a living systems view of a far-from-equilibrium organization.

Transition and Transformational Theories of Individual Change

While investigating the organizational transformations that take place within libraries, Bridges (1980/2004, 2003) also brings our attention to the individual during life changes. He views life as a development journey that is accompanied by stages of personal transitions. The first stage, "endings," occurs as the culmination of some type of dilemma, identity confusion, or a

lack of engagement in a changing environment. The second stage, the "neutral zone" is a period where the individual attempts to reconcile the past with the new changes in order to move forward. The transition process begins here, and, Bridges (2004) argues, individuals waver between the old and the new, struggling to let go of the past and integrate the present. In many ways, this could be compared to a system that is beginning to operate in chaos, as individuals exist in a dimension of simultaneous order and disorder. And the third stage, "new beginnings," represents the end of the transition process and the beginning of a new life perspective.

Bridges (2003, 2004) finds that this transition process is unique to each individual. For some people, the onset of the transition rises from within, whereas with other people external factors may precipitate the transition. In his studies of individuals in group therapy situations, Bridges (2004) has also found that people have a tendency to focus more on particular aspects of the transition process. As an example, people who felt they had control over their experience and therefore chose the transition focused less on endings. Conversely, those who had not choice when entering the transition continued to struggle with the concept of a new beginning even after it was in effect. Moreover, these transitions can be extremely disruptive where we "siphon off energy and time from performing our jobs to make the transitions" (p. 80), and experience "disengagement, dismantling, disidentification, disenchantment, and disorientation" during the realization of a natural ending (p. 109).

Relating this type of individual transition theory to the world of academic libraries, Buch (1997) sees parallels between the individuals Bridges

(1980) discusses and the current state of librarianship. She argues that, during the transition phase, heightened levels of constant communication and information are needed. It would also seem that this stage parallels the increased amounts of energy needed by a dissipative system before entering far-from-equilibrium conditions. However, Buch (1997) contends that in our rush to implement technology, the "new beginnings" stage is often the main focus, and we do not provide librarians with enough time to reflect on their fluctuating transitions stage. Moreover, Buch (1997) feels that academic administrators often attempt to meet resistance to change head on and defensively rather than by embracing this phenomenon. "Why? Because most arguments to overcome resistance are based on logic, on the technical aspect of change; yet we now know that a great deal of change (including resistance) is about emotions and is therefore not at all logical" (p. 150).

A more radical understanding of individual development involves Mezirow's (1991) process of perspective transformation. This process is unique to each individual but usually commences during what Mezirow describes as a disorienting dilemma. Some type of cathartic experience takes place in an individual's life, pushing him or her into an uncomfortable zone where he or she tries to make meaning out of the event. This is followed by a deeper understanding of the cognitive structures that lead an individual to develop at a higher level by reflecting critically on life events and integrating them into a broader picture of one's life. This process is usually followed by a period where the individual has feelings of rebirth, as he or she integrates these reflections into a more encompassing personal *Weltbild*.

Systems Theories of Organizational Change

Systems theories have come to play an increasingly important role in the study of organizations, and, in particular, academic libraries. During the middle of the twentieth century, Kurt Lewin challenged mainstream approaches to psychological analysis through the creation of field theory, borrowing from the concepts of contemporary physics. In Lewin's (1951) view, an individual's life space contained interconnected and interdependent fields that associate with other individuals within groups. Modeling a process of unfreezing, moving, and re-freezing of group standards, Lewin (1951) argued that this field view was necessary to move individuals within groups from the perspective of a "goal to be reached" toward a view of change that moved the group "from the present level to the desired one" (p. 224). Around the same time, Ludwig von Bertalanffy (1968/1973) expanded research in the biological sciences and opened the door for an organic view of organizations in his *General System Theory*. He argued that open systems were impossible to understand completely by looking only at the parts of the system. In effect, his work developed at a time when many researchers had started investigating evolutionary and natural approaches to human interaction as an alternative to the reductionist theories that viewed that viewed the individual as a discrete whole.

Ackoff (1981, 1994) extended this systems theory approach, arguing for interactive planning models for organizational theory. In Ackoff's (1981, 1994) view, organizational change is a never-ending process, yet humans desire organizational stability which Ackoff (1981) compares to homeostasis. The increasing complexity of organizational life, and the tension between

individual and organizational concerns, led Ackoff (1981) to argue for a new, nonlinear systems view. Ackoff (1981) subsequently lists three main propositions about the nature of a system which foreshadows the later descriptions of complex systems:

1. The behavior of each element has an effect on the behavior of the whole.
2. The behavior of the elements and their effects on the whole are interdependent.
3. However subgroups of the elements are formed, each has an effect on the behavior of the whole and none has an independent effect on it. (Ackoff, 1981, p. 15).

In this way, the interdependence of individuals in an organization leads to increases or decreases in internal variability, therefore, promoting or inhibiting system development. Consequently, democratic organizations imply shared leadership through the circularity of individual decision-making within groups (Ackoff, 1994).

Schön (1971, 1991) focuses on systems theory during the process of change in organizations. He notes that turbulence forces individuals to move away from an equilibrium-oriented environment which presents an organizational paradox much like Morgan (1997) describes. "The crisis forces vital elements of the system to change. The change threatens disruption at the stable state whose achievement and maintenance are central to the existence of the organization" (Schön, 1971, p. 12). However, individuals within the organization eventually recognize the existence of the crisis which

places them in a position to transform the organization internally through the creation of new ideas, known as "reflection in action" (Schön, 1971).

Schön would later work with Argyris to develop a theory of psychological development that integrates the diverse feelings of individuals confronted with a changing environment (Argyris & Schön, 1974). This research led Schön (1991) to further argue that the nonlinear environment created by organizational crisis provides researchers with the opportunity for "reflection on practice." Since individual insights into organizational change are heightened during this period, the researcher is able to interact actively within the increasing complexity of the case under study while generating overall impressions of discontent with professional practice.

Argyris, having collaborated with Schön on research and writing, extends this view of organization dynamics in relation to action in a later shift in focus to Model I and Model II organizational theory (Argyris & Schön, 1978). Model I theory suggests that all actions of individuals are theory-laden, subscribe to Simon's (1969) information processing limits of humans, and that, in effect, the logic of theory creation becomes individual "theories of action" (Agryris & Schön, 1978). Argyris and Schön (1978) have found that single-loop learning is a dominant function of organizational learning. In single-loop learning, "members of the organization respond to changes in the internal and external environments of the organization by detecting errors which they then correct so as to maintain the central features of organizational theory-in-use" (p. 18). In other words, single-loop learning reinforces the culture and belief patterns that already exist in Model I organizations.

Double-loop learning extends the learning process of simple error correction and reflects on the organizational processes that cause error. As a result, double-loop learning challenges organizational norms and behaviors by studying the conflicts of individual "theories-in-action" and creating new theories. And finally, Argyris and Schön (1978) draw on the work of Bateson's (1972) "deutero-learning," or what is commonly referred to as second-order learning. Second-order learning draws upon both single and double loop learning and challenges members to learn about the previous contexts of their learning and how these have influenced their knowledge activities. Consequently, second-order learning challenges the core theory creation within the organization by learning *how* to learn.

Returning to Argyris & Schön's (1974, 1978) development of Model I theory, the authors suggest the Model II theory of organizational learning. Model I theory inhibits double loop learning, because it reinforces rather than challenges the existing theories-in-action of individuals. In this theory, Argyris somewhat abandons his previous view of the immature-mature continuum, noting that Model II theory cannot evolve from Model I theory. If leaders try to implement Model I, they force individuals to act in manners that are contradictory to the theory by forcing passive roles on followers (Argyris, 1990). Moreover, in Model I, the absence of double loop and second order learning, necessary components of theories that reflect on practice and learning, prevent the organization from evolving to a higher state. Incorporating double loop and second order learning, however, helps to create an environment where Model II theory can emerge.

In effect, Argyris and Schön (1978) argue that interventions by leaders to integrate double loop and second order learning helps to create an environment where Model II theory can take hold. Individuals reflect on practice and the context of their learning, driving the organization into a state of disequilibrium. Clear paths toward organizational planning begin to disappear. A learning system then emerges where "mistaken assumptions can be reformulated, incongruities reconciled, incompatibilities resolved, vagueness specified, untestable notions made testable, scattered information brought together into meaningful patterns, and previously withheld information surfaced" (Argyris & Schön, 1978, p. 131).

In systems theory, this concept of the learning organization has been attributed primarily to Senge (1994, 2004). Senge's (1994) learning organization theory, heavily influenced by Argyris and Schön (1978), is composed of five main disciplines. The first discipline, personal mastery, focuses on the desire of the individual to continually learn and therefore improve his/her mastery of personal and professional growth. Senge argues this process is never completed if one truly searches for personal mastery. The second discipline is the use of mental models which are "deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action" (Senge, 1994, p. 8). Similar to Argyris and Schön's (1978) "theory-in-action" and Schön's (1971, 1991) reflection on practice, mental models provide a way for individuals to reflect on assumptions and develop new theories that help move the organization forward. The third discipline revolves around shared vision. In order for an organization to seek long term survival, individuals

need to share a vision of how and where the organization may move. Senge (1994) notes that shared vision "is vital for the learning organization because it provides the focus and energy for learning" (p. 206).

The fourth discipline, team learning, expands upon shared vision and personal mastery by emphasizing the power of interaction among individuals when they work and learn in group settings. Senge (1994) argues teams are able to expose the deep structures of the organization that contribute to what Argyris and Schön (1978) would call second order learning, since the group is able to combine the knowledge of each individual into a collective intelligence. The fifth discipline, systems thinking, is the foundation of the learning organization. Senge (1994) contends this systems view provides a way for individuals to see the organization as an interconnected, living organism within an environment that responds to reinforcing--or amplifying--and stabilizing--or controlling--feedback mechanisms. In library organizational development literature, this focus on Senge's theory of the learning organization is perhaps the most studied and recognized aspect of systems thinking in academic library research.

Flood (1999) and Checkland (1999) have also expanded the field of systems theory , embracing the works of Schön and Ackoff in understanding rapid change and organizational circularity. Flood (1999) suggests leaders need to take a prismatic view of the interconnections in organizations, recognizing multiple actions and interactions among people are integral to the change process. Checkland (1999) furthers these ideas through *Soft Systems Methodology*. He argues for action research approaches to organizational development primarily focused on "soft problems" in the

social sciences where goals and objectives are difficult to prescribe during problem-solving situations. Soft Systems Methodology subsequently, "emerges from the research experience as a systems-based means of *structuring a debate*, rather than as a recipe for guaranteed efficient achievement (p. 150). In Soft Systems Methodology, leaders are encouraged to move followers toward an understanding of how individual needs contribute to overall changes within the organization.. Here we find similarities to Burns (1979, 2003) theory of transformation leadership, as Checkland (1999) contends the group's goals encompass a transforming view that helps individuals realize there is something more toward which they are working than individual needs and desires. Equally, Checkland (1999) contends that the use of metaphors is integral to understanding organizations as social structures, similar to Morgan's (1997) focus on metaphorical paradoxes in organizational cultures.

Yukl (2002) argues that a systems view is an equally important approach to understanding leadership. From this perspective, the leadership of organizations is viewed as socially constructed, and leadership is shared by the group rather than focusing on only a few individuals within the organization. Yukl (2002) also contends that studying leadership as a shared process allows the researcher "to pay more attention to the complex influence processes that occur among members, the conditions that determine when and how they occur, and the consequences for the group or organization" (p. 4).

Nadler, Shaw, and Walton (1995), rely on a theory of discontinuous change in moving organizations through transformation. They have found

that in the private sector, changes to markets, knowledge, and technology are increasing at faster rates everyday, which echoes the environment in academic libraries. They contend that organizations also need to transition at rates relative to their environment in order to survive. Large-scale changes usually happen as a result of a triggering event that leads an organization toward disequilibrium. Moreover, they have consistently found that organizations that move toward change in earlier stages of disequilibrium tend to have more successful transformations. Higher levels of organizational complexity, in their view, require less thinking about structures and more about shifting and integrating processes.

Although skeptical of many management theories, Birnbaum (2001) arrives at an evolutionary view of leadership that takes into account the concerns of organizational effectiveness. He contends that the metaphor of genetic mutations applied to understanding organizational dynamics leads to an emphasis on organizational variety. This idea echoes Ashby's (1956) Law of Requisite Variety, where a system's ability to produce internal variety is necessary for it to keep from disintegrating. In Birnbaum's (2001) view, "without variety, there are no alternative pathways open to either organisms or institutions. Over the long term, institutional forms, like the forms of organisms, must change or die" (p. 209), a view shared by Pascale, Millemann, and Gioja (2000). Yukl (2002) equally argues that this evolutionary view is a necessary component of organizations moving through a period of crisis, focusing on survival and adaptation.

Chaos and Complexity Theories of Individual and Organizational Change

> Theoretical assumptions such as those of Theory Y imply some conditions which are unrealizable in practice (like the perfect vacuum implied by physical theory). (McGregor, 1960, p. 245-246).

While many of the systems theorists have been concerned with the structures of organizations and how these influence individual behavior, chaos and complexity theorists have further integrated the living systems view of organizations, moving toward the processes and interactions of individuals and groups. Returning to the view that leadership is a dynamic process, complexity theory challenges the reductionism of classical mechanics. Stacey, Griffin, and Shaw (2000) argue for a new understanding of organizations as Complex Responsiveness Processes, which focus on an integrative view of the interconnected relationships established among people. According to Stacey, Griffin, and Shaw (2000), a systems view is only one tool, but this approach moves leaders from the role of objective observer and towards a participant in the process. Stacey (1992a) contends that organizations exhibit many of the traits of complex adaptive systems. Individuals and groups need to adapt in order to survive to their changing environment, similar to Ashby's Law of Requisite Variety, where a system's ability to produce internal variety is necessary for it to keep from disintegrating.

Stacey (1992a) suggests the use of positive and negative feedback mechanisms as a leadership approach to organizational dynamics. Paralleling Senge's (1994) reinforcing feedback, positive feedback is an

amplifying mechanism that increases behavior responses among individuals or groups, similar to the reverberation feedback that happens when a microphone is placed in front of a amplified speaker. The microphone creates sound which comes out of the speaker, goes back into the microphone, and returns from the speaker in a continuous feedback loop. This circularity of feedback increases stress on the system and leads to significant fluctuations from the sound that was first produced. In organizational settings, positive feedback could mean increasing resources and energy to a unit that is moving away from equilibrium.

Negative feedback, similar to Senge's (1994) concept of stabilizing feedback, is a dampening mechanism that moves a system toward equilibrium. A thermostat that controls heating and cooling in a home can represent this type of negative feedback. Each time the temperature moves away from the pre-determined comfort level (equilibrium), the thermostat readjusts the temperature to maintain the home's heating and cooling environment. In organizational settings, negative feedback could be described by mean limiting resources and energy from equilibrium-oriented units or as methods to keep far-from-equilibrium units from escalating to unbounded chaos (Pascale, Millemann, & Gioja, 2000; Stacey, 1992a).

It must also be cautioned that over use of feedback mechanisms can lead to unintended consequences in an organization. If those in leadership positions employ excessive amounts of either positive or negative feedback, they run the risk of micromanagement. Argyris (1990, 1992) contends that feedback used as a control mechanism can also lead to self-regulating feedback within groups that causes the system to perpetuate faulty learning

or increases normative behaviors, such as social contagion, through increased fear of authority or resistance to change (Blake & Mouton, 1981). And Stacey (1992a; 2003) argues that the overuse of either type of feedback mechanism will drive an organization towards equilibrium. In Stacey's view (1992a) bounded instability is the goal toward which leaders should focus in order for the self-organizing processes of group dynamics to take place. In this way, individuals within groups apply different types of feedback to each other that keeps a team operating within the parameters of bounded instability.

Morgan (1997) also focuses on chaos and complexity theory as critical components of individual and organizational development. He argues that all organizational theories are actually images or metaphors designed to persuade individuals to see and understand the phenomena of organizational life in partial ways. Morgan (1997) suggests the use of chaos and complexity theory metaphorically enables us to view simultaneous and emerging paradoxes of organizational conflict "between the status quo and alternative future states" (p. 271), and he contends that leaders of the future must be skilled at recognizing these emerging paradoxes.

Pascale, Millemann, and Gioja (2000) share this view, noting that this recognition will become the litmus test of effective organizations. In the authors' view, organizations that continually move towards stability actually inhibit their abilities to change, such as Prigogine and Stengers (1984) have found in the chemical and biological world. These views are also supported by Wheatley (1994), Zohar (1997), and Fullan (2001), who contend that complexity theory is a necessary lens for viewing leadership and

organizational dynamics in situations of constant change. When seeing organizations through a chaos and complexity lens, Pascale, Millemann, and Gioja (2000) note several issues that are critical for assessing the complex organization:

- Equilibrium is a precursor to death. When a living system is in a state of equilibrium, it is less responsive to changes occurring around it. This places it at maximum risk.
- In the face of threat, or when galvanized by a compelling opportunity, living things move toward the edge of chaos. This condition evokes higher levels of mutation and experimentation, and fresh new solutions are more likely to be found.
- When this excitation takes place, the components of living systems self-organize, and new forms and repertoires emerge from the turmoil.
- Living systems cannot be directed along a linear path. Unforeseen consequences are inevitable. The challenge is to disturb them in a manner that approximates the desired outcome. (Pascale, Millemann, and Gioja, 2000, p. 6).

Theories of Library Organizational Development

Perhaps one of the earliest approaches to library organizational development theory can be traced back to Ranganathan (1965). As an immigrant to the United Kingdom, Ranganathan brought a unique view of librarianship and was able to compare the libraries of India with those in England. He developed a model, based on evolutionary biology, describing

the Five Laws of Library Science. Ranganathan's (1965) Fifth Law stated that "a library is a growing organism." In Ranganathan's words:

> It is an accepted biological fact that a growing organism alone will survive. An organism which ceases to grow will petrify and perish. The Fifth Law invites our attention to the fact that the library, as an institution, has all the attributes of a growing organism. A growing organism takes in new matter, casts off old matter, changes in size and takes new shapes and forms. Apart from sudden and apparently discontinuous changes involved in metamorphosis, it is also subject to a slow continuous change which leads to what is known as 'variation,' in biological parlance, and to the evolution of new forms… The one thing that has been persisting through all those changes of form has been the vital principle of life. So it is with the library. (Ranganathan, 1965, p. 326).

Ranganathan's views were critical to the evolution of library science, as he is still cited in the literature today.

Most recently, Stephens and Russell (2004) have synthesized existing literature and have re-created a theory of library organizational development that brings the evolving practices of librarians in a changing environment into account. In their view, leadership is critical to the future of libraries, "and all employees should be seen (and developed) as leaders" (p. 239). They argue that alternative approaches to leading libraries are more effective than the traditional approaches with which most librarians are familiar. Equally, they contend this focus requires the use of organizational and leadership theories that are outside of library science. Their theory describes organizational

development as a process which includes creating a healthy environment, evaluating the strengths and weakness of units within the organization, identifying issues and choosing whether to take action, implementing more than one action, and assessing the effectiveness of the action (Stephens & Russell, 2004).

Stephens and Russell (2004) follow in the same path as Ranganathan, arguing that libraries are constantly changing. In their view, however, libraries are changing at a very fast rate, described by Ranganathan as metamorphosis. According to Stephens and Russell (2004), librarians now require models that focus on adaptation to the environment while studying cases that manifest the connection between leadership and organizational dynamics. Stephens and Russell (2004) also draw from chaos and complexity theory through Morgan's (1997) concept of paradoxes of organizational tension. They note that "these diverse perspectives on leadership create a certain tension within libraries–a tension that creates conflict where instead it should create opportunities for healthy discourse and a diversity of approaches" (p. 249). They argue that librarians cannot divorce themselves from the conflicting views of organizational development, change, and leadership and, therefore, should embrace them pluralistically. And from a research methodology approach, Stephens and Russell (2004) suggest moving towards integrated research techniques that use case studies of best practices, leadership in groups, and observation.

Argyris (1990, 1992) discusses the paradox of pluralism in his description of the process of Model I. The theory argues that people want to be in control of their own actions, similar to McGregor's (1960) Theory Y.

Loss of control of individual production leads to negative feelings surrounding the belief systems of individual "theories-in-use." As McGregor (1960) explains, "every managerial act rests on assumptions, generalizations, and hypotheses--that is to say, on theory" (p. 6). Likewise, Argyris (1990, 1992) notes that individuals within organizations also draw from their own "theories-in-use" when making and supporting decisions. However, the paradox resides in the idea that if leaders try to implement Model I, they force individuals to act in manners that are contradictory to the theory. "The recipients must be willing to accept being submissive, passive, and dependent" (Argyris, 1990, p. 13).

Although we would prefer to believe that moving an organization toward the mature continuum is acceptable, Argyris (1990, 1992) argues it is not enough. If individuals are left to contribute to the group without reflecting on the belief systems surrounding their own ideas, they will succumb to defending only their current "theories-in-use." Model II "theory-in-use," suggested by Argyris (1990) argues that humans "seek to produce as much valid information as possible... the reason for seeking information is to make choices or decisions that are as well-informed as possible... [and] individuals are viewed as being responsible for their decisions," known as self-responsibility (p. 104). In summary, valid information, informed choice, and personal responsibility lead group decision-making away from leader implementation and toward individual reflection on professional practice.

Holloway (2004) focuses on a systems and quantum theory interpretation of libraries as organizations while highlighting the effects of technology on changes in the profession. She argues that library

organizational development is a nonlinear, change-oriented process. In her interviews of librarians and library administrators, Holloway (2004) found that some of the more successful libraries were given considerable latitude within the university structure "to be different" (p. 8), and that technology was the major factor that precipitated change. Additionally, Holloway (2004) argues that successful changes rely on the interconnectedness of librarians and suggests that the challenge of organizational development rests in "balancing the competing values in an organization" (p. 15), again echoing Morgan's (1997) focus on competing tensions in organizations. Moreover, successful libraries chose their own path--these paths were not dictated by senior administrators within their universities. In effect, turbulence within the system, combined with an environment that fosters group dynamics, leads to the potential for self-organization and emergence among librarians.

Conclusion

A wide selection of theories has been included, as this study looks at diverse phenomena that emerge among librarians in an academic library. Theories of chaos and complexity are intended to generate a scientific and more natural interpretation of human experiences and events. Theories of individual and organizational change are expected to produce deeper understanding of the non-stabilizing effects of change at both the individual and organizational level. Theories of library organizational development ground this research in the field of library science, while arguing for a living-systems view of the library as a complex system. And the range of theories on organizations and provides a broad framework for understanding the complex processes of leadership, human interaction in groups, and the move

toward higher level learning and thinking about organizations. This broad coverage of theoretical frameworks is expected to help build the foundation of the study on how librarians experience and contribute to the leadership of their organization.

Studies of Individual Change

Introduction

This section will introduce studies on individual change that contribute to the complexities of organizational change. The first study focuses on the midlife transition period among individuals. This is followed by a study on career plateauing in academic libraries. And the last study incorporates a dissipative structures analysis of individual change in organizations going through transformation.

Studies of the Midlife Transition Period and Career Plateauing

In library science literature, the "graying of the profession" is a concept that elicits much attention, yet relatively little has been done to explore this phenomenon, particularly as it relates to the transformative change process in libraries. However, a related study in higher education literature has focused on "faculty renewal and recommitment at midlife." Karpiak's (2000) investigation of social work faculty at midlife transitions provides a view of this phenomenon that might relate to similar aspects of librarianship. In effect, many librarians are approaching or are in the phase commonly referred to as midlife. The American Library Association reports that sixty-seven percent of professional librarians are between the ages of 40 and 59 (ALA, 1999) which correlates to the age range of librarians selected for this research study.

In her study of 20 associate professors in the arts, ages 41-59, Karpiak (2000) investigated their "experiences and career perceptions at mid-career and midlife" (p. 126), noting six main personal life charges or "calls." Through the "call to care," most of the respondents noted a real commitment to their profession and found their interpersonal experiences with their students very rewarding. Many felt a "call to community," yet the participants tended to feel there was a lack of caring and concern within their academic departments, noting that many needs of a collegial nature were not being met. As one professor commented, faculty who "really do have a sense of deep commitment to their discipline, to their profession, are beginning to feel that they are doing all this in a kind of vacuum and nobody gives a damn." Another commented on the aspect of aging faculty that "the administration would just love it if the whole bunch of us would just drop down a hole and disappear" (p. 128).

Many of the participants noted the desire for professional and personal renewal in their "call to creativity." Some commented on the new found inspiration for research interests. Others looked to extrinsic life goals, as one cancer survivor expressed, "I'm really pushing myself to try to do new things at midlife." Still others felt susceptible to the "call of stagnation." Karpiak (2000) noted that "those who are motivated by intrinsic rewards and who relate to what they care for are able to continue to be creative and make unique contributions. Those who cannot let go are doing more of the same, searching through old manuscripts for something to finish, imagining a book based on research done long ago" (p. 129). Many of them felt frustrated,

alone, disinterested, and disengaged. Karpiak (2000) suggests, however, that these feelings of stagnation can be "misinterpreted as indifference or disdain" (p. 132) and might rather be reflected on as the impetus for re-generation. Several participants noted a "call to consciousness" and "the call as crisis" where critical events in life led them to reflect introspectively on aspects of their lives they had suppressed or avoided previously.

Smith (1995) has commented on similar aspects of career plateauing among librarians. Similar to Karpiak's (2000) findings on a call to stagnation and a call to consciousness, Smith (1995) notes for librarians "there is both a poignant awareness and a sense of frustration about the ways in which their career paths have been blocked or irrevocably altered... that they are faced with the loss of opportunities for advancement and achievement of goals" (p. 23). In many ways, this has created "the call as crisis," where, in Smith's (1995) view, librarians desperately try to realign themselves within their profession while turbulence and uncertainty abound.

Dissipative Structures Change at the Individual Level

A study of East German organizations after the fall of the Soviet regime led to interpretive analyses similar to both Lichtenstein (2000) and Newman (2000). This study relates to a process of dissipative structures change, in that the fall of communism led to complete transformation of some East German companies. Breu and Benwell (1999) borrowed from Lewin's (1951) field theory model and the evolutionary model of punctuated equilibrium (Tushman & Romanelli, 1985). During the process of radical, or discontinuous, change, the authors found a process of individual transition

taking place, similar to the work of Bridges (1980). In Bridges view, change is a concept that takes place externally from the individual while transition takes place internally. Interviews of 73 senior managers from 61 East German organizations yielded interesting results.

Analyzed data showed that that respondents focused on three main aspects of change: perceptions of the external environment, individual self-perception, and the behavior of the individual. In "Perception of the external environment," Breu and Benwell (1999) found that managers went through stages during the process of external change. They viewed the rigidity of the former communist system in negative ways, and believed the new capitalist system would lead to a totality of change. This was followed by a period of deconstructing the "total change myth" which led to understanding of incremental change and a belief in continual change. During the stage of "individuals' self-perception," managers first felt they had no ability to affect change, which was followed by faith in the ability to achieve rapid change. They then realized they had no knowledge base with which to lead change which inhibited their abilities to affect change. This was followed by a period of learning new skills which then restored their confidence in being able to facilitate change.

Managers in the former East German organizations then reflected a transition process of behavior. Right after the collapse of communism, managers fell into "disengagement and passivity." The Soviet regime had focused on politics over performance due to an emphasis on "collectivist ideology." There were no performance appraisals, and, as one manager noted, "this horrible egalitarianism resulted in such a distortion of the whole

system that performance preparedness didn't exist any more… you couldn't achieve anything but, also, nothing happened to you and this destroyed initiative" (Breu & Benwell, 1999, p. 509).

At the next stage in the individual transition process, managers moved towards an "eruption into hyperactivity." Reflecting on this experience, managers noted that they were euphoric about the changes taking place and developed relationships with new partners in the West largely through naivety. They emphasized speed and quantity in their work at the expense of conceptual knowledge and quality. Contracts, something with which none of the managers had experience, were signed without understanding the conditions, and managers commented that they "didn't know about prices and accepted prices that would not have been realizable elsewhere" (Breu & Benwell, 1999, p. 510). Soon this activity led to the next transition stage.

"Paralysis and hesitation" quickly set it. Managers realized the consequences of their actions in a market economy became evident in poor organizational performance. They had believed that, in the freedom of the West, anything was possible. Now they realized there were limits to this freedom, and, moreover, they recognized they didn't know what they were doing. "One waited and thought, when will somebody come to tell me what to do?" This passivity digressed into inactivity, and "those managers who became active in this stage survived in part, not all, but those who did nothing are gone" (p. 510).

The next stage of the transition brought "inquisition and exploration of the new world." Those managers who were able to re-activate themselves from the previous period began to move forward and search for new

knowledge that would help them succeed in their new environments. "Every day we learned something new, we absorbed what we could get in information and applied it… the practice, every single day, was continuous learning. Making discoveries, piece by piece, and responding to them" (Breu & Benwell, 1999, p. 511).

In the final stage of individual transitions, managers described "impelling and proactive enactment of the environment." Individual confidence began to increase with the new knowledge managers had gained. A process of self-reflection emerged which led to managers learning to analyze their failures and accomplishments in order to continually feed this knowledge back into their learning patterns. Breu and Benwell (1999) argued this transition process was completely transformative and exhibited features of second order change.

Studies of Leadership in Academic Libraries

Introduction

In the following section, studies on leadership in academic libraries will be investigated in their relationship to the theoretical orientation of this research. The first studies will focus on behavioral and attribute theories of leadership in academic libraries, as well as studies of the leadership of team-based organizational structures These will be followed by normative theories of leadership in relation to their emergence in academic libraries. And finally, studies on charismatic and transformational leadership in academic libraries are introduced.

Studies of Normative and Behavioral Leadership in Research Libraries

Hernon, Powell, and Young (2001, 2002) have performed one of the most comprehensive studies on phenomenological and behavioral aspects of leadership associated with academic library deans. In their first study, the authors' intent was to have deans reflect on the changes taking place in library administration, focusing on attributes such as qualifications and experiences. Hernon, Powell, and Young (2001) collected job descriptions for senior library administrators that appeared in professional journals from 1994 to 2000. They incorporated this data to develop questionnaires that were used while interviewing 19 directors or deans of U.S. and Canadian libraries that hold membership in the Association of Research Libraries.

Many of the deans related how rapidly changes were taking place in their libraries. Contrary to similar studies conducted previously, ARL library deans saw their positions shifting from internal to external foci, higher attrition rates, more emphasis on leadership experience while continuing to focus on academic qualifications, and the ability to manage conflicting expectations among the university community. One director echoed Morgan's (1997) organizational conflict, arguing that there are:

> Multiple and competing tensions in the academic library world… For example, there is the tension between strategic investment in building and collection infrastructures and the need for more collaboration within consortia for purchasing of digital information which will never be owned or need housing. And it is not simply the conventional tug of war such as local versus consortial investment that creates present

and future challenges for academic libraries. (Hernon, Powell, & Young, 2001, p. 118).

Equally, many deans stated that their jobs were becoming so much more complex, that many of their previous job duties were now being shared with other library administrators and staff, implying that the concept of shared leadership was beginning to emerge in ARL libraries, at least at the upper levels. The authors note, however, that the study did not take into account the perceptions of librarians on senior administration in each library.

In their second study, Hernon, Powell, and Young (2002) conducted follow up interviews to identify key attributes needed for future ARL administrators. These interviews now included not only ARL deans, but also assistant and associate deans in ARL libraries. Of note, ARL deans asked to have "uses different decision-making styles depending on the situation" removed from the questionnaire which might imply that the attitudes of ARL deans in general did not support Situational Leadership Theory, although perceptions of other librarians were not taken into account.

Present and future attributes were then compiled for both ARL deans and associate and assistant ARL deans, including managing, leading, planning, dealing with others, individual traits, and general areas of knowledge. Interestingly, many attributes in the "managing," "leading," and "dealing with others categories" were shared by deans, assistant, and associate deans, such as "builds a shared vision for the library, manages/shapes change, develops and fosters partnerships with groups and organizations on/off campus, promotes professional growth in staff, resolves conflict, facilitates the group process, is able to work effectively in groups"

(Hernon, Powell, & Young, 2002; pp. 79-84). This study does not incorporate the multitude of additional aspects of the effective leadership process of a complex organization, and it does not take into account the perspective of lower levels of staff. However, the study does provide a framework for critical attributes for future leaders and that many of the traditional boundaries of the ARL dean's job are starting to permeate into other areas of the library, implying the emergence of shared leadership.

Kascus (2004) has performed research on the leadership of teams in an Association of Research Libraries (ARL) institution. By identifying team leaders within the institution and subsequently interviewing them, Kascus (2004) looked at the shift from management to leadership roles and the success of this strategy. Six main leadership traits were measured, looking for causal relationships in the success of teams. Equally, Kascus (2004) assessed the effect of the organizational change in relation to the needed leadership attributes of team leaders through the perspectives of team members, senior managers, and team leaders. Results of the study show that 10 leadership behaviors were attributed to the success of the team model, including active listening, coaching, collaborative, empowering, enabling, encouraging, facilitative, interpersonal, mentoring, and trustworthiness.

Studies of Normative Theories of Leadership

Normative decision-making processes that typically drive organizations are at the root of some of the problems that surround organizational conflict and resistance to change. Blake and Mouton (1981) have described this normative behavior through social contagion theory, where spontaneous emotional and behavioral responses arise within groups

based on their history and culture. The library science literature describes this phenomenon as psychological contracts, where "these are the unwritten (and often unspoken) *understandings* held by individuals about expectations, privilege, power, obligations, rewards, and the like" (Stephens & Russell, 2004, p. 248).

Librarians have historically looked at their roles through the philosophy of preserving past knowledge rather than on creating future knowledge. As a result, normative behaviors have led to group pressures on individuals within libraries to resist technological changes (Weiner, 2003). However, many times, "violation of the psychological contract often occurs without the knowledge of the offender (usually those who are in authority) and can escalate to general distrust, skepticism, and rejection of efforts to develop the organizations' capabilities" (Stephens & Russell, 2004, p. 248). This phenomenon is furthered by the argument that technological change involves much more complex emotional and power responses to change. As a result, by studying the narratives of people who are going through, or who have been through, major technological changes, we are able to see a much broader picture of how the normative responses and power struggles influence resistance and adoption of change (Dawson & Buchanan, 2005).

Dowell's (1998) research on perceptions of leadership in academic libraries expands on both the normative and shared leadership. Dowell (1998), studied several large academic libraries that employed more than 50 librarians. Leaders and librarians were asked to define leadership in relationship to the organization, professional peer networks, and by the

individual professional. Dowell (1998) found, most notably, that within organizations sexism existed "on both sides of the gender gap" (p. 164). Samples of both women and men showed participants tended to list their sex at higher rates as defining leadership than either sex was represented as a percentage of the population in the libraries under study. However, as the questions shifted to external foci, such as peer networks, this sexism began to diminish. And at the individual level, each librarian identified aspects of his/her job that exhibited traits of leadership. In concluding the study, Dowell (1998) showed that leadership was viewed in a variety of different ways, depending on social and structural contexts, and many times designations of leaders were outside of the typical managerial structures of the organization. Administrators might be identified as leaders in some roles, whereas lower levels of librarians were identified as leaders in other roles. Overall, Dowell (1998) contends that leadership in academic libraries is "in the eye of the beholder" (p. 160).

Studies of Charismatic and Transformational Leadership

Bass' (1998) Full Range of Leadership Model was also supported in library development literature. Albritton (1998), performed a comparison study of leaders and followers in medium-sized academic libraries to test the efficacy of the of the Full Range of Leadership model in the library environment. The study found that, of the 146 participants in the survey, factor analysis showed an extreme significance ($p<.01$) of transformational attributes (satisfaction with the leader, effectiveness of the leader, and extra effort of followers) on the effect on leadership outcomes among followers. In Bass' (1998) view, "going beyond a transactional leader's specifying and

clarifying the goals, the transformational leader presents the value in the goals" (p. 23).

