

EXPLORING THE IMPLICATE ORDER IN PUBLIC ORGANIZATIONS:
THE COMPLEMENTARITY OF BOWEN THEORY AND CHAOS THEORY

by

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(ABSTRACT)

Chaos theory, a philosophical viewpoint from physics, is being adopted by some public organization theorists as a new standpoint for understanding and managing organizations besieged by instability and turbulence. A basic tenet of chaos theory, known as mutual causality, denies that an entity behaves or evolves in isolation. Rather, acting, behaving and evolving can only occur through mutual interaction with other entities (Briggs and Peat 1989). Concomitantly, any managerial theory of action consistent with chaos theory must be grounded in the concept of mutual, not linear, causality.

I contend that in the nascent transdisciplinary journey by which chaos theory is moving into public administration as a metaphorical explanation of public organizations, the theory is in danger of being corrupted and bastardized. This is suggested by the fact that a number of managerial applications being inspired by chaos theory promote conventional, linear approaches to action aimed at command and control. Others present only an organizational-level application--rather than the holistic approach that chaos thinking entails. Such linear, bounded applications are inconsistent with the principle of mutual causality. I argue that as a corrective to this emerging trend, public organization theorists need to adopt a more complementary frame to chaos theory, viz., family

systems theory, in order that the co-determined nature of human dynamics can be adequately brought to the level of practice.

I present two case studies. The cases illustrate the difference between managing with a theory of action grounded in the principle of mutual causality and managing based on a theory of action undergirded by linear thinking.

The complementarity of chaos theory and family systems theory offers managers of public organizations a more holistic understanding of processes in their organizations. Hence, public administrators who adopt this new, conjoint theoretical viewpoint can develop a different way of behaving in and effectively managing their organizations.

Dedication

To my husband, Bill, and to my daughters, Jennifer and Ashley

I have felt similarly unique personal pride three other times in my life: when I married Bill and when I gave birth to Jennifer, then to Ashley. The glow I feel this day, although somewhat different than the other pivotal life events, is possible because my family constantly supported and encouraged my endeavor. All three of them made unique sacrifices so that I could achieve this goal--this dream.

I love each of you more than I can express. And now it is my turn to clear the path for you.

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As I drafted the conclusion chapter of this dissertation, a final and full realization of how all of my professors at the Center for Public Administration and Policy had helped me to develop a level of critical thinking skills I previously could not fathom. I am indebted to all of them.

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for management, rather than merely to continue developing its utility for diagnosing organizational dysfunction.

DP and CW and each one of their respective staff members are at the center of this dissertation, representing its heart. I am truly grateful to each staff member for being willing to participate in the study. I appreciate the time they volunteered as well as their candid responses. We are all fortunate to have these professionals serving the public interest.

CW's and DP's singular willingness to serve as models and their forthrightness attest to their considerable abilities as managers. They have my utmost respect, admiration and gratitude. May calm prevail in each of their organizations.

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INTRODUCTION

In this post-modern age, with its rapidly developing technologies and an overabundance of instant information, citizens in the United States are continually bombarded with news that describes our societal condition. From a multiplicity of sources, we learn instantly of catastrophes. Daily we hear about the nation's soaring debt. Horrendous social problems including violence, addictions, abuse, poverty, homelessness, and racism--to mention a few--are described, amplified and reverberated by the media (Friedman 1995). Reports on international situations, acts of terrorism at home and abroad, the global economy, deadly virus outbreaks around the world, close monitoring of the promised permanence of the end of the cold war and global environmental warnings of danger are broadcasted continually.

These pessimistic and often alarming reports are accompanied by our government's seeking to respond to problematic situations. But more often than not, the responses marshalled consist only of reactive, negative, inflammatory rhetoric from both political parties. Although the blame ricochets around our governance system, little gets done. Public organizations, situated between elected officials and citizens, often appear to be in the crossfire.