Studies of Organizational Change

> In this crisis phase the primary responsibility of management is to determine how to adapt and survive. (Yukl, 2002, p. 36).

Introduction

The next section introduces studies of organizational change in academic libraries. The first study focuses on systems theories of organizational change in an academic library. The next studies include chaos theories of leadership and organizational change. These are followed by self-organizing and dissipative structures studies of organizational change. Each of these studies builds upon the theoretical orientation of this research.

Study of Systems Theory of Library Organizational Change

Phipps (2004) autobiographical study of a system design of organizational development in a large academic library brings new insight of a theory of integration that incorporates aspects of systems theory, Total Quality Management, and Theory Z. In the view of university and library senior management, the library had reached a crisis period. Aging organizational structures and work processes, combined with budgetary spending escalation, led to an entire restructuring activity in the library. In Phipps (2004) words, the library "was a participative but traditionally hierarchical, nontechnical, inward-focused organization that valued collection building and was based on a service model that assumed users' dependence on mediation" (p. 72). A new nonhierarchical structure that focused on capitalizing on technology to perform new work functions was then

introduced, but "it was clear that all the embedded systems that had supported work in the former organization were incompatible with the new structure and goals" (p. 70). Librarians were challenged to: eliminate work that did not add value to the organization, reduce spending, incorporate new technologies, and focus on customer focus of continuous improvement.

Studies of Chaos Theory in Leadership and Organizational Change

Pascale, Millemann, and Gioja's (2000) case studies in the corporate sector have shown promising results. In their study of General Electric, rather than by trying to predict the future, Jack Welch attributed the success of the company by exciting employees to react at a faster rate to the changing environment than their competitors. The authors attribute this success to the application of the Law of Requisite Variety (Ashby, 1956)--where it is necessary to increase rather than control variation within a system in order for it to survive--and from evolutionary chaos theory, where in nature species evolve due to changes in their external environment often at the benefit of their community.

Pascale, Millemann, and Gioja (2000) expand on this phenomena in their interpretive study of Sears' CEO, Arthur Martinez. They argue that Martinez incorporated a plan of genetic diversification to counterbalance the ongoing internal managerial promotions that were causing the company to move towards equilibrium and stagnation. In the course of a few years, 20 percent of management positions were filled from the outside, and the company was starting to gain market share back at a fast rate.

The most in-depth of their case studies looked at the transformation of the bio-petroleum company Monsanto. In this case, the company's CEO,

Robert Shapiro, actually applied a chaos and complexity framework to transform the company in a rapidly changing bio-tech environment. The company's employees had become accustomed to the status quo, which Shapiro attributed to the organization's near-equilibrium characteristics. Shapiro began to hold town hall meetings with company employees and moved traditional hierarchies toward self-managed teams. His presentation of information on the changing environment, as opposed to directing employees how to move, led the teams to self-organize and find radical solutions to the problems the company faced. Within a few years, Monsanto had completely transformed from a bio-petroleum company to one focused on bio-diversity and sustainable agriculture in order to assist developing countries (Pascale, Millemann, & Gioja, 2000).

Aram and Noble (1999) participated in a similar experimental design of leadership in small groups within a far-from-equilibrium environment. For five weeks, students in an MBA program received instruction on traditional management theory and then switched to complexity theory for another week. The authors then gave students a "theme for exploration" with limited rules to test their capacity and ways in which they learn in a complex and far-from-equilibrium environment. Students were also asked "to decide how they wanted their learning to be assessed, and when, and who should assess that learning" (p. 332). Students determined that this "theme for exploration" meant preparation of a presentation but did not let the instructors know that this was their preferred method of assessment. After finishing their presentation, students "waited with beaming faces for me to say well done" (p.332), but the instructor asked them questions about

the process of the assignment and that the students had still not told the instructor what method was going to be used for the assessment. As the students assumed the presentation was the assessment method, discussion ensued about their assumptions and the intent of the assignment. Through further dialogue with the instructor, the students learned the focus of the assignment was on process rather than outcome (Aram & Noble, 1999).

Aram and Noble (1999) tried to continue this level of disequilibrium among the students. At the same time, the research also focused on ideas surrounding reflection on practice (Ackoff, 1993; Argyris & Schön, 1978; Schön, 1987). The authors' intent, therefore, was to reflect equally on their own experiences in the disorienting ways the students' had reflected on their classroom experiences, paralleling the dynamics that take place between leaders and groups. Open discussion among the students was then encouraged to describe their reflections on this teaching method. The authors realized a paradox between students' and instructors' expectations and reactions emerged:

> Where I had assumed they could trust me, they feared I was trying to trap them. Where I feared their power to attack me as a 'poor' teacher, they saw their own powerlessness in the face of an institution that could grant or withhold degrees. Where I expected to see openness of the situation I offered them, their perception was a situation bounded by institutional and expert authority and power, their own long experience and beliefs about successful behavior within educational systems, and the conviction that there was a 'right' way to 'do' the

> exercise, which I would expect them to discover. And to some extent they were right! (Aram & Noble, 1999, p. 335).

As a result of these conversations with students, Aram and Noble (1999) found aspects of chaotic and complex systems that emerged during this experimental instruction. Positive feedback mechanisms were used by instructors to create an environment with few restrictions on learning outcomes. Although this environment had boundaries, the conditions of the teaching method led to bounded instability, where Argyris' (1990) concept of double-loop learning emerged as both students and teachers became learners. Stacey's (1996) interventions were used to eliminate control functions and foster self-organization within the group. And most importantly, the teaching experiment emphasized process over outcomes where the teacher shifted focus from expert to participant learner. Consequently, the authors contend that, for the same reasons that this experimental teaching method moved learners into an uncertain and far-from-equilibrium environment:

> These experiences offer insights into our understanding of situations managers face when seeking to open up opportunities for new ways of working within established organizations... the difficulty experienced by the 'student/planner' above in simply suggesting informal conversation to his boss is evidence of the stranglehold expected patterns of behavior have on our lives. It is also a clue to the potential significance of small events contributing to bringing about–eventually–remarkable change. (Aram & Noble, 1999, p. 340).

Studies of Self-Organizing Change in Organizations

Lichtenstein's (2000) case studies of three major companies in the United States show the benefits of using Prigogine and Stengers (1984) thermodynamics metaphor when interpreting organizational transformation. In each of these cases, Lichtenstein (2000) found that radical shifts in organizational functions led to nonlinearity and often follow punctuated equilibrium; that they are the result of stress or tension that overloads a system's capacities to perform its normal functions; and that "system-wide change is usually preceded by an increase in intensity, tension, and a critical recognition of some sort" (p. 130). Lichtenstein (2000) found that, in these companies, a three-stage process of self-organization takes place. In the first stage, increased organization begins to happen as a result of the initial stresses placed on the system. When not subjected to negative feedback mechanisms or directed control of hierarchical management of the system, employees exhibit increased activity in trying to create new, interdependent organizational structures. In the second stage, this increased tension leads to a "threshold of change," where employee behaviors are amplified rather than controlled. The system becomes so sensitive to initial conditions that "at this critical stage a single idea can provide the seed for self-organization" (p. 131).

The third stage leads to the "emergence of a new configuration," where shared leadership leads to changes in mission, vision, and organizational structure in ways that are radically different from the old organizational structures and philosophies. This phenomenon also appears to relate, to Osberg and Biesta's (2007) strong emergence and Bak's (1996) self-organized criticality. Lichtenstein (2000) also found important qualities

of self-organization became evident in each of these cases, most notably self-referencing, increased capacity, and interdependence. Self-referencing involves bringing the organization's "principles, values… accumulated learning, and core competencies" into the change process where "the more the new dynamic order is congruent with the origins and evolving expertise of the firm, the more successful the change will be" (p. 132).

The creation of new products did not rely on the implementation of entirely new methods for work processes. Each company drew upon technology and knowledge that already existed as a means to facilitate transformative changes (p. 132). Drawing on this concept of self-referencing, increased capacity happened as a result of the self-organization that had emerged utilizing "tangible and intangible resources that already exist in the firm" (p. 132). The development of new philosophies led to an increased capacity to look for and recognize existing resources that could be used to move the organization forward. And finally, interdependence involved a break from traditional departmental boundaries, where employees shared information and began to communicate at levels that were outside of typical job functions (Lichtenstein, 2000).

In Lichtenstein's (2000) view, "nonlinear dynamics solves a paradox that many managers face: how to keep developing when you cannot keep growing" (p. 135). Equally, he contends that complexity theory leads to the absence of predictability, that individuals in complex systems need less control in order to self-organize, and that managers should be less concerned about the final organizational structure of the company and more concerned

with using complexity principles that will help the organizational structure emerge (Lichtenstein, 2000).

The importance of self-organization and self-referencing as concepts used to interpret institutional transformation are expanded upon in Newman's (2000) studies of radical institutional transformations of former Soviet companies in Central and Eastern European (CEE). As the bureaucratic models of the former Soviet regime began to disintegrate, organizations were thrust into a new environment driven by global capital markets. Newman's research showed that self-referencing and self-organization were key components for successful organizational transformations. Those CEE firms that tried to mimic organizations in the West were often unsuccessful, as they attempted to move forward without any reference points to their own organizational histories. Equally, this lack of self-referencing inhibited employees from moving through the process of self-organization. External resources were few, and the absence of self-referencing led to limits in increased capacity. A focus on external models with different histories caused them to fail to capitalize on the tangible and intangible internal resources within their organizations (Newman, 2000).

Smith and Comer (1994) studied the self-organization process in small groups. Their study of graduate students in schools of management over a period of 12 weeks showed promising aspects of Prigogine's (1980) dissipative structures theory. The authors argue they attempted to find an alternative approach to Lewin's (1951) theory of change within groups, incorporating Ackoff's (1981) idealized design with complexity theory. The research tested idealized design theory (Ackoff, 1981) in relation to self-

organization for its predictive capabilities of group effectiveness within turbulent settings. The authors utilized research intervention techniques designed along the line of Tavistock group leadership and power roles, and incorporated them as a "psychodynamic intervention" among the experimental group. It was the intent of the authors, therefore, to push the experimental group into far-from-equilibrium psychological states and then observe their group interaction. Results of the study showed "significant differences were found between the experimental and comparison conditions in terms of the presence of the self-organization variables and in terms of group effectiveness... within the more turbulent situation, the groups that possessed more experimenting capacity, self-reference, and boundary reparation were more effective" (p. 572, 574).

Studies of Dissipative Structures Change

MacIntosh and MacLean (1999) draw upon the works of Prigogine and Stengers (1984), Jantsch (1980), Waldrop (1992), Stacey (1992a), Pascale (1990), Argyris (1990), among many others, while focusing on strategic change in organizations in crisis. In their studies of two U.K. manufacturing firms going through the process of organizational transformation, MacIntosh and MacLean (1999) interpreted these changes through a lens of dissipative structures. In their view, dissipative structures theory predates the "edge of chaos" theory in the professional literature and focuses on the concept of deep structure within organizations while the latter does not. This deep structure is manifested in organizational change "as a quasi-permanent, invisible substructure which remains largely intact whilst manifest, observable structures break down. As such it forms the bases for the self-

referencing processes which occur during self-organization" (MacIntosh & MacLean, 1999, p. 303). In this manner, deep structure describes the key principles and organizational knowledge that emerge during the chaotic period and are visible through the remainder of the transformational process.

Each company under study reached bifurcation points when turbulence from outside market factors influenced the companies from responding adaptively. Previously, the companies exhibited near-equilibrium conditions: stability, slow change, and resistance to modifying organizational structures. During its period of heightened dissipation, however, "the system becomes open, blurring its boundaries with the environment in a bid to import the energy required to sustain future growth and export the entropy or disorder which has arisen from its overwhelmed control systems" (MacIntosh & MacLean, 1999, p. 303).

The authors also found unique characteristics of feedback mechanisms in these companies that related to similar examples in the natural world. Negative feedback expressed by individuals, rather than used by senior managers, within the companies led to continual attempts to return the companies to near-equilibrium states. As an example, after the organizational structure had been changed at one company, employees accepted it at face value but continued to operate along the lines of the previous structure. MacIntosh and MacLean (1999) noted that at one company, the transition plan had to be implemented on three successive occasions before bifurcations started to take place. This relates directly to Prigogine and Stengers (1984) argument that, in thermodynamic systems, unless the conditions are ripe for

change or enough perturbation has been placed on the system, the internal push to move towards equilibrium is too strong to resist.

Moreover, the authors found that feedback viewed as positive at one level could be interpreted as negative at another level. The amplification of new rules fed into the organization to help condition the self-organization process could also be viewed as a dampening mechanism that led to social contagion around the rules (MacIntosh & MacLean, 1999). This concept, therefore, finds reference to the scale independence of fractal geometry, where increasing complexity emerges with each new focus at the macro or micro levels (Davis, 2005).

MacIntosh and MacLean (2001) further developed their work on dissipative structures in organizational theory, coining the term "conditioned emergence." The term "implies that organizations move through a cycle of gradual evolution, stagnation, radical upheaval, and self-organization (MacIntosh & MacLean, 1999, p. 324). Their study of a 100 year old U.K. manufacturing firm showed that the company had been performing poorly for a number of years. Each new shift in management had re-applied the same rules the company had always known, leading to further decreases in performance. MacIntosh and MacLean's (2001) research was designed, therefore, to help managers in the company identify and condition different phases of the transformative process.

MacIntosh and MacLean (2001) found there was a three phase process of transformation. The first phase, "conditioning," involved creating a new organizational structure that was implemented in incremental steps, relying on the concept of sensitivity to initial conditions found in chaotic systems.

The second phase, "creating far-from-equilibrium conditions," incorporated a significant shift in traditional work roles, developing an environment of uncertainty that encouraged openness and an increased capacity to take in new information. The last stage before transformation involved "managing the feedback processes," where management resisted applying negative feedback mechanisms that would highlight the traditional practices with which employees were comfortable. Instead, managers encouraged any form of acceptance of the new rules and further creation of new rules.

Of note, MacIntosh and MacLean's (2001) research found that similar features of previous studies, mainly the pull of negative feedback. Company employees continually tried to apply the traditional rules of the company while avoiding the new rules. The authors found that management identified this phenomenon and focused on maintaining far-from-equilibrium conditions within the firm. "Repeated efforts to introduce instability created the organizational flux in which a new rule set *could* emerge" (p. 1,351), including structural shifts in physical space and perceptual changes of the company.

Managing the feedback process involved meetings that continually reflected on professional practice. Although the authors found Argyris' (1990) work on reflective practice similar, and particularly relevant here, they could not determine the extent that this theory influenced the emergence of new rules and transformative organizational properties (MacIntosh & MacLean, 2001). The authors also felt it important to reference Lewin's (1951) field theory model of unfreezing, moving, and refreezing group standards as relevant to the process of maintaining disequilibrium. Although they

originally believed rules to change order generation were necessary at the beginning of the conditioning phase, the case showed that this process happened during the maintenance of disequilibrium and during application of positive feedback mechanisms. As a result, MacIntosh and MacLean (2001) now move towards the "position where organizational transformation is viewed as an emergent process that can be accessed and influenced through three interacting gateways, i.e. order-generating rules, disequilibrium and positive feedback" (p. 1,353).

Conclusion

This turbulent environment with which research librarians are now faced, changes the way librarians think about their libraries in the future. Complexity theory provides a lens for interpreting these far-from-equilibrium conditions. Throughout the course of this study, it is expected that librarians will provide rich descriptions about how they experience and cope with the rapid changes brought on by the increasing use of technology. While studying a library that has incorporated a non-traditional library organizational structure, the author feels that many of the theories of organization and leadership, theories of change, and theories of library organizational development might emerge. Equally, an evolutionary and adaptive theory of complexity will help to explain these phenomena through an interpretive lens.

The literature on theories and studies of change provides a framework for understanding how both individuals and groups respond and react to change. As individuals move through stages of development, it is important

to understand how they experience and cope with change. Studies of transition theory and individual change in the academic world also support the conflicting emotions and psychological orientations of individuals moving through change. Organizational theories of change also provide a systems view of individuals operating collectively within a larger structure. This theory lends to a better understanding of phenomena that emerge through group interaction and help provide a new view of the academic library as a complex system. Studies supporting organizational change theory also show how this relatively new way of thinking about libraries as systems and learning organizations is radically changing their organizational structures and traditional modes of operation.

The literature on organization and leadership theories and studies shows an evolution in thought and action taking place. These theories are becoming more complex and have moved from only looking at one aspect of organizational development or leadership, such as behavior or transformation, to investigating the interaction of multiple aspects of organizational dynamics and leadership as processes. Many theories move toward or imply the increasing role of shared leadership among individuals of all levels, and studies of these theories manifest these emerging roles in practice. These theories also show how normative and psychological behaviors can influence group thinking or contribute to organizational malaise. Studies on resistance to change have been most important in understanding this phenomenon of normative behavior which can effect how an academic library moves through a period of transformative change.

Moreover, many of the theories call into question how both leaders and followers reflect on their practice and contribute more advanced ways of thinking about organizations in the future. Several studies have also supported this professional shift, noting the breakdown in the capacity for traditional organizational and leadership structures to respond to the rapidly changing environment.

The incorporation of complexity theory as an interpretive framework for this study also helps explain and describe the many different phenomena and issues that surround this case using a more evolutionary and adaptive view of libraries. As organizational and leadership theories move more toward nondirective and interactive forms in academic libraries, the author believes that the concept of self-organization may play a critical role in analyzing and describing organizational transformations. Equally, as the research library under study has moved toward far-from-equilibrium conditions, it is possible that the interactions of internal and external stress, combined with self-organization, might lead to ways of interpreting the transformations that have taken place as bifurcations similar to those found in dissipative structures. Moreover, it is also believed that these bifurcations might be accompanied by an interpretation of the emergence of more complex organizational structures, deeper learning and reflection on the shifts in organizational dynamics and the profession of librarianship, and provide a broader picture of how librarians interact as individuals within a larger organization. Studies of private sector organizations and institutions

support this interpretive framework, and it is believed that this case will also benefit from this type of analysis in similar ways.

CHAPTER THREE: METHODOLOGY

Design Overview

Denzin and Lincoln (1994) have noted the social and behavioral sciences are unique in that their main purpose for research is to understand human experiences. They argue that humans cannot be removed from the contexts within which they participate, either formally or informally. Consequently, researchers explore the phenomena of organizational behavior by studying the meaning that individuals give to the phenomena (Denzin & Lincoln, 1994). Weick (1979) reveals that the term organizational behavior has roots in both sociology and psychology. However, the two disciplines tend to skew the individual versus societal elements of organizational behavior in their preference for one over the other. And, as Ranganathan (1963) contends in *The Five Laws of Library Science*, the fifth law states, "the library is a growing organism" (p. 326). Individuals in organizations, therefore, behave in ways that manifest their connection with their evolving environment and exhibit characteristics of complex systems, as do all living systems (Complex Systems, 1999; Morgan, 1997; Pascale, Millemann, and Gioja, 2000).

In choosing a paradigmatic lens for this study, it is important to take into account the interconnected actions, behaviors, and responses of individuals within a rapidly changing and uncertain environment. Since library chosen for study exhibits the features of a complex system--turbulence, change, and system transformation--a methodological framework that is in line with studying complex systems was needed for this research. Observations of complex systems are typically bounded by the parameters of

the researcher, implying that s/he becomes a participant in the complex system through observation. Since differences exist qualitatively between and within complex systems, methods for studying them are normally limited to phenomenological description. Additionally, while observing a complex system, the more one tries to control the processes or structures of the system, the less descriptive his/her qualitative understanding of these systems becomes (Complex Systems, 1999; Doll, 1993; Morgan, 1997; Stacey, 1992a, 2003).

It is the purpose of this study to increase understanding of how research librarians experience and cope with the turbulence within their research library. Equally, by studying in depth a research library that has incorporated a non-traditional library organizational structure, this research examines the issues that surround the organization and leadership of change in a research library. It was, therefore, the intent of this research to apply a case study method for investigating the complex phenomena of the interconnected, individual experiences associated with change in an ARL library.

The framework for this qualitative inquiry relies on Stake's (1995) case study method. In Stake's (1995) view, "the real business of case study is particularization, not generalization. We take a particular case and come to know it well, not primarily as to how it is different from others but what it is, what it does" (p. 8). This study, therefore, focuses on emic issues that emerged from interviews of individuals participating in the study. Rather than reducing these issue questions into segmented parts, Stake (1995) argues

for openness to the complexity that emerges during the study. Equally, topical questions are asked that describe the environment in which the phenomena of the case developed. This case study investigation consisted of two main approaches. Each participant interviewed served as an instrumental case study, where the purpose of studying individual cases is used "to understand something else" (p. 3). Because each librarian experienced and perceived actions and events surrounding the change process differently, s/he gave meaning to the phenomena in different ways. Through this process, this researcher was able to understand the context for each individual's experiences (Stake, 1995).

These separate, instrumental cases were then coordinated through collective case study method. This portion of the study focused on each of the instrumental cases to build a complex systems framework used for development of an intrinsic case study of the library as an organization. Using this approach, the researcher was able to focus on the interconnections of individual actions and experiences as integral to the library as an organization by weaving the instrumental cases through the fabric of the intrinsic case study. The study of each person instrumentally, therefore, showed disparate interpretations of the change process. However, when each of these cases were developed collectively into an intrinsic case, the study led to a further understanding of organizational dynamics of individuals within groups in order to interpret these phenomena of the library as a system. Direct observation of an organizational meeting was also used while on site.

Selection of Institution and Participants for Study

In the United States and Canada, there are 113 academic libraries belonging to the Association of Research Libraries (ARL). In order to narrow down a library for intensive study, this researcher informally contacted ARL deans to discuss my research interests, based on my own knowledge and research of ARL institutions that are considered to be leadership models by their peers. These deans consecutively suggested peer institutions that could be used for case study research that exemplify organizational change in ARL libraries. This approach served as a triangulation technique to ensure my views on organizational change and the views of ARL administrators were generally in-line with each other. Further explanation of the selection of the institution for case study analysis would jeopardize the anonymity of this study.

After an ARL member institution was selected for case study research, I then contacted the dean of that library and discussed my research interest and intent to obtain permission from him/her to perform the case study. I applied for and received Institutional Review Board approval at both the University of Oklahoma and at the institution where I conducted the research. To ensure the anonymity of the participating institution and the individuals participating in the study, the pseudonym East Coast University has been used to describe the participating institution. Equally soubriquets for each of the participants are also used throughout the findings section of this study. This researcher has made every effort to protect the privacy of the participants under study, and, general terms are used to describe the

institution, its organizational structure, and job titles of individual participants, so that identification is limited.

Data Collection

Data was collected initially through a preliminary survey research of all librarians at the ECU Libraries. A survey questionnaire comprised of short demographics information and open ended questions was distributed via mail and secure email to each of the professional librarians at the ECU Libraries (See Appendix A). Thirty librarians responded to the survey with a response rate of close to fifty percent. Surveys were then analyzed by the researcher to identify depth of responses and richness in descriptions of the changes associated with the ECU Libraries as a purposive sampling method to select participants for interviews. Seventeen librarians were then selected for on site interviews during the course of this case study. This researcher then traveled to the ECU Libraries to interview and observe individuals within the organization.

The interview process was composed of two methods: a clustering technique and biographical semi-structured interviews. The use of "clustering" was first introduced by Rico (1983) in creative writing, and the technique has been expanded for use in adult education by Karpiak (1990, 2000). Participants were provided with a sheet of paper containing the phrase: "change in my library." They were then asked to write down short ideas or mental pictures they thought of while contemplating this phrase. The use of the clustering technique served as a method that allowed the participants to describe the first things that came into their minds (See Appendix B). This researcher then allowed participants as much time as they

needed to present their individual mental maps that surrounded the main phrase.

After participants appeared to be finished with their clustering map, this researcher then turned on the audio recorder and asked the participant to describe what they were thinking about each of the concepts they had written down on their paper. The researcher encouraged the participants to go into as much detail about their thoughts and feelings regarding each cluster as the participant wished. When the participant felt s/he had responded sufficiently to each of the clusters, the researcher then asked the participant to rank order his/her responses and, finally, provide a summary of his/her thoughts about the contents of the clusters. Participants were given as much time as they needed to describe the concepts they had written down which usually lasted around fifteen minutes.

After participants finished with their clustering exercise, the researcher moved to the second portion of the interviews. Questions used for the semi-structured interviews were developed based on the main research questions for this study and were asked of each of the participants (See Appendix C). Each interview lasted approximately 60-90 minutes. Levinson (1978) describes the process of biographical interviewing as a combination of structured interviewing, where structured questions are asked; as a clinical interview, where the interviewer responds to the emotions and meaning generation of the participants; and as a conversation, where the interviewer as practitioner might share his own experiences with participants.

Consequently, the main questions from the structured template were used, but follow up questions of a semi-structured nature were also asked

based on both the participant's and the interviewer's interpretations of the questions and responses that emerged during the interview. When participants felt they had answered all of the questions sufficiently, they were given an opportunity to add any other information to the interview. After each interview was finished, the researcher then turned off the audio recorder.

Data Analysis

As has been stated previously, data analysis began and continued throughout the study. As Stake (1995) notes, in case study research "there is no particular moment when data analysis begins. Analysis is a matter of giving meaning to first impressions as well as to final compilations" (p. 71). Consequently, this analysis took place during preliminary interviews, the clustering technique, semi-structured biographic interviewing, and during the course of data coding and analysis.

For the primary case study approach of this research, data coding included a multiple methods design of direct interpretation and categorical aggregation (Stake, 1995). After analyzing the interview transcripts, open coding of the data was then performed, using NVivo software. A recursive process of constant comparison was also used to generate new categories or move data into existing categories as applicable. After coding and recoding, the data was then organized into thematic categories which Stake (1995) describes as categorical aggregation. These categorical themes spanned the breadth of the clustering and semi-structured interview data, providing the rich descriptions and deep meaning necessary to be used as a basis for the interpretive framework of the study (Denzin & Lincoln, 1994).

The interpretive framework for this study draws from the theory of complex systems. Since research librarians have entered a period of rapid change in their profession, this theory helps to explain in more natural and complex ways how the phenomena within one library emerged and contributed to transformative change. Additionally, organization and leadership theory, as well as library organizational development theory, were used throughout this study. The interpretive framework of complex systems enabled the researcher to bring all of these theories together, focusing on the complex interactions among individuals' experiences in relation to the change process within group settings.

Limitations of Method

This research relies on case study method that is based on a complex systems framework for analysis. There are, therefore, limitations to this approach. As Stake (1995) has noted, "in qualitative studies, research questions typically orient to cases or phenomena, seeking patterns of unanticipated as well as expected relationships" (p. 41), and that "an understanding that important human actions are seldom simply caused and usually not caused in ways that can be discovered" (p. 39). This study consequently brings to the surface emic issues that emerged through the course of data collection and analyses.

Equally, data analysis relied on an interpretive framework. Although multiple triangulation techniques were used, this study can be influenced by the researcher's own subjectivity. Further, there are limitations to applying an interpretive framework of complex systems to a particular phenomenon,

since this methodological framework takes into account the interactions among individuals within group settings that lead to connected phenomena. Also, since this is a case study, the extent of generalizing findings to the entire population of ARL libraries will be limited. The library under investigation is chosen purposively to study the phenomena that exist in non-traditional library organizational structures, and phenomena that emerged during this study might carry unique characteristics or description (Stake, 1995). The uniqueness surrounding this study may or may not relate in ways that are similar to the wider body of research on ARL libraries.

The role of language also contributes to a large part of investigation during the interviewing and data analysis process. As Feinberg and Soltis (2004) note, interviews of participants might contain conflicting interpretations and understandings of word meanings. As an example, the terms leadership and management are often used interchangeably in everyday language, but are characteristically distinguished in the literature. As an additional example, a study participant might use the term chaos as a pejorative common in the English language but which conveys a far different meaning in complexity theory. Therefore, the researcher interpreted participants' use of these types of words through re-designation to their operational definitions when applicable. Equally, pseudonyms have been used to preserve the anonymity of the participating institution and the librarians under study. General terms are used to describe specific aspects of the organizational structure and job titles to limit identification of the participants. Although documentary investigation has been utilized

throughout this study, a limitation in reporting findings is that these documents cannot be cited directly without identifying the participants. As a result, this researcher relies primarily on the data collected during the interview process as a basis to present and discuss findings specific to the institution and participants under study.

CHAPTER FOUR: RESEARCH FINDINGS

Introduction

The turbulence surrounding this newly evolving library environment brings significant shifts to the profession. Very little is known about the process of change at the individual level concerning those who work within twenty-first century research libraries. The purpose of this study was designed to increase knowledge of how research librarians experience, cope with, and respond to dramatic change and also how they contribute to leadership at the individual and organizational levels during the process of change. Instrumental case study methods, or rather those cases that help "to understand something else" (Stake, 1995, p. 3), were employed to investigate a group of librarians who were working at an institution belonging to the Association of Research Libraries (ARL). Seventeen librarians were chosen to participate in the interview process which included semi-structured interviewing and clustering techniques (Karpiak, 1990) designed to draw out the experiences of librarians within an organization going through dramatic change in order to develop the larger intrinsic case study which describes this library system in particular (Stake, 1995).

The East Coast University (ECU) Libraries are a library system belonging to the Association for Research Libraries (ARL), ranking near the median of the 113 participating academic libraries. Over the last fifteen years, the ECU Libraries have gone through two structural reorganizations. These organizational changes are discussed in detail further in this chapter, but attention should be drawn to these restructuring activities in order to provide

a framework for understanding the environment that these librarians describe. In the case of the ECU Libraries, these changes have led to a different organizational focus for the future, involving first a transformative reorganization from a traditional library hierarchy to a team-based environment, and later transitioning into a blended team-based structure that emphasizes constant change and adaptation to the evolving research community. Librarians interviewed during this study consequently have been involved in organizational upheaval and rapid change, and they are challenged to see the future in ways that are very different from traditional philosophies of academic librarianship.

Instrumental Case Studies of Individuals

Introduction

In order to understand the context for each participant's experiences at the ECU Libraries, instrumental case studies (Stake, 1995) of each individual were conducted as a result of the on site interviews. A brief introduction to each librarian who was interviewed is therefore included. The anonymity of each librarian is protected, using general terms to describe such demographic data as age, longevity in career, job titles, specific areas of the library within which they work, and personal lives. Pseudonyms are also used in place of participants' real names. Demographic information about the instrumental case study participants is noted in Figure 4.1.

Demographic	n=
Female=	8
Male=	9
Mean Age=	51
Median Age=	56
Youngest Participant Age=	36
Oldest Participant Age=	63
Mean Years of Experience as an Academic Librarian=	21
Number Holding Second Subject Masters or Ph.D. in addition to M.L.S.=	10
Administrators or Managers=	7
Supervisors=	5
Non-supervisors=	5
Number of Branch Librarians=	3
Number in Collections or Technical Areas=	7
Number in Public Services Areas=	8

Figure 4.1 – Demographic Information of Instrumental Case Study Participants

Instrumental case studies were then coordinated through collective case method into a complex systems framework for intrinsic case study, looking at the interactions and connectedness of individuals operating within an organization (Stake, 1995). Since the instrumental case studies of each individual are woven into the fabric of the intrinsic case study, it is important to provide an opportunity for the voices of the participants to rise through the aggregation of data themes. Equally, when viewing these instrumental case studies through the lens of complexity theory, analysis of data collected from interviews using the clustering technique shows how the development of themes at the individual level serves as an emergent quality of the themes generated for the intrinsic case study (See Appendix D). Davis (2005) has described the recursive process inherent in fractal patterns that emerge at both the micro and macro levels:

> Fractal images don't get simpler when you magnify them, nor more complicated when you pull back from them. Said differently, there is a

> scale independence to complex phenomena… Closing in on any aspect of this web, or pulling back from the image, reveals another web that is similar in detail and form to this image. Each moment is a node, connecting and collecting a new weave of associations. Closing in on any aspect of this web, or pulling back from the image, reveals another web that is similar in detail and form to this image... life is presented as a complex unfolding that is always renewed, always brimming with detail. (Davis, 2005, pp. 124-126).

This interconnection between the instrumental and intrinsic case studies provides a framework for the complex web of associations and patterns that emerge at both the individual and organizational levels. Equally, this view of multiple case study analyses reveals similarities between the fractal patterns in chaotic and complex systems and those inherent in the relationships of human experiences [See Figure 4.2].

The following image represents a fractal map of one theme that emerged during intrinsic case study analysis of the ECU Libraries as an organization. The findings of these instrumental case studies suggest that the experiences of individuals converge toward and diverge away from intrinsic case study themes in ways that are very similar to the chaotic structures associated with a fractal image. In the case of several instrumental case studies, for example, a reflection of similarities to a general theme of the intrinsic case is observed. At the same time, the experiences of any one individual under study contribute to characteristics that are unique to that instrumental case. As Stake (1995) notes in case study research, instrumental cases are used to help understand the emergence of other phenomena. The

complexity of instrumental cases represented as fractal images at the micro level therefore emphasizes how both unique and interdependent relationships contribute to the emergence of complex themes at the macro level of the intrinsic case which will be discussed in the further in this chapter.

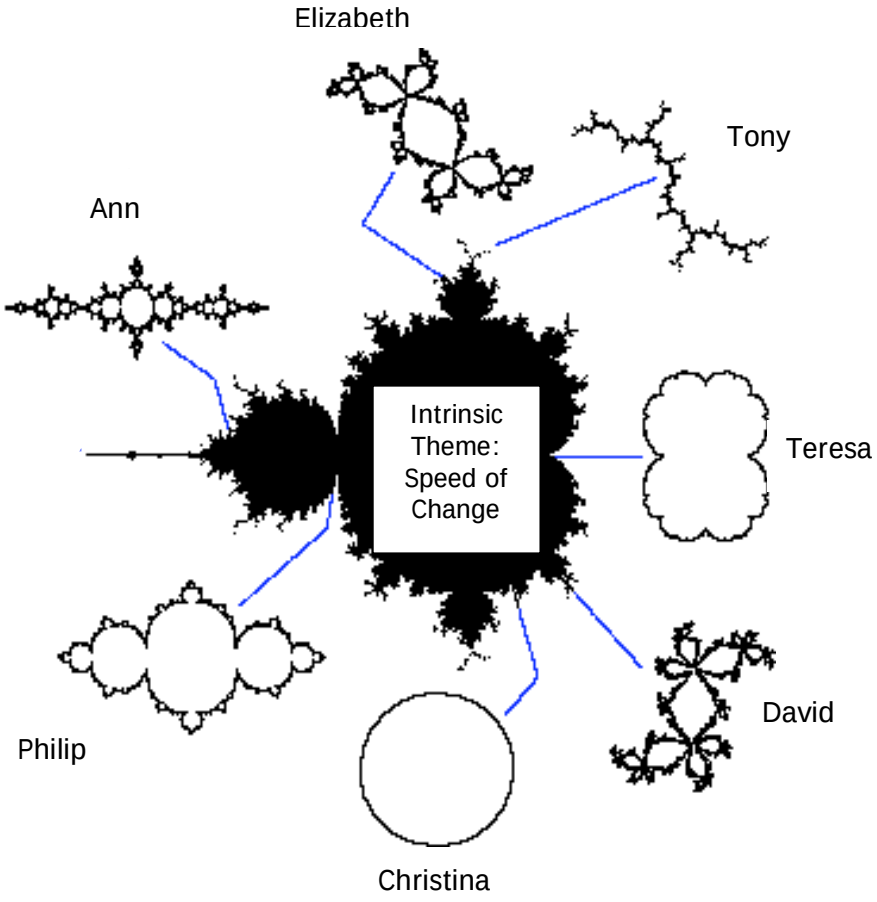


Figure 4.2 - Fractal Relationships of Instrumental Cases to Intrinsic Case Theme
[Fair use of the *Chaos Hypertextbook* is encouraged http://hypertextbook.com/contact.shtml]

The Case of Christina

Christina is relatively new to the ECU Libraries. Although she primarily serves the library in an educational role, her previous experiences in technology development have also been utilized by the library. Christina

has little tolerance for the traditional practices of the profession and strongly encourages librarians to continue to make the shift to a completely electronic environment. She has a strong desire to focus on competencies in the workplace and learn new skills. Christina provides the ECU Libraries with mechanisms for positive feedback in her continual challenges to traditional librarianship.