Many of our public organizations are charged with ameliorating intractable, certainly complex problems. The multifarious actors who have an interest in any public organization's mission typically disagree about appropriate structure and policies needed to address the mission (Wamsley & Zald 1973; Wamsley et al. 1990). New policies and programs supplant or modify existing ones as political power changes, as public opinion

sways, and as budget allocations contract or expand. Efficiency, as a paramount value, produces results in downsizing, reduced allocations of program funding, and experiments in organization restructuring. Minimally, these factors contribute to current disturbances and instabilities within a public organization's human system (Kiel 1989).

Recently, some scholars have appropriated principles of chaos theory from the physical sciences as a way of comprehending the phenomenon of disquietude in public organizations. In chaos theory terms, nonlinear interactions within the system are amplified when the system is suddenly impacted by either internal or external fluctuations. These disturbances and instabilities drive a complex system (or dissipative structure) to a critical point of instability known as a bifurcation point (Nicolis & Prigogine 1977). Random behavior and chaotic conditions occur. The seemingly stable system is then considered far-from-equilibrium (Jantsch 1980).

According to this theory, the system at its bifurcation point can transform to a new structure that can deal with increased complexity.¹ Alternatively, it can remain in a chaotic state until enough energy is imported to achieve a new configuration. Or thirdly, the system will decline unless new energy is imported and positive entropy is dissipated. In all this, however, note that this type of macro-level explanation does not give us insight or enhance our understanding of how organizational members who constitute the human dimension of the "system" are behaving.

¹ In the exploratory phase of chaos theory's applicability to human systems, a consensus has not been reached regarding this conjecture. Alternatively, most scholars interpret transformation to mean evolving to a higher level of complexity.

The terms "chaos" and "nonequilibrium" are intuitively appealing to public administrators as descriptions of the present state of public organizations. The terms are attractive because they help to neutralize an underlying emotional response: anxiety. Ironically, it is most likely the anxiety--"anticipating something might happen that one will not be able to manage" (Kerr 1996, 14)--that has been the catalyst for the search for a more descriptive theory. New theory perspectives do often "reflect changes in society" (Diesing 1982, 409).

Nonlinear theories, subsumed under the label chaos theory, metaphorically offer a rich, multi-dimensional new view of social life generally and organizations specifically. The concept of nonequilibrium is just one of many interrelated principles and theories.

Incorporating chaos theory's power requires a gestalt shift--one theorist is calling a paradigm shift--in our thinking (Daneke 1988-89; Dobuzinskis 1992). Briggs and Peat's (1989) description of complex systems captures this paradigmatically different, holistic orientation toward organizations:

Complex systems--both chaotic and orderly ones--are ultimately unanalyzable, irreducible into parts, because the parts are constantly being folded back into each other by iterations and feedback...Every complex system is a changing part of a greater whole, a nesting of larger wholes leading eventually to the most complex dynamical system of all, the system that ultimately encompasses whatever we mean by order and chaos--the universe itself (147-148).

This description of complex systems illuminates the notion of the "implicate order." To Bohm (1980), the term implicate order denotes that the order of the whole is implicit in the motion of each part. As such, when one particle is disturbed, the whole system

responds with movement and affects again the disturbed particle. Through an infinite nonlinear feedback process, motion in a particle enfolds the movement of the whole.

The enfolding suggests that behavior is not independently determined but rather co-determined. In their interpretation of Jantsch's notion of co-evolution, Briggs and Peat (1989) depict the interactive influences that exist between and among micro and macro scale systems and evolve in a "seamless cycle of mutual causality" (164). This basic tenet of quantum physics denies that an entity acts, behaves or evolves in isolation. Rather, acting, behaving and evolving can only occur through interaction with other entities. Following Margulis' work on autopoietic paradox, Briggs and Peat see the individual as an illusion and ponder whether the "discovery that individuality is at its roots a cooperative venture [could] be taking us toward a new kind of holism" (165).

Closely related to the implicate order is Mandelbrot's principle of self-similarity, which signifies "symmetry across scale ... [and] implies recursion pattern inside pattern" (Gleick 1988, 103). Nature abounds with a myriad of displays of self-similarity, which indicate the "infinite self-embedding of complexity" (Gleick 1988, 100). It is the "repetition of structure on finer and finer scales" found in snowflakes, fern leaves, and the branching of trees (100). Analogously, the principle can be visualized in the "infinitely deep reflection of a person standing between two mirrors" or in nested dolls (Gleick 1988, 101; 103).