The Case of Katherine

Katherine is new to the ECU Libraries. She brings external experiences into the organizational framework, having worked with technology at other libraries. Katherine is a strong advocate for transformational change in research libraries and proposes alternative views for shifts in professional thinking. She recognizes the amount of organizational turbulence that accompanies the level of change the ECU Libraries has undertaken, but she argues these types of shifts in professional thinking are necessary for the survival of librarians in the future. Katherine seeks out new skills and continues to advocate for radically different concepts of libraries in the future.

The Case of Robert

Robert is relatively new to the ECU Libraries and brings the experiences of having worked at both a very traditional hierarchical organizational structure at another library combined with his work in the team environment at ECU. Robert states that he tends to respond to change rationally; that the changes at the ECU Libraries are necessary for the organization's future. However, he finds that the limiting aspects of academic librarianship in general conflict with the more rapid changes taking

place locally at his library, thereby limiting the ECU Libraries' capacity to change as quickly as many librarians there would like.

The Case of James

James is a mid-career librarian who has worked for the ECU Libraries for several years, primarily in an educational capacity. He has additionally been through both of the library's reorganizations and finds the team-based organizational structure to be an ideal environment for research libraries. Having seen so many changes taking place at the ECU Libraries, James questions whether all of the decisions that have been made have actually helped move the library in the correct direction. However, he recognizes that transformative change is critical for research libraries to survive in the future, and he believes that the ECU Libraries are far ahead of many other ARL libraries in making the organizational and professional changes needed to survive in the future.

The Case of Lisa

Lisa is still in the beginning stages of her career and has been with the ECU Libraries for only a short time. However, she brings a great wealth of knowledge and experience, having worked at other academic libraries while currently working as one of the library's administrators. Lisa was not employed at ECU during the first major organizational restructuring and does not comment on this experience, but she identifies herself as one of the people who actively promotes change within the ECU Libraries. However, she struggles with the stress brought on by the rapidity of change in her library and recognizes this symptom in her other colleagues.

The Case of Teresa

Teresa has worked at the ECU Libraries for many years, although she is still far from retirement. For several years she has worked as a manager in a technical area. She has been involved with both library reorganizations and finds change in research libraries to be a natural, transitional process. Teresa supports the use of technology to a high degree, as it is an instrumental tool for how the people in her area accomplish their work. However, she finds that the greatest challenge to the ECU librarians is choosing which technologies will have longevity while identifying and repurposing staff work that has become obsolete.

The Case of Elizabeth

Elizabeth is new to the profession of academic librarianship and new to the ECU libraries. Her primary responsibility is working in an educational capacity, and she brings a wealth of external professional experiences, having served as an educator before changing careers. Elizabeth encourages further change to take place at the ECU Libraries and challenges professional thinking among all academic librarians who hold on to traditional ideologies that primarily protect and force people to use books. She fears a future where librarians do not advocate for a futuristic role of librarianship. She also predicts that if librarians do not confront these philosophical issues at an individual level, the profession may be reduced to a servile technical role or become obsolete altogether.

The Case of Laura

Laura is a mid-career librarian who has in recent years come to ECU to serve as a manager in a public service area. She is an advocate for

incorporating technologies that reflect contemporary practices in society. Additionally, her experiences in other libraries and in her participation in professional groups leads her to question whether organizations like the ECU Libraries, which are instituting transformational changes, are anomalies in the larger scale of research libraries. Since she is many years away from retirement, she fears that the traditional practices engrained in the profession at large will lead to a bleak future for librarians.

The Case of Tony

Tony, who works at one of the branch libraries, has been with the ECU Libraries for many years. He has experienced turbulent change in his professional career, having been through both reorganizations at the ECU Libraries. Tony is nearing retirement and questions how much more active he can become given the increasing levels of tension that are placed on librarians as a result of the significant changes taking place at the ECU Libraries. He is committed to the university's faculty and students and finds the most recently placed organizational structure to be the best within which he has worked throughout his career.

The Case of Bill

Bill has worked as an administrator in the ECU Libraries for many years. He is nearing retirement, and he reflects on the significant changes that have taken place at the library over the past 15 years. Bill has been through both of the reorganizations at the ECU Libraries, and he provides a broad understanding of the decision-making processes and organizational structure of the library. He also recounts how business models are becoming more common place in research libraries, and, although he supports them, he

questions their longevity in higher education. Bill is near retirement, and he focuses more deeply now on how he may be able to contribute to the future of the ECU Libraries by enabling staff in his area to move forward after he is gone.

The Case of Patricia

Patricia has worked for the ECU Libraries for many years and most recently has served as an administrator in a technical area. Patricia is deeply committed to the educational mission of the university and in guiding the people in her area toward positive professional growth. She sometimes questions whether the future of librarianship is certain, however. Patricia consequently encourages all librarians working in research libraries to step back from their everyday routines and find ways to implement change that is concurrent with the shifts in higher education practices.

The Case of David

David has worked at the ECU Libraries for many years and now serves in an administrative capacity in a technical area. He is nearing retirement and questions whether research libraries are evolving and adapting fast enough to survive the future of the twenty-first century. David reflects critically on the profession and the changes that have taken place at his own library, searching for much deeper meaning associated with change and his connection to his life's work.

The Case of Paul

Paul has worked for the ECU Libraries for much of his career and most recently is serving as a branch library manager. Paul is also nearing retirement and has begun his own investigation into the organizational

structures and leadership of libraries undergoing transformative change. As a branch library manager, he recognizes that the macro system structures of the ECU Libraries are not always applicable to his own situation. However, he challenges all librarians to think in new ways about the library as place in the future.

The Case of Philip

Philip is the director of the ECU Libraries and has worked there for several years. As one of the original developers of the team-based model for the ECU Libraries, Philip draws on the successes and failures of attempts at organizational change, as well as the personal transitions in his own life. He believes that the integration of contemporary technologies is critical for the future of research libraries, and he seeks to foster the growth of leadership within all levels of the ECU Libraries.

The Case of Ann

Ann has worked at the ECU Libraries for many years, most recently serving in an educational capacity. She brings a wealth of experiences to the organization, having previously worked as an administrator and at different ARL libraries. Ann believes that transformative change can only take place in research libraries when librarians at the individual level reflect critically on their own practices compared to the changing needs of the university community. She believes it is only when a person reaches a level where he or she is ready to begin the process of individual exploration and discovery that either transitions or radical shifts in professional thinking can take place.

The Case of Richard

Richard has led a successful and fulfilling career as a manager of library collections at different libraries. He has been involved with both organizational restructuring activities at the ECU Libraries and has come to find the team-based environment to be the best structure from within the libraries he has worked. Approaching retirement, Richard searches for deeper professional meaning and encourages younger librarians to challenge the status quo at their libraries.

Concluding Statement

The instrumental case studies of individuals within the ECU Libraries helps to build the larger framework for intrinsic case study of the organization. Each individual brings different experiences, perceptions, and responses to the overall library system. And at the same time, these instrumental case studies serve as an emergent framework for complex systems analysis that helps to bring out the interconnected and interdependent experiences of each individual interacting with others in the organization as an intrinsic case.

Intrinsic Case Study Findings of the Organization

Introduction

Six main themes emerged during intrinsic case study analysis of the ECU Libraries as an organization from data collected from on-site interviews. These themes spanned the breadth of experiences each librarian attributed to change given his or her individual perspectives on the organization. The first two main research questions for this study are: 1) "What experiences do academic librarians attribute to an environment of rapid change, uncertainty,

and turbulence?" and 2) "What specific changes do library regard as having the most profound effects on their work life?" Four themes respond to the first two main research questions for this study which include: Competing Tensions between the Physical and the Virtual Environments, The Speed of Change, The Search for Professional Meaning, and Coping with the Experiences of Professional Change. The last two research questions for this study are: 3) "How do academic librarians respond to their organizational structure?" and 4) "In what ways do librarians as individuals contribute to the leadership of the library?" Two additional themes address the last two research questions for this study and include: The Evolving Organizational Structure and Leadership as a Shared Experience.

Theme One: Competing Tensions between the Physical and Virtual Environments

Research librarians have begun the new century with many challenges to the future directions of the profession. One of the most apparent issues for librarians, the users of library resources, and university administrators has been a significant shift in focus from the print to the virtual library. In the past, research librarians defined themselves by print collections and boasted the size of these collections through their ARL Index Ranking. As more and more digital resources became available at the ECU Libraries, the maintenance of a print environment became an increasing challenge for the librarians. As a result, the ECU Libraries have significantly slowed collection development of print resources, moving toward a model of electronic-only where possible. This shift in collection development focus has led almost all librarians to respond with some emotion in favor of or against this trend.

And the decrease in maintenance of print items challenges librarians to think in new ways how to use the physical library building in the future.

The shift from the physical object to an intangible virtual item brings new ways of offering services to faculty and students. New technologies are needed to process circulation transactions with e-books, ways to insure that ejournal access is provided for the information to which the ECU Libraries subscribe, and interlibrary loans take on different forms with complicated licensing agreements in a virtual environment. Equally, the impact of Google Scholar on how quickly the ECU Libraries chooses to perform its own digitization projects affects decision-making in new ways. Bill, who has participated in both reorganizations at the ECU Libraries as an example, indicates that he oftentimes wonders whether business models will replace the traditional models of research library operations. Although the ECU Libraries have been particularly successful in making this shift, he questions how and if research librarians in general will be able to make the changes necessary to keep up with this evolving environment.

Since the ECU Libraries have taken an active role in the shift from the physical to the virtual environment, this new focus has been a major catalyst for change within the organization. The library has decided to forego the purchase of a remote storage facility that was popular among research libraries during the 1990s. However, librarians at ECU have watched their peers at other ARL institutions fill these storage units quickly while still running out of space. As a result, librarians at ECU have made a conscious decision to select electronic items over print and discard any duplicate print copies. Library staff have traditionally processed the print item, but work is

now focused on providing access to electronic resources. The ECU Libraries outsource much of their processing of the remaining print items to receive "shelf-ready" materials from their book vendors. This transition has eliminated many of the previous forms of internal processing. While many ARL institutions focus on cataloging data in the international standard MAchine Readable Cataloging (MARC) format, the ECU Libraries now have time to integrate an increasing amount of non-MARC metadata, using the Extensible Markup Language (XML) and the Dublin Core standard. However, this shift in focus requires continual re-training to enrich data associated with the new electronic resources. Teresa, a library manager in a technical services area who worked through the conversion of the print card catalog to a database system notes for example, "we're also cataloging more digital materials, and some of those are in non-meta format, so we had to have training to process those as well."

Emotional challenges associated with this shift from print to electronic resources can also be epitomized in the development and subsequent withdrawal of the shelf-list for the ECU Libraries. In the past, the shelf-list served as the inventory of record for the entire collections. For the same reasons that librarians at most research libraries discarded their print card catalogs during the 1990s, due to space concerns, librarians in that area made the decision to discard this list, since much of it was online. Although librarians at ECU indicated that this was an essential and critical decision that needed to be made, from an historical perspective many people had dedicated their lives' work to the creation and management of that inventory of record. When they watch it being thrown in the trash, Robert, a librarian

new to the profession who works primarily with digital formats for example, states there must be something extremely psychologically discomforting going on in those peoples' minds.

Space issues have in recent years been of major concern in research libraries. In some ways, this trend could be viewed as a microcosm for the space issues faced by the university at large, as the number of students and faculty has increased on most comprehensive university campuses. At ECU, every campus in the state system has been asked to implement new programs, but, physically, where to place the students in these new programs has reached a critical level. So administrators identify the library at their campus as one solution to their space dilemmas. As an example, Paul, who manages a branch library, recognizes this growing tension between librarians and campus administrators and points out that, "they walk around and ask, 'isn't it true people don't use books anymore, and isn't it true a whole lot of your space is taken up with book stacks?' Well… yeah [laughing]." At the same time, Paul presents a challenging argument to campus administrators that if they walk around several of the classrooms on campus, they will find many empty at any given hour and day of the week. For the same reasons that research libraries have to confront space issues through new services and technologies, this trend in libraries might signal a broader need to analyze the use of space on university campuses in general.

The administration of current physical and virtual environments has also challenged librarians to differentiate between the "library as place" versus doing something in the building. If students primarily go to the library to get a cup of coffee and find a corner in which to study, then the

purpose of the library as a physical building shifts dramatically. Moreover, if journal subscriptions and books move more increasingly to electronic access, then storage of items in the physical building becomes somewhat obsolete with the exception of maintaining physical items to support index rankings associated with research libraries. On this issue, Bill, who has administered work with both print and digital items processing, suggests for example that most physical items can be stored in off-site storage facilities while being shared by several research libraries in a consortium. But given that the shift to a virtual library is taking place at the ECU Libraries, he questions how the space that is left will be utilized effectively.

This emphasis on digital over print resources has become a critical aspect of the ECU librarians' vision of the future. The library previously had a consultant come in who asked how much of their collection budget was devoted to electronic-only purchases. After the library's administration proudly remarked seventy percent, the consultant asked "why isn't that one hundred percent?" This was a fairly reasonable question to ask of research libraries in the age of digital resources, but events like this that reflect the reality of this shift create marker events in individual librarians' professional lives. As an example, librarians had spent many years developing the print collections and watching them grow. James, a mid-career librarian who has worked with collection development and library education, indicates that ECU librarians were now given the difficult task to begin weeding out the collection at a much more dramatic pace than in the past:

> It's one of those traditional librarian roles that just never was much fun in the past. And now it's definitely not something that anyone is

excited about doing. But it's just as critical as it has always been… we have a real space crunch.

The reference unit in the ECU Libraries is another area that has been affected by the shift from print to electronic resources, impacting the psychological perceptions of librarians working in this unit. In years past, the reference department proudly proclaimed how many thousands of volumes were in the reference collection, and these librarians had spent a considerable number of years building up that collection. Almost overnight the collection was cut in half in favor of online reference sources. Elizabeth, a young librarian new to her work in instructional services but having experience in other university academic units, argues that the decision to do this was critical for the survival of the ECU Libraries. However, some librarians at ECU now feel lost and are having a hard time transitioning away from the collection of physical items.

A parallax view of space issues also emerged during the discussion of the shift from the print to the virtual environment. Although freeing up space in the library by weeding out books has been successful at ECU, the demands for digital resources have placed a new set of requirements on the virtual spaces found on the library's computing servers. In effect, the space issue has not disappeared; rather it has shifted from the physical building to the computer servers. And this requires a new focus on how administrative decisions are made to support this electronic environment. The new challenge has evolved toward trying to find enough server space and resources to house the digital items that have been created at the ECU Libraries. Robert, who works primarily with digital resources, notes for

example that this will become an even more critical issue as the ECU Libraries expand access to information in online video and audio used for course reserves and special collections. He questions if this all is not happening too fast; that it would be nice to provide access to all of the digital objects that have already been created. However, when compared to how much more quickly Google has been digitizing items, librarians now have to think and work faster than even the current virtual space allows. Consequently, as the ECU librarians respond to physical space issues in the future, this demand for virtual space will continue to grow.

In summary, the ECU Libraries' shift from a physical to a virtual library has been met with different individual responses while creating new challenges. Physical space issues have been a source of discussion in ARL libraries for some years now, and the ECU Libraries is limited in the amount of space available to continue growing physical collections. This shift in focus challenges the librarians at ECU to think differently about how the physical building of the library is used in the future. Equally, the rapid growth of electronic resources as a result of changing collection development strategies has provided a catalyst for organizational transformation while contributing to further uncertainty and emotional responses experienced by the librarians at ECU. And while the issue of physical space to house print collections diminishes, the need for new growth in virtual spaces becomes a new source of conversation.

Theme Two: The Speed of Change

Many of the specific issues surrounding both changes at the individual level and how librarians cope with these transitions involve the speed of

change itself. While some librarians find the speed to be too fast, others find the speed slow and rigid. However, technology serves as a catalyst for the speed of the changing environment of the East Coast University Libraries in both proscribed and unintentional ways that lead to further complexity of the services and resources librarians provide to the university community. Limitations in the university structure, capital and human resources, and the external business community also prohibit librarians from affecting change at a faster pace. And at the same time, the rapidity and constancy of the changing organizational environment increases levels of professional tension among the librarians.

Technology as a Catalyst for Change

Technology understandably contributes to many of the service shifts in academic librarianship today. As new library technologies emerge on a daily basis, librarians respond to the changing external environment to provide services and resources in a contemporary fashion. Equally, the integration of new technologies are applied to help transform the organizational structure of the ECU Libraries through continual adaptation to the changing student body. The librarians in this study identify that technology has been a major impetus for change at the ECU Libraries, but they also note that it encompasses several different aspects of a changing profession. On one hand, technology has been a very empowering tool for freeing up space in the library and making daily tasks more efficient. On the other hand, technology makes librarians somewhat nervous about the future, because it confronts the core values of librarianship. As an example, Elizabeth, who is new to the career of librarianship and who works in an educational role, shows how the

use of electronic databases has entirely changed the way library instruction is taught at the ECU Libraries in the course of only a few years:

> I find myself with instruction shifting the way I talk about things. From, 'you better know how to find it in print', to 'let's go looking for it in full text, but don't forget there might be print if you have to use it.' It's a totally different way of talking about things, of thinking about things.

These shifts in professional thinking as a result of technology cause librarians to speculate if the changes at ECU are more successful because of technology or if sometimes technology drives the change; that because there is new technology, change simply takes place.

Although technology has solved problems brought on by growing collections and services, at the same time it brings new problems that are equally, if not more, complex in nature. Technology has greatly assisted the librarians at ECU to be able to transition into the future, and most of the librarians self-identify their preference toward the use of new technologies. However, all of these changes have required new equipment, new training, new network bandwidth, and an increasingly complex communication network to make sure all these things take place with the appropriate university officials; from carpenters to network technicians to legal counsel. And because this network of both hardware and the people to implement it is now so complicated, librarians have to be very selective in what they choose to integrate. Furthering this argument, Laura, who supervises a unit that oversees technology used for public services, states that it becomes critical to plan for the obsolescence of old practices in order to integrate the new

technologies. But, due to the limitations in librarians' abilities to predict far into the future, a significant challenge comes in knowing what to give up, when to do it, and how to plan for that abandonment.

Adding value to services that are provided primarily through the World Wide Web also becomes problematic. As librarians do not always know how to transfer skill sets in new, technologically oriented ways, grounding user expectations in the academic setting becomes increasingly difficult. As an example, Ted, who has worked in a branch library for many years, questions whether student use of certain technological products drives the changes taking place at the ECU Libraries. He states that he wonders whether RSS feeds and facebook.com pages in academic libraries add any value to services. At the same time traditional library practices such as collection development do not exist on the Internet, and incorporating strategies that adapt to the student and faculty use of technology become more critical in convincing the university community that librarians do something that adds value, or, as Ted comments, "that you're not an appendage of the Internet." Phillip, the library's director, extends this perspective by arguing that disseminating information in ways that are commonly used in society is crucial for the future of academic librarianship. If librarians do not embrace these changes, they will continue to lose ground at academic institutions, because library users will find ways to get the information they need if the library does not provide it in a contemporary fashion.

Technology has been a large issue to which research libraries have responded over the past thirty years. Although librarians are often

stereotyped as "bookish," in many ways they have been integrating technology at a faster rate than their peers on university campuses. Librarians began using the Online Computer Library Center (OCLC) to store records in an FTP enabled, centralized database before most areas on campus even used mainframe computers to a large degree. And this progression continued with the adoption of the online catalog, CD-ROM networks, and online databases. As an example, Ann, who has worked in library administrative and educational capacities, comments, "so much of the technology is just perfectly suited to what we do, our use of it was patently obvious." She notes that she loves the discovery process associated with technology but states, "I'm not so amazed that I can't discriminate from among the tools we need for our purposes." In campus environments and in generational contexts, therefore, the lines between using technology for professional or recreational purposes continue to blur.

Technology can also be seen as a panacea for dealing with the inefficiencies of the print environment. With the rise in newer student expectations for a World Wide Web framework in which everything is in full text, some librarians believe the library should abandon print collections wherever possible. Christina for example, who is new to the profession and fully embraces technological change, states that she has become increasingly frustrated with any continued focus on collecting print resources. Although the ECU Libraries have been particularly active in this collection development strategy, she states that the profession of academic librarianship cannot break free from the frame of reference of the print environment:

> [The ECU Libraries] are OK with not buying a print copy of a book if it's online. And if the online goes down for a couple of hours, nobody in this library is going to die… I don't know how any librarian could *not* feel that way. This whole idea that you need to retain print.

Katherine, a librarian new to the ECU Libraries who primarily works with technology, equally sympathizes with this shift in collection development. She comments that, "honestly, when I'm at the reference desk, I don't want to send people to the paper stacks if I can possibly avoid it."

Limitations in Affecting Change

One of the particularly frustrating issues that accompanies change at the ECU Libraries has to do with the actual purchase of new products or technology. A large amount of time may be spent on evaluating and making recommendations for new software that will help improve the ECU Libraries further transition into a digital environment. But once the selection has been made, librarians note that months can transpire in the university's purchasing or legal units before the product is actually implemented. Whereas some might argue that the library is not changing fast enough, librarians equally respond that the university's bureaucracy cannot keep up with changes the ECU Libraries need to make. As a result, ECU librarians comment that they are given an unfair reputation of being resistant to change when in actuality the university structure prevents them from becoming more effective change agents.

Technology also becomes an agent that adds further complexity when trying to move the library into the future. Again, many librarians note that they bear the brunt of criticisms by students and faculty about the library's

technology when it cannot compete with enterprise technologies like Yahoo or Google. As an example, James, who has contributed to the ECU Libraries' migrations to two different library management systems, states that online catalog systems supplied by corporate vendors continue to use technology that is "straight out of the 70s." Librarians at ECU know the improvements that need to be made to this technology and provide the knowledge and feedback to the vendors to make these changes on a weekly basis. Moreover, there is a tremendous investment made in these products, and, since the library has little ability within the overall structure of the university to pursue litigation against vendors, many librarians feel there is no recourse to confront the failure of these vendors.

There is a paradox that emerges in observing research libraries which try to compete with large corporations for similar product development. One of the most frustrating elements of being an academic librarian is that much of the knowledge needed to create new products already exists among librarians. However, there is a lack of time and resources to implement these services. As an example, the librarians at ECU have many of the technological skills and the desire to be able to implement online audio and video for course reserves, adding more value to services that would expand access to these resources for students and faculty regardless of time or geographic location. Equally, this model could effectively replace all of the physical non-print items that are currently held on reserve. Moreover, as information resources in research libraries evolve beyond traditional text based items, the library's ability to support these new mediums of information will become critical. But the required equipment, including

server and network capacity, are cost prohibitive for research libraries let alone smaller academic libraries.

Many ARL libraries become beta-sites for vendors to develop products as a way to address the lack of in-house resources. Some of these vendors give the ECU Libraries discounts in pricing by agreeing to become a beta-site. But in reality, the ECU Libraries do significant product development of vendor software, including a large investment of human resources and intellectual capital from which the vendors benefit later on with other libraries. Christina, who brings experience from having worked in the corporate technology sector, laughs as she describes this model, arguing that any other company in the same situation would actually be *paid* to be a beta-site, rather than merely receiving discounts. Moreover, there oftentimes are no other vendors that provide better services, so being a beta-site is the one of the only methods librarians feel they have to bring the vendors up to speed with the technology needs of twenty-first century research libraries. The frustrations that arise from this situation are highlighted by Elizabeth, who deeply questions the slowness of change when teaching library research, in her response to vendor limitations:

> If change is so good and so essential, why isn't it just happening? Why aren't we in the twenty-second century with technology, and why aren't librarians inventing the technology?... Change is certainly possible, but you can't just will it, in however passionate you are about change.

Although the open source movement has received great attention recently in research libraries (Breeding, 2007a, 2007b; Pace, 2006), most ARL libraries just

do not have the capital to invest in equipment, people, and resources to create products that compete with vendors in the business community.

Another feature that emerged through the course of interviews concerned how quickly librarians are able to respond to change with the rise of so many communication technologies. Granted, email, wikis, listservs, and intranets have massively integrated and provided access to information in ways that enable librarians to absorb and share a great deal of knowledge in much faster ways. Several librarians comment that the real challenge comes when the involvement of so many people actually slows down the process of implementing change, as Lisa, a library administrator in a public services area, recounts for example:

> Sometimes change is very slow. You can't always have an impact, and it doesn't always go smoothly when you're working with a group of people. It also feels like the process can be slow, because you're consulting everyone.

At the broader professional level, research libraries have not been able to create and implement standards fast enough to keep up with technology due to the involvement of so many people in different online working groups. Robert, as an example, commented that he first chose to pursue an M.L.S. because of the predicted mass digitization that was soon to take place. However, ten years later, many of the metadata standards that apply to both the academic and private sectors are still in nascent stages. Without a concentrated effort to update standards at a rate equivalent to the changes in technology by a smaller group of people with the knowledge to do so, many

research libraries are left on their own to create or enhance locally the standards associated with metadata.

Limitations in decision-making are also connected to the basic limitations of the strategic planning process in the ECU Libraries, as well as in higher education in general. The ECU Libraries, like most research libraries, follow a yearly strategic planning process where library wide goals and objectives are developed with input from all personnel in the library. However, technological developments in the ECU libraries now happen so quickly that by the time the library's goals and objectives have been finalized, the technology has already shifted the focus of the librarians. Katherine describes her own frustrations with how this process slows down the ability of librarians to make periodic changes throughout the year:

> Librarians aren't necessarily thinking in that cycle. They're thinking, we need to do this, and we need to do it now. They're not thinking in terms of "well in two months I'll be able to propose goals and objectives for the next strategic planning cycle."

And as universities continue to use these traditional strategic planning processes, rapid changes in research libraries will be further limited by this annual cycle.

Acceptance of the slowness of change often comes through one's longevity in the academic community. Some librarians comment that it is just not realistic to expect major changes to take place quickly at research universities. Rather, change has to come in incremental steps guided by a larger vision of where the organization needs to go. Furthermore, Teresa,

who has participated in both reorganizations at the ECU Libraries, describes how she sees splinters happening in organizational processes through time:

> We often fall into several transitional phases along the way until we get there. And sometimes we find innovations that we didn't plan. Change is more like a wheel and you come to a point where you have accomplished what you set off to, yet it pushes you into another direction.

However, librarians note that these types of transitions will quickly escalate into rapid shifts in the profession as more librarians retire.

The Speed of Change is Rapid and Constant

Many librarians see continual change taking place at their libraries, ranging from the introduction of new technologies to the incorporation of new information sources. The literature in library science shows that many research libraries approach change as an incremental process. However, those librarians working at ECU frequently describe change as rapid and constant. Younger librarians, in particular, note that change no longer happens at a pace consistent with generations. Rather, technology in libraries has created an environment where something new comes out literally everyday. And because of the rapid and turbulent speed of change, librarians at ECU are affected by this speed in their abilities to respond to change. Lisa, who works daily to help her colleagues move further toward a digital environment, highlights this feeling of being constantly pulled in different directions as a result of so much change:

> This change is beyond a proliferation, it's an explosion. I can't finish doing one thing before I've got five more that need to be done

> yesterday. Looking at my calendar this week and last week, if I have two hours together without a meeting, somebody's waiting to fill that time... It's like being on a treadmill.

The ECU Libraries are making significant progress in their transformation to an organization that relies predominantly on providing information and services in a virtual environment. However, several librarians comment that the speed of change happens so quickly that there seems to be little time to enjoy the successes that the ECU Libraries experience due to an immediate shift in focus toward the next project. As an example, Laura describes the turbulence of change in her own professional life:

> Change is happening so fast, and flying at us at such a pace, that you constantly feel like you don't have time to get your foot down before you're moving on to the next thing... And while we don't have the kind of financial support that the commercial sector would have, we still have to provide things in ways that are comfortable and convenient for the population in other areas of their lives.

Laura, who earlier suggested that librarians plan for the obsolescence of past practices, is an avid supporter of all the changes the ECU Libraries have made in the past few years. But she asks somewhat rhetorically if there is a way to control the speed of change that hits everyone's desk on a daily basis. Although she knows this probably cannot be accomplished, she recommends to the profession that, "there does have to be the voice that says, I embrace change, but there has got to be a way to do this that is not going to kill everybody."

Another phenomenon that emerged related to this theme pertains to the abandonment of old practices. The ability to increase the speed of change at the ECU Libraries is often slowed down by trying to maintain both a physical and a virtual library. New digital resources and services compute to new work that has been added on top of the librarians' existing work, while new staff to handle these services are not added to the library. In many ways, librarians are forced to continue to perform print-oriented work due to the demands of some of the more vocal faculty at ECU. At the same time, however, Patricia, who administers a unit that processes many of the print and digital resources of the ECU Libraries, notes that librarians are not willing to give up this work even if it is no longer needed. Consequently, this dilemma is exacerbated, since some librarians are very much in favor of continuing to add more and more digital resources while *maintaining* their work in the print environment. Several other librarians comment, however, this is just not an option for the ECU Libraries. So while librarians have been given permission to abandon their old work, passive aggressiveness toward change sometimes emerges regarding the protection of obsolete work. And, moreover, the necessity of this change becomes critical, because the library will not be viewed on campus as being an innovator or a partner in educational and research processes.

In summary, the speed of change contributes significantly to the organizational dynamics of the ECU Libraries. Technology as a catalyst for change, whether as a result of the academic environment or applied to move the library forward, changes how the ECU librarians think about their profession while introducing a new set of more complex problems to which

the organization responds in contemporary ways. At the same time, limitations in the higher education environment inhibit some of the librarians from adapting to a new environment as quickly as they desire. These include limitations in university legal, purchasing, and strategic planning processes; capital and human resource issues to develop products in-house; and failures of some library vendors to provide services at the level that enterprise solutions should offer. Additionally, the constant and rapid speed of change at the ECU Libraries causes increasing stress among the librarians while challenging them to abandon old practices in order to keep pace with emerging technologies.

Theme Three: The Search for Professional Meaning

The search for professional meaning emerged as a philosophical undercurrent associated with change at the ECU Libraries. This theme ranged in diversity and depth of responses by librarians which showed that, although the ECU Libraries operate with a shared vision and team environment, the concept of change was not necessarily a conformist ideal to which all librarians merged. Rather, it was individualized for each person's experiences accompanied by a desire to make meaning out of the phenomenon. This search for professional meaning leads librarians into a period of simultaneous uncertainty and discovery. Bridges (2004) describes this search as the "forest dweller" stage where an individual leaves the comfort of his or her previously stable settings and introspectively explores alternative perspectives of career meaning.

For some librarians at ECU, this journey does not include a change in professional philosophy. Rather, it implies the need for librarians to choose aspects of the philosophy that respond more readily to new environments while communicating their own professional relevance to the university community. For other librarians, this response to the external environment requires radical shifts in philosophical thinking to ensure the long-term survival of the profession. This search for professional meaning also brings the question of dehumanization in the profession to the surface, as some librarians fear that implementation of new technologies without the presence of human interaction with students and faculty will create increased stress and uncertainty not only for librarians but for the academic community in general. Still other librarians suggest that the search for professional meaning includes active competition with the business community in future product development. ECU librarians also suggest that internal professional crises precipitate the need to shift away from traditional librarian specializations altogether, requiring radical shifts in library science curriculum to provide the skill sets necessary to manage emerging virtual libraries. Moreover, the absence of these external opportunities for development requires research libraries in the future to promote professional transformation through the precipitation of organizational transformation.

Communicating Professional Relevance

Many of the changes that have taken place at the ECU Libraries are viewed not as professional shifts in philosophy; rather, the argument is made that the philosophy of librarianship continues to adapt to the changes brought on by technology. Some librarians observe that these changes do not

require shifts in professional philosophy but create a different or greater emphasis on what aspects of that philosophy upon which librarians should focus in the future. As an example, James describes his own experiences with change as a workplace adaptation of traditional librarianship, pointing out that the library profession throughout its history has focused on organizing materials. During much of the twentieth century, this philosophy of organization focused on printed materials, such as books and journals, and it now focuses on organizing websites, databases, and digital content. Subsequently, the philosophy has not changed; rather the resources and tools to acquire and make them available have changed. But with the rapidly increasing access to more and more information, the harder choice librarians now make is choosing what is worth while to organize in order to be perceived as relevant and contributing to the mission of the university.

In an online environment, the concept of communicating the relevance of the library becomes more and more difficult. Users access library resources to which the library subscribes oftentimes without realizing the work that has gone on behind the scenes to provide a seamless gateway to these online resources. As an example, Lisa, who previously questioned the continuation of outdated practices, notes the greater importance librarians attribute to the perception of the library by the academic institution. She describes this scenario as continually exacerbating the concept of communicating the library's importance:

> You have to continue to prove your relevance, but you have to do it in ways you didn't do in the past. Volume counts aren't important anymore. When researchers get grants and rely on the electronic

> resources of the library, and they don't identify those resources with the library or the people that work there, how do you keep them aware of that?

Furthermore, the library used to be viewed as a central intellectual center on campus, but university administrators now see this central role disappearing due to the increasing demand for electronic information. And while the library continues to pay for these digital subscriptions, researchers do not always identify the library with the information resources available to the university community.

Changes in the ECU Libraries might also be attributed to dysfunctional communication patterns among the librarians. Some librarians find themselves disconnected from the university community and from other academic librarians. As an example, Elizabeth, who previously questioned how slow the speed of change sometimes takes place, challenges librarians to communicate their relevance by tearing down both the physical and metaphorical walls that separate librarians from the university community. Moreover, this framework for understanding can help expose the dilemmas of libraries as similar symptoms of universities at large. Elizabeth argues that libraries epitomize the ivory towers on campus:

> Libraries have always been a tower within a tower. And often literally, *literally*, a library is that building that looks like a tower in the middle of the campus.

The metaphorical significance of this image subsequently leads to a convent-like mentality among librarians. Because of their physical spaces, librarians

allow themselves to be cloistered from the university community outside the walls of the library and from their own colleagues within the building.

The Question of Dehumanization in the Profession

Many of the problems the ECU Libraries face are equally representative of the same dilemmas encountered by other academic units on campus. As an example, many university employees take Information Technology departments for granted and do not realize the significant amount of work that goes into maintenance of the campus IT infrastructure. And this problem is exacerbated in IT units, since many of the people who work within them are never seen by the campus community. Elizabeth comments that librarians, equally, have been unable to find ways to legitimize and advocate for themselves professionally. In her view, the human side of libraries continues to have importance even in a digital age:

> You could erase the people, and we could hide ourselves underground, right? There would still have to be people hidden someplace like moles or gophers actually doing things to make that possible. We'll still be around. But it would be nice not to have to be buried in a hole. It would be nice to market ourselves.

The search for professional meaning in the age of commercial search engines becomes problematic when trying to project an image of human interaction into the future of librarianship. Some of the attributes of the profession happen philosophically behind the scenes but are not realized by many who use the ECU Libraries. Ann, who previously identified her skepticism towards some technological changes, states that she feels the human focus of the profession has been taken for granted. Research

librarians have a societal obligation to preserve history for the future while concurrently incorporating new technologies to make this happen. "It is sort of a dichotomy we've been faced with for 20 years or more at least, and it's not an easy one." However, Ann, like Elizabeth, fears that a research future that does not involve human beings seems dark and desolate.

Some of the philosophical issues that are driving the library profession go even much deeper on campus, as librarians are not the only academics who are searching for professional meaning. Having formally taught in another discipline, Elizabeth states that she sees many of the liberal arts being dismantled on university campuses which, in her view, has led to a crisis in teaching critical thinking skills in the academy:

> Do [librarians] find a way of having some backbone? Do they find a way of fighting for education? Librarians, I think, are afraid of asserting that they're humanists… And I think generally librarians do believe in a humanistic notion of knowledge--a humanistic notion of liberal education --and that knowledge is a good thing.

Like the case of the ECU librarians, Elizabeth believes faculty in the liberal arts have not advocated for themselves, and librarians' search for professional meaning should therefore include embracing the philosophical traditions of librarianship while becoming more critical about policies on their campuses that discount the educational ideals of librarians.

The Need to Respond to the External Environment

The search for professional meaning is a challenge that also shifts thinking in more rapid ways to respond to the real world experiences of library users. Librarians at ECU argue that librarians should learn to provide

services and resources that are more in line with what people experience in their lives. Although Laura describes herself as an older, long-term career librarian, many of the challenges in exposing the deeper issues of professional meaning are related to generational divides among older and younger librarians. The ECU Libraries are moving into the digital environment at a fast pace, but her experiences with librarians in other libraries have shown her that the profession is reaching a critical juncture. Laura, who has worked in different libraries for many years, argues that change in libraries is happening at a rate that is unsustainable if older librarians continue to force rigid structures of control and guardianship on the university community:

> Mostly in other libraries the change doesn't come as fast as it does here, and it's not well received. There's a lot of older librarians in more hierarchical places who don't get it. They don't get it that, if they don't change, their whole institution may well disappear.

This argument does not imply that research libraries can do without older professionals. On the contrary, older librarians could lend a great deal of knowledge to the further development of the profession if they would only begin their own individual searches for new professional meaning. This dilemma becomes even more frustrating when apathy toward a shift in professional thinking threatens job security, as Laura comments:

> My sons, who are in their 20s and 30s, tell me, "Mom, you have got to get a new profession. Libraries are going away. Nobody in their right mind goes to a library anymore." That's an epidemic way of thinking in the population as a whole and not necessarily inappropriate I think… It's a huge issue, and it really needs to be put out there

especially for the benefit of the people who don't think their jobs are in danger or that libraries will go away.

Librarians at ECU also note that responding to the external environment must begin by reflecting on practice, and the practice of librarianship relies on understanding the educational and personal experiences of the library user. This includes recognizing what it is like to be a university student today and that many students are just as busy between work, school, and family lives as are librarians. What an incredible advantage it must be for these students to be able to access the library's resources late at night after the family has gone to bed.

The divide between library user expectations and traditional frames of reference for the library profession can be particularly frustrating in an age of enterprise level search engines. Many of the students entering ECU now have lived through much of their educational careers with online search engines. As a result, they are accustomed to this type of searching and do not feel that library databases meet their expectations as far as user interfaces go. As one example, Christina identifies that some of her colleagues are adversarial about online search engines, and she states that librarians' search for professional meaning should specifically address the failure of library resources to meet the Google expectation. Students now have choices and do not need to rely on librarians to find information. If librarians want to be able to compete with these types of search engines in the future, the time to compete is now, and that can only come with a new professional philosophy that tries to surpass Yahoo or Google. Students and faculty continue to view librarians as "kindly" and "intellectual," but these qualities will not suffice

when librarians are no longer the people students and faculty turn to when they need information. David, who has been a librarian for many years and administers technology in the ECU Libraries, argues that librarians have lost touch with the foundations of librarianship and need a recursive view of the founding philosophies:

> It certainly doesn't have to do with books, and it has nothing to do with libraries – it has more to do with access to information. It's really what it was all about in the first place, but I think we've always gotten hung up by the book on the shelf itself.

This is the unfortunate consequence within which librarians have placed themselves. Some would argue that librarians have focused on the book and have therefore shifted their thinking towards things rather than people. In effect, librarians have created for themselves the very crisis from which they are trying to escape. If librarians can begin marketing their own value, they have a chance to evolve in a future where physical items are less important and human beings are more valued in a profession that continues to compete with the private sector.

Internal Crises in the Profession

Societal factors additionally drive people toward misperceptions about professional changes in librarianship. To many of these librarians at ECU, this causes increasing frustration. And some librarians feel less optimistic that both finding and communicating new professional meaning will make a difference. Ted, as an example, argues that some university administrators have already made up their minds about librarianship as a profession and believes his message will not be heard. As Ted states, this is an unfortunate

attitude in higher education, because "if you're really smart, productivity is important -- at some point the skills of a librarian are very useful. I think a lot of people don't get it." Moreover, why would researchers want to take on more work than they already have, when librarians serve a role for them that helps them be more efficient with their time?

Professional crises among the different areas in research libraries have also been debated for many years. Ironically, the profession of cataloging has come under fire in recent years, primarily because it has traditionally been identified with the book. And if the book disappears, then it is possible that catalogers will follow suit. However, catalogers at the ECU Libraries have been steadily managing the transition from the MARC format to multiple metadata formats. As an example, David notes that the ECU catalogers have made the shift from the physical environment of the book to cataloging non-tangible items:

> A constant truth check is you know what it is like to catalog a book, but what is it like to catalog a digital object? Are you ever finished describing a digital object as it moves through its life cycle?

As a result of reflecting on professional practice, catalogers are positioned for radical professional changes in the ECU Libraries.

Reference librarians are also presented with significant professional turbulence. At ECU, reference librarians have been instituting liaison programs to shift their focus toward service external of the physical walls of the library. However, librarians at ECU note that in the larger picture of research libraries, there are no generalizable rules for reference librarians to interact with all university disciplines. The concept of creating new roles for

departments to which librarians liaison should partner relies on the culture and research patterns of that department. A physicist, for example, will have far different research needs and communication patterns than an English literature scholar. But many reference librarians remain unaware that the traditional foundations of reference librarianship are also in jeopardy, because attention has always been placed on the predicted disappearance of catalogers. David expands upon this idea by looking at the national trend of decreases in reference questions at research libraries:

> I'm not sure there is a reference librarian anymore, because I don't think there's a reference desk anymore. If there's not a reference desk, is there a reference librarian?

Moreover, the changes in his own area happen so quickly that he does not have time to engage in this conversation at the professional level, noting "I'm not sure that if I did anyone would even give a damn what I have to say."

Identified Needs for Change in the Philosophy of Librarianship

Identification of needs associated with a change in professional philosophy equally becomes stressful due to the inabilities of librarians to be able to describe the future. In the past, it was easy to categorize academic libraries and librarians through common typologies such as: you were a cataloger or a reference librarian; you worked in a research library, a smaller academic library, or a special library. As an example, non-MARC metadata has become increasingly important to make digital resources available through the World Wide Web. Yet when librarians at ECU try to recruit for these types of positions, it becomes difficult to even explain the skill sets needed that emerge so quickly.

Changes in professional and organizational structures are happening so fast that there have been significant shifts in how research libraries of the future are even discussed. Teresa notes for example that there has been a subtle conversation among ARL directors that in the future, there might only be a handful of research libraries, and the remaining libraries will end up merging in virtual environments with, or subsequently absorbing, other academic libraries. If the former occurs, all of the prestige that formally came with the title of being a research librarian will start to disappear, leaving many wondering what this future will hold. Research universities in general might subsequently follow this trend. As Teresa states, "I think the profession will probably continue to have an identity crisis [laughing]." Moreover, Teresa questions, like many of her colleagues, if there will even be research librarians as we know them now in the future. If there are, the stereotype of librarians liking books will completely disappear, and the concept of managing electronic resources will be less understandable to those outside the profession.

The evolution of the profession as uncertain increases occupational angst. At ECU, the librarians have done a very good job in reaching out to the new generation of students coming into the university, but this shift in focus has not been easy. As librarians note, they need to have people in the library who understand this generation. And the ECU Libraries have accomplished this to a large degree by actually going physically and virtually where the students are. Librarians go to the students to provide services, whether that means at the dorms, the individual colleges and departments, or the student union. Equally, in a virtual environment, the librarians use Wikis,

blogs, podcasting, and Facebook.com to reach out to students. Lisa, as an example, challenges research librarians to understand how important this is, arguing that librarians need to look deeply at the relevance of their organization to the current and future university. "You definitely need to get a strong idea of what your institution is thinking about you and what it's expecting from you." And that means librarians have to make difficult choices. They can no longer continue to perform tasks that the institution perceives as irrelevant or wait to react to changing needs.

Increasing retirements taking place in research libraries can also be viewed as a catalyst for a new process of discovery of professional meaning. The ECU Libraries, like many other research libraries, have had difficulties recruiting librarians with newly needed skill sets. As an example, Christina states that, librarians disagree with the librarian stereotype, but the stereotype still fits to a large extent. "I think the people who are attracted to becoming 'a librarian' in quotes are not necessarily the type of people we need." The ECU Libraries seek out librarians who are willing to create and promote an environment where students can get access to library resources from commercial search engines without ever coming to a physical library. The problem is that research librarians often want to work primarily with graduate students when the vast majority of most campuses at ARL institutions are composed of undergraduate students who use the library far more frequently than their graduate level colleagues. As Christina argues, "I don't think we like a lot of our users. I think we don't connect with them, and it's a problem."

A change in professional philosophy can also be accompanied by more flexibility and creative thinking about collection development. Research librarians traditionally used to purchase resources with limited stakeholder involvement. As a result of this professional myopia, this group of ECU librarians notes that research libraries have lost nearly 100 years of popular culture. As an example, the ECU Libraries have recognized that research libraries cannot count on the commercial sector to archive popular culture, yet many universities rely on video stores to supply films that support teaching in the classroom. Many faculty are frustrated by this philosophy, because Blockbuster is not in the business to maintain arts and social science films which are often actually used in the classroom. Moreover, Katherine states, for example, that many research libraries continue not to collect these types of materials, because librarians have the philosophy that video material is not scholarly. "For God's sake, you wouldn't say we're going to get rid of all of Henry James' stuff, because we don't think Henry James is scholarly." Examples such as this suggest that librarians must confront the foundation of their collection development philosophies. Libraries can shift funds towards electronic resources, but, unless collection development philosophies change, librarians will continue to replicate collection problems in the shift from a print to an electronic environment.

These types of challenges to professional philosophy are shared by other librarians at ECU. Some librarians feel these changes devalue the profession. At the same time librarians--like those in other professions--have become very comfortable with the work they have traditionally done for many years, and the idea of changing this to take on higher-level

responsibilities causes them fear. Patricia, for example, finds this particularly frustrating for library administrators, because they constantly try to match the strengths of librarians with the projects the ECU Libraries take on. And what happens to those librarians with outdated but intrinsically valued skill sets?

In performing collection development at the ECU Libraries, librarians are continually challenged to question whether the resources they are providing are really what the faculty and students need. As Patricia describes, for example, librarians must physically go to departments and look for ways to partner with faculty in the learning environment:

> To actually get out of their chair and go over to the department. Human nature being what it is, there are things at rest that stay at rest. [At the ECU Libraries], librarians go out around the campus, they go to doctoral defenses, they go to colloquiums, presentations to new faculty, they make their presence known. And they take those opportunities to develop new relationships with faculty and students.

This view is shared by many librarians working in educational capacities at the ECU Libraries. Other issues can be pushed farther down the priority list, but librarians must focus on the need for active engagement with departments for professional philosophies to evolve.

Organizational Transformation Accompanied by Professional Transformation

For many research librarians, organizational changes serve as a catalyst for accompanying professional changes. These shifts in thinking require librarians to generate their own professional evolution by relying on the continual acquisition of new skill sets. Librarians at ECU highlight

changes in their own professional philosophies by focusing on the organizational redesigns that have occurred at the ECU Libraries over the past 15 years. It becomes critical for research libraries to evolve continuously, otherwise members of the university community will find different ways to get the information they need through methods that reflect practice in contemporary society. As an example, Philip sees how the organizational structure of the ECU Libraries has gone through significant changes in philosophy by encouraging openness to new ideas. And this means individuals must take on leadership roles that promote this continual evolution. However, librarians can sometimes be reluctant to initiate change without direction and sometimes express resistance to give up obsolete work in order to take on new challenges. Although the ECU Libraries have been particularly successful in recruiting librarians with new skill sets, many librarians were hired to perform work in a traditional print environment. And, equally, many of these people were hired to do very specific tasks. Consequently, Philip states,

> I see the disconnects between the skills that we have at hand, and the skills that we need... And I think that's our single biggest challenge... There will always be a call for the digital object itself, but I truly believe we're looking at a really different future at some point.

Another concept that emerged during the course of this study suggests that a change in professional philosophy should really be centered around the concept of coping with change. These librarians note that everyone responds to change differently, and, perhaps, there is a tendency for people in general to react negatively to change during the beginning of the process. The ECU

Libraries have been active in facilitating an educational process that helps train people with not only new skill sets but also how to question current practices. This change process at the ECU Libraries typically has to be explored at the individual level which creates its own set of problems. When individuals ask themselves whether their own work needs to continue to be performed, they feel threatened. Ann, who works in an educational capacity where she helps librarians repurpose their skill sets, jokes that "it's like the first rule of holes: the first thing you have to do is quit digging." When librarians refocus their views towards the opportunities that the changes bring, however, they recognize that holding on to the past actually creates more stress for themselves than letting go and embracing new ideas.

Having worked at other ARL institutions, Ann recognizes that other research libraries share some of the same professional challenges that the ECU Libraries faces. And these challenges often come in the form of a paradox between professional thinking about the printed and virtual environments. Research libraries have an obligation to preserve the past in order to make this information available for future examination. At the same time, research libraries are obligated to incorporate digital resources that streamline the research process for faculty and students. But regardless of the medium of exchange, the need for human experience and interaction will continue to be critical for the success of the research library in the future.

In summary, the search for professional meaning implies phases of uncertainty and exploration. For some librarians, the philosophy encapsulates the critical thinking necessary to respond to changing external environments while communicating professional relevance. For other

librarians, radical shifts in philosophical thinking about the profession are required for research libraries to continue to evolve. Still other librarians question the dehumanization of the profession in a world devoid of human interaction which creates additional turbulence in the university community. Equally, the need to learn to compete with the business community in product development is integral to the success of research libraries. And finally, the absence of external opportunities for development creates situations where organizational transformation is required in order to facilitate professional transformation.

Theme Four: Coping with the Experiences of Professional Change

Significant turbulence in a person's life can greatly influence how he or she responds to change. And certainly there are significant changes taking place at many research libraries across the country. There is an absence in the research literature, however, that addresses how librarians cope with and experience change in academic libraries. During the course of interviews at the ECU Libraries, librarians described several different experiences and coping mechanisms they use when responding to change. The concept of increased stress and tension as a result of rapid change and increased workloads emerged frequently, and the phenomenon of stress as a shared experience also was identified by the librarians in this study. Subsequently, coping strategies were identified by the participants which included communicating change, learning new skills, adapting tasks and workflows, and encouraging new recruitment methods. Equally, the necessity of coping at the individual level and through dialogue with other individuals becomes important to establish what Schön (1991) would describe as new theories in

use. It became clear during the course of these interviews that dealing with change focuses more on the individual's own experiences, and his or her coping mechanisms manifest themselves in ways relevant to these experiences.

Stress Associated with Change

The concept of stress associated with rapid change causes the librarians at ECU to respond with different types of emotions. Some grow despondent, others look for opportunities within the change process, and still others find particular coping methods that work best for their individual experiences. Many librarians identify with the stress that comes as a result of constant change. Librarians worry that they are not keeping up with the needed technological shifts, because there are so many skill sets required to manage hi-tech research libraries. And this angst is exacerbated if a person does not have enough knowledge to assist in decision-making or to make the correct decisions. Bill, who has worked with the conversion of print to digital resources for many years, notes for example, "it's overwhelming in some ways--it's often like you're running to catch up." As a result, librarians rely more on the collection of people with different knowledge and skill sets to make recommendations that will influence individual decision-making. Patricia, who oversees a technical services unit, expands on this example, noting that she has learned to delegate more responsibility for decision-making to her staff while relying on them to provide her with information. By letting go of control as an administrator, this process not only lowers her own stress, but her staff generally come back with more information, adding value to the decision-making process.

An overwhelming sense of stress associated with the volume of change at the ECU Libraries also takes place in the organization. Librarians comment that the amount of scenarios upon which decisions can be made are far more now than there were just a few years ago. As an example, Lisa, who oversees work in a public services area, states that she feels an increased amount of anxiety that goes along with determining whether you have made the correct decision:

> It's like you're constantly searching the landscape to make sure there isn't something else ahead of you that you need to be on top of. And for me, I get over 100 email messages a day, and a lot of people have demands on my time and attention. It is hard to keep up with that. At what point do you say, "we're kind of maxed out on what we can do?"

As another example, librarians recognize emotional responses similar to these among staff whose tasks are no longer valued. This increases their own stress, because they realize that these changes must be made to maintain the relevance of the library to the university community.

Sometimes these emotional responses can be accompanied by feelings of despair. As an example, Elizabeth, who works in educating students about changing library resources, states that the stress associated with competition with the private sector leads her to feelings of hopelessness in her ability to keep up:

> I think our library has been having to face how difficult it is just to stay in the present--not able to get ahead--just keeping things on. Because library users just do not understand and have absolutely no sympathy for things not working.

When a computer quits working, users must wonder why someone just does not simply replace it with a new one. Moreover, library users have little sympathy for system failures and network bottlenecks, and they do not understand what goes on behind the scenes to make all this technology work in research libraries. And as Elizabeth comments, in a research library there probably should be little sympathy.

Technology, conversely, can be viewed as contributing to increased productivity in the workplace. Many librarians at ECU comment that technology has enabled them to increase the volume of work they oversee on a daily basis. But some librarians question if this productivity can sometimes actually be unhealthy for a sustained career in research libraries. As an example Laura, who oversees a large public services unit, states that, "pretty much from the moment I step through the door to the moment I go home, it's non-stop." Moreover, librarians are also finding that the lines between their professional and personal lives have significantly blurred due to the technology they use. Since ECU librarians have access from their homes to all the technology they use at work, several joke that finding enough time to sleep is now becoming more problematic.

Many librarians characterize the ECU Libraries as "non-stop" work and also identify the resulting stress in less positive ways. Many librarians note that their typical day starts when they hit the door and does not let up until they leave. Some librarians comment that the work of teams also takes up a large portion of time when they could be working on individual projects. Additionally, librarians identify that the stress in their work lives spills over into their private lives where they must sometimes juggle between family and

work. As an example, Christina, who works in an educational capacity, states that her commute to work intensifies this stress, as she has to be away from her children for longer periods during the day. She jokes about these high levels of stress, stating, "you might as well take up smoking, you know?"

The experiences of other librarians also furthers the constancy of stress brought on by working at the ECU Libraries. Librarians comment that the stress brought on by so many changes can be exhausting. Moreover, they are not sure that the university has mechanisms in place to allow librarians to relax periodically and use creativity serendipitously to stumble upon solutions. David, as an example, is coming closer to retirement which causes him to reflect on how tiring all of the changes have been. And he highlights a key theme that can perhaps be attributed to the stress associated with research libraries in general which pertains to support of both a print and a virtual environment:

> I find myself getting exhausted by it all; by the constant uphill battle with it. It became obvious to me a long time ago that it wasn't going to be either a brick *or* a byte library, but it was going to be a brick *and* a byte library... And we were going to have to maintain them both with the same amount or less staff. The same or less budget. Quite frankly... it burns you out after a while.

On the day that David was interviewed, there was a storm that caused campus closures across the state. As a further example, David describes the reaction of librarians to this event by asking the researcher to look at the library that day. Nonessential employees were told they could stay home, and there were probably around five librarians that came to work. David

argues, "most of the staff by a long shot decided to stay home, and probably said thank God, it's a day off!"

The increased stress and workloads have also permeated outside the walls of the main library and have drifted to the branch libraries. Some librarians identify that much of the stress can be attributed to more work being added to the work that already exists. Branch librarians note that the team environment of the ECU Libraries has really opened up communication among all the different libraries in the ECU system. At the same time, the branch libraries have struggled to fit into this organizational structure, since these libraries do some of everything that the main library does. They comment that there were several things that were done at their libraries in order to look like the rest of the organizational model that were very time consuming and were not very useful at the local level. For example Tony, who works in one of the ECU branch libraries, comments that the work has become so consuming that he often finds he can no longer participate in professional organizations at levels near where he did a few years ago. And, Tony reflects on the fact that he is close to retirement and sometimes feels he simply does not have the energy anymore to keep up with all the changes.

At other branch libraries, the stress of the workplace has increased but for different reasons. Some branch libraries deal with concurrent local campus administrations and the ECU Libraries system administration. In the case of one campus, funding levels have led to difficult challenges in providing enough staff to keep the library open. As an example, Ted, who works at one of the branch libraries, states that in the past he has been the only person working at his library sometimes. And in addition to his normal

workload, he comments that local campus administrators are "always outside the library expecting something to be taken care of immediately." These constant interruptions, combined with increasing library system demands, give little time to plan, to prepare for meetings, or to follow up on his normal work activities. And Ted, like his other colleagues at ECU, describes this environment as one filled with stress that occurs all day, everyday, stating that, "the risk is you start feeling bad about it and angry that you're carrying this weight."

An interesting phenomenon emerged during the interviews, suggesting that an open, team-based organization with a focus on group decision-making also leads to heightened levels of stress that are shared by colleagues in the workplace. Many of the librarians at the ECU Libraries have such overwhelming schedules and task responsibilities that they are constantly trying to "farm out" work to their colleagues. Richard, who has worked for the ECU Libraries for many years, recalls that, although not intentionally used to avoid work, this strategy has often been used to balance workloads:

> I ran into someone that used to work here years ago, and she told me that when she first got here another person told her not to volunteer for anything. 'Because if you volunteer for things and do them well, they just keep asking you for more.' I told her, 'that's exactly right, that's what we do. We're looking for people who have the capacity to do good work. And if you do good work, I'll ask you to do more [laughing]'... People who sit back and wait for someone to tell them

> what to do tend to spend a lot of time sitting back, because nobody's got time to do that for them.

At the same time, the expectations to perform at the ECU Libraries are set very high, and librarians are compensated well. Despite the levels of stress that are shared among the librarians, people really do seem to like their jobs and their colleagues, and they have a good attitude about their work despite its volume. However, librarians note that the speed of change is so pervasive in the library profession that research libraries cannot be a part of all of the changes. Moreover, librarians should question whether there really are enough people to accomplish all of the library's goals or whether some things just should not be done anymore to free up time to accomplish the projects that are the most critical.

Coping by Communicating Change

It has been suggested by several researchers in the social and behavioral sciences that leaders should communicate the issues that surround needed changes in organizations as a strategy that helps individuals deal with organizational shifts (Birnbaum, 2000; Burns, 2003; Shaw, 1999; Yukl, 2002). At the ECU libraries, several librarians extend this perspective of communicating changes at all levels as an effective coping strategy. By letting colleagues know that changes are coming before they happen gives the librarians an opportunity to confront and make sense out of the change. As an example, Teresa, who has participated in both organizational restructuring activities, sees communication as the most important aspect of coping with change. Change for many people in her area is uncomfortable and frustrating, since outdated practices are being phased out. The perception

among staff can sometimes be that change is being pushed on them. But in her view, the ECU Libraries have been particularly successful at communicating changes throughout the organization and getting people involved in discussion. As a result, in addition to the library wide opportunities for communicating change, in her own area Teresa tries to begin dialogue among colleagues as early as possible.

This process of verbalizing their frustrations and being able to share in this discomfort is a strategy for coping that helps employees move toward the change, similar to Bridges' (2003, 2004) description of the individual transition process. Occasionally, the changes are so dramatic that library personnel find themselves in a situation Mezirow (1991) would describe as a disorienting dilemma. For some, the change is insurmountable, and, in spite of opportunities to train for new skill sets, these employees see retirement as the only option for coping with change. Conversely, employees also go through a similar process of perspective transformation that enables them to move into a more highly developed frame of reference for coping with change. Moreover, Teresa states that their involvement in communicating the change process is sometimes more important than the change itself, a phenomenon Ouchi (1981) has observed in Asian organizations.

Coping with change is also viewed from a different framework when discussing individuals that are external to the ECU Libraries. Several librarians accept the changes that have taken place in at the ECU Libraries very positively. Furthering this idea, James, who works in an educational capacity, states that communicating change is essential to help *faculty and students* cope with the shifts taking place at the ECU Libraries. Students in

particular find it difficult to engage in instructional sessions on library research, because the amount of information is somewhat overwhelming for them and because their experiences today are so different from the students of ten years ago. Consequently, it becomes more difficult to learn critical reflection skills in a dynamic rather than a static environment, as the traditional structures of research and learning are starting to disappear. Therefore, librarians constantly change lesson plans and supporting materials as a way to communicate shifts in higher education that subsequently help students and faculty cope with these changes. As another example, Christina, who has worked to a high degree with web technologies, argues that she has to cope with the slow speed of change and that the ECU Libraries should move at even a faster rate. As a result, she continually communicates the need for change with librarians, faculty, and students on campus, stating that, "there are a lot of 'no's' but with so many 'no's' you will eventually get a 'yes'!"

Communicating change can also be used in subtle ways that help individuals accomplish their goals. Librarians who are relatively new to the ECU Libraries might use a naive approach to communicate change. As an example, Robert, who has been at the ECU Libraries for a few years now, notes that much of the perception of the resistance or inability to cope with change at the ECU Libraries can be attributed to the idea that these conversations are "probably gossip enhanced to make the library more interesting." Consequently, since it is more difficult for someone perceived as an outsider by long time employees to be accepted and thereby affect change, naivety can break down these otherwise judgmental attitudes through the

recognition that someone is new and does not know any better. This in turn allows librarians to be less reactive and reflect critically on the new ideas proposed by someone who has not been biased toward the internal theories in use that might be held by librarians with longevity in the library. Moreover, the team-based organizational structure contributes to the ability to use this strategy, because people can communicate with almost anyone in the organization without having to go up and down a hierarchical ladder.

Coping with Change through Learning

Learning new skill sets, methods, and philosophies can also be effective methods to cope with change. Several ECU librarians identify the concept of learning as an integral strategy for coping with all of the changes taking place at their library. As an example, Lisa notes her own personal confrontation with change has incorporated new learning strategies to prepare for the future:

> I have had to "come to Jesus" as it were. You know I have had to fight the same personal issues that a lot of people do. I just have to be prepared for change and that it's a part of my life all the time. What we did well six months or a year ago may be different. So looking forward helps me not to get blind-sided.

Consequently, the brown bag lunches the ECU Libraries hold periodically have been a very effective method for her to incorporate continual learning into her coping strategies. These brown bag lunches usually cover a specific aspect of new technologies and give every participant an opportunity to discuss and understand the changes this technology brings. Lisa also points out that no matter how much she might discuss the constancy of change at

the ECU Libraries, "that doesn't give anyone any comfort." Rather the ability of individuals to experience and understand change through learning makes the change less uncomfortable, as well as provides new skills that will help during the change process.

Learning as a strategy to cope with change can also make increasing stress more problematic. Gaining new knowledge is integral to several of the ECU librarians' evolving perspectives on the changing library profession. However, this quest for knowledge can be very time consuming, because the team environment contributes to a considerable number of meetings. Moreover, if training or learning activities are not geared toward immediate use, people will forget their new skill sets or will not be able to see the bigger picture of their application toward contributing to change. Elizabeth, who works in an educational capacity with many web technologies, also expands upon this idea, arguing that using learning to cope with change involves an incredible investment of time and a conscious decision to *choose* what to learn:

> Someone could spend 40 hours a week going to informational meetings just trying to keep up with what's going on. I mean really, it's just so overwhelming. How do you balance learning new things with actually trying to get some work done [laughing]. It's difficult some times.

So, although learning can be an effective method for coping with change, it can also contribute to the increasing stress levels associated with change.

Coping by Adapting Workflows

Mechanisms for coping with stress can also be attributed to more direct methods in the workplace. For several librarians at ECU, adaptations

in their professional lives include such concepts as organization, choice, and disengagement. For each librarian, adaptation in the workplace bring either positive or negative outcomes and sometimes a combination of the two. Many librarians note that they are better able to cope with change by drawing from one of the key philosophical components of librarianship: staying organized. The high volume of emails, meeting requests, and daily priorities are almost overwhelming for several of the librarians interviewed in this study. Recently the ECU Libraries hosted a day of learning where time management and organizational skills were taught. As an example, Laura, who must use several different technologies in the area she supervises, found this very beneficial, as she now coordinates her email with documents in her PC and Intranet folders in order to keep a connected map of her workflows. By taking this organizational approach, she feels she is able to replicate her thought processes about task development regardless of the medium of information or its location. As another example, Patricia, who has a high volume of work as an administrator, uses software not only for email and scheduling but also to map out and remind her when deadlines are approaching. Taking the extra time up front to enhance this information on project schedules turns out to be a long-term investment which prevents stressful cycles of trying to reach deadlines while trying to connect all of the data on individual computers.

Interruptions during the normal workday are also some of the more frustrating outcomes of continual change in libraries. Since many of the work responsibilities associated with professional librarianship are largely intellectual, there is an increased need for finding both the time and space for

concentrated thinking about change. Organizational development theorists suggest one coping strategy that can be used is to review and answer email only at a certain time of the day. However, email traffic is typically non-stop during most of the day at the ECU Libraries, and librarians note that waiting too long to respond quickly leads them to be overwhelmed by the volume of email. And the interruptions to concentrated thought will become more and more of a significant impairment for librarians to be able to adapt to change. As an example, Bill, who processes a great deal of communication in the area he oversees, finds himself closing the door to his office more frequently as a coping strategy. However, since the ECU librarians' work lives are so busy, people still constantly knock on his closed door to ask questions or report findings. Librarians, consequently, have growing levels of stress, since it becomes difficult to find time to think about complex decisions that need to be made quickly. Furthermore, in the case of Bill, he has shifted this time and space of concentrated thought to his home life, early in the morning or late in the evening, but he notices that having to do this cuts further into his personal life. Christina, who is involved with large team projects, also notes that she finds herself taking more and more work home, since she has little opportunity for concentrated effort during the work day. However, she feels that she is sometimes neglecting her family by working at home rather than spending time with them. In effect, both have carried over into their personal lives the cycle of stress from which they have difficulty escaping in their professional lives.

Overwhelming feelings of information overload can also contribute to the change of workflows at a philosophical level as a way to cope with

change. As has been previously stated, several librarians describe the stress and tension that occurs as a result of so much change at ECU. Realizing that he simply cannot keep up with everything, Richard, who works in a cross-functional manner with several different library units, now chooses to focus specifically on those changes that affect his area while ignoring some of the changes in tertiary areas. This sentiment is also echoed by other academic librarians. With the proliferation of information, it is virtually impossible for any single person to keep abreast of everything that is going on. Consequently, Richard has learned to filter information that does not pertain specifically to the tasks at hand:

> The pace of innovation and change is everywhere, and you can't be part of it all. Or I can't be, because I just have too much to do... I think there's a good deal of rhetorical cynicism about some of the changes, but I think it's a fairly easy cynicism. The gap between ideal and reality is all around us in our lives, and it's here in the library.

David, who oversees technology in the library, also finds similar means to cope by being selective with the changes in which he chooses to participate, and he, rather, deals with each day as it comes. Since David understands the growing number of variables which affect these changes, he states that change happens at the ECU Libraries slower than most librarians' perception of the rapidity of change would suggest.

A strategy of disengagement extends the philosophical strategies used to cope with the stress of the changing library environment. Some ECU librarians find it increasingly difficult to cope with all the changes that go on not only in the ECU Libraries, but also within the profession in general, and

have chosen, therefore, this strategy of disengagement. As an example, Tony, who has participated in both library reorganizations, laughs when he states the only way to cope realistically with these changes is through "therapy!" He notices his own coping strategy has been to disengage from commitment to the organization and to the profession, focusing primarily on the tasks that surround his local area. Moreover, the amount of information that is required to keep up with and understand all of the changes at the ECU Libraries and within the profession in general can sometimes be too much for one person to digest. As another example, Ted, who has actively worked to help the ECU Libraries continually evolve, jests that, "there's probably something that will cause change that I'm either blocking or ignoring!" However, both Tony and Ted try consciously to see the changes taking place at the ECU Libraries as positive which they feel helps them to cope.

The concept of investing in people is also used as a philosophical strategy to cope with change. Bill's experiences through many years at the ECU Libraries, for example, have convinced him of the importance of maintaining strong connections with colleagues while focusing on shared accomplishments. In his view, "collaborations don't work when someone wins and loses," therefore, giving away such things as power, territory, and knowledge to other people can become an investment over time. Although the gain from this investment may not be seen for many years, when the rewards do come, Bill views them as successes that are one of the most important coping mechanisms for him in his professional life. By observing other librarians grow and succeed as professionals, colleagues are able make meaning out of the turbulence of everyday life by seeing the progress that has

been made historically by individuals contributing to the life of the organization.

Environmental settings are an equally effective method for coping with change. Issues such as access to external light and separation from others in office spaces can contribute to helping people cope. Librarians note that office spaces can be constructed in a way where there are constant interruptions which makes it very hard to stay focused. Philip, the library's director, notes for example that his office is located at the end of a suite of offices. Because of the physical layout of the office suite, no one comes to his office unless it is his or her destination. Equally, this office is surrounded by windows to the outside. As a result, Philip notes that this environment lends greatly to concentrated work where creativity is involved and helps to decrease the stress and tension of everyday work life while allowing him to be more productive.

Coping with Change through New Recruitment Practices

A sensitive issue for the library profession in general and at the ECU Libraries specifically pertains to new recruitment practices as a way to cope with transformative change. Some librarians who have worked at a library for many years are unwilling to change their work practices and subsequently work collectively with other librarians to resist change. Other librarians see the necessity of organizational change and feel there is no solution to this dilemma other than to recruit new, younger librarians after retirements take place. Although one might make the argument that this is a euphemism for ageism, the findings of this study suggest that at the ECU Libraries, it is primarily older librarians who make the suggestion to hire young librarians.

Moreover, the librarians who suggest this see that the resistance to change at the ECU Libraries actually creates more work and more stress for those willing to take on the challenge of leading the change process. As an example, Laura has worked in academic libraries for many years, has come to a stage in her professional career where she recognizes that many of her older colleagues in the profession in general are the most resistant to change. At the ECU Libraries in particular, she argues that change comes at such a fast pace it has to be embraced. As a result, Laura states that a successful strategy for coping with change is to hire younger librarians:

> There's a lot of older librarians in more hierarchical places who don't get it. They don't get it that, if they don't change, their whole organization may well disappear... The education of the older population to the necessity of making these changes has made them open to suggestions from younger librarians... We could do with even more hiring of younger people to come in and bring some fresh ideas. And I think if we do that, it will be well received.

Furthering this idea, other librarians find that the workloads are unevenly distributed between older "resisters" and younger "adopters." As a result, those who actively work toward the change process bear a larger burden of the stress associated with organizational change and look for younger librarians to help share this load. As another example, Richard, who has worked at different research libraries, finds that he continually encourages search committees to hire younger librarians. All too often librarians are drawn to search candidates that share the same individual beliefs of the members of the search committees. Equally, representation by

junior librarians is usually a very small minority whose voices can be repressed by senior librarians. Richard, therefore, sees the need to challenge these committees, recommending that they hire young librarians who will argue against the engrained philosophies of the organization and who will take on leadership rather than follower positions.