Complementing this notion, Lorenz' "butterfly effect" describes the effect of a small fluctuation in initial conditions that can multiply and produce greatly magnified

effects (Gleick 1988, 22-23). Said differently, "small differences in the initial conditions [may] produce very great ones in the final phenomena" (Gleick, 1988. 321, note 17). The power of the concept belies our ability to predict outcomes and simultaneously demonstrates the need to study as many layers as possible in the implicate order of our complex universe.

These concepts speak to the evolutionary process inherent in open systems. In addition to the notion of slow, incremental growth and change, nonlinear interactions depict how a small fluctuation may also trigger an unexpected and disproportionate reconfiguration of systems throughout the implicate order. In contrast to the tenet that causality is linear (i.e. "A" directly and proportionately impacts and changes "B"), the mutual interaction of two entities produces change characteristic of evolution. Nicolis and Prigogine's (1977) dissipative-structure theory describes the evolutionary process of open systems. In their view, dissipative structures have permeable boundaries that facilitate energy transfer from the environment to the internal system as well as from the internal system to the external environment. Energy transferred from the environment regulates the system's co-evolution. As Harvey and Reed (1996) explain

any long-lived dissipative system must fulfill two prerequisites if it is to persist: (1) it must be able to convert free environmental energy into ever more elaborate forms of internal structuration; and (2) it must transport thermal disorder into the environment (303).

The process requires that the system increase its capability to utilize negentropy (the negative of entropy) to achieve increased internal complexity. Simultaneously, it

must discharge the positive entropy that, if allowed to accumulate within the system, degrades it. This flow and exchange sets up a dynamic tension, which if sustained, creates the condition under which the system can evolve.

Dissipative systems constantly seek the environment's energy and have the capability to achieve a far-from-equilibrium state needed to increase their complexity. The system is poised and receptive so that when sufficient environmental energy is available, the system can reconfigure.

This evolutionary process begins with the appearance of bifurcational behavior, that is, a fluctuating behavior that sends the system into an oscillating movement between two or more new points of possible equilibrium. This cyclic oscillation indicates the dissipative system in question has destabilized and entered a chaotic phase. At this point one of two things can happen: the system can remain chaotic, oscillate ever more rapidly, and eventually destroy itself, or the fluctuation will dampen as the system settles into a new configuration (Harvey and Reed 1996, 304).

Internal fluctuations, such as an individual's (top-level administrators, managers or subordinates) or work group's unexpected (positive or negative) change in behavior or actions can trigger the evolutionary process as well. The development of new ideas, systems, policies or processes (e.g. management information systems, improved designs in equipment essential to accomplishing the organization's mission) can also trigger internal fluctuations.

However today, internally-generated fluctuations appear to be overshadowed by concern about environmental perturbations currently bombarding public organizations. External perturbations signal the advent of an external condition that can trigger the

evolutionary process. A fundamental issue is whether or not public organizational systems are internally poised to reconfigure--i.e. to respond effectively.

Traditional management approaches designed to keep public organizations in a homeostatic state of equilibrium are viewed as increasingly inadequate to negotiate necessary changes (De Greene 1996). However, incorporating the paradigmatically different views of chaos theory into a theoretical framework to assist managers in understanding processes in public organizations more holistically is a challenge. Therein lies the problem.

Statement of the Problem

Chaos theory's transdisciplinary journey into public organization theory is traversing an interesting yet somewhat familiar path. Reminiscent of the history of open systems theory, organizational culture theory, and other approaches taken in the field, chaos theory is now witnessing an explosion in popularity among organization theorists.

In seeking to set out chaos theory's implications, scholars are exploring selected aspects of its meaning and explanatory power. Specifically, as with theories assimilated in previous episodes of theoretic change, scholars are primarily applying chaos theory to the macro-level. Others are committing the error of portraying a reified conceptualization of organizations, in which they "treat an abstract concept as if it referred to a thing" (Weick 1979, 34). Weick (1979) has admonished us to avoid

treating organization as a separate force or agent. What we want to do

instead is look at behaviors that are eventful, process-like, and that possess some kind of distinctive quality that make it reasonable to call them organizational (34).