A similar way of looking at this can be explained by recruiting new librarians regardless of age to come in and challenge the system. Some librarians do not explicitly tie recruitment to the age of librarians, but rather the more people who come in with fresh ideas, the better the library becomes at adapting to change. The new staff challenge the ECU librarians to question whether they want to continue to perform the same work and look internally at whether the work they perform is even relevant anymore. Equally, librarians identify that overspecialization has become a pandemic for much of the resistance to change in research libraries. As a result, librarians at ECU try to hire people who have multiple skill sets. In particular, librarians who have skills both in public and technical services bring a broader perspective of the library as an organization and who work to contribute to the organization rather than only to the unit.

Coping as an Individual

Coping with change ultimately can be tied to the experiences of the individual. Librarians at ECU identify that coping most usually is up to each person to respond in a manner most productive to his or her own situation. Having worked in several research libraries, Ann tells the story that during her career she was forced to go through a transformative experience when she was moved out of an administrative position. Much like Mezirow's

(1991) description of the "disorienting dilemma," Ann went through several stages of reactions to this event and eventually realized that she was not coping productively with change when this event started to affect her personal life. When Ann sees this phenomenon taking place at the individual level at the ECU Libraries, she is able to draw from past experiences to encourage librarians to move toward positive reference points which will help them cope with change:

> Despite 1000s of years of development, deep in our reptilian brains, we are still "fight or flight." So much of what we do during that very first reaction to change is still based on that. And we can't control that, but we can realize what it is.

As a result, helping colleagues develop frames of reference that relate to an individualized view of change subsequently enables people to build a broader perspective of others in the library going through similar transitions.

Another method used to cope with change is to project a positive image at the individual level. Some librarians at ECU note this is sometimes difficult but believe this positive image helps others respond in ways that are beneficial to the group environment. As an example, Katherine, who works with technology to a large degree, argues that functionality has not been the major obstacle to change; the technology is there, people just have not always communicated in ways that are productive to resolving technology issues. So Katherine now tries to explain solutions in positive ways that are not jargon laden and that contain brief explanations rather than overwhelming detail. As another example, Patricia sometimes finds it frustrating to deal with the people that she supervises when they complain "just to complain." This is

one of the most difficult aspects of her job because of her deep affection for her colleagues. By focusing less on failures and more on success, librarians see the positive effects of her individual attempts. In turn, Patricia feels personal gratification which enables her to continue to adapt to the changes in her own work.

Exercise is another strategy that can be used to cope positively with change. Interestingly, the concept of exercise as a coping mechanism was not identified by a majority of the librarians interviewed at ECU, although it is stressed by many in the social and behavioral sciences (Austin, Shah, & Muncer, 2005; Morse & Walker, 1994; Puetz, O'Connor, & Dishman, 2006; Taylor-Piliae, Haskell, Waters, & Froelicher, 2006). This researcher found that those librarians who identified exercise as one technique they used for coping tended to have positive attitudes about change while dealing with stress in constructive ways. As an example, Bill states that he originally began exercising everyday for health reasons, but now that he has done it for so long, he recognizes that it has become an aspect of how he copes with change, noting, "I do feel better, I feel more energetic." As another example, Patricia comments that, in addition to contributing to her general well-being and positive attitude, she notices that exercise gives her an opportunity to clear her head from competing ideas, enabling her to focus more deeply on the critical issues that need immediate attention. Equally, Philip argues that he has to exercise everyday in order to deal with the stress of his job and that his exercise regime allows him to think more positively about his work. Additionally, he recommends to all librarians that when tension is starting to

build up during the day they should get up and walk around the library to cope with stress in the workplace.

Coping through Dialogue with Other Individuals

Although communicating change is one method used to cope with stress in the workplace, dialogue with others suggests a broader focus on giving meaning to organizational change. As many organizational therapists have argued, communicating with others on the crises or dilemmas affecting an individual in his or her professional life provides the group with a context to generate deeper meaning about their own on circumstances (Abraham & Gilgen, 1995; Bridges, 2004; Stacey, 2003). Librarians at ECU also concur that conversations with others about the stress of their work life has been an effective personal strategy to cope with all of the changes taking place at their library. As an example, Tony, who is nearing retirement, notes that being able to share the same frustrations with his colleagues enables him to decrease his own angst about professional changes. Equally, Lisa, who has somewhat new to the ECU Libraries, shares this belief, stating that "being honest about the fear of change when that is what is happening enables everyone to learn ways to deal with it better." And Patricia, who has worked at the ECU Libraries for several years, comments that personal stories can be used to help others both learn and teach from the experiences of others, helping everyone to reflect further on their own individual coping strategies.

The open meetings at the ECU Libraries also help to encourage group communication that contributes to coping with change at the individual level. Since not all of the ECU librarians deal with change in the same way, the open forums for discussion have been very effective for helping other

librarians see the different perspectives of their colleagues. Ted suggests, for example, that all research libraries integrate this style of communication:

> Go ahead and talk about it. If you don't like it, bring it up. For someone upon whom change is being imposed, talk about it. If it's negative, if it's positive, at least it's expressed.

Therefore, reflections become less focused on the change itself but rather that the voices of individuals are heard. As another example, Laura argues that territorial boundaries tend to lend to negative misperceptions about "what the other guy does." Now her entire department meets informally with other ECU librarians outside of her area which has allowed all librarians involved to develop "broad spectrum" coping strategies across individuals in the ECU Libraries.

The ECU Libraries' administration has moved toward being as transparent as possible when addressing upcoming changes at the library. This helps staff tremendously, as they like to know what is going to happen, when it will take place, and how changes will affect their own work. Equally, the ECU Libraries have implemented a program that helps train staff for new responsibilities which has also been viewed positively by library staff. In this program, staff are presented with scenarios for the future, and work that will be de-emphasized is discussed as well as why the work will be phased out. Philip, as an example, has found this program to be valuable, as many staff want to be successful in their new work, and the more time they are given to explore options and talk about them, the better they are able to succeed.

The comfort that comes from communicating the stress associated in the workplace can also be found in relationships with spouses and partners.

A few of the librarians identified that this was the most effective way for them to cope with change. As an example, Lisa comments that she speaks with her husband every night about problems, frustrations, or achievements that are going on at the ECU Libraries. She also notes that she has the added benefit of her partner working in higher education also which she finds enables her to have an actual dialogue with someone outside her own work environment. As another example, David said that he felt hesitant about bringing his relationship with his wife into a conversation about the ECU Libraries. However, David, who has been married for many years, believes it is essential for this researcher to understand that he feels he is really only able to cope with the stress caused by working in the library by expressing his concerns and joys with his wife. He argues that it may sound strange, but he still goes home and has dinner with his wife every evening. And during that time, David comments:

> I have somebody that I can talk about changes in the library with, and decompress them, and put them into some kind of real situation. That's on a very personal note, but I think it's important. I don't know how I could do it without her. It would be so relentless; I wouldn't be able to step away from it.

As a result, both Lisa and David find that having a trusted confidant outside the library serves as a successful way to cope with the increasing stress and turbulence that comes from working in an organization focused on transformative change.

In summary, the turbulence that takes place at the ECU Libraries affects how librarians respond to change. Stress was identified consistently

by librarians as accompanying change in the library along with increased levels of work. Several methods for coping with change and the stress of organizational life emerged during the interviews, including communicating change, adapting tasks and workflows, seeking opportunities for learning, encouraging new recruitment practices, and through dialogue with others. Additionally, the focus on learning to cope with change at the individual level became a strong undercurrent amidst the other findings.

Theme Five: The Evolution of the Organizational Structure

The ECU librarians are unique among other librarians in ARL institutions in that they have developed and implemented changes in organizational structures and thinking to help transform their research library. Over the course of fifteen years, the ECU Libraries had gone through two organizational restructuring activities, and librarians at ECU described the concept of the organizational structure and its dynamics in detail. As a result of these reorganizations, librarians were confronted with professional experiences in new, unexplored ways. The concept of change became an emphasis for redirecting resources and staffing, while librarians dealt with shifts in their frames of reference in interacting and participating in a non-traditional library hierarchy. In this section, several areas will be explored including: librarians' descriptions of the organizational structure; how organizational dynamics influence the team environment; the challenges of decision-making; how the organizational structure contributes to both individual and organizational development; reactions to the latest reorganization; how static staffing levels inhibit increased change; and the financial implications of the publishing community. The evolution of the

ECU Libraries as an organization was viewed in different ways by the librarians, from confusion and fear of the unknown to identification of contributions to the success of the organization and participation in the leadership of the library at different levels. However, librarians also coalesced on important points dealing with decision-making, reorganization, and responses to the structure.

Descriptions of the Organizational Structure

The ECU Libraries have gone through two identified reorganizations over the past 15 years. Previous to the early 1990s, the ECU Libraries operated with a traditional library hierarchical organizational structure. The library was divided into two main units, technical services and public services. All librarians reported to one of these two units which were administered by associate deans. Upon the arrival of a new director, during the 1990s, a significant reorganization took place, moving the ECU Libraries to a team-based environment. Library and university administrators, as well as library staff, had identified that departments within the library had become territorial and were no longer functioning at a progressive enough level to deal with the rapid changes being imposed by a rapidly evolving environment. This new team-based structure changed reporting lines and opened up communication channels between areas previously seen as isolated from each other. The two main units of technical and public services were replaced with several new units that were oriented toward library functions.

The library incorporated several different types of teams, similar to those discussed by Yukl (2002). Cross-functional teams involved individuals

from different areas that came together to work on library wide goals and initiatives. Self-managed teams also developed based on identified needs for short periods. Area teams were created to educate and facilitate the new organizational structure while leading the work in the newly created units through a process of shared leadership. And functional teams were designed to focus the shared specialization of particular groups of people toward discrete tasks. Library wide goals and priorities were also developed primarily by the cross-functional and area teams, and this mechanism was in place to identify and implement the strategic planning of the ECU Libraries.

At the time of this research, the ECU Libraries had gone through another reorganization within the past two years. This restructuring was less dramatic than the previous reorganization, and several librarians commented that it was a slow incorporation of more hierarchy within an otherwise team-based structure. The library had again changed its frame of reference for operating in the twenty-first century, and Philip, the library's director, highlights some of the identified needs for another reorganization of the team-based environment through the following vignette:

> I think when we started, a lot of us were sixties idealists. And we thought that people would buy in conceptually to the idea of being self-leading, self-motivating, self-directing, self-accounting. And what the reality was that they liked the idea of not being supervised, but they didn't necessarily like the idea of being held accountable themselves. They bought part of the package but not the whole package. So I learned early on that people weren't going to self-identify when the tasks that they were doing were no longer important

> to the organization. That somebody, whether it was me or whether it was their direct supervisor, was going to have to be the one to say, "we value your contributions, it's just that we don't need you to do that anymore. We need you to do something differently." So I've sort of learned that the hard way. Try not to have it be a top down process, but, inevitably, I think people at the top of the organization have to take the responsibility for leading change. I don't think it's going to happen as an organic, grass roots movement.

Marker events are also used as catalysts for successful organizational transformations at the ECU Libraries. Oftentimes, large research libraries are slower to change than smaller libraries, because so many of the practices have been developed over many years with an increasingly larger bureaucracy. It becomes difficult to move people out of their comfort zones, or, as Katherine describes ARL institutions in general are "like trying to turn a battle ship in a small harbor." Philip states that the use of marker events has been a strategy the ECU Libraries has used for some time, and, in his view, this strategy has been critical for the success of the library's organizational transformation. A previous director introduced the first major organizational restructuring as a way to address the rapid evolution of the academic environment and the library's inability to respond fast enough with a more traditional organizational structure.

In addition to the evolving environment of research, teaching, and learning, the financial crisis experienced by institutions across the country during the beginning of the twenty-first century precipitated the need for further organizational restructuring at the ECU Libraries. While university

budgets grew static, inflation in the publishing sector, as well as escalating costs in maintaining a print research library, led to further organizational transformation. Philip states that librarians can identify with this event and work collectively towards finding solutions to deal with these types of problems. Financial crises are something that most librarians understand, and the event brings people together out of necessity as Philip points out:

> The inclination is towards maintaining the status quo: entropy. People left to their own devices are, in my opinion, not going to be individual change initiators. So it takes something to jolt them, so they'll say, uh oh, things are changing. And they need to be able to understand why. It's got to be a response to some event.

Organizational Dynamics and Challenges with the Team Environment

Several other factors contributed to the need to readdress the functionality of the previous organizational structure. In some ways, the creation of the original area teams had been a catalyst for creating new silos within the organization. Although the structure that came out of the original reorganization was necessary to create the rapid changes needed in the organization, eventually the areas entropy into the same types of habits found in the previous traditional organizational structure. Equally, the first reorganization to the team environment was needed to handle wide scale processing of both print and electronic materials in the library. However, the model did not always work for job tasks that still required human intervention, as vendors had not yet provided mechanisms for replacement of some of these tasks.

The first reorganization contributed greatly to needed changes at the branch libraries by removing them from local isolation and integrating them further into a library wide system. However, since the branch libraries often performed most of the responsibilities associated with the main library, it was sometimes difficult to replicate the team-based model with small staffs. Additionally, when staff from the branch libraries participated in the team-based structures of the main library, the problem became exacerbated. Branch libraries did not have the personnel available to attend all of the meetings, and these libraries could not replicate some aspects of the new team model. Consequently, branch librarians who participated in library wide teams approached the team environment from the overall view of their own individual libraries, and, as a result, it became difficult for librarians in the branch libraries to focus on one or two projects for a given area.

Another dilemma that was presented with the team environment was that some staff found the new structure completely foreign. Librarians noted that some staff just could never come around to adjusting to the new structure and began to isolate themselves from the openness of the team-based model. Moreover, the union environment inhibited librarians' abilities to restructure positions. Most librarians interviewed in this study commented that they were surprised how well the unions had been at accommodating issues of retraining and repurposing outdated work. However, if a staff member made a case that was essentially used to skirt the reorganization, the union had little choice but to support those particular staff during the grievance process. This tended to be more of an issue among non-professional staff who had worked at the ECU Libraries for many years.

Unlike professional librarians, they were not invested in the profession and were rather completely invested in the specific tasks of their work area in the ECU Libraries. Consequently, when challenged with new job requirements, some of these staff resisted these changes adamantly.

Another problem that emerged after the first reorganization pertained to difficulties in decision-making. In some ways, the team structure made difficult decisions easier to ignore, since group involvement ultimately would lead to tabling tough issues for fear of insulting someone in another area. As another example, librarians commented that with the previous director, the perception among librarians was that decisions had already been made, or, at the same time, no one wanted to make the decision because it would involve more work. Equally, the focus of the organization moved toward the group instead of the individual, and at times it became very difficult to identify who should actually be leading a project that no one had ever done before. Or, conversely, when a project required the highly developed skills of several different people, it became difficult for a team to choose a leader, because everyone felt they would be the best at the job.

The strategic planning process, which was based on the bureaucratic traditions of the academy, sometimes conflicted with the team structure. In particular, the process of developing library wide goals became increasingly problematic, and the organization has had difficulty reconciling this process within the new framework. Library wide goals are tied to merit pay, which makes the identification and creation of new goals very competitive. Several librarians noted that, after the first reorganization, the concept had been used effectively for a number of years to both make needed changes while

rewarding those individuals willing to take on significant challenges. However, recently, several librarians noted that the library wide goals process had become more of a marketing tool designed to make some individuals prosper at the expense of others' whose work was affected but who were not equally rewarded. Moreover, librarians identified that so much focus was now being placed on the library wide goals by individuals, and associated merit page, that the ideal of teams working across functions to accomplish noble goals had started to disappear. As an example, Richard, who has worked on several teams at the ECU Libraries over the years, describes how some people spend much time developing a goal that will be accepted by the library's leadership while making their everyday work less important:

> Yeah, there are people who tell you that they are change agents. They go out and identify with whatever makes them look progressive. And sometimes, it seems to me, it's all about a stance and not very much about the core values of the institution or what the role of a librarian might be about... Because they know that simply being involved in the things that are making the biggest changes will make the biggest changes for them.

Delegation of work also became more problematic with the shift to a team-based model. As a result, increasing levels of hierarchy have been blended with the team environment. As an example, Elizabeth, who has worked in higher education for several years but is new to academic librarianship, states that, "[ECU] library jobs can be as much or as little as you want to make out of them." Consequently, those who choose to take on

projects--who see the need for critical changes to take place quickly--receive more work to perform. Those who choose not to take on projects are supportive of those who do, but end up having far less work to produce. And the previous team structure lacked in its ability to hold teams and team leaders accountable for their colleagues' work. Equally, all librarians who self-reported as being active in the team process note that an increasing amount of time is needed just to handle the communication among and between teams. Conversely, the ultimate goal of many librarians sometimes seems to be striving toward individual recognition. If only the members of a team are recognized for their accomplishments, this focus on the ego becomes a continual source of frustration among librarians as individuals.

The concept of the team environment strives toward an ideal organizational environment, but issues of authority and power still arise in this structure. Librarians comment that the original restructuring left many of the tacit and intrinsic aspects of position power in place, sometimes only giving the appearance of a flattened hierarchy. For some librarians, the political hierarchy of "senior librarians" was very much there if not obviously apparent. Ideas that were generated or decisions that needed to be made were often filtered and controlled by librarians that had been at the ECU Libraries the longest period of time. Equally, senior librarians usually wielded great power in the appointment of team leaders, so the perception evolved that it was extremely difficult for newer librarians to lead teams effectively. Moreover, some librarians felt the senior librarians contributed greatly to maintaining the status quo in their ability to kill projects by masking decision-making as team consensus. And this contributed to

identifying weaknesses in the team structure that could be used to an individual's advantage. Consequently, some librarians noted that the flattened structure sounds good, but, unless mechanisms are built in to hold team members accountable as individuals, the team structure is very susceptible to abuse.

The Challenges of Decision-Making in a Team Environment

Organizations operating in a team environment place a large degree of responsibility for decision-making at the team level. The concept of an academic unit utilizing a team structure in a campus organizational framework that still maintains traditional strategic planning processes creates an intra-organizational challenge. One of the issues that arose from the team environment at the ECU Libraries pertains to rigidity in reversing decisions that have been made already. Since the team environment encourages group decision-making, ultimately decisions affecting the ECU Libraries system have been primarily accepted with consensus among the group. And reaching this point of consensus often involves lengthy dialogue and extended work. After a decision to take on a library wide project had been made, it is viewed as an organizational decision. Therefore, if a project begins to fail, it was very difficult in the past to go through this entire decision-making process again to reverse the decision. Furthermore, it was difficult for the library's director, who encouraged group decision-making, to provide executive decisions that contradicted the group decision when projects were going wrong.

Another phenomenon that arises out of the team-based structure is the dampening of mechanisms for positive feedback. Since group decision-

making and open communication are encouraged, it seems paradoxical that this would occur. However, teams working on big projects within the ECU Libraries have an increased amount of scrutiny on them which seems to develop into higher levels of criticism by those who are not currently working on the team. As Christina comments on a major project she is currently undertaking, "I'm pouring so much of myself and sacrificing so much to do my job, I'm not going to get praise for it; they'll eat you alive like a bunch of piranhas."

Along these same lines, another term librarians identified during the course of interviews was "sniping." Again, those working on major projects tend to receive the most criticism, and the perception among librarians is that these criticisms come from people who are disengaged from the process. "Sniping" is used to describe when, much like during warfare designated shooters sit far away and take out their opponents, librarians criticize from afar in ways that make it difficult for teams to complete tasks. Librarians in this situation feel an increased need to protect themselves which, consequently, takes time away from key library goals while making librarians second guess their decisions. Although the argument can be made that these types of single loop learning responses are indicative of bureaucracies, Richard describes the competitive nature of the ECU Libraries as contributing to this type of feedback:

> I think in general it's the dark side of a good thing, which is that we have high expectations for ourselves and our library, and we want to be the best that we can.

The protectionist feeling tends to put librarians on the defensive while looking for ways to "strike back" by developing criticisms about other teams.

The Structure as a Catalyst for Individual and Organizational Development

Breaking from hierarchical structures to incorporate a team-based environment can bring several of the challenges to the research library environment. The organizational structure of the ECU Libraries has changed somewhat in the past two years based on continued organizational analyses of the effectiveness of the team environment. Primarily, the organization has moved toward a blended model of both team-based and hierarchical structures. Accountability within and among teams became a primary issue as the first reorganization of the library evolved. Team-based structures were kept in tact during the latest reorganization, however, hierarchy was built into the team process as Katherine notes:

> It used to really be more team-based, and there were rotating team leaders. [The ECU Libraries] does seem to be integrating more hierarchical structure now, and I appreciate this.

The most significant aspect of this change pertains to position hierarchy within teams. Whereas leaders of teams previously rotated over given periods, area teams in particular now have supervisory team leaders who do not change. Many of the ECU librarians believe that this adds a level of stability to the fast paced structure of teams while shifting how accountability is defined toward this supervisor.

Previous challenges in decision-making have also begun to be addressed through the new organizational structure. Decision-making continues to take place in open forums where the library's leadership

discusses goals and objectives for the library. However, there is now much more flexibility in changing decisions rapidly. During particularly sensitive issues, or issues that arise during times of project crisis, the director, as well as the area team leaders, now have much more latitude to step in and make critical decisions that stop projects, move them in different directions, or create new projects based on the changing environment. The hierarchy built into the team decision-making process equally allows for faster changes in strategic planning. Where library goals and objectives previously fell on an annual scale, if the environment changes during the fiscal period, goals and objectives can now be modified more easily throughout the year. Equally, while still participating in the overall ECU Libraries system organizational structure, branch libraries have been given more autonomy to apply aspects of the teaming environment that are relevant for their particular location. Where applicable, participation with satellite campus administrative units has also been encouraged as a mutual partnership in the development of these libraries.

Interpersonal relations are also being addressed with an increased focus on organizational development. New resources have been directed more toward this area while library staff trained in this discipline are leading these initiatives. Whereas in the past, learning opportunities focused more toward learning new technological skills, many librarians have seen how the team-based organizational structure has now matured. The librarians responsible for organizational development in the library have shifted individual focus toward the deeper structures of organizational change. When technological skills need to be developed further, individual librarians

are now encouraged to take on self-directed learning or professional development activities that take place outside the library. Group learning opportunities are now beginning to move more toward the deeper structures of organizational change by emphasizing philosophical dialogues that discuss the change process. Key speakers whose focus is on organizational development are scheduled to come in on a semi-annual basis to help facilitate the mourning and discovery processes associated with change at the ECU Libraries. This shift in focus toward deeper levels of understanding change is expected to help move the organization further in the maturation process of the team environment.

Another phenomenon that emerged through the team structure is the exponential creation of teams. Self-managed teams typically arose spontaneously at the ECU Libraries. In the beginning phases of the first reorganization, this was a welcome change viewed progressively by most librarians. However, over time, it was perceived by several librarians that the number of self-managed teams that were being created started to get out of control. In effect, the team-based structure had reached a critical point where the number of self-managed teams being created spontaneously was beginning to interfere with the work of functional and area teams. As a result, the new reorganization dampened the ability to create self-managed teams as easily while integrating more structures for approval for the creation of teams into the organizational process. Librarians still have the ability to create informal, self-managed teams to investigate the evolving research library environment. However, priority and accountability focus more on the work of functional, cross-functional, and area teams. Self-managed teams are

subsequently shifting focus toward discovery and dialogue about emerging issues and needs rather than the creation and implementation of projects and tasks.

To respond more directly to the changing environment of research libraries, the ECU Libraries have also undertaken a staffing division. After the first reorganization, most positions were left intact while reporting lines and organizational dynamics had changed to facilitate the team process. During the most recent reorganization, the staff division was investigated to analyze existing job descriptions and work functions. Work performed that was determined to be of the highest priority to move the library into the future was given more importance. Work that was generally task oriented was identified for outsourcing or directed towards student labor, since much of these types of tasks were perfunctory and repetitive.

Work identified as non-essential has had a dramatic impact on librarians' professional lives, and, perhaps more so for support staff. Job descriptions were re-written to exclude these job tasks, while more attention was placed on high priority aspects of work. Library personnel who are affected by these changes participate in re-training and re-purposing activities which acclimate them toward their new work environments. Additionally, the organizational development unit of the library has become increasingly viewed as a resource for counseling staff on these changes while providing them with an opportunity for feedback on newly needed skills.

Reactions to the New Organization

With two structural reorganizations that have taken place at the ECU Libraries over the past fifteen years, it is expected that librarians might

respond pessimistically about these types of major changes. Overall, these librarians' perceptions of both reorganizations have been mostly positive. In some ways, the latest reorganization has put structures into place in areas that needed more definition and emphasis. As an example, David noted that when he took over the management of his unit, there was very little structure, and his area participated in library wide projects through association with needed activities. Individuals in his area took on leadership roles based on their personalities rather than on the connection of their knowledge and skills with defined projects. Now, his area operates with more direction, as individuals are able to be matched with the most value they may bring to particular projects. David also states that many units used to operate as isolated areas, and this reorganization has allowed his area to interact constructively with other areas in the organization as an "organic whole."

The blending of the team-based environment with hierarchical structures has also allowed librarians to gain more focus through awareness of supervisory roles. Librarians new to the profession often have difficulty adjusting to leadership positions. Formal reporting lines have allowed them greater access to needed mentoring from their supervisors, while supervisors have had more direct authority to point new librarians toward projects which they feel will give them greater opportunities to succeed in leadership roles. Equally, new reporting lines seem to "make more sense" to librarians who previously might have been directed by team leaders who had little knowledge of an individual librarian's day to day work. Librarians tend to respect the knowledge of their supervisors to a higher degree and now feel that they have more support. Tony reflects the sentiment shared by librarians

stating, "to have someone strategically placed who is highly supportive of the work that I do is very important to me." Or as Elizabeth notes, "I work with the nicest boss in the library; he's very supportive." Regardless of frustrations librarians may have with the evolution of the ECU Libraries organizational structure from time to time, most of the librarians during the course of this research identified their supervisor as someone they enjoy working with and who they truly feel supports his or her work.

The new reorganization has also placed a greater emphasis on the individual operating within the ECU Libraries system. During the previous reorganization, the team-based environment was used to break down territorialism and rigid hierarchies while bringing people together in the decision-making process. The focus became more on the team rather than the individual, as it was viewed as a necessary step in the process to facilitate the changes needed at that time. Now that the team-based environment has had more time to mature, the latest reorganization has allowed for an emphasis on the micro level of the individual. In addition to increasing accountability within teams, more accountability for the individual is encouraged. By allowing librarians to reflect critically on the necessity of change for them as individuals, they are able to strengthen the core foundation of the originally adopted team-based environment while addressing their individual roles within the organization as a whole. As several librarians point out, this is an evolving process that has not been without bumps, but they are happy to see the library move in this direction.

In some ways, this latest reorganization has been a more difficult process for the ECU Libraries. During the original reorganization to a team-

based environment, a systems oriented method was implemented to help the library grow as an organization. After the latest reorganization, more emphasis was placed on determining what roles the ECU Libraries would continue with, add to, or remove from the organization. Faced with a changing research environment and limited resources, librarians now have had to choose which work they will stop doing in order to focus on the survival of the organization. And unlike in the past, where technology was integrated along side print resources, librarians now visually see print collections disappearing from the physical library to be replaced by new technology, areas that promote collaborative research among students and faculty, and instructional places to help guide students toward the virtual research environment.

In spite of any criticisms librarians might have about the blended organizational structure at the ECU Libraries, all librarians expressed their satisfaction with this structure. Equally, the organizational structure helps position the ECU Libraries for continual adaptation in the future. As examples, David points out that this structure has allowed him to increase his interaction while developing positive relationships with others in the library. James notes that he loves being able to work with colleagues in areas outside of his own, and that the organizational structure encourages philosophical exploration of diverse ideas. Katherine, who is new to the ECU Libraries, comments that the organizational structure allows librarians to look at ideas, not as predictions about the future, but in terms of possibilities that allow librarians to break down resistance mechanisms to change in the absence of

one definitive view of how the future will be. In effect, the organization supports new ideas and attempts to turn those ideas into successful realities.

The consecutive reorganizations have also challenged professional thinking to explore the deeper levels of meaning making around the purpose of the library as an organization. As examples, Richard and David, who have both worked at the ECU Libraries for many years and are nearing retirement, have come to reflect critically on issues of structure and change. Richard comments that the blended organizational structure provides a broad synthesis of how libraries operating in higher education might be able to complement academic thinking with business models:

> You do need a structure, and you do need some people to remind us that the structure isn't a reality; it's an artifice, and we work with it even though it has it's problems.

Likewise, David identifies the successive reorganizations as simultaneously accompanying and driving the change in the culture among librarians at ECU.

> I think those changes--the organizational structure, change in the culture, empowerment--those are all the pieces that are moving us towards a better place. But how will we know when we get there? [laughing]. Will something feel easier or will there be less pain?

Moreover, he questions whether academic libraries in the future will have the convenience of settling on one organizational structure.

At the same time, quality of staffing will continue to be viewed as a critical component of change in research libraries. In addition to static budgets, the skill sets of some library staff are just not up to par with the

technological needs of the ECU Libraries. And although training is highly encouraged and the resources to do so are available, unless this training is immediately applicable to the tasks at hand, it will go unused or be forgotten about altogether. The result is that new services, new types of collections, and new skills are all needed, but staff need more help in choosing what is truly important to the future of the library. As one example, Paul notes that a shift in emphasis toward teaching by librarians is a needed change in the ECU Libraries. However, many librarians have not ever taught classes before, and to simply give them a laptop and tell them to go teach is doing a disservice to the academic community. Therefore, Paul states that continuing education to support teaching techniques is desperately needed for the evolution of the profession.

A dramatic shift in mass digitization has also contributed to changing the future staffing needs of research libraries. The ECU Libraries have struggled to recruit new librarians that have the skill sets necessary to compete with the private sector, and this will greatly affect higher level staffing decisions in the future. As an example, Philip highlights this phenomenon with some concern:

> I'm reluctant to admit this but, I'm not one of those people that's on the "librarians are leaving the profession faster than they're coming in: it's a bad thing." I think reference librarians... reference statistics are way down... There's always going to be a call for the digital object itself, but I truly believe we are looking at a really different future at some point. I think there will always be libraries, but I think the role of librarians is really going to change.

Scenarios such as this challenge both librarians and library science programs to implement thinking that keeps pace with the needs of research libraries.

Financial Implications of Inflation in Research Publishing

Another phenomenon, which has precipitated change to a large degree at many research libraries, is the ongoing commitments associated with the purchase of print and electronic journals and databases. While the Consumer Price Index inflation rate has averaged around 3% for the past 5 years (Bureau of Labor Statistics, 2007), the average annual price increase of a journal subscription is 8% (EBSCO Information Services, 2007) [See Figures 4.3 and 4.4]. In the sciences, the inflation rate is even higher at an annual average increase of 10% on journals that are already extremely expensive (Van Orsdel & Born, 2007). This trend in escalating subscription prices has led to serious decisions that have forced rapid change on the ECU Libraries. State budgets have never provided annual increases for East Coast University at these levels. So librarians are literally left scrambling every year to try to deal with this crisis. The ECU Libraries has benefited by participating in cosortial arrangements with other universities to decrease publisher costs and has also entered into publisher bundling agreements to lower the overall costs for all journals published by a particular vendor.

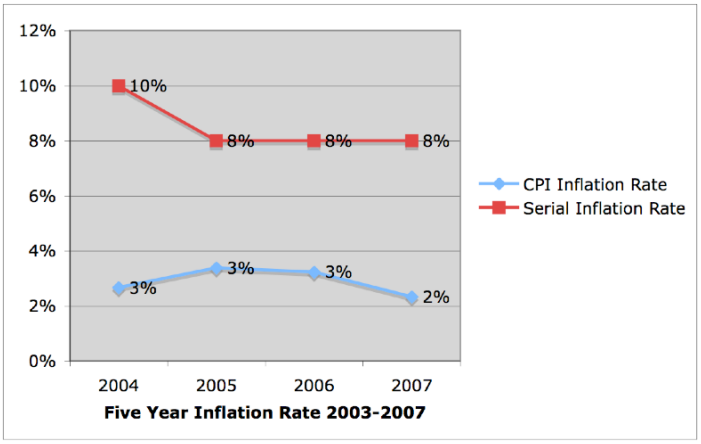


Figure 4.3 Annual Serials Inflation Rate Compared to Consumer Price Index

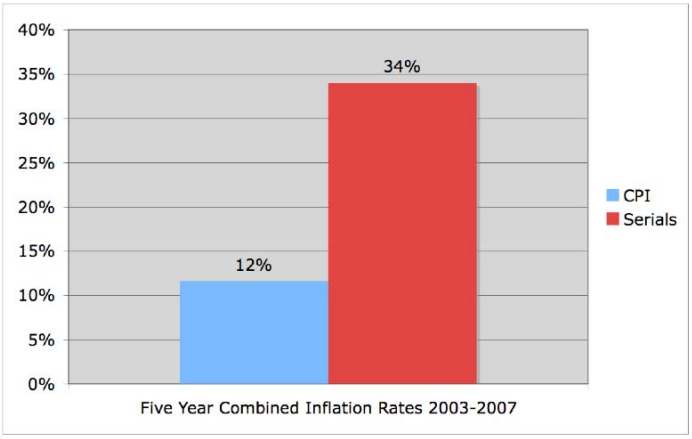


Figure 4.4 Five Year Combined Serials and Consumer Price Index Inflation Rates

Albeit, health insurance, retirement, and technology costs have risen dramatically on most university campuses, the inflation rates associated with scholarly publishing are perhaps next in line in factors driving the costs of university budgets. Additionally, moving more collections to electronic formats has only solved part of this budgetary problem. However, largely due to faculty and staff resistance on the ECU campus, the library has continued to purchase and house print materials even in small amounts. In effect, David sees the ECU Libraries as actually operating two libraries now: the physical library *and* the virtual library. This phenomenon, shared by the

majority of research libraries, has left many librarians with some despair about the future. David, who through the years as a research librarian has seen many technological changes, argues that the library should choose one strategy and abandon the other. Implying that the print needs to disappear, David also reminds librarians that the choice of moving to electronic collections brings with it a set of expensive technological requirements. So abandoning print collections in order to save money by replacing them with electronic collections is not a realistic assumption.

The ECU Libraries are forced every year to meet their bottom line in the budget. And this usually means canceling journals in both print and electronic format. Although they receive input from faculty on which journals to cancel, this change is increasingly stressful on both librarians and teaching faculty. Equally, some ECU librarians have pointed to the idea that many departments on campus would never dream of determining which programs are important and which are no longer needed. In effect, librarians have been somewhat forced to help faculty determine the usefulness and longevity of programs on campus while cuts in collections signal a much broader assessment of academic programs than simply the information resources needed to support them. And this trend has significant implications for the successes and failures of the ECU Libraries. Many ARL libraries have focused in recent budget years on maintaining collections at an annual increased cost while keeping costs associated with personnel and facilities at the same level. As an example, Tony, who works at one of the ECU branch libraries, finds this detrimental to the quality of professional life and the subsequent evolution of research libraries in the future:

> Limited facilities and resources have a lot to do with frustrations on the job. Availability of a good facility and resources can do a whole lot to improve your morale and efficiency and the kind of job you're going to do.