Scholars who reify the organization when using chaos theory to explain organizational phenomenon tend to depict individual behavior as caused by system variables. And thereby, as a result, human dynamics are generally relegated to a set of variables to manipulate so as to increase productivity. This conceptualization violates the very essence of chaos theory's holistic orientation.

The tendency to revert to linear cause-and-effect thinking has been remarked upon by various scholars. In tracing the roots of positivism and interpretivism, Hughes (1990) argues that positivism became an orthodoxy as a result of social scientists' quest to legitimate their research by emulating the natural science model. Durkheim's empiricism, constructed by viewing social facts as "things," invoked "the principle of causation, an axiom essential to his epistemology" (28). In essence, Durkheim reified social phenomena, and in defining categories of social fact, attempted to reduce causality to a single factor, "despite the fact that, in actuality, causal relationships were entangled in complex ways" (28). His legacy in social science research is telling.

Historically, rational processes developed to predict and control outcomes were useful in maintaining the system's functioning and equilibrium. Linear-based rational processes are subsumed under what De Greene (1996) labels the "Newtonian Paradigm"

that emphasizes and usually tolerates only the following: rationalism, reductionism, parts isolated from wholes; detached objectivity of observation from the observed system; simple causality; logical, steplike

but iterative analysis;...denial of variety and ambiguity; denial of subjectivity; and convergence on *the* correct answer or solution (286).

De Greene asserts that we must adopt a new holistic paradigm--one grounded in "nonrationality, nonlinearity, mutual causality, nonequilibrium"--in order to condition our human systems internally to reconfigure (236). His argument suggests that traditional management approaches may actually entrap positive entropy in organizational systems that contribute to systems remaining chaotic or self-destructing.

Daneke (1988-89) similarly argues that "attempts to escape the pull of positivism" have been thwarted by lack of a coherent new paradigm, one in which there is a consensus regarding methods of proof (277-278). The dominance and resiliency of the reigning functionalist paradigm inclines theorists to reconcile "new epistemology with the old methodology" (282). Furthermore, "disciplinary isolation" thwarts sharing new developments in the methodological and theoretical realms (286).

Forrester (1987) agrees with Daneke, but adds a two-pronged level of analysis and explanation. Once developed, computer-simulated nonlinear models were recognized as destroying the "simplicity, elegance and universality by which research papers are judged" (104). Relatedly, from a more practical and political point of view, "junior faculty members in universities enter the nonlinear world at the risk of their promotions" (104).

But more fundamentally, nonlinearity undermines the dominant notion of causality itself and hence shakes the core of the reigning ontological and epistemological

perspective. This thought evokes anxiety (Hughes 1990, 156). Is it inherent in our human nature that we need to believe that we can predict what lies ahead and thereby be able to control our fate?

Should this pattern of reductionism continue, chaos theory could become simply another technique for prediction and control. To embrace chaos theory for application to public organizations--even at the metaphorical level--the implicate order, which includes human dynamics, must be explored in terms that fit it. Chaos theory applications to public organizations have, to date, primarily explored macro-level phenomena. But when we refer to organizational systems internally conditioning themselves in order to import energy needed for transformation, we must necessarily address the human phenomena that constitutes the organization. Exploring those dynamics is the only approach consistent with chaos theory's holistic orientation. The danger in complacency with macro-level applications is that chaos theory is likely to be corrupted.

Purpose of the Study

Chaos theory's grounding in nonlinear thinking provides an unequalled opportunity to enhance the theory base of public organization change and its management. However, given the proclivity toward positivistic approaches, the tendency for scholars to fail to capture the notion of the implicate order in their chaos theory applications to public organizations may continue. This tendency, if unabated, will deprive the field of public

administration of, possibly, a theory frame that could be of fundamental importance to it.

In this dissertation, I seek to blend equivalent principles from seemingly divergent theories so as to augment our theory base's relevance for managers in public organizations. As a corrective to the emerging trend of distorting chaos theory at the level of application, I argue that public organization theorists should cease seeking to develop new "chaos theoretic" approaches to organizational management. Instead they should adopt the complementary frame that already exists in family systems theory²--a frame for which the practicalities of application are well developed. Chaos theory, now prominent among nonlinear organization theories, should, in turn, be regarded as the "legitimizing umbrella" for family systems theory, one that lends it the scientific respectability that it needs if it is to replace the currently dominant ideas of behavior as linearly caused with the notion of mutual causality.

The fit between chaos theory and family systems theory lies in the implicate order

² Family systems theory encompasses various therapeutic methods or approaches united in the view of family as an emotional system. The unity distinguishes the body of theory from psychoanalytic theory, which espouses intrapsychic causality.

Of the dominant models, structural and strategic approaches focus primarily on intervention techniques. In contrast, Murray Bowen developed an "encompassing systems-based theory of emotional dysfunction" (Guerin 1976, 21) now known as Bowen theory. Since Bowen developed the extensive theory construct, the terms "Bowen theory" and "family systems theory" are often used interchangeably. Despite the casual interchange, I strive to maintain the distinction by using the term "Bowen theory" when accentuating its thrust and theoretical construct. I use the term "family systems theory" when referring to the universal concepts that distinguish all family systems approaches from psychoanalytic theoretical approaches.

that chaos thought shows to be prevalent in natural systems. The quantum physics ideas of fractals, self-similarity and the nested interrelationship of living systems, reveal the interactive influences between larger systems and human behavior. An equivalent principle is found in family systems theory, though the nomenclature identifying it is different. Human behaviors are seen as co-determined through the individual's interaction with others and are affected as well as affect systems within the environment. Both approaches are grounded in evolutionary, more specifically, co-evolutionary, theory.

Bowen theory explicates the emotional process that denotes how emotions are transmitted between and among system members affecting the functioning of one another. This essential notion is often unacknowledged in traditional management theories. Yet when managers fail to grasp its significance, the functioning of the organization often diminishes. Productivity and performance "problems" are often attributed to linearly-conceptualized causes. Understanding the emotional process governing human interactions is a powerful key to managing effectively.

Moreover, and perhaps of even greater significance, family systems theory addresses the crucial threshold described in dissipative structure theory (Nicolis & Prigogine 1977) that separates the generation of creativity under conditions of change from its generation of anxiety. Having fully explored this phenomenon, Bowen theory maintains that anxiety must be tolerated and reduced to prevent organizational members from crossing the threshold. To date, chaos theory applications to public organizations

in the literature do not sufficiently address the phenomenon.

Incorporating family systems theory as a model of how co-determined human dynamics function produces a more holistic understanding of phenomenon in organizations. Hence, it reorients our functionalist mindset away from perceiving human behavior as a manipulable variable toward viewing mutual human processes as fundamental to managers' approach to action.

Grounding theories of action in human processes signifies the realization that "organization emerges in the process of human interaction, that social relations are constitutive of organization" (Weinberg 1993, 3). In an inseparable duality, as the organization is being shaped by mutual human interaction, concomitantly the organization is influencing human interaction. It is the antithesis of Frederick Taylor's legacy, which views organizational members as "another factor of production" (Bartlett & Ghoshal 1995, 134). On a practical level, the reorientation shifts managers' approaches away from strategies of command and control over the "organization man" (Whyte, 1956) to a focus on interaction of the role of "self-management"³ in structuring it. The manager who understands that behavior is co-determined and works from this basis to develop effective actions, will generally see organizational members responding with individuality, initiative and creativity.

³ In this sense, "self-management" refers to the manager's (or any organizational member's) awareness of the co-determined nature of behavior. Based on that awareness, the manager (or subordinate) focuses on self, modifying his or her behavior and actions realizing that others will in turn respond differently. In contrast, a focus on others results in a manager (or subordinate) attempting to change directly another's behavior.