Many years ago, the ECU Libraries were very far behind other research libraries in their ARL rankings. But because the ECU Libraries were late implementers during the major technological shifts during the early 1990s, they now have become leaders among ARL institutions in the adoption of technology. As Phillip, the library's director, points out, "really in the early 90s, as the digital information environment was evolving, we sort of got on the bus and never got off. So once we geared up for the online catalog, then we just moved from one thing right into the next." And because the ECU Libraries never had the expansive print collections that the major private libraries have historically maintained, the library had the luxury to invest heavily in technology. Hiring key personnel in network authentication, Global Information Systems, and electronic collections, as opposed to the need to hire rare books curators for Southeast Asian languages for example, helped to move the library forward at a fast pace, as Phillip recollects:

> Once we found out that our faculty and students were on board, it's been like a honeymoon. Because they want electronic information, and we were geared up to provide it. And also, the regional campus libraries never had strong print collections. We were able to introduce the idea of networked information and delivering digital resources to the regional campuses... I think the fact that we were more of a centralized rather than a decentralized library worked in our favor.

In effect, the history of the library's structure both before and after reorganization enabled transformation to take place much easier than in a research library that has a large number of specialized subject libraries with distinct needs and limitations in sharing resources and knowledge.

In summary, many issues surround the evolution of the ECU Libraries organizational structure. Librarians' descriptions of the successive structures highlight the library's movement toward an organic and systems oriented organization. The team environment contributes both positively and negatively to the dynamics of individual and organizational growth and development. Librarians' reactions to the latest reorganization have been mostly positive and show how the blend of the team environment with hierarchical structure can provide increased adaptability while operating within the traditional bureaucracy of a comprehensive university. Along these same lines, librarians describe how static staffing levels, decreasing budgets, and inflexible purchasing mechanisms in university settings can inhibit the ability to adapt at a faster speed. And the financial implications of scholarly publishing associated with decision-making at the ECU Libraries signal a growing pandemic in higher education. All of these factors contribute to the organizational whole of the ECU Libraries and provide a framework for understanding both the needs for and consequences of organizational transformation.

Theme Six: Leadership as a Shared Experience

The role of leadership has received increasing scrutiny in both business and higher education communities over the past several years. During recent times when higher education budgets in the United States have suffered from

funding decreases at both federal and state levels, institutional administrators have been placed in situations where they must provide new, student oriented programs and services with fewer resources. This has placed the need for increased contributions for the leadership of the university at more organizational levels than were previously expected many years ago. Along these same lines, another theme that emerged from participant interviews in this study dealt with the contributions of the librarians as individuals to the leadership of the ECU Libraries. Several librarians identified the roles individuals play in the leadership of the library, ranging from decision-making to interpersonal dynamics with colleagues. Some librarians also identified their contributions to the leadership of the library in lesser, discrete ways. Still other librarians struggled with the concept of leadership in a team-based environment while suggesting the need for a better understanding of leadership at the individual level. And a few librarians identified that the concept of leadership is very important to the future of ARL libraries while, at the same time noted that professional values and organizational structures of progressive institutions contribute to an impending leadership crisis.

Identification of Leadership Roles at the Individual Level

Leadership is a difficult concept to understand and is frequently misunderstood as the more general terms of management or administration in higher education. Since this focus reserves leadership for administrative levels, it is understandable that identification of leadership roles at the individual level can be problematic. Interestingly, several of the ECU librarians noted that they feel they contribute, and sometimes significantly, to

the leadership of the ECU Libraries. Since the ECU Libraries utilize a blended team-based environment, consensus is the primarily model used in decision-making. As a result, the generation of cross-functional teams combined with autonomy in budgeting by teams enable librarians from seemingly disparate areas of the library to take on the leadership of significant projects in the library. However, Bill, who works in administration, states that it becomes difficult to assess one's own leadership skills, because "people don't really tell you when you aren't doing well, where you are failing, or when you are not living up to peoples' expectations." As another example, when David first started his administrative position, he expected leadership to be an integral component of his daily activities. But he notes that after a few weeks on the job he quickly realized that:

> In fact, it's probably 85% management, and 15% leadership. I would love it to change. I would truly love it to change. And I am not sure it will, because of the state of librarianship in general.

As a result, while leadership is tacitly expected among librarians working in a team environment, the contributions to leadership at the individual level are difficult to assess.

In the absence of formal assessment mechanisms, other librarians self-identify that they are participants in the leadership of the library. Several librarians note that leadership is revealed in the projection of an individual's desire to reflect the same level of commitment and professional attitude he or she would like to see colleagues exhibit. Other librarians identify that maintaining a scholarly level of knowledge in their own areas at the national level contributes to the leadership of the library by serving as an expert in a

particular field. And sill other librarians find that synthesizing their individual experiences with the descriptions of their colleagues' experiences leads to a process of shared leadership. As an example, Lisa, who administers a public services area, states that the people in her area work very well both within their area and with others throughout the ECU Libraries by increasing the understanding of individual experiences. She argues that this is one of the leadership skills she is most proud of, because people are able to make these connections and come together as a group to solve problems and initiate change.

Understanding leadership also involves the influence of the organization in which a person works. For some librarians, their participation in the ECU Libraries' organizational structure has led them through a transitional process of recognizing the concept of leadership in libraries. As an example, Laura, who supervises a public services unite, states that she used to view leadership as associated primarily with the person at the top of the organization. Now she believes leadership deals much more with empowerment and support. Consequently, Laura works to maintain connections with different levels of professional and support staff which she argues makes her a better leader, because she keeps in touch with the issues of concern for all library personnel throughout the organizational structure. As a result, practicing leadership through helping others distribute work and contribute to organizational changes is viewed as one component of leadership at the ECU Libraries.

Contributions to effective recruitment efforts can also contribute to the leadership of the ECU Libraries. As a few librarians note, many times people

who are involved in recruitment efforts try to select people who they know can be "molded" due to their ignorance of the position and the organizational environment. As an example, Richard, who has served as the leader of several teams, describes his own contribution to the leadership of the library in challenging the status quo during recruitment processes.

> It is a painful reality that in almost every situation there is something that is better to say than the truth... I don't want to mentor people, I want to learn from people. I recognize that some of the people who I will learn from need mentoring, but I'm not looking to bring in people for any length of time will be standing in the bright light of my sun.

As a result, Richard feels he helps lead the library by stressing the importance of finding people who are self-starters and who will contribute to the success of the ECU Libraries on their own accord. Richard, therefore, identifies leading by influence as one of his strongest leadership by being honest about perceived expectations of job candidates contrasted by real organizational needs.

Leadership in Small Ways

The identification of self in the role of leadership can prove illusive in higher education. The most common example of this is, when asked about leadership, an individual responds with descriptions of his or her supervisor. In a team-based organization this becomes more problematic, since the absence of traditional library hierarchies conflates the paradox of leadership in an organic environment. Several ECU librarians express this confusion with the concept of leadership. As an example, James, who is a non-supervisory librarian, states that the organization tends to have people that

get along well with each other, and that leadership becomes somewhat of a non-issue in the team environment. He argues that a good leader at the ECU Libraries is someone who is able to "see problems where others don't" and who gets the resources needed for the teams to complete projects. James then goes on to describe his supervisor as someone who is very engaged in the work in his area and finds him approachable, a good listener, and full of praise and then states, "It just makes you want to achieve. It makes you want to work for him." As another example, Elizabeth, who is a non-supervisory librarian, notes that, since so much of the work at the ECU Libraries involves teams, it becomes challenging to try and "lead" in the traditional sense. As a result, comments that she is able to contribute to the leadership of the library by working to support the leadership of her supervisor. In both of these cases, librarians tend to defer toward their supervisors as fulfilling the leadership roles of the ECU Libraries.

At the same time, these librarians also identify their roles in the contribution to the leadership of the library in small ways. As an example, James notes that, although he does not have supervisory responsibilities, his work on cross-functional teams with librarians from other areas of the library in the past helped him to lead in ways that directly contributed to achieving library wide goals. As a result, James states his past leadership roles enabled the ECU Libraries to reach a place where librarians are now able to provide resources via the World Wide Web in ways that were previously very difficult. As another example, Christina, who works as a non-supervisory librarian, notes that she has difficulties disassociating "leadership" from "administration," but she also comments that she is very effective at

initiating change and guiding the change process. Equally, Katherine, who works in a non-supervisory position, states that she contributes to the leadership of the library by trying to help her colleagues see things in terms of possibilities. By focusing on scenarios rather than prescriptions, Katherine believes that people become more comfortable when they are able to view the future from different reference points. Each of these cases alludes to the idea that individuals are contributing to the leadership of the ECU Libraries but do not recognize it in themselves.

Individual Contributions to Leadership through Decision-Making

Decision-making serves as a primary venue for librarians to participate in the leadership of the ECU Libraries. Several librarians identified that decision-making provides them with leadership opportunities that might otherwise be difficult within which to participate. As examples, Lisa feels she brings expertise in certain areas that other librarians rely on for decision-making and goal accomplishment. Laura believes that many of her contributions to leadership are conveyed through engagement and communication with other librarians on large projects in the library. She argues that when others see her engaged in the change process, they transfer leadership roles to her. As a result, when individuals see their colleagues promoting the success of the library, they transfer their own power to those they feel will be most able to make achieve goals.

Critical reflection and mentoring are other components of the leadership of the ECU Libraries in decision-making. A few librarians comment that they contribute to the leadership of the library by helping their colleagues critically reflect on the development of the organization, as well as

professional development at the individual level. As an example, Richard notes that he consciously tries to learn the work styles and personalities of his colleagues and subsequently caters his communication patterns toward their styles in order to help them reflect critically on opportunities to make projects work successfully. Equally, a few librarians feel they serve in a mentoring capacity for their colleagues they feel need help adjusting to all the changes that take place at the ECU Libraries. Quite poignantly, Richard comments on the steps he has had to go to in order to save a colleague during an open decision-making meeting who might be jeopardizing his or her own credibility:

> It might be vulgar to say, but sometimes I feel I have reduced my colleagues to the level where I thought they might pee on the floor if I didn't get them out of that meeting [laughing]. Then I worry, do I need to spend even more time with these people to help them reach this level?

So although mentoring can be critical to the leadership of the library, critical reflection at the individual level must accompany these opportunities for professional guidance.

A challenge to leadership in a team-based organization also arises from the expectations of consensus in decision-making. Librarians note that, when consensus breaks down due to polarizing issues, someone is still expected to make a decision upon which not everyone agrees. As an example, Ted, who manages a branch library, feels his largest contribution to leadership in decision-making is to help his colleagues embrace their strengths and confront their weaknesses:

> You have to be able to engage them. Every once in a while, you have to say, you really have to pay attention to this. Not because I said so, but because this is what is happening. Sometimes it's just asking them to think about something that they want to avoid. And you have to draw it out of them.

Equally, Ted believes leadership cannot be separated from style, and, in his opinion he occasionally plays the "joker." Although this is sometimes perceived by his colleagues with disdain, he argues that someone needs to contribute a leadership style which can lighten the mood of a group enough to be able to stand back from an idea and look at it from outside normal frames of reference.

Still other libraries find that leadership in decision-making places more emphasis on holding people accountable for actually making decisions. Working in a management position, Patricia also finds that in a team-based environment everyone believes consensus must be reached during the decision-making process, or, consequently, the decision must be modified or tabled until people can all agree. However, this might be viewed as one of the misperceptions of the team environment, because at the ECU Libraries, as well as in any organization, someone has to make decisions on tough issues. What Patricia finds particularly frustrating is that people who do not serve in administrative roles sometimes do not believe they are leaders and subsequently feel that they should not have to make difficult decisions.

The Challenge of Leadership at the Individual Level

Leadership continues to be a challenge for librarians when viewed in the context of the individual. Even the ECU Libraries' director finds issues of

leadership particularly problematic in research libraries. As an example, Philip states that, in spite of the team-based environment, it becomes difficult for librarians to comprehend and engage in shared leadership when so much of their knowledge of "leadership" is associated with previous experiences with traditional administration and hierarchy during much of their lives. Equally, Philip believes leadership becomes even more of a challenge in research libraries, because there is so much heterogeneity among library personnel. Some employees have never gone to college, some have bachelor's degrees, some have master's degrees, and some have doctoral degrees which makes tailoring leadership toward the needs of the individuals much more complex.

The challenge of leadership at the individual level in research libraries is also exacerbated by the research studies that have been conducted most recently on library administrators. Hernon, Powell, and Young's (2002, 2001) widely acknowledged leadership studies of ARL libraries have received much attention by librarians at all levels and at different types of institutions. Philip comments on his own frustration with these types of studies, arguing that there is a disconnect between research and practice:

> If you look at the studies that Peter Hernon has been doing about the responsibilities of a contemporary academic research library director [laughing], there are somewhere around 140 attributes that make you a successful leader in research libraries. Nobody can do all of these things.

Conversely, Philip argues that leadership comes down to a basic premise that all librarians should ask themselves: "If no one is behind you, are you

leading?" Despite the limitations in having so many expectations for library leaders, Philip notes that leadership for him personally primarily comes down to setting an organizational vision that is much farther ahead than staff are willing to accept. In his view, humans have a natural tendency to resist change, and hopefully a successful leader will be able to realize a vision somewhere in between these two extremes.

The ECU Libraries are also unique in their culture and organizational structure compared to most other ARL institutions. It is interesting that, in a team environment, the concept of leadership at the individual level is still unexplored to some extent. As an example, David states that many librarians cannot seem to grasp how much this organizational model "requires and expects them to share in the leadership of the library." Some librarians, however, hold on to engrained structures of the past that focus on hierarchy, implying that only a few people at the top should actually make decisions. As contrary as this might seem to the team environment, David notices that:

> Librarians want administrators to tell them what to do, and administrators just can't do that. It would be silly. It's the X theory of management.

Librarians at ECU have been trying to escape from the grasp of the Theory X organizational structure, but it still encompasses so much of human thinking. As a result, David argues that part of the reason hierarchy has been reintroduced into the team-based organizational structure is to provide a frame of reference for librarians when challenged by the concept of individual leadership which seems so foreign to them.

Another challenge in contributing to leadership at the individual level pertains to how mentoring opportunities take place. At the ECU Libraries, mentoring activities on leadership can reflect the different personalities of individuals who make up the organization. And librarians comment that it is difficult to break from the lens of traditional hierarchy when discussing leadership with the peers. As an example, Ann, who has worked in previous administrative positions at research libraries, states that she recognizes the different leadership styles exhibited by the ECU librarians, and adjusting her communication patterns toward those individuals becomes critical in the process of helping others understand leadership, particularly in a team-based structure. She highlights the challenges associated with a new understanding of leadership, stating "I think that what makes us different from other ARL libraries is that we do practice shared leadership, but we have to work really hard to not be a top down organization." As another example, Paul, who manages a branch library, notes that the practice of leadership focuses on helping other individuals become their own leaders, stating "I'm kind of like the sherpa [laughing]--I take people up the mountain, but they have to carry their own load." Therefore, mentoring activities between librarians contribute to the development of librarians as individual leaders.

This process of critically reflecting on leadership at the individual level becomes paramount to the success of the team structure. During the first reorganization, the librarians easily learned to embrace the concept of empowerment. After the second reorganization, librarians are now learning to act on that empowerment by learning to practice shared leadership. However, the process of reflecting on the self during the investigation of the

organization must contain an introspective view of leadership as a phenomenon. As an example, Richard notes the tendency in all research libraries is to direct complaints about the functional aspects of the organization toward people in higher positions in the hierarchical structure as a way to place blame:

> Like many people, I don't think I'm suitably recognized by my ultimate boss for my true value, and I feel his contempt. And then I realize that that's probably irrational. And then I think, "do people who work with me feel like they get recognized for their true value?" And then I realize that I'm probably not as good at that as I might be. So I say to them, "you know you could lighten up on your boss" [laughing].

By critically reflecting on their own experiences, while integrating the experiences of others, librarians are therefore able to grasp the realistic demands of leadership as a shared experience at the ECU Libraries.

The concept of the ego among individual librarians also presents a leadership challenge when the organizational structure is more flattened than at other ARL institutions. Since the team-based organization lends to identity of the group, the individual can sometimes be lost within the organizational framework. David, as an example, states that this creates a phenomenon for "horizontal opportunities," particularly for the new librarians coming to ECU. As a result, their knowledge base will be broadly focused as they move from project to project, yet their ability to gain leadership and supervisory experience will be lessened. While he contends that the idea of specialization

in research libraries will diminish, he wonders if a by-product of the team environment will eventually create a leadership crisis among ARL libraries.

Outside of the ECU Libraries, a potential leadership conflict exists in professional library organizations. In the Association of College & Research Libraries (ACRL) and the American Library Association (ALA), the major professional organizations for academic librarians, the committee structures are often composed of senior librarians. Speaking as a librarian who has worked in academic libraries for many years, Teresa, as an example, finds this phenomenon to be perplexing. On one hand, there are frequent discussions in ACRL committees about an upcoming "exodus" of baby boomer librarians who will retire from the profession in a few years. These discussions frequently turn to an impending crisis in future leadership in libraries, since so many librarians in administrative positions will be retiring. Yet at the same time, Teresa notices that many of the ACRL and ALA committees tend to be led by senior librarians who have held their chair positions for many years. In her view, if those in the profession who are nearing retirement truly are concerned about a possible leadership crisis, then they should be mentoring younger librarians to take over in the positions, and eventually give them up *well before* they retire. Interestingly, this trend is also noticed among younger librarians at ECU who note that even in a team environment a social hierarchy exists that separates senior librarians from junior librarians in the balance of shared leadership. Furthermore, Teresa also questions whether the committee structures in both ALA and ACRL are really more designed for traditional approaches to librarianship while the younger

generations of librarians tend to group together for task completion and then disband when projects are finished in a self-organizing manner.

In summary, the issues surrounding leadership at the individual level at the ECU Libraries are continuing to evolve. Librarians identify leadership roles at various levels, however, most librarians note that they contribute to the leadership of the library in small ways and primarily in decision-making. Other librarians still struggle with leadership at the individual level, identifying others over self as leaders or referring to traditional library hierarchical roles, such as manager or administrator, as subsequent leadership roles. Moreover, library professional organizational structures have not changed in a way that reflects the ECU Libraries' organizational structure. Consequently, librarians' abilities to seek out leadership roles continue to be challenged at the professional level.

Summary of Findings

The findings for this study reveal many aspects concerning research librarians in a changing environment. The first two main research questions for this study are: 1) "What experiences do academic librarians attribute to an environment of rapid change, uncertainty, and turbulence?" and 2) "What specific changes do librarians regard as having the most profound effects on their work life?" Findings presented in the next section respond to these questions and include issues associated with the physical and virtual environment, the speed of change, the search for professional meaning, and coping with change.

The findings suggest that this group of librarians at ECU struggle with the competing tensions between the physical and the virtual environment.

These librarians have seen the ECU Libraries evolve from an entirely print based organization, to a transitional organization that integrates print and digital resources, to an organization that has made an abrupt stop to collecting print materials altogether. At the same time, this shift in framework has not eliminated the challenges of the print environment; rather, it has shifted many issues such as space, staffing, and funding to the digital environment. Equally, the digital environment creates a new set of demands for needed technological skill sets that change periodically while shifting the meaning of the library as a physical presence on campus in new ways. All of these changes bring varying levels of emotional responses by librarians in both positive and negative ways.

The speed of change at the ECU Libraries is also identified in the findings as creating an environment of increased stress and turbulence for librarians. The use of new technologies was identified by these librarians as being one of the largest factors contributing to the speed of change, and librarians commented that these new technologies greatly increase communication and informational mechanisms that encourage the continual adaptation to the changing environment. At the same time, the technological demands of contemporary society create increasingly complex challenges for librarians to keep pace with needed changes in their library. Several limitations were identified by librarians in their abilities to affect change, including human and capital resources, hardware and software resources, strategic planning models in higher education, and slow purchasing practices inherent in the larger university system. Equally, failures in the private sector to develop technological products for libraries at a pace that competes with

World Wide Web enterprise systems moves librarians into the role of product developer while still maintaining their normal work activities. Moreover, the speed of change in general was identified by librarians as being rapid and constant which contributes to the organizational environment of turbulence and uncertainty.

Several different changes taking place at the ECU Libraries contribute to the librarians' identification of a new search for professional meaning. This search includes communicating the professional relevance of librarianship in an online environment when the ECU community seems to identify less with the traditional roles of librarians. At the same time, the question of the dehumanization of the profession emerges in an environment moving further toward technological integration where librarians' interactions with other human beings might disappear. Although librarians do not disagree that this change will take place, they identify that the support of a humanistic professional philosophy will become more complicated in this environment. These findings also show that these librarians are very aware of the changing research environment and competition with the private sector, and they advocate for continued significant organizational and individual transformation at the ECU Libraries and within the library profession in general.

The findings of this study also point toward these librarians' abilities to cope with the experiences of professional change. The ECU Libraries environment encourages organizational and individual transformation which brings increased stress associated with change. Decision-making and new work expectations cause emotional responses that contribute to further

tension in the work environment. Librarians identified that communicating change both internally and externally can help librarians cope by understanding the bigger picture associated with the ECU Libraries. Increasing dialogue with other librarians about the stress associated with organizational change, similar to an informal group therapy session, also serves as a mechanism for coping at the individual level. Learning activities that focus on new skill sets and philosophical thinking, and adapting tasks and workflows to the changing environment all contribute to librarians' identification of coping mechanisms. New recruitment practices equally help librarians cope with change by bringing in people from the outside that contribute new ideas and strategies to the continual evolution of the ECU Libraries. And an introspective assessment by the individual librarian becomes critical for accepting change, thereby decreasing the turbulence associated with a new, somewhat foreign environment.

The findings of this study also identify individual responses and descriptions association with the organizational structure and leadership of the ECU Libraries. The last two research questions for this study are: 3) "How do academic librarians respond to their organizational structure?" and 4) "In what ways do librarians as individuals contribute to the leadership of the library?" Findings presented in the following pages respond to these questions and include issues associated with the challenges of the team-based organizational environment, the organizational structure as a catalyst for individual change, and leadership at the individual level.

This group of librarians at ECU identified several aspects of transformative phenomena that have contributed to the evolution of the

organizational structure. Descriptions of the organizational structure at the individual level suggest that a transformative organizational restructuring took place at the ECU Libraries during the 1990s. This reorganization moved the library from a traditional hierarchical structure to a team-based environment in order to respond more rapidly to the changing technological environment. The findings of this study suggest that the original move to a pure team environment at the ECU Libraries was necessary to break from the traditional hierarchical model that contributed to resistance to change and the continuation of outdated practices. Organizational challenges to the team model developed over time, however. The original move to a team-based structure was very foreign to many librarians who knew no other organizational structure than the traditional hierarchical model. Difficulties in decision-making and the library wide goals planning process were identified by librarians as occasionally problematic, since the focus on team decision-making sometimes contributed to an organizational inability to make difficult decisions or because competition among teams overshadowed the overall needs of the ECU Libraries. The accountability of teams and their participating individuals also became difficult, as there were no formal mechanisms in place to evaluate team and team leader performance in relation to the university's overall evaluation system. Equally, the emergence of several self-organized teams occurred over a period of time, creating a situation the increasing amount of teams could not be supported by library human and financial resources.

Librarians during this study identified that another more subtle reorganization had taken place recently. This restructuring integrated team

supervision hierarchy into the organizational model as a way to addresses the issues that arose out of the first reorganization. The organizational structure of the ECU Libraries has been used as a catalyst for organizational development, and the new incorporation of team hierarchies allows for a further focus on individual development. Interpersonal relationships and group learning activities emphasize the deeper structures of organizational change while encouraging reflections on the self by individual librarians. The findings of this study also suggest that overall reactions to the new organization have been viewed very positively by these librarians, as the blended team-based model continues to allow for an organic model of adaptation while providing mentoring and supervisory responsibilities to address accountability issues. However, human resources issues and the financial implications of scholarly publishing continue to act as limitations to the team-based organizational structure overall effectiveness.

The findings of this study also suggest that leadership as a shared experience is still in its nascent stages at the ECU Libraries. The identification of leadership roles at the individual level varied among librarians, and the ability to increase leadership activities is somewhat limited by the large traditional hierarchy inherent in the university structure. However, several librarians do feel they contribute to the leadership of the library if only in small ways. In particular, librarians identified that their contributions to the leadership of the ECU Libraries primarily takes place in decision-making processes through the open participation model of the team environment. At the same time, some librarians still struggle with the concept of leadership at the individual level. Professional expectations surrounding research on

leadership in ARL libraries have grown to a somewhat unrealistic level. Moreover, traditional hierarchical library organizational and library professional organization structures contribute to this group of ECU librarians' difficulties in moving the framework of leadership away from managerial and administrative levels.

CHAPTER FIVE: INTERPRETATION OF FINDINGS AND RECOMMENDATIONS

Introduction

Librarians in the Association of Research Libraries are faced with dramatic changes in their libraries. The turbulence and rapidity of these changes are manifested in the study of the East Coast University (ECU) Libraries. Librarians at ECU's main and branch libraries have experienced many significant changes, ranging from the shift from the physical to the virtual library and to organizational restructuring activities that focus on continual change in the thinking and practices of the participants. This study reveals significant findings pertaining to the experiences of these librarians, and each participant provides an individual interpretation of organizational phenomena that are integrated into a systemic picture of the ECU Libraries.

An interpretive framework of complex systems was used as the main method for analysis of the phenomena that emerged through case study research. This researcher also included a broad literature base on change theory, organizational theory, leadership theory, and library organizational development theory in the analysis of findings. Complexity theory "emphasizes a nonlinear, even emergent approach to dealing with organizational challenge" and "provides an integration point for many disciplines," sometimes even those that seem to be at odds with each other (Bütz, 1997, pp. 184, 223-224). Using this wide range of theories, therefore, enabled the researcher to analyze and interpret recursively the findings of this study through the lens of complexity theory while grounding the study in the main theoretical literature pertaining to individual and organizational

change. This chapter, therefore, presents the experiences of the ECU librarians under study by generating interpretive results that include: the emergence of a hypercritical state; the limiting nature of negative feedback mechanisms in relation to change; a complex systems framework for professional thinking; coping in a hypercritical organization; the emergence of disorder within the complex system; a bounded chaos view of the organizational structure; and the complexity of leadership in the new research library.

The Emergence of a Hypercritical State

The concept of paradox in group dynamics has been presented by several different researchers during the twentieth and twenty-first centuries (Abraham & Gilgen, 1995; Mitleton-Kelly, 2003; Morgan, 1997; Stacey, 2003). Morgan (1997) has described the concept of paradox in organizational life through various ideas, ranging from power and influence to adoption and resistance. In organizations, paradox often is manifested through competing tensions between organizational cultures, norms, and experiences. It is in this discovery of paradox that one is able to see an organizational place that might exist "between the status quo and alternative future states" (p. 271). At the same time, the results of these changes contribute to further complexity in the organizational lives of the individual participants in this study, increasing the competing tensions surrounding organizational paradox. Consequently, a hypercritical state has become evident at the East Coast University (ECU) Libraries, contributing to the transformative changes in both individual and organizational dynamics.

For many ECU librarians, their experiences with change, uncertainty, and turbulence contribute to competing tension between the emergence of their future state while trying to maintain the traditional roles of research librarianship. The shift from the print to the virtual research library has not taken place as quickly as many librarians had previously expected at the ECU Libraries. Equally, many external constituents—from faculty and students to university administrators and alumni—have identified the shift to the virtual library at ECU as a panacea for decreasing the costs of running libraries in the future. Although in some cases this might be true, often the ECU librarians have struggled with this misinterpretation, not as a result of resistance to change, but rather as a consequence of the growing complexity with which librarians now deal when providing digital services and resources.

It is apparent that the shift away from print resources allows the ECU Libraries to focus less on the expenses and resources associated with maintaining print collections. Human involvement with printed materials is greatly reduced if there is not as much need to have library personnel process, check-out, and re-shelve physical items. Equally, fewer facilities expenses arise if there is less physical square footage that must be maintained. Conversely, in a virtual environment, many of the costs and resources associated with the maintenance of print collections shift to the maintenance of items in digital form. Research information and the technology needed to provide it still cost money in a virtual environment. Moreover, humans are still needed to facilitate the research needs of the faculty and students while matching these needs with the electronic resources that are purchased by the university. However, the library as a physical place

and the physical items within it change in importance on campus which bring emotional and psychological challenges to the librarians at ECU.

This shift from the physical to the virtual library at the ECU Libraries might provide a glimpse of the future that can be extended to other research libraries. For several librarians at ECU, particularly those who have been in the profession for many years, individual interpretations of the phenomena taking place in their library represent a shift in professional thinking that very well might expand to many Association of Research Libraries institutions in the future. The shift from print to virtual environments manifests an individual change that brings with it discomfort, heightened emotional responses, and feelings of confusion about the future. Moreover, these changes represent a time of closure in the provision of print based services that librarians had embraced throughout their careers.

There is, in the above, unique similarity to Bridges' (2003, 2004) stages of transition in that several librarians are now confronted with a professional "ending" to a large aspect of their careers. During the previous reorganization at the ECU Libraries, the maintenance of both the print and virtual environments allowed librarians to avoid confronting this stage. But in very recent years, the impetus to move away from print altogether has thrust several librarians into the "neutral zone," a period described by Bridges (2003) as one filled with confusion and doubt. At the same time, a significant finding in this study suggests that the heightened levels of stress associated with the rapid and turbulent environment of change are related to the current reality that the ECU librarians still maintain both print and virtual environments. The next stage in this transition process is the time for "new

beginnings" that one could speculate might possibly represent the evolution of philosophical and professional thinking among librarians.

When interpreting these phenomena through the lens of complexity theory, it can be noted that Prigogine and Stengers (1984) have identified this period as one existing between a chaotic state and a bifurcation point. Accordingly, when agents operating as a system move through a chaotic state, there is a period right before bifurcation when chaotic activity appears to dissipate in a period doubling cycle where the internal resonance or balance of agents with the system seem to be at their most harmonic state (Ravindra & Mallik, 1994). Metaphorically speaking, one can find similarities to the absence of turbulence found in the eye of a hurricane. In a dissipative structure, the outcome of this bifurcation has the potential to be either negative or positive, and the system will evolve with higher development and structure, bringing the system back toward an equilibrium state.

There are similarities between the observations that take place in physical and life systems and the observations of change within the ECU Libraries. Individuals in this study have moved into a level of professional turbulence and uncertainty that creates a chaotic organizational state. Bak (1996) has described this hypercritical state in physical systems through the concept of self-organized criticality, and this state has also been shown to emerge among individuals in group and organizational settings (Breu & Benwell, 1999; Lichtenstein, 2000; Smith & Comer, 1994). Some researchers in the social and behavioral sciences have argued that it is necessary for individuals to remain in this state without moving toward a bifurcation point (Carver & Scheier, 1998; Pascale, Milleman, & Gioja 2000). Other researchers

have argued it is critical for people to move beyond this phase state in order for organizational transformation to take place (MacIntosh & McLean, 1999, 2001). In the case of the ECU Libraries, both situations seem to have occurred. During the library's first reorganization, transformative structural change led the librarians through individual and organizational bifurcation points where the organizational operations, culture, and thinking have been transformed at a level with which Osberg & Biesta (2007) might describe as strong emergence. During the library's second reorganization, structures were put into place that both influence and limit librarians' abilities to operate in far-from-equilibrium conditions while simultaneously preventing movement into periods of unbounded chaotic activity.

The speed of change was a major contributor to the feelings of uncertainty and turbulence among the study's participants. Several librarians identified technology as a critical component that greatly affects this speed and, subsequently, is associated with heightened emotional responses among the participants. Continual learning and the implementation of expanding forms of communication with the ECU Libraries' constituents also contributed to the speed of change through more rapid rates of information processing at the individual level. Consequently, the information taken in by librarians is then used to generate rapid and consistent change at the organizational level, reflected in the statement of one librarian that, "change happens faster here than at other libraries."

In the case of ECU, these librarians deal with increasing amounts of information on which they must make decisions. These rapid and fluid information flows lead each librarian to process and reprocess information in

interconnected ways that are shared among the members of the group. Likewise, a qualitative characteristic of a dissipative system is its ability to take in and exchange information at faster and more comprehensive rates than systems moving toward equilibrium states. Ashby (1956) first described this phenomenon through requisite variety in cybernetics, where a system's ability to reflect internal variety at levels comparative to the external environment becomes critical for its survival. Stacey (1992a, 2003) has also argued that a dissipative system's absorption of increasing amounts of information leads to further diversity among individual system agents.

In summary, this research shows that a hypercritical state has emerged at the ECU Libraries which contributes to the stress associated with the turbulence and uncertainty of transformative change. Primarily, the shift from the print to the virtual environment has precipitated this hypercritical state in both predicted and unforeseen ways. Emotional responses to shifts in professional thinking away from the physical object and the physical space have contributed to heightened emotional responses, pushing many librarians into what Bridges (2004) describes as an ending stage to their professional careers. At the same time, the emergence of these competing tensions and the rapid speed of change contribute to an organizational environment of self-organized criticality (Bak, 1996). High levels of stress and subsequent energy consumption among the ECU librarians reflect a healthy, complex adaptive system. Equally, the large amounts of information taken in and processed by librarians highlights the qualities of an environment of dissipative structures.

The Limiting Nature of Negative Feedback Mechanisms

In contrast to the stress associated with the rapidity and turbulence of change, certain limitations identified by the ECU librarians act to inhibit their abilities to affect change at a faster pace. These limitations include slowness in university purchasing and strategic planning, vendor production failures, and the lack of capital, physical, and human resources to develop library technology within the ECU Libraries. As several researchers in the social and behavioral sciences have observed, such limitations can be viewed as negative feedback mechanisms (Checkland, 1999; Flood, 1999; Stacey, 1992a; von Bertalanffy, 1973). It was assumed by this researcher that during the course of this study much of the negative feedback would result internally, either at the individual level through resistance to change or at the administrative level. However, as detailed in the following section, librarians identified negative feedback controls primarily as originating outside of the library system. In complex systems, these negative control mechanisms move individuals toward equilibrium and stability (Stacey, 1992a, 2003). More importantly, over time, the damaging effects of negative control mechanisms can move systems toward obsolescence (Pascale, Millemann, & Gioja, 2000). It must be noted that the university structure at ECU supports creativity and growth in intellectual thought and educational change which is evidenced in its support of the ECU Libraries' organizational restructuring activities. However, it is equally important to note that, while this support exists, institutional limitations to the ECU Libraries' continual evolution still occurs in the framework of negative feedback in organizational systems.

One of the strongest negative feedback mechanisms identified by the ECU librarians pertains to the strategic planning process. Strategic planning in most institutions of higher education is typically performed on an annual, two-year, or five- year cycle that is repeated after goals and objectives have been completed. On one hand, this mechanism prevents academic departments and units from shifting goals and objectives too quickly, preventing an environment of unbounded chaos (Morgan, 1997; Stacey, 1992a). On the other hand, when changes do need to be made at a faster rate that responds to the external environment, longer cycles limit an organization's ability to respond and adapt to the changing environment (Cutright, 2001; Weick, 1985). Strategic planning largely evolved from the Management By Objectives (MBO) movement of the 1950s and 1960s and was fully integrated into the academy by the 1980s. It has since been criticized as an ineffective and unproven strategy by major management theorists in both the higher education and business communities (Birnbaum, 2000; Mintzberg, 1994). However, this periodic cycle of strategic planning continues to be used to a high degree by institutions of higher education for, as some might argue, lack of a better model.

From the lens of complexity theory, the strategic planning process at the ECU Libraries is problematic to the complex systems framework. The annual cycle is linear in nature, with the creation of goals and objectives taking place at the beginning of the cycle followed by a report on goal and objective progress or completion at the end of the cycle. Little room is given for deviation from this linear process, as new or changed goals arise as a result of the changing environment. Equally, similar to the single order

learning organization (Argyris, 1992; Schön; 1991; Argyris & Schön, 1978), reflection on practice during a strategic planning cycle while in process often involves the same information or practices that originally created system errors. Although this model can still be viewed as an open system in complex adaptive systems due to absorption of external influences on a periodic cycle of planning and re-planning, the limiting aspects of strategic planning can prevent an organization from reaching its full potential. Some researchers even suggest that traditional forms of strategic planning in higher education should be abandoned and replaced by newer models that continually adapt to the changing environment (Cutright, 2001). Likewise, librarians at ECU might reflect more critically on how timely and effectively the strategic planning process contributes to the organization's adaptation to the environment, while considering or proposing alternative forms of planning, such as scenario probability development, that reflect the nonlinear dynamics inherent in the library system.