Bowen theory has broached the theory's applicability to organizations. Thereby, it constitutes a well-developed body of theory upon which a management theory of action⁴ can be constructed. The research I undertake in this study seeks to describe such a theory of action.

Approach to the Research

The purpose of the research is to suggest that family systems theory is more congruent with chaos theory than "chaotic management" theories recommended under its nominal frame--specifically because these generally recycled theories violate chaos theory's foundational assumption of mutual causality. Family systems theory, and in particular, Bowen theory, does not. A major aspect of making this case is to show that a public management theory of action can be grounded in family systems theory. To accomplish this part of my project I conducted a qualitative case study in a nonprofit organization whose manager professed to base her theory of management on family systems theory. To illuminate its distinctiveness and to demonstrate how linear approaches to management are inconsistent with the assumptions of chaos theory, I also conducted a case study in a public organization whose manager had been schooled in a more linear and traditional management approach. His training reflected that espoused

⁴ Following Argyris et al.'s (1985) definition, a theory of action refers to underlying propositions an individual forms that prescribe action the individual should take to achieve intended consequences (80-81).

in a well-regarded text, Quinn et al.'s (1990), Becoming a Master Manager.

In Stake's (1995) view, the case study, which seeks to understand, describes phenomena "without expectation of causal explanation" (38). His interpretation is consistent with the aim of this study. Within the overarching phenomenological perspective that frames this research, qualitative case study methodology best captures the subjective experience of individuals. Given its inductive, holistic, naturalistic, and humanistic nature, the qualitative case study is the method of choice to elicit descriptions of managers' theories of action. Yin (1989) concurs, citing the qualitative case study's particular value in holistically and meaningfully capturing "organizational and managerial processes" (14).

In conducting the case studies, I followed the in-depth interviewing method prescribed by Rubin and Rubin (1995), modifying it only slightly. In the organization of the "family systems" manager, I conducted individual interviews with eight staff members. During the interviews (these ranged from one to two hours in length) I asked the three same open-ended questions, all of which are designed to elicit patterns the manager exhibits in her interactions with the various staff members. I interviewed the manager on two separate occasions. During the first interview, I asked her the same three open-ended questions.

As closely as possible, I replicated the interview format when I interviewed individuals in the organization selected for comparative description. The six staff members who volunteered for the study were each interviewed once (their interviews also

ranged from one to two hours in length). I interviewed the "traditional" manager on three separate occasions. Additionally, I observed a staff meeting in each agency. My observations served as a "triangulation" technique (Patton 1990) to confirm the validity of other data sources.

Following Rubin and Rubin's (1995) analysis method, I sorted the data first to identify emerging themes (234). The iterative process begins in the actual interviews, between clusters of interviews, and continues after the interviewing phase has been completed. With each successive iteration, patterns defining the phenomenon under study became more lucid.

As it turned out, three patterns capture the essence of a management theory of action grounded in family systems concepts as developed by Bowen and his followers. Further, these patterns can be seen to be distinctive when contrasted with the patterns produced by the comparison case study. Notably, the distinction centers on the polarity of linear and nonlinear thinking.

Organization of the Dissertation

My explicit purpose is two-fold. I seek to expose a disturbing trend already emerging in nascent chaos theory applications to organizations, and consequently to public organization management specifically. Second, I seek to demonstrate that family systems theory principles constitute a legitimate management theory of action complementing chaos theory. More precisely, chaos theory is being borrowed from the

physical sciences to help public administrators understand and cope with the turbulence, which currently besieges organizations, and also as a corrective to the illusion that we can predict and control outcomes. As part of the theoretical assimilation, scholars are attempting to bring chaos theory to the level of application, but in so doing frequently bastardize it. I argue that the bastardization is needless. There exists already a recognized body of theory--family systems theory--that is ontologically consistent with chaos theory principles and which provides the frame for specifying chaos theory at the micro-level. As such, family systems theory, particularly Bowen theory, supplies a viable frame and basis for a management theory of action.

Exploring the implicate order through conjoining the two theories offers public managers a more holistic understanding of processes in their organizations. The polarity of linear and nonlinear thinking unfolds throughout the study. That polarity provides the basis to explore implications for public administration and public administration management education.

Given my aim, in the second chapter I chronologically review chaos theory applications first to organization theory, then to public organizations. In the process, I critique those that focus primarily on implications for managers. The standard by which I critique the various works centers on each piece's ontological consonance with the guiding principles of chaos theory.

Secondarily, the literature review reveals a dearth in chaos theory applications to public organization management. In the concluding section of the chapter, I note other

paths public administration scholars' have chosen to further public management theory as well as chaos theory applications to other aspects of public administration's vast arena. Both trends shed light on understanding the dearth.

In chapter three, I explain the interrelated concepts constituting Bowen theory. Of the three prominent streams of thought in family systems theory, only Bowen theorists have developed concepts applicable to organization management. I seek to weave numerous connections between family systems theory and chaos theory throughout the chapter, thereby strengthening, I hope, the legitimacy that family systems theory can have as the basis of a public management theory of action.

As part of this effort I trace effluent applications of chaos theory to family systems theory and psychology in general, then briefly review consubstantial social science theories grounded in nonlinear thinking. This exploration of self-similar patterns in the implicate order reveals equivalent nonlinear thinking in family systems theory, the mentioned precedents in social science and chaos theory. Citing the broader longstanding arena of nonlinear thinking in the social sciences lends credence to the value that both chaos theory and family systems theory can offer public administration.

The heart of the dissertation though, revolves around the actual description of a management theory of action grounded in family systems theory principles. In the fourth chapter I set the stage for the description by explicating the research design used to elicit the description. I present and justify the paradigmatic perspective framing the research, then follow with a similar presentation that supports the qualitative case study as the

method of choice for evoking the description I seek. Subsequently, I detail the model I selected for conducting the case studies.

In the second section of the fourth chapter, I describe the process comprising the research, including obtaining university authorization, piloting the interviews, sample selection, and the interview format. Following that, I describe the methods and techniques I employed for data collection and analysis. The chapter concludes with the reflexing process in which I engaged in my attempt to surface possible biases I may have as a researcher. I wanted as well to create a conscious awareness about the co-determining influence of the researcher and interviewee.

The centerpiece of the fifth chapter is, of course, the description of the two management theories of action. I introduce the data by explicating the frame that illustrates the two theories' complementarity and simultaneously distinguishes the two described management theories of action. I add specificity by delineating and describing three salient interconnected patterns that capture the essence of a management theory of action grounded in family systems principles, thereby distinguishing it from the other manager's theory of action. Those patterns emerged in the data analysis and summarize the data in schematic form.

To conclude the dissertation, in chapter six I briefly reiterate a summary of the findings and then explore their possible implications. The significance of the findings offer new possibilities for public administration management and logically extends to implications for teaching public administration management.

LITERATURE REVIEW

In this chapter, I trace the history of the attempt to develop practical applications for chaos theory. I critique those that focus primarily on implications for managers. The standard by which I critique the various works centers on each piece's consonance with the guiding principles of chaos theory. Since chaos theory is grounded in nonlinear thinking, I specifically look for congruent applications that reflect the holism chaos theory purports, the recognition that nonlinear thinking precludes prediction and control of outcomes and an awareness that human behavior and the "organization" are co-determined. Such an awareness precludes management prescriptions that treat the employee as a variable that can be manipulated. The chronological review begins with the generic organization theorists' assimilation of chaos theory principles to revise conceptualizations of today's organizations, then moves on to public organization applications.

In my critique, I intentionally examine the literature with a critical eye in order to expose problematic trends that are already emerging--the first of which is that the majority of the research offerings addresses only the matter of macro-level or system level applicability. In addition to undermining the holism chaos theory entails, those scholars display the widely practiced tendency to reify the organization.

A second problem is that the majority of authors who do address organizational members' significance or roles in organizations rely on traditional organizational behavior models for their explanations. This line of thought is inconsistent with chaos theory's

principle of mutual causality.