The university purchasing process also contributes negative feedback from the environment external of the ECU Libraries. Technology evolves at a rapid rate. However, a typical purchase for any high dollar item involves a lengthy processes including: bid, response review, legal review, contract negotiation, contract signing, and implementation through the course of around six months before the technology is in full production. Equally, if the product is needed at the time but deviates from the strategic planning process, the purchase must be delayed until it can be added into the next cycle.

Failures of library technology vendors have also contributed to the limiting aspects of the ECU Libraries' organizational development. As ECU librarians pointed out, technology used in most integrated library management systems is outdated and does not compete with enterprise technologies in the private sector. This trend of poor performance by library technology vendors has also been documented in the library science literature most recently (Antelman, Lynema, & Pace, 2006; Breeding, 2007a, 2007b; Pace, 2006). Although the open source software movement has gained attention, it has not been embraced by information technology units in higher education. This reluctance can be explained in complexity theory through Arthur's (1994) concept of increasing returns, where adoption of software models become difficult with which to compete the longer products have been on the market and have been mainstreamed by individuals; even when better and less expensive software exists. Consequently, the librarians at ECU are left with few options to provide technology that competes with the private sector without further investment in human and capital resources for product development. And since many comprehensive universities have in the past few years faced significant funding restraints at the federal and state levels, this issue must be discussed at a broader level in the research library community. If librarians at individual institutions are unable to fund product development, it might be beneficial for research libraries to expand on their consortial partnerships to promote collaborative technology product development that can be shared at the regional or national levels.

The limiting nature of both university purchasing cycles and technological development points to the recreation of Prigogine's (1967, 1980)

concept of dissipative structures. In these cases, the organization is limited in the amount of resources it is able to take in from the external environment and subsequently dissipate entropy, or rather random and unused energy, as a way to adapt to the environment. Equally, if the dynamics taking place among the ECU librarians exhibit the characteristics of dissipative structures, then the external negative controls could be said to operate as the boundary parameters that keep the organization of the library from moving toward bifurcation points. However, as a result of the negative feedback mechanisms at the macro levels that have a tendency to move systems toward equilibrium conditions, stress and turbulence at the micro level of the individual librarian is heightened to a state where potential bifurcations emerge from within the organization.

This observation of dissipative structures activity among the ECU librarians leads to Prigogine's (1980) theory of order through fluctuations. Observations of this activity in physical systems show the spontaneous generation of self-organization among individual agents within a system. Bak (1996) furthers this idea through the study of self-organized criticality. When negative feedback mechanisms prevent a system at the macro level from interacting with its external environment, internal perturbations at the micro level can contribute to self-organization among individual agents within the system where critical system states emerge. In organizations, Stacey (2003) has also observed this type of dissipative structures activity in similar terms through the amplification of system diversity. This appears to be a major finding of this study, because the librarians at ECU have been able to institute transformative changes in spite of these external limitations,

showing that the phenomenon of self-organization, and subsequent self-organized criticality, might be taking place and contributing to the change process.

Trends in scholarly publishing also contribute to negative feedback mechanisms for librarians at ECU. The control mechanisms of publishing models emerged frequently during participant interviews, however, scholarly publishing inflation has been copiously cited in the library science literature. On the surface, this issue does not present new knowledge for the findings of this study. But as one librarian commented, "change is sneaky... you must peel back the layers to understand." A major finding for this study therefore suggests that librarians, faculty, and administrators at ECU, as well as these constituents in higher education in general, inadvertently contribute positive feedback to this trend of scholarly publishing inflation particularly in regards to academic journals in print and electronic format. As has been stated previously, scholarly publishing inflation rates--particularly in science, medicine, and technology-- far outpace the Consumer Price Index (Bureau of Labor Statistics, 2007; EBSCO Information Services, 2007; Van Orsdel & Born, 2007). While librarians and university administrators have been active in addressing this for many years now (Crow, 2002; Edwards & Shulenberger, 2003), the trend continues to take place as an aspect of this positive feedback.

At the micro level, faculty members at comprehensive institutions in many disciplines are required to research and publish in the highest tiered and subsequently most expensive journals for consideration for promotion and tenure. Resources for faculty to conduct this research and writing are primarily provided through tuition and fees, state tax revenues, and tax

sponsored federal grants and programs. After faculty publish the results of their findings in journals produced by private publishing companies, the information is then sold back to university libraries at an extremely high cost. In effect, the revenues universities receive from the public subsidize many highly successful sectors of the scholarly publishing industry in the form of new knowledge provided by faculty. And universities again subsidize the publishing industry when purchasing the information written by university faculty to be held in the form of journals in institutional libraries (Edwards & Shulenberger, 2003).

Librarians and administrators have been advocates for bringing attention to this paradox between academic expectations for faculty and increasing inflation rates in scholarly publishing. Albeit, this has been conducted somewhat idiosyncratically among teaching faculty, institutions have participated in economies of scale consortium arrangements for many years now to try to drive down inflation rates on scholarly journals. And some suggest that attempts to maintain both print and electronic formats of journals have contributed to this problem from both the public and private sectors (Johnson & Luther, 2007). At the national level most recently, the U. S. Congress initiated legislation to promote open access to government funded research which primarily appears in science, medical, and technology journals (National Institutes of Health, 2005). However, little progress was achieved with this model at the federal level, and tiered status publications are far too engrained in faculty tenure and promotion traditions in many disciplines to affect change at the local level. In the case of the ECU Libraries, librarians have instituted negative feedback mechanisms, in the form of

canceling subscriptions, where possible. But many of these publications can be considered essential to the academic programs at the university. Although the Open Access model of scholarly publishing and authorship rights have received more attention in Canada and Europe (ABRC/CRLA, 2007; Dewatripont, Ginsburgh, Legros, & Walckiers, 2006; Grivell, 2004), little progress has been made in the United States pertaining to this issue in higher education. What contributes to the importance of this finding is that the research university community, in general, generates positive feedback for the private publishing community by continuing to pay inflation costs associated with scholarly publishing that far outpace the Consumer Price Index. And this positive feedback mechanism is inherent in institutions of higher education across the country.

From a complex systems framework, this phenomenon represents a constant flux of negative and positive feedback between the higher education community and the private publishing sector. Converse to what would seem to be the natural order of market driven economies, university libraries generate positive feedback to the external publishing community by continuing to pay high inflation rates for information that has been produced by faculty and is integral to university teaching and research. The publishing community, consequently, increases prices each year which serves as an external negative feedback mechanism imposed at the institutional level, creating continued financial dilemmas.

In summary, the limiting aspects of negative feedback mechanisms inhibit the ECU Libraries as a complex system from evolving and adapting at a rate that could be achieved in an otherwise open systems environment.

These negative feedback mechanisms come in the form of outdated strategic planning processes that operate at a rate that does not reflect the growth of technology in the external environment. Additionally, slow ECU purchasing processes limit librarians' implementation of technologies that respond to the changing environment of teaching, research, and learning. Library technology vendors also produce negative feedback mechanisms for the ECU librarians in that they do not produce products that compete with private enterprise systems with which students and faculty are familiar in contemporary society. And moreover, the projection of positive feedback by the ECU and research university communities through unrealistic inflation payments to the private sector publishing community conversely redirects negative feedback mechanisms on the ECU system in the form of budgetary constraints.

A Complex Systems Framework for Professional Thinking

The call for a philosophical evolution of academic librarianship serves as another challenge for participants at the individual level. Some librarians are able to transfer the philosophy of librarianship to the newly emerging research library. They argue that the philosophy has not changed; rather, many librarians have lost touch with their professional philosophy by focusing entirely on the physical item. Other librarians see a need for a critical shift in thinking about how research libraries operate in the future, including a shift toward services and technologies that reflect contemporary society.

These observations by the librarians at ECU reflect the work of Argyris (1990, 1992; Argyris & Schön, 1974, 1978), Schön (1971, 1991) and Senge (1994,

2004) on organizational learning. In single order learning environments, librarians would correct errors within the environment by applying rules that already exist within the organization. In the long run, this type of learning environment becomes problematic, because the same system structures that contributed to the errors are integrated into problem solving situations. In second order learning environments, librarians identify the key philosophical issues that contribute to the causes of error by critically reflecting on existing theories in use and by subsequently developing new theories in use that respond to changes in the environment. The ECU librarians' recognition that the need for change in professional philosophy, or a recursive reflection on the original philosophy, highlights their incorporation of a second order learning organization. Although single order learning still exists in the organization, it reflects the paradox that emerges in the move away from constrained, linear learning toward an environment of self-organizing learning described by Aram and Noble (1999). Equally, the observation that second order learning is often taking place among librarians is significant, because it signals that the ECU Libraries are in a continually recursive process of movement toward the organizational learning and complex systems learning environments described by Senge (1994), Doll (1993), and Fleener (2002). This learning environment at ECU reflects the openness of librarians to external influences that continually challenge librarians to think in a complex systems framework. This observation is also significant, because it challenges the academic library community to identify whether single order learning is a dominant learning function of several contemporary research libraries. If that is the case, it implies that some libraries have moved

increasingly toward a closed system framework which could be contributing to the professional perception that academic librarianship might be coming to an end.

Several tacit outcomes of the changing environment at the ECU Libraries have also had profound effects on librarians' profession thinking. Communicating the relevance of the library becomes more difficult when resources are provided in digital formats and are not necessarily branded in ways that associate the library with the resources. The ECU Libraries' recruitment of recent graduates of library science programs who not only possess the technological skill sets to operate in a digital environment but who also understand the complexities these technologies bring when providing virtual services continues to be difficult. Along these same lines, from the interviews with ECU librarians, it can be inferred that recruitment by library science programs which continue to admit students who are "bookish" might spell disaster for the profession. This is particularly problematic when research libraries are reaching an era when many librarians from the baby boomer generation will be retiring. As a result, librarians at ECU identified that the profession will need to become more flexible, more adaptable, promote strategies of continual change, and reflect more critically on the future rather than the past. This finding is important, because the ECU librarians have suggested that faculty and students *will* find other places from which to receive their information. And this is particularly the case if librarians miss opportunities to transfer important aspects of professional thinking toward the digital environment by focusing their energies on the physical items in their library.

Finding analogy with the work of Lewin (1951) in field theory, it can be said the ECU librarians paint the picture of research librarianship in a current state of being "frozen." Extending this perspective to complexity theory, the maintenance of the status quo reflects professional thinking that is designed to promote stability and equilibrium in academic libraries. Although stability might be a desired aspect of individuals operating within organizations, the unfortunate long-term consequence of this approach in organizations is that equilibrium jeopardizes the survival of the system (Pascale, Millemann, & Gioja, 2000; MacIntosh & MacLean, 1999, 2001). If this is the case for research libraries, the future of these organizations might appear much bleaker to those both outside and inside the institutions.

In physical systems, equilibrium and far-from-equilibrium systems can be represented in four main types of attractor patterns. Point attractors move toward stable equilibrium and follow a linear perspective of beginning and ending points. Periodic and periodic point attractors are somewhat more complex in that they operate in a continuum, moving toward and away from a given point while their trajectories remain the same in the case of the former or change in the case of the latter during each iterative loop. The most complex however, and subsequently the most commonly occurring attractors in physical systems, are the strange or chaotic attractors. They are bounded by system parameters, and they appear to move toward and away from a basin of attraction in what appear to be different yet similar trajectories in each iterative loop. Strange attractors exemplify simultaneous order and disorder, and they are, therefore, commonly used as a model to describe a

bounded chaotic system [See Figures 5.1-5.4] (Gilstrap, 2005; Stacey, 2003, 1996; Williams, 1997).

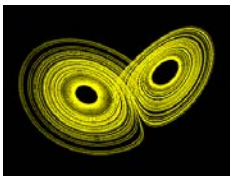


Figure 5.1
Lorenz



Figure 5.2
Lorenz



Figure 5.3
Ikeda

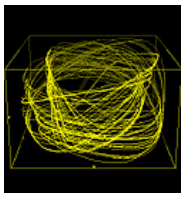


Figure 5.4
Duffing

[Fair use of the *Chaos Hypertextbook* is encouraged http://hypertextbook.com/contact.shtml]

ECU librarians as individuals interacting within the library as a system reflect the strange attractor of the bounded chaotic system. System parameters keep the chaotic system from moving toward unbounded chaos, and the far-from-equilibrium system consumes high levels of information and energy (Gilstrap, 2005; Stacey, 1996; Wheatley, 1994). In the same manner, librarians at ECU consume a great deal of information and energy while continually moving toward a second order learning environment. During this process, high levels of stress and turbulence emerge, as these librarians reflect on practice in ways that expose error creation within the organization and, subsequently, within the profession. The organizational structure of the ECU Libraries along with the internal and external feedback mechanisms that contribute to the dynamics of the organization can be said to "bound" the librarians within their organizational system. As each librarian operates on his or her own trajectory, basins of attraction appear to move librarians toward and away from this phase space in an iterative process, similar perhaps to an Ikeda or Duffing attractor pattern [See Figures 5.3 and 5.4].

In summary, librarians at ECU have created an organizational structure and have reached a level of reflection on professional practice that supports the complex systems framework for thinking about the future. These librarians consciously attempt to move away from the first order learning models inherent in closed systems and continually try to recreate the organization when moving towards an open systems framework of second order learning. Additionally, exposing themselves to the external environment during this process creates an environment for professional thinking that projects their future relevance and needed technological competencies to both the ECU community and library science programs in higher education. And, most importantly, the librarians at ECU exhibit the qualitative characteristics of individuals who follow strange attractor trajectories within bounded chaotic systems.

Coping in the Hypercritical Organization

The movement toward far-from-equilibrium conditions also brings increased levels of individual as well as group stress, and the experiences of the ECU librarians equally reflect this phenomenon. On the surface, observations of heightened individual stress suggest a negative analysis. But even though stress levels are high among the ECU librarians, the activities associated with this stress actually reflect a healthy organization that responds to its environment. As Stacey (1992, 2003) has found, individuals interacting with high levels of energy lead to the amplification of system feedback. The reverberations of this feedback throughout the organization contribute to the creation of a critical state where organizational learning continues to fold in on itself, presenting the possibility for transformative

development to take place with each iteration. Breu and Benwell (1999) have observed this same phenomenon in organizational studies, where individuals actually reach states of "hyperactivity" that challenge each person to seek out learning opportunities to help understand the experiences of stress associated with change. It is at this stage that hyperactivity appears sometimes to be without formal structures or outcomes. If individuals enter this state and seek out opportunities for new learning, however, the organization has the ability for "strong emergence" (Osberg & Biesta, 2007) to take place where radically novel shifts in professional thinking can lead to further organizational transformation.

To reiterate previous discussion, Bak (1996) describes this phenomenon in the natural world as self-organized criticality. Supercritical interaction among individual agents leads to a system's ability to create emergent internal structures. When individual agents within a system reach this state, there is a point where the system can fluctuate between predictable outcomes and chaotic activity. In Bak's (1996) view, this observation highlights the characteristics of a complex system. It can be said that the individual stress associated with rapid change at the ECU Libraries reflects this hypercritical state where the emergence of more highly developed professional thinking is taking place. However, the potential for unbounded chaos implies that this emergence could take either a positive or negative form. While recognizing this phenomenon is a natural occurrence within complex systems (Prigogine, 2000; Prigogine & Stengers, 1984), it is at the juncture between this stress and organizational turbulence that it becomes critical for librarians to learn coping mechanisms that limit the ability of

unbounded chaos to take hold within the system as a response to individual negative bifurcation.

Coping mechanisms for dealing with change are varied at the ECU Libraries. One observation that took place during the course of this study is that those librarians who identified more developed methods for coping with change exhibited lower levels of stress even when significant change was taking place in his or her area. As Wheatley (1994) has noted in organizational dynamics, we often confuse "control with order" (p. 22). Often these lower levels of stress came from those librarians who released the psychological desire to control situations that bring turbulence and uncertainty. Additionally, the concept of communicating change at the organizational level was viewed by a majority of librarians who *receive* this information as an effective method of coping, but it was not reflected in general as contributing to lower levels of stress when viewed in the context of the wide range of responses by each librarian at the individual level. Of interest, however, were those librarians who commented that communicating change was an effective method they used to help *others*--both internal and external to the organization--cope with the stress of the changing library environment, similar to Karpiak's (2000) finding of a "call to community" in mid-career professionals. Moreover, these librarians tended to project a level of stress that was well managed in spite of the turbulence surrounding them. Additionally, these librarians did not identify themselves as "change agents" but were instrumental in helping their colleagues who did project high levels of stress cope with change. This was observed in both their own and their colleagues' responses. Returning to the theory of dissipative structures,

complex systems dissipate increasing levels of entropy, or unused random energy, as the system moves away from equilibrium and toward a chaotic state (Prigogine, 1980, 1964). Furthering this observation, it can be said that these librarians dissipated the stress associated with change by helping colleagues and external constituents cope with their own individual responses associated with change.

Conversely, dialogue on individual frustrations associated with change was also identified as an effective coping mechanism. Librarians in this group tended equally to exhibit lower levels of stress in their descriptions of the ECU Libraries. Although other factors might be involved in the phenomenon that emerged for this group, such as disengagement, in individual transition theory (Bridges, 2004), perspective transformation theory (Mezirow, 1991), and complexity theory (Stacey, 2003) humans enter a state of confusion where discussion of a cathartic event helps that person to cope with and deal with the changes taking place in his or her life. Extending this approach to group therapy in psychology, Burlingame, Fuhriman, and Barnum (1995) expand upon the reciprocal process of dialogue among individuals within organizations:

> It is readily apparent that the psychotherapeutic process is not only characterized but influenced by multiple levels. These levels exist within the intrapersonal sphere, the interpersonal sphere, and the global sphere. Although no one level may be individually preeminent, each could potentially be connected to or influence another, thus contributing to process change and evolution. (Burlingame, Fuhriman, & Barnum, 1995, p. 90).

The appearance of this phenomenon at the ECU Libraries, therefore, suggests that, at the micro level, individuals can cycle through periods of stress and stability while, at the macro level, the library as a system can be exhibiting concurrent or conflicting periods of stress and stability. Equally, by extending these same types of dialogue that take place between two or three people to larger groups could provide a framework for furthering the process of individual and organizational change while contributing to positive coping methods in the work place. Moreover, as a few librarians identified that coping strategies must be developed at the individual level, the work of Bridges (2004), Mezirow (1991), and Stacey (2003) might help to extend the significant work the ECU Libraries have performed on organizational development so far in the history of the institution.

In a similar vein, coping with change through the projection of a positive attitude was another strategy identified to help others deal with the stress of a turbulent environment. In complexity theory, this might be interpreted as a positive feedback mechanism which is integral to self-organizing, open systems. As Bütz (1997) has found, "positive emotional communication... appears similar to positive feedback loops" (p. 157). Amplifications of the positive aspects of the transitions through which the ECU Libraries are moving are integrated back into the organization by the librarians who in turn amplify the system's positive feedback. Using the metaphor of the strange attractor in chaotic systems discussed previously, increased levels of positive feedback cause individuals within the ECU Libraries system to move toward basins of attraction that stimulate growth. As these cycles loop into themselves, the energy created by the positive

feedback causes subtle transitional states to grow stronger with each iteration, leading to high levels of energy production and entropy dissipation.

Several other coping strategies for dealing with the turbulence of change in the organizational environment were proposed by the study's participants, including exercise, disengagement, and isolation. Although not identified by a majority of librarians in this study, exercise was perceived as critical to a few individuals at ECU. Much literature exists on the positive benefits of exercise in relation to work attitude and performance (Austin, Shah, & Muncer, 2005; Puetz, Morse & Walker, 1994; O'Connor, & Dishman, 2006; Taylor-Piliae, Haskell, Waters, & Froelicher, 2006). More research would be needed to investigate this concept further, but these findings suggest that the ECU Libraries consider encouraging employee wellness programs as an additional strategy for coping with change. A strategy of disengagement was also identified by a few of the ECU librarians as successful, since they were receiving so much information and had more new work responsibilities to accomplish. This is an understandable reaction to change at the ECU Libraries, and Carver and Sheier (1998), in their research on the self-regulation of behavior, suggest that disengagement is sometimes a necessary process to help individuals struggle through self-verification; or, rather, "confirming their view of themselves" (p. 211). Conversely, they note that it can contribute to self-destructive patterns of behavior. In the case of the ECU librarians, disengagement as a coping method can lead to anomie among colleagues and implies that this strategy for coping might follow the same phases at research libraries that incorporate either traditional hierarchies or flattened organizational structures. At the same time, other

ECU librarians identified that they had less and less time in the workplace for uninterrupted, concentrated thought. These librarians also noted that they had begun seeking out opportunities for this type of isolated thinking in their home lives, adding further stress to both their professional and personal lives. This paradox between practiced disengagement and needed isolation will most likely continue, therefore, to be challenges as the ECU librarians move further into the future. Moreover, the phenomenon taking place at the ECU Libraries might signal an emerging challenge for librarians at research libraries in general.

Opportunities for learning were also identified by many librarians as an effective method for coping with change, but, at the same time, this learning created more stress among participants. Learning activities ranged from self-directed learning and brown bag lunches to formal workshops on new technological and workflow skill sets. Intrinsically, these learning opportunities are significantly important for most librarians to keep up with the changes happening at the ECU Libraries. Opportunities such as these for professional growth should continue to be encouraged, as most librarians in this study reflected very positively on how learning contributes largely to an individual's ability to adapt to the changing environment. However, learning was not observed to decrease levels of stress among the ECU librarians in general terms. Rather, learning opportunities appeared to increase stress levels among many librarians. In the study of nonlinearity in psychology, proportionality in relationships between psychosocial responses are not always congruent (Goerner, 1995). As is the case for learning opportunities among the ECU librarians, this suggests that there is not necessarily a

correlative relationship where increases in produced knowledge lead to a linear decrease in stress levels. Conversely, the environment of learning contributed to further amplification of chaotic periods among study participants by their hypercritical consumption of information. As Prigogine (2000) has argued, in a networked society, "the imperatives of the connected collective overwhelm the individual's ability to make choices" (p. 36). Primarily, there were so many different learning opportunities in which individuals could or felt they needed to engage at the ECU Libraries that increasing amounts of knowledge began to contribute to these individual librarians' confusion over selecting which learning was most relevant to their work. Furthermore, the abilities of these librarians to retain new knowledge became problematic if the new skill sets were not immediately applicable, increasing the amount of individual stress as a result of investing in learning that did not contribute to the tasks at hand. These findings suggest that, although boundary conditions exist to keep the organization from moving toward unbounded chaos, at the individual level these boundaries appear to be less defined.

It is intriguing that the concept of coping with change is problematic at the ECU Libraries, particularly since the organization projects an environment of continual change. It is assumed that the ECU Libraries are not alone among their ARL peers in trying to respond to this issue, and the library system has integrated an organizational development unit to investigate this phenomenon at the level of the individual. Some coping mechanisms identified during the course of this study appeared to be effective in helping librarians lower stress levels while making sense out of

the changing library environment. However, it became apparent that, although coping with change is necessary at the individual level, systemic mentoring opportunities to learn how to cope with change appear to be idiosyncratic. Therefore, this is an area that might need further attention, and the ECU librarians might consider bringing in outside professionals periodically to help individuals within the organization to learn better skills for managing and coping with change. Employee wellness programs might also be encouraged by the library's administration to provide library personnel with outlets for the release of stress while generating more positive physical and mental health. Moreover, ECU librarians might reconsider how effectively the library wide goal process contributes to the overall health of the organization.

In summary, this research study shows that coping in the hypercritical organization of the ECU Libraries brings with it many different experiences and responses at the individual level of the librarian. It can be said that effective coping mechanisms included the dissipation of stress by those librarians who choose not to attempt to control or harness change; by those who reflect positive feedback mechanisms; and by those who have incorporated exercise routines into their daily schedules. Equally, strategies of disengagement and isolation at the individual level have been shown to be natural, positive, and sometimes troubling for the future of the organizational development of the ECU Libraries. Moreover, in the absence of boundary conditions, coping through learning conversely contributes to increased stress and turbulence, suggesting many individuals operate with unbounded chaotic activity in this area.

The Emergence of Disorder in the Complex System

The evolution of the organizational structure at the ECU Libraries was described by most of the librarians in this study in very similar terms. Some librarians had been through both reorganizations, while others had only experienced the latest reorganization. These librarians' discrete descriptions of the team environment as an organizational structure were consistent. Study participants described functional, cross-functional, area, and leadership teams through similar operational constructs. Descriptions differed, however, in these librarians' relationships to particular teams and in describing how leadership and decision-making take place at the ECU Libraries. In particular, it can be interpreted that disorder in organizational thinking and action emerged out the restructuring activities that took place at the ECU Libraries over the past several years.

Decision-making was identified by the study participants as perhaps the greatest challenge to the team environment. The library's administrators serve in more facilitating roles in the decision-making process, encouraging involvement at all levels, and the ECU Libraries operates with an open flow of information among and between all individuals. However, as some of the librarians pointed out, communication still took place at the individual level as a closed system. Therefore, decision-making would fail occasionally, because some librarians struggled with the concept of pluralism in the views of their colleagues. As Argyris (1971, 1990, 1992; Argyris & Schön, 1978) and Schön (1971, 1991) have discussed, the emphasis on the ego at the individual level limits an organization from recognizing root causes of error in decision-making. Organizational learning among the study participants reflects

second order learning, where critical reflection on practice leads to newly developed theories in use. Equally, the ECU Libraries appear to have adopted the philosophy of a learning organization with a systems framework for understanding the ECU Libraries, similar to that described by Senge (1994, 2004), as the recognition of the interaction of different teams and areas is apparent in the responses of librarians in this study. Although second order learning was observed at the micro level of the individual and is incorporated into the organizational vision, this type of learning does not appear to be cohesive or systemic at the macro level of the organization. Equally, the natural tendency for individuals to revert to first order learning, much like how human nature pulls systems towards equilibrium, might need further development in open discussion forums.

The concept of accountability in decision-making was also observed by this research to resemble a paradox in the group setting. Despite any criticisms of the organizational structure, the librarians in this study consistently argued that they preferred the current blend of the team environment with hierarchy better than both of the previous organizational structures that defined these models discretely. However, the concept of the team environment is one to which some librarians are still struggling to adapt. Several of the librarians contended that the team environment allowed for either engagement or disengagement in decision-making at the individual level which caused some employees to take on more responsibilities than others. Other librarians noted that, due to a lack of hierarchy, it was easier to defer difficult group decisions to the top of the organization's administrative structure.

Conversely, other librarians argued that the organization was moving toward further accountability to address these issues. As one librarian suggested, the reason for this new organizational change came from the idea that in a pure team environment, it was difficult to hold individuals accountable for their work within teams. It was also identified that the number of self-organizing teams had grown exponentially during the pure-team years. And still other librarians identified that a social hierarchy continued to exist that separated senior librarians from junior librarians in the balance of shared leadership. As a response to some of these challenges, the organizational structure has now introduced further hierarchy to respond to the need for accountability and has focused more on the concept of organizational development at the individual level.

The library wide goals process was also identified as a newly problematic aspect of the ECU Libraries' organizational dynamics. This process in current practice has evolved to a form that was not expected by the study participants from its original theoretical framework. Librarians who had been through the previous organizational restructuring noted that the creation and completion of goals at the team level, and the further association of these goals with merit pay, had originally worked very well as a strategy of positive feedback to move the ECU Libraries into the future. Over time, however, several librarians argued that the library wide goals had become overly competitive, primarily due to the merit pay associated with the process, and focused an increased amount of attention toward projects associated with library wide goals. Moreover, this phenomenon created an environment of increased sensitivity toward those individuals working on

team projects while protecting group territories. As one librarian commented, "it's the dark side of a good thing... we have high expectations for ourselves and our library." Equally, because the strategic planning process is based on an annual cycle, as has been noted earlier, library wide goals that shifted in scope during the course of the year were difficult to change, since so many library activities were tied to them.

When viewed through the lens of complexity theory, the phenomena surrounding the library wide goals process present challenges to the systems framework of the ECU Libraries. As universities struggle to find compensatory methods that challenge bureaucratic structures and compete with models in the business community, merit pay has been a commonly used reward system to recognize individuals for their accomplishments. This process proved to be highly successful during the ECU Libraries' first reorganization to a team environment where radically new ideas were needed to help the organizational structure take hold. Over time, this model morphed into what might be described as a Spencerian view of the survival of the fittest (Spencer, 1898). In contrast, Maturna and Varela (1980) argue in biological terms that autopoiesis in self-organizing human systems relies on the interdependence of individuals who co-create the evolution of the system, therefore challenging the Spencerian view. Likewise, in dissipative structures, Prigogine (2000) notes that bifurcations have the potential to create both positive and negative effects. In the case of the ECU Libraries, the library wide goals process tied to merit pay may have reached, through an iterative bifurcation process, a phase state where the model has become less relevant to achieving the overall development of the library as an

organization. The continual recreation of the library's vision should be explored as a creative element that adds to the self-organizing evolution of the ECU Libraries. However, librarians might critically reflect on whether the model originally proposed for radical organizational transformation has outlived its usefulness or perhaps might evolve in ways that reflect the current organizational structure.

In summary, this study shows that the emergence of disorder within the complex system of the ECU Libraries has taken place over the course of successive reorganizations. Although decision-making includes a very open flow of information between all individuals within the organization, it evolved over time to create pockets of closed systems or unbounded chaos in the form of accountability. Additionally, the library wide goals process also evolved from a framework of interdependence that contributed to transformative change to a more competitive and occasionally polarizing aspect of the organization's development.

Bounded Chaos: Blending Self-Organizing Systems with Structural Feedback Mechanisms

The findings of this study suggest that the organizational transformations that have taken place at the ECU Libraries have been accompanied by watershed events. These events have included radical reorganization and financial crisis as precipitators. As Prigogine and Stengers (1984) have found in dissipative structures, a significant catalyst is needed to move an organization away from equilibrium, creating enough turbulence that the system bifurcates towards new levels of development. Otherwise, the equilibrium-oriented aspects of the system will return

individual agents to a stable environment. In participants' descriptions of the first organizational restructuring that took place during the 1990s, the massive impact of a significantly different organizational structure became the catalyst for this type of dissipative bifurcation. Organizational reporting lines and professional expectations in the ECU Libraries changed dramatically from the traditional library organizational structures that had existed in the profession for most of the twentieth century.

The second organizational restructuring that took place in recent years was much more subtle. Several librarians noted that aspects of this new, blended organizational style are starting to take hold. The language used to describe this phenomenon parallels the response mechanisms within a chaotic system where sensitivity to initial conditions can lead to transformational outcomes. In Lorenz' (1963) description of phase sequences in non-conservative systems, it must be noted that bounded chaotic systems moving toward equilibrium have the potential to fluctuate in quasi-periodic behavior that resembles the history of the system, or what Prigogine & Stengers (1984) describe as self-referencing in dissipative structures. Much like observations of fractal patterns, which can exhibit characteristics of complexity at both the micro and macro levels, in the case of the ECU Libraries, this phenomenon can be interpreted as two levels of the university system. In the first observation, librarians had moved toward a cycle of unbounded, far-from-equilibrium activity as a result of the first reorganization which had produced so much change in organizational structures, culture, and thinking. However, increasing cycles of self-organization processes made it more and more difficult to control for the

accomplishment of organizational objectives. The blending of hierarchy and the team model, therefore, allowed for system parameters to bound the system and avoid the possibility of organizational drift as a negative consequence of operating in an environment of unbounded instability.

In the second observation, ECU librarians described limitations in their abilities to move the organization forward in terms of external control mechanisms primarily associated with the university structure. Inference can be made that the ECU Libraries are still bounded by the traditional hierarchical structures of the university system at large even though librarians operate in a self-organizing manner and exhibit many characteristics of individual agents interacting within a complex, nonlinear system. This latest reorganization could be viewed as one aspect of an internal response to the university system and subsequent state agency control parameters. In both cases, this movement away from far-from-equilibrium conditions might have been necessary to respond to influences within the library and the university system.

In either case, however, librarians at ECU should monitor this latest organizational shift. On one hand, the blending of hierarchical with team models could provide an organizational framework for librarians to operate in periodic states of bounded chaos while limiting system parameters from moving the organization toward unbounded, far-from-equilibrium conditions. On the other hand, human systems have a natural tendency to move toward increasing stability or the previous system state even when it conflicts with the survival of the system (Ashby, 1956; Cummings, 1980; Pascale, Millemann, & Gioja, 2000; Simon, 1985; Stacey, 1992a).

Consequently, the control mechanisms or responses to the environment might allow the organization to drift towards equilibrium conditions. Furthermore, several librarians identified that the control mechanisms of autocracy are ingrained in the profession of academic librarianship and that librarians at ECU have to work extremely hard to move away from this framework. In dissipative structures, a return toward equilibrium is often a result of transformative events that occur due to far-from-equilibrium conditions (Prigogine, 1980; Prigogine & Stengers, 1984). Similarly, as Lewin (1956) suggested in field theory, the "refreezing" stage may be taking place currently in the ECU Libraries. However, what distinguishes complexity theory from field theory is that the critical nature of self-organization moves individuals toward what Guastello, Dooley, and Goldstein (1995) describe as a constant framework of change given the existence of far-from-equilibrium conditions. This newly emerging environment might be necessary for the ECU librarians to "catch their breath." Continual evaluation of the organization from the frame of reference of moving away from equilibrium and toward the positive impacts of self-organization might be beneficial, however, to prevent the ECU Libraries from reestablishing the old practices from which librarians in this study originally tried to escape.

This latest blend of the team environment with hierarchical structures also leads to a further observation for library organizational development in the future. At one end of the spectrum, traditional library hierarchies can contribute to how individuals move their organization toward equilibrium. At the other end of the spectrum, self-organizing systems move organizations toward far-from-equilibrium conditions. With this type of transformative

organizational shift, significant turbulence and stress arise from individuals interacting in this type of environment. As Philip pointed out, the purely self-managed team environment might be an ideal to which all research libraries should strive but is very difficult to achieve in practice. At the same time, this environment might be considered utopian, particularly when viewed within the framework of traditional university bureaucracies.

Consequently, the results of this study might imply that transformative organizational shifts are necessary to move research libraries away from the structures that limit their ability to respond and adapt to change at a pace that keeps pace with the external environment. However, new team-based structures with limited hierarchy might eventually lead libraries toward unbounded instability. Additionally, a library might need to integrate hierarchical structures into the team environment to prevent the negative effects of chaotic activity. And at the same time, these hierarchical structures could drift cyclically in and out of an organizational structure over a period of time until the next transformative development contributes to the adaptation of the environment. The results of this study also imply that traditional hierarchical library organizational structures conflict with the emerging dynamics of research libraries that continually respond and adapt to the changing external environment. A model is presented in Figure 5.5 that suggests a new approach to organizational development in libraries that reflects this iterative process.

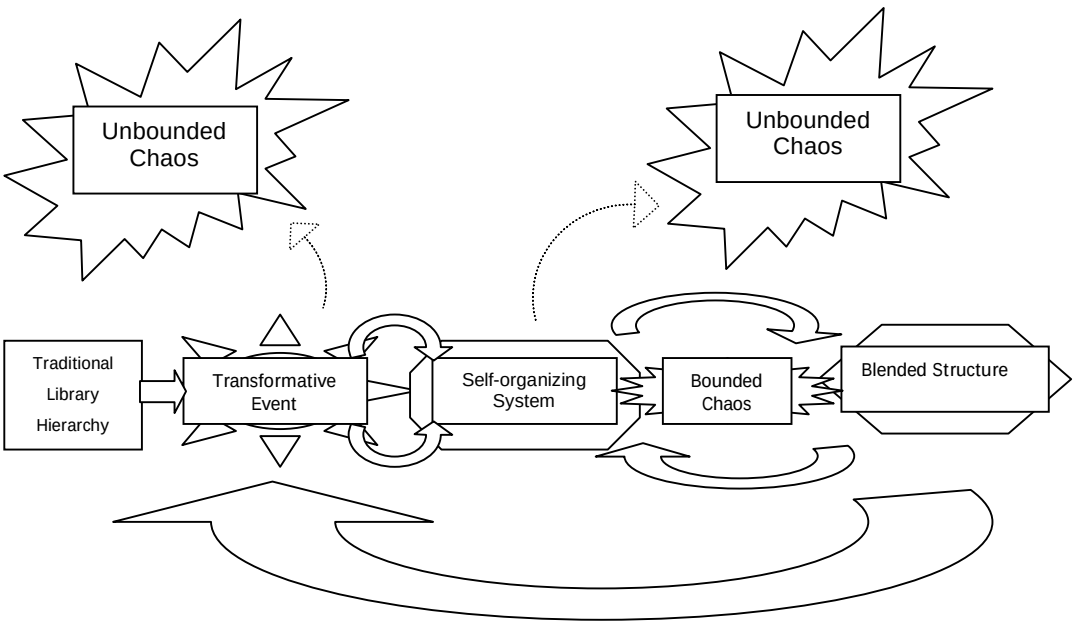


Figure 5.5
Model of Organizational Structure Development with Transformative Periodicity

Describing this model in further detail begins with the traditional library organizational structure. Hierarchical supervisory lines follow discrete functions arranged by department. It is suggested from the literature and findings of this research that the traditional library organizational structure limits librarians operating within a system from moving away from equilibrium-oriented conditions. As Prigogine and Stengers (1984) have discussed, a system that operates with a stable structure has a tendency to reject the introduction of foreign ideas and will inhibit the ability of these new ideas to survive. This implies that an approach to library organizational development that implements small incremental changes over a period of time might prove unsuccessful, as librarians will hold onto existing structures and limit the ability of new system structures to take hold. Furthermore, the equilibrium-oriented system moves toward a closed system framework

which limits the ability of the library from interacting with its external environment and thereby jeopardizing its survival (Ashby, 1956; Maturana & Varela, 1980; Pascale, Millemann, & Gioja, 2000; Prigogine, 1967, 1980; Stacey, 1992a).

The next stage in the process model represents transformative events that impact all individuals operating within the library system and that can be needed periodically to move librarians away from this closed organizational framework. In the case of the ECU Libraries for example, the event can happen due to unintended external influences (Breu & Benwell, 1999; Lichtenstein, 2000; Smith & Comer, 1994), such as the movement of university constituents away from the printed object, or due to intentional external influences (MacIntosh & MacLean, 1999, 2001), such as university budget crises. The transformative event can also occur due to unintended internal influences, such as the self-organized criticality (Bak, 1996) that arrives from librarians reflecting on practice at a second order learning level (Argyris, 1990; Argyris & Schön, 1974, 1978; Schön, 1991; Senge, 1994, 2004). Or the transformative event can take place due to intended internal influences, such as with the case of conditioned emergence in dissipative structures (MacIntosh & MacLean, 1999, 2001), where restructuring activities move the equilibrium-oriented system away from discrete functions and subsequent hierarchical reporting toward a system that exhibits far-from-equilibrium conditions.

The next stage in the process reflects a complex system's ability to introduce self-organization among individuals at the micro level interacting as a collective whole at the macro level of the organization. Prigogine (1980)

has described this phenomenon through the concept of Order through Fluctuations, where the far-from-equilibrium state that results from the transformative event leads to internal fluctuations that create "new non-equilibrium transitions not predicted by the phenomenological laws of evolution" (p. 147). This places the system in a continual flux between order and disorder, or as Carver and Sheier (1998) in human behavior describe as critically damped self-regulation among individuals within a system. If boundary conditions for the library as a system do not exist or are unclearly defined, the system has the potential to move toward unbounded chaos where positive and negative outcomes are unpredictable or uncontrollable (Pascale, Millemann, & Gioja, 2000). The blended organizational structure, however, can be generated in order to create further boundary conditions if the library system is moving increasingly toward unbounded chaos. This blended structure incorporates structural hierarchy within a team-based organizational structure that limits the possibility for the creation of an exponential amount of self-organization during the chaotic cycle, such as with the example of the emergence of many self-organized teams in the case of the ECU Libraries after the first reorganization. In the case of bounded chaotic activity, the self-organizing team-based structure continues to operate within the boundary conditions of periodic chaotic cycles that continually fluctuate between the system moving toward and away from the control mechanisms of the hierarchical structures.

In the last phase of the model, over time it is assume that the boundary conditions of the blended organizational structure have the potential to move the system back toward equilibrium-oriented conditions. As MacIntosh and

MacLean (1999) have noted, humans operating within a system differ from other living systems in that they have the capacity of "consciously creating the conditions in which successful transformation can occur" (p. 305). During this period, librarians operating within the system can either choose or respond to another transformative event, resulting from intended or unintended external and internal influences. Equally, librarians have the choice to move the system back toward the original traditional library organizational structure, reinforcing how Prigogine (1980) and Lorenz (1963) have observed that self-referencing or phase sequencing toward the history of the system can move the system agents toward their original state.

In summary, this research study shows how the ECU Libraries as an organization have evolved into a complex system of bounded chaos. The organizational structure blends the self-organizing qualities of a dissipative structure with boundary conditions that include further supervisory hierarchy. This evolution leads to two observations of the ECU Libraries as a complex system. The first observation suggests that boundary conditions were put into place to keep the organization from moving into unbounded chaos. The second observation suggests that these boundary conditions have the potential to create an environment where individuals move toward increasing stability and equilibrium thereby limiting further organizational development. Most significantly, the ECU Libraries' organizational evolution shows that librarians have experienced both conditioned emergence (MacIntosh & MacLean, 1999, 2001) and bounded chaos models of organizational transformation (Pascale, Millemann, & Gioja, 2000; Stacey,

1992a) whether by intent or as a result of the natural qualities inherent in complex systems.

The Complexity of Leadership in the New Research Library

Leadership was viewed differently among the librarians at ECU, and some librarians are still struggling with the concept of shared leadership. This is indicated in the responses where librarians tended to identify supervisors over self as leaders in the ECU Libraries or where librarians noted that the team model has led people to believe leaders do not exist in this type of environment. Equally, the challenge of leadership was identified by some study participants to be important for the future of research libraries, because "horizontal opportunities" in both library and professional organization settings limit opportunities to mentor new library leaders in the future. Moreover, study participants' general understanding of leadership, its difference from management, and its contribution to the development of the organization were observed by this researcher to still be in nascent stages at ECU. Librarians at the ECU Libraries noted that a return to foundational leadership knowledge needs to be explored in order to understand more fully the concept of shared leader as a frame of reference for future organizational development.

Attribute theory in leadership proved to be a problematic finding during the course of this research. At the highest levels of the library's administration, librarians identified that research on attribute theories of leadership in library science (Hernon, Powell, & Young, 1991, 1992) had reached unrealistic levels of expectation. Moreover, the concept of matching the leadership attributes of individuals based on issues of concern for people

and production, as suggested by Blake, Mouton, and Williams (1981; Blake & Mouton, 1978, 1981, 1985), emerged idiosyncratically or as consensus balance between the two factors in the instrumental cases of the study participants. Analysis of this observation might suggest that, when leadership activities did contribute to attribute theory at the ECU Libraries, it reflected the constituency-centered plot 5.5 on the Managerial Grid III (Blake & Mouton, 1985, p. 12). This finding is not strongly supported, as the consensus approach to leadership typically reflects maintenance of the status quo in organizations (Blake & Mouton, 1985). Alternate interpretations of this finding might also suggest that the "status quo" at the ECU Libraries is one of constant change or that leadership takes place among many individuals within the organization, thereby reflecting the consensus attribute of the group rather than a few administrators. This interpretation does support Blake and Mouton's (1981) normative decision model in that convergence toward group norms has taken place. Yukl (2002) discounts the use of attribute theory without including many other factors in the leadership process. Since attribute theory tended to be identified idiosyncratically and less commonly among the study's participants, it is difficult to assess to what extent this theory contributed to leadership during this research study.

Transformational and charismatic leadership, however, were observed to be taking place during the course of this research. Albeit, the intentional use of simultaneous transactional and transformational leadership factors (Bass, 1998) was not strongly supported in this study. In particular, issues generally associated with transactional leadership, such as contingent reward and management by exception, primarily emerged as a result of group

decision-making rather than as individual leadership methods. This finding also supports Bass's (1998) own findings that transactional characteristics correlate far less than transformational leadership with follower evaluations of leaders when many organizational variables are involved. In the case of the ECU Libraries, however, transformational and charismatic leadership were identified by study participants as leadership attributes of mid-level managers and senior level administrators in the library. These librarians commented on the high levels of praise and motivation their bosses would inspire in them as followers with one librarian stating, "it just makes you want to achieve--it makes you want to work for him." These types of comments relate to Burns' (1979, 2003) and Bass' (1998) work on leadership theory, where transformational and charismatic leaders seek out ways not only to support followers but to inspire them to find purpose beyond individual needs in an effort to move the organization toward change. Equally, these findings suggests that an integrative theory of charismatic leadership, such as that proposed by Shamir, House, and Arthur (1993), might be in process at the ECU Libraries.

Considering that the concept of leadership is still not understood or misunderstood by librarians at ECU, the recommend incorporation of Hersey and Blanchard's (1993) model of situational leadership might be beneficial. It is interesting that, when the studies of leadership in ARL libraries were performed by Hernon, Powell, and Young (2001, 2002), library administrators chose to take out factors within the survey framework which correlated to situational leadership. ARL library administrators may have believed that neither identifying individuals with particular leadership attributes nor

encompassing all of the attributes suggested by Hernon, Powell, and Young (2001, 2002) was a realistic expectation for library leaders. However, of the librarians who commented on their contributions to the leadership of the library, some librarians did identify that they adapt their own leadership styles to the readiness and willingness levels of particular individuals with whom they work. Furthermore, the incorporation of a blended organizational structure might imply that librarians arriving new to the ECU Libraries, and who are unfamiliar with the team environment, have lower situational leadership readiness levels which therefore requires more directive leadership within the organization (Hersey & Blanchard, 1993). These findings suggest that situational leadership is being practiced in the ECU Libraries despite formal training or understanding of the theory.

One of the challenges of leadership in a team-based structure at the ECU Libraries pertains to librarians who have not worked in this type of environment before. Although it is assumed that the open organizational communication structure helps new librarians learn this structure on the job, it is still apparent that many of the newer librarians understand leadership through the influence of traditional hierarchical library organizational structures. Consequently, new librarians defer more to senior administrators in decision-making and leadership roles. Moving away from attribute theory, the Situational Leadership model (Hersey & Blanchard, 1993) suggests a developmental approach to analyze follower readiness levels and subsequently adjusts leadership actions toward that particular situation. Moreover, the Situational Leadership II model (Carew, Parisi-Carew, & Blanchard, 1986) places more emphasis on the development of group

dynamics and is particularly well suited for team environments that have matured over the course of several years. However, Situational Leadership II also moves focus away from the individual and toward the group which might prove problematic for the ECU Libraries, since a new emphasis has been placed on understanding change at the individual level. Consequently, rather than using the Situational Leadership or Situational Leadership II models as prescriptive techniques, librarians at ECU might benefit from incorporating these models as a theoretical framework to promote further understanding of shared leadership in a team environment while observing how leadership emerges. Identifying leadership readiness in the team environment, particularly for those librarians unaccustomed to the team environment, could be instrumental for librarians and administrators in promoting organizational development opportunities among the ECU librarians.

It can also be argued that the ECU librarians exhibit qualities of complexity leadership, whether intentionally recognized or by serendipitous discovery. The organization has for many years moved toward a systems framework for understanding similar to the learning organization described by Senge (1994, 2004). Equally, the ECU librarians seek out ways to foster communication at all levels on issues that do not have clear goals and objectives, or as Checkland (1999) describes as Soft Systems methodology. It would seem, therefore, that a natural evolution from this systems frame of reference would include aspects of complexity leadership theory.

Most significant for the findings of this study would be the difference in approaches to leadership of the two reorganizations in the case of the ECU

Libraries. During the first restructuring, library administrators introduced significant structural changes to move the ECU Libraries past a bifurcation point and toward transformative change. MacIntosh and MacLean (1999, 2001) have suggested that the application of dissipative structures theory, through conditioned emergence, is necessary to move an organization away from the equilibrium-oriented tendencies inherent in human systems. Otherwise, the system will continue to hold on to past practices which inhibit higher level development. Additionally, during the second organizational restructuring, library administrators introduced new hierarchies into the team-based model as boundary feedback mechanisms. Pascale, Millemann, and Gioja (2000) and Stacey (1992a) have argued that the influence of chaos theory is critical for an organization's survival by introducing chaotic processes and control mechanisms to move an organization toward a perpetual non-periodic cycle at the edge of chaos. Researchers in the social and behavioral sciences are sometimes at odds with each other as to whether which leadership framework best serves organizations moving towards transformation. A significant finding for this research study suggests that the ECU Libraries serve as a model where both leadership theories have been incorporated successfully.

In summary, this research shows that leadership as a shared experience among the ECU librarians appears to be in its nascent stages. Recent research on leadership in library science appears to be irrelevant to the case of the ECU Libraries as a result of unrealistic expectations or poorly constructed frameworks for studying the emergence of leadership at the micro level of the organization. Although normative models of leadership

were not observed to be in use among librarians, transformative and charismatic leadership theories emerged as strongly supported theories in use that contribute to the evolution of the ECU Libraries during the course of this study. Moreover, the differing levels of understanding about leadership, and the perception by librarians at ECU of widespread Taylorism (Taylor, 1911) viewed to be pervasive in the broader profession of academic librarianship suggest a problematic condition for the ECU librarians in general. Complex systems leadership was also observed to have occurred during two successive reorganizations, showing how the natural qualities of complex systems emerged either as intended or unrealized phenomena during this study. Most importantly, this study shows that the characteristics of situational leadership emerge in this type of organizational structure, and a further investigation of this model could help bridge the divide between traditional library professional views of leadership and the natural complex systems leadership that takes place at the ECU Libraries. Moreover, situational leadership in this study suggests a framework where the difficulties inherent between the theoretical understanding and the applied practice of leadership can be reconciled; particularly in the case of the non-traditional organizational structure of the ECU Libraries.

Summary Comments

In summary, interpreting the experiences of individuals interacting and responding to change within the ECU Libraries highlights the complex systems nature of the organization. The seventeen librarians who participated in the main part of this research study bring experiences that might be shared by academic librarians in general and that are also unique to

their own individual environmental responses to the ECU Libraries over the past few years. The findings of this study suggest that librarians at ECU have critically reflected upon the experiences of turbulent change and have developed new or altered perceptions of research libraries and professional librarianship in the future. It should be reinforced that this journey has not been easy for even the most willing of participants in the change process. However, the deep reflection on errors or misperceptions on previous theories in use has moved the ECU librarians' thinking away from *being* in a library that focuses on the eminency of the physical object. Librarians are now in the process of *becoming*, as they accept or embrace the necessity of responding and adapting to the external environment through a continual flux of order and disorder.

CHAPTER SIX: IMPLICATIONS AND CONCLUSION

Introduction

Librarians working in research libraries have lived experiences that are both similar and different from their colleagues in the academic community. Many studies of change have focused on libraries as *things* while ignoring the experiences of librarians as human beings within the changing environment of higher education. This study investigated how librarians experience and cope with change within their research library, and it also explored how librarians respond to their organization and contribute to its leadership. This study was, therefore, guided by the general research questions which are addressed in the findings and interpretations sections and included: 1) the experiences of librarians in an environment of rapid change, uncertainty, and turbulence; 2) the changes librarians identify has having the most profound effects on their work lives; 3) how librarians respond to their organizational structure; and 4) the ways in which librarians as individuals contribute to the leadership of the library.

Qualitative case study method was used as the primary method for investigation of a research library belonging to the Association of Research Libraries (ARL). The East Coast University (ECU) Libraries were selected as a participating institution in this research, and a preliminary survey was sent to all librarians at ECU. Using a purposive sampling method, seventeen librarians were chosen for on site interviews at the different libraries making up the ECU Libraries system. Integrating a combination of semi-structured and clustering interviewing methods (Karpiak, 1990; Rico, 2000), data were

collected and analyzed using both instrumental case study method of the individual participants and intrinsic case study to focus on the organization in which the librarians work (Stake, 1995). An interpretive framework of complexity theory was also used to analyze and present the findings of the data collected during these respective case study methods. Additionally, organizational, leadership, and library organizational development theories were used during data analysis and presentation.

Implications for the ECU Libraries

Implications for Individual Librarians

The findings of this research present significant new knowledge concerning the librarians and the organization that make up the ECU Libraries. Responding to the first two research questions of this study, these librarians are making significant shifts from a print to a digital environment, but a paradox emerges that challenges traditional ways of thinking about libraries. Implications for the librarians under study include: the challenge of emerging resources needs, associating digital resources and services with the ECU Libraries, a radical shift in professional thinking, and learning how to cope with change at the organizational level.

The implications for this shift from the physical library as place to a virtual environment that integrates many new mediums of information to support research, teaching, and learning suggests the emergence of a more complex set of resource challenges. Librarians at ECU must be able to provide the hardware, network infrastructure, and human knowledge to make this transformation successful. Current librarians need continual learning of new skill sets, and hiring new librarians with the high-level skill

sets needed for even entry level positions will be difficult. Equally, the implications of shifting to a digital environment might create further issues of professional relevance for the ECU librarians. Associating resources and services in a digital environment--particularly those that are highly expensive--with the work of the ECU librarians is problematic when library users find it much more difficult to distinguish between the free and subscription-only aspects of the World Wide Web. Moreover, the ECU librarians will be challenged to market the resources and services they provide to the academic community in non-traditional ways that focus much more on *becoming* part of the external environment, using methods that may have yet to be explored.

The incorporation of new technologies and the organizational changes taking place at the ECU Libraries cause heightened emotional responses and apparent increases in stress levels that may not exist in other academic and administrative units in the university system. Most importantly, the findings of this study suggest that much of the individual stress at the ECU Libraries is not due to resistance to change but, rather, can be associated with attempts to maintain concurrently a print *and* a digital library. This dual environment creates additional work and added stress for librarians who already deal with an exponential amount of growth in scholarly research and services.

A significant implication for this study, therefore, suggests that a radical shift in professional thinking is required for the ECU librarians. For the study's participants, this change represents what Bridges (2004) describes as an "ending" in the history of the ECU Libraries. Choosing which aspects of their professional stance can be transferred to a digital environment--while

recognizing that certain aspects of the philosophy should be modified or abandoned altogether--can contribute to the ECU librarians' reflection on practice and library organizational development that focuses on continual change and adaptation to the external environment. However, promoting the relevance of librarians in the ECU community will continue to be problematic if campus constituents do not congruently reflect on practice in ways that question whether similar professional shifts in thinking are needed in other units at ECU.

The efforts on the part of the ECU librarians to cope with the turbulence and rapidity of the changing library environment is another significant finding for this study. Stress levels among librarians varied, but, in general, a heightened intensity of stress was observed through this research. Inference can be made that the transformative changes that take place at the ECU Libraries contribute heavily to this stress. Subsequent coping mechanisms were intended to help librarians to respond to the experiences attributed to change in active and positive ways. These coping strategies among the ECU librarians ranged from adapting workflows and dialogue with others to learning new skill sets and the projection of positive feedback into the organizational environment.

The implications for the study's participants suggest that coping mechanisms are still somewhat misunderstood. Continued high levels of stress at the individual level could have negative effects on the organization over the long term, and ways to deal with this stress at the individual level could contribute to resources and energy being devoted to non-essential functions in the library. In particular, coping strategies are promoted in

idiosyncratic ways or are primarily driven at the individual level at the ECU Libraries. Although this is both expected and necessary, the ECU librarians will continue to be challenged to find methods that promote coping with change in positive, mentoring, and supporting ways at the macro-organizational level.

Organizational Implications

The evolution of the organizational structure at the ECU Libraries and librarians' responses to it is another major finding for this research study. Reflecting on the second two research questions of this study, librarians have responded and participated in the evolution of the ECU Libraries' organizational structure while learning how to contribute to the leadership of the organization. Implications for the ECU Libraries suggest that transformative organizational change was needed to move librarians away from stable conditions; that librarians respond positively to the blended organizational structure and that this structures provides methods for accountability and assessment; and that a foundational leadership framework is needed for further organizational development that might include situational leadership theory.

This study has shown that the current organizational structure to which the ECU Libraries have evolved has relied on a developmental process of two successive restructuring activities. The first reorganization at the ECU Libraries included a radical reorganization to a team-based structure and serves as a model for transformative change in a research library. The second organizational restructuring synthesized hierarchy within a team-based organization and presents a model that highlights an organization open to its

external environment while still containing control parameters. For the ECU Libraries, the first restructuring served as a transformative event where novel organizational and individual thinking contributed to an environment of continual change. The latest blended organizational structure is highly valued by the study's participants, and, the thinking in general among the librarians is that this model is the best organizational structure within which most of them have ever worked. Moreover, the findings of this study suggest that both organizational restructuring activities have promoted an environment where second order learning emerges often, and this organizational structure contributes significantly to critical reflection by librarians on traditional and contemporary professional thinking.

Implications for the ECU Libraries suggest that librarians respond to the current organizational structure in positive ways. Although the first reorganization was viewed as the most turbulent, individual references to the history of this restructuring suggest that it was needed to facilitate a perspective of continual organizational change. Further implications for this study suggest that the blending of hierarchy within the team model provides a frame of reference with which librarians can identify within the larger context of university organizational structures. Moreover, implications for the use of hierarchy within a team framework infer that methods of accountability and assessment of the organizational structure are difficult to sustain within a pure team environment. Conversely, the implications for this current model suggests that, over time, the ECU Libraries could move closer toward stability and equilibrium, potentially jeopardizing the progress

that has been made so far in affecting transformative change within the organization.

The findings of this study also show that leadership at the individual level is a continuing challenge for librarians within the ECU Libraries' organizational structure. Librarians at ECU who do not serve in administrative capacities still struggle to define or describe their individual contributions to the leadership of the ECU Libraries. However, the findings also show that librarians are beginning to engage in deeper discussions on how leadership can emerge as a phenomenon independent of administrative levels.

Implications for leadership within the ECU libraries suggest that librarians are in their earliest stages of development in this area. Equally, the learning organization framework of the ECU Libraries contributes to environment where leadership can be explored in greater depth. Implications for the librarians at ECU suggest that the integration of leadership theory into existing library organizational development activities might benefit the ECU Libraries. Moreover, implications for the use of situational leadership theory, in combination with other leadership and organizational development theories, might provide a foundation upon which the ECU librarians can expand their frames of reference in how leadership can emerge at the individual level.

Implications for Professional Practice

The findings of this study further suggest several possible implications for practice in research libraries in the future. This research relied primarily on intrinsic case study of an Association of Research Libraries (ARL)

institution, and, therefore, the results are not intended to be generalized to all research libraries and librarians. The phenomena that emerged in this study suggest that the ECU Libraries are well positioned for continual adaptation to the changing academic environment. Librarians and administrators at other research libraries, therefore, may find the experiences contained in the study of the ECU Libraries and librarians useful for decision-making and organizational development in their own respective contexts. As has been discussed previously, there are differences in opinions about whether organizations should move toward turbulent points in order for transformative development to take place or whether organizations should remain in a perpetual state of high-energy activity through control parameters. The ECU Libraries serve as an example of an organization that has utilized restructuring activities which successfully reflect both approaches to organizational development. Equally, the ECU Libraries provide an observation of the unintended emergence of situational leadership as a response to readiness levels of librarians who are new to the organization.

Implications for the use of these models may serve to advance the organizational development activities of other research libraries in manners where similarities might exist in their own contexts. Furthermore, librarians at other academic institutions might reflect on the experiences of stress, turbulence, and uncertainty, as well as mechanisms used for coping with this environment, that were presented by the study's participants. In particular, the concurrent maintenance of both print and digital libraries, and the need to

explore this paradox through deeper organizational learning, might contribute to similar experiences among librarians at different institutions.

Issues of change involving professional thinking and leadership that emerged during this study suggest possible implications for research librarians in general. The organizational dynamics that take place at the ECU Libraries encourage and reflect second order learning among librarians. The results of this study challenge librarians to question how prevalent first order learning structures exist and limit complex and systemic learning from taking place at their own libraries. Equally, implications for library professional organizations and library science curricula suggest that transformative shifts might need to take place in professional thinking about how libraries operate in the future. Moreover, the interpretation of findings used in this study suggests that many theories in use among library professional organizations and library science curricula may not designed to respond rapidly to changing external environments. Additionally, this study suggests that the traditional library organizational structures that currently may be in use might limit newer librarians' abilities to engage in philosophical professional changes or opportunities to engage in leadership at all levels of not only libraries but also professional organizations in the future. Moreover, implications for the findings of this study suggest that situational, transformational, and charismatic leadership emerged as a natural phenomenon of a changing library organizational environment at ECU which therefore might be useful for other research libraries.

Implications for Institutions of Higher Education

The findings of this study suggest several implications for institutions of higher education. The organizational models used by librarians at ECU might contribute to further thinking about how organizational transformation or educational reform can take place in different academic and administrative units at colleges and universities in the future. Knowledge gained from the case of the ECU Libraries can be used to continue the promotion of university environments that reflect on the need for change and that encourage second order learning and complex systems thinking about organizational development. Equally, this case generates an emergent and complex framework for understanding the university from the micro-individual level to the macro-university system level.

Librarians at ECU alluded to how their own experiences and responses to change and turbulence in the evolution of their own research library might serve as a precursor for university wide changes in the future. For many of the same reasons that the ECU librarians respond and adapt to changes in the external environment, implications for faculty and staff at universities in general might suggest that investigating the findings of this study could be useful in helping others understand these same sorts of pressures to change in the future or that are already present in their own contexts. Growth and further development at the institutional level might continue to be limited by financial and human resource issues, as well as by new demands by external constituents for the use of technology in teaching and learning that reflect its use in contemporary society. Failures in private sector technological development for libraries might also suggest impending challenges for

universities as the use and development of technology becomes more complex. Moreover, the usefulness of questioning the purpose of the ECU Libraries as physical places in the future might help universities reflect on their physical and virtual presence in a global research, teaching, and learning society that adapts to student needs and requires emerging mediums of communication and scholarly exchange. As librarians noted that it would be nice not to be buried underground in the future, implications of this study might be useful for university faculty and staff to question further how these types of changes can affect the development of university campuses in positive and negative ways.

Suggestions for Further Research

The findings of this study reveal many issues that impact research libraries and contribute to the need for further research. Foremost, research might be conducted that explores the phenomena taking place among librarians at ECU and whether these types of turbulent and rapid changes are taking place in the broader research library community. Equally, the organizational structure of the ECU Libraries appears to be successful in helping librarians to strive toward the vision of a library system that continually adapts and responds to the changing external environment. The organization has evolved through a primary transformational restructuring process, using a team-based model, to a secondary blended team model that incorporates hierarchical feedback mechanisms for system accountability and growth. Research might be conducted to explore the efficacy of this blended model in other library settings; particularly restructuring activities that follow the same process of radical transformation to move the library away from

stability and equilibrium with subsequent reorganizations which implement feedback mechanisms that contribute to a state of flux between ordered and chaotic states.

Considering that the findings of this study show that the participants experience increased stress in their lives, coping mechanisms become critical for dealing with changes in the profession. There is little scholarly research that has been conducted on this phenomenon in the library science literature, and it is suggested that future studies might help identify if and what coping mechanisms and strategies are used successfully at other academic libraries. Coping is primarily influenced at the individual level, but, given that librarians may see many of the same external issues influencing their own responses to their changing environment, a more integrated professional strategy for coping with change might be beneficial for librarians in general.

The concept of leadership in academic libraries, as opposed to management or administration, is still relatively unexplored in library science research. Moreover, the study of shared leadership appears to be limited to the small number of academic libraries that utilize a team-based organizational structure; or "leadership" is believed not to exist in these environments altogether. Further research on how leadership emerges in non-hierarchical ways would be beneficial to not only the library profession, but also to the academic community at large in understanding how organizations might further integrate successful leadership strategies in the future. Equally, research should be conducted on the professional organizations to which academic librarians belong to identify whether an impending leadership crisis might realistically happen and whether librarians

new to the profession have opportunities for mentoring and growth in leadership processes that are non-administrative in nature. Additionally, further research on how situational, transformational, and charismatic leadership can emerge unintentionally in organizations could benefit the development of future leadership development in research libraries.

Conclusion

Higher education continues to evolve to integrate an ever-changing teaching, learning, and research environment. Globalization and emerging technologies bring both challenges and opportunities to academic institutions. While some librarians might question whether the use of new technologies by younger generations has actually contributed to the learning process, others suggest that students continue to excel in areas such as reading and creativity by using new mediums of communication for the exchange of ideas (Cart, 2007; Russo, 2007). At the same time, the use of technology by new students and faculty has contributed to a much more complex framework for understanding how teaching, learning, and research might emerge within the next few decades. Perhaps this is most critically evidenced by the recent contributions of the Digital Ethnography Working Group on mediated cultures (Wesch, 2007). As has been shown through the course of this research, a university library might serve as a test case for some of these shifts at the local institutional level.

The librarians in this study have provided a brief snapshot in time of the possible discourse within which the profession might engage in the near future. Transformative development at the ECU Libraries has entailed a journey for both the individual and the group. The shift from the print to the

digital environment, the speed of change, increases in information, and new and emerging technologies all contribute to the far-from-equilibrium conditions associated with the ECU Libraries. Changes at the macro level of the organization have impacted these librarians in many, primarily positive, ways. And each librarian's reflections on his or her own experiences and reactions to change in their library reflects scenarios that have the potential to impact how other research libraries think about the future.

Likewise, organizational transformation in academic libraries as a result of the changing information environment brings with it many diverse and complex issues. As Prigogine (2000) noted, the increasing complexity of a technologically-oriented, global society leads individuals to a great deal of uncertainty and uneasiness about the future, but it also brings feelings of "qualified hope" (Prigogine & Stengers, 1984, p. 313). The experiences of the librarians at ECU equally show how the turbulence and rapidity of change brings with it stress, tension, and uncertainty. At the same time, these experiences have enabled librarians at ECU to reflect critically on a deeper purpose for librarianship, allowing the ECU Libraries to move to a more favorable spot in the organization's development than in the past. Whereas these librarians previously focused on the physical library and the physical items contained within it, they now extend their view to adapt to the changing external environment. In an age when some might suggest that libraries as *things* have become anachronistic, this study reveals that librarians are in the process of *becoming* the focus of their own discourse on the future.

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APPENDIX A: PRELIMINARY SURVEY

1. What is your job title?
2. What unit or area of the library do you work in?
3. How many people do you supervise directly?
4. Please list higher education degrees you have received.
5. How many years have you worked as a librarian?
6. What is your age?
7. What is your sex?

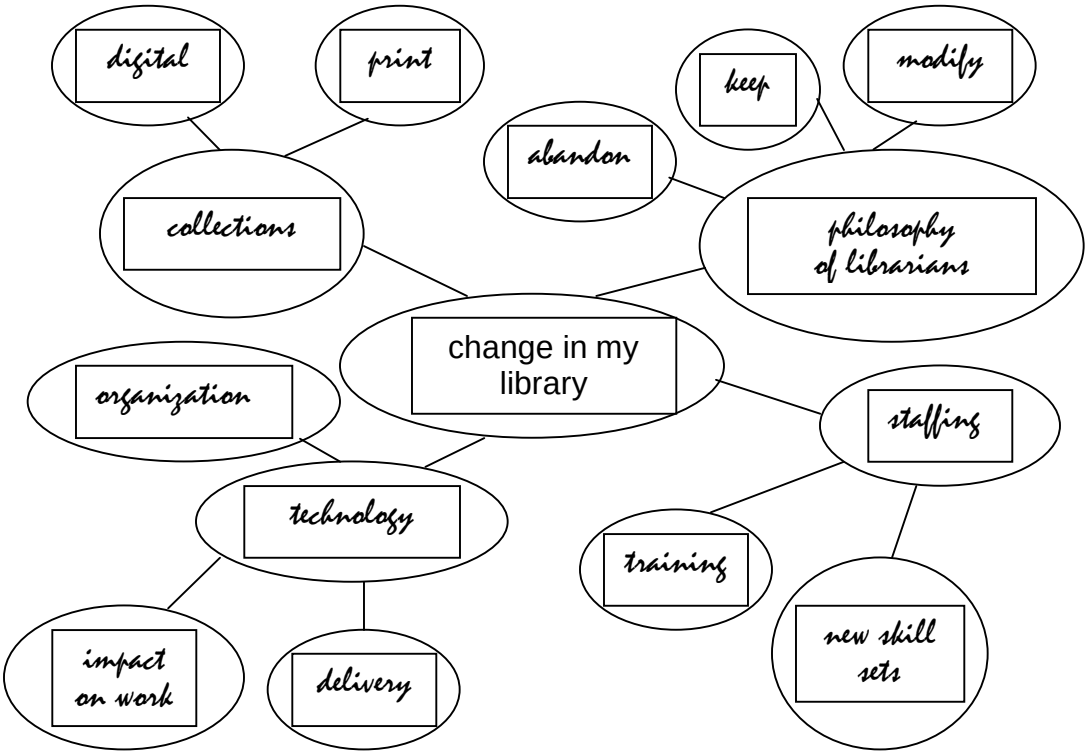
   _____ Female _____ Male
8. Briefly, what do you feel are the most significant changes that have taken place in your library in recent years?
9. What are the reasons you feel these changes have taken place?.
10. In what ways do you think these changes have affected your job and/or the library?
11. Do you feel you contribute to the organizational changes within your library, and, if so, how?
12. Would you be willing to discuss your experiences during an on-site interview? (Please expand if you like)
13. Please complete the following contact information if you are willing to participate in this study?

    Name: _____

    Email address: _____

    Work phone: _____

APPENDIX B: EXAMPLE OF CLUSTERING TECHNIQUE



APPENDIX C: INTERVIEW QUESTIONS GUIDE

1. Can you tell me about your job? What are your duties and responsibilities?
    a. Describe a typical day
2. What are some of the things you like most about your job?
3. What are some of the things you like least about your job?
4. How would you describe the work environment in this library?
5. What do you think are the biggest challenges the library has faced over the past few years?
6. Can you describe some specific changes that have taken place in your library during the past few years that stand out to you as having major importance?
    a. In what ways do you feel these changes affect your work life?
7. What are some of the strategies you use to cope with the change in your library?
8. What are your impressions of how other librarians have coped with these changes?
9. What do you think are some of the biggest challenges this library faces in the future?
10. What do you think are some of the biggest challenges the profession faces in the future?
11. How do you envision your role with respect to these changes?
12. Could you describe the organizational structure of the library? How does it work? How are decisions made?

13. How do you feel this organization does or does not help you respond to change?
14. Based on your own experiences, what suggestions would you give other librarians when confronted with the sorts of change that your library has undergone?
15. How would you define leadership?
    a. Based on this definition, do you feel you contribute to the leadership of this library?
    b. If so, in what ways?
    c. If not, then how come?
16. Do you have any other comments you would like to make?

APPENDIX D: CONCEPT MAP OF INTRINSIC THEMES EMERGING FROM INSTRUMENTAL CASE CLUSTERING