Third, a few chaos theory applications either overtly or implicitly suggest that chaos theory can lead us to a new, albeit more sophisticated methodology to predict outcomes and hence produce increases in productivity. This tendency exposes a subtle and implicit drift towards distorting the theory for the purposes of prediction and control.

Chaos Theory Applications in the Generic Organization Theory Literature

Section Introduction

In this section, I begin with an explanation of the manner in which chaos theory has been transported from the physical sciences to the social sciences. The brief explanation is a logical starting point for the ensuing chronological review, which resembles an evolutionary journey. In a chronological review, we might expect that as the imported theory becomes more familiar and understood that subsequent works would reflect a more accurate theoretical interpretation and application. However, the chronological and evolutionary journey we will take reveals first the tentativeness with which chaos theory was embraced, followed by quickly leaping from metaphorical or insight-filled applications to a tendency to embrace chaos theory as directly and equivalently applicable to organizations. Scholars for the most part did realize that human systems were indeed nonlinear shortly after chaos theory migrated to the social sciences. Nevertheless, the sudden leap may also represent the first indicator that some

scholars are moving so quickly to embrace chaos theory as *the* solution to our current turbulent conditions that consistently careful attention is not being paid to its fundamental tenets. As a result, chaos theory principles are too frequently being misused, misapplied and corrupted. Correspondingly, the quality of scholarly writings varies even with continued research over the years. And interestingly, the application's congruence with fundamental tenets of chaos theory sometimes varies within a particular article. In other words, in some articles the author appears to align parts of the application with certain chaos theory tenets accurately; but, within the same article misalign other aspects of the application.

The Starting Point

Daneke (1988-89), Forrester (1987) and Loye & Eisler (1987) suggest that in embracing an alien theory, social scientists seek to establish its resemblance to an accepted theory. In order to make sense of an unfamiliar theory, we associate it with an understood theory. The problem is that in this sense-making by association, we run the danger of completely conflating new with existing theory. The danger is especially acute in the case of nonlinear thinking that is viewed through a linear frame.

According to Loye and Eisler (1987), when social science imports a theory developed by and for the natural sciences to explain a phenomenon, intermediary bridging is required to span the boundary between the two sciences. Among several "stepping stones" needed to make this "transdisciplinary leap" (53), the authors suggest

that potential implications for theory application need to be explored and examined. For example, Loye and Eisler identified research on chaos theory's application to policymaking as a strikingly useful endeavor. They point out that policymaking models typically have been isolated from social theory. As a result,

[t]he net effect has been that while the problems it [the policymaking model] was supposed to help have exponentially increased, social theory has tended to become either the plaything of an increasingly lonely academic elite or the weapon of comparably lonely activists with little knowledge of or experience with science (58).

In these authors' view, chaos theory's greatest potential lies in its ability to enlighten social scientists of the "isomorphisms across levels," and the interconnectedness of changes in the social and physical spheres (59). Linear thinking is the source of the disconnect between policymaking and social theory.¹

Another critical step in transdisciplinary boundary spanning centers on tracing those social sciences roots that provide a "social equivalent" to natural sciences' chaos theory (53). Loye and Eisler discovered "roots of social chaos theory" in the works of Heraclitus, Hegel, Marx, Comte, Durkheim, Pareto, Lewin and Riegel among others (59-60). Among current works, the authors cite equivalents in research on attitude and

¹ T.R. Young (1991, 1992) pursues the disconnect. Through his postmodern and Marxian view, Young argues that "[h]enceforth, all social theory must be change theory" (1991, 289). Chaos theory findings have successfully demonstrated that "natural systems are fractal in their ontology and nonlinear in their dynamics" (1991, 289). And therefore, human agency can choose to promote pluralism, variety, contravariety (298) as countervailing forces to "destabilizing bifurcations" resulting from "wealth, power, and status" (289). Human agency, thus can "manage chaos by determining its dominant chaotic regime and adding enough matching chaos to maintain the desired balance between order and disorder" (1992, 458).

value changes, leadership styles, norm maintenance and change as well as cognitive functioning of individuals (Rokeach 1973; Dubeth 1984; Elgin 1977; Burns and Ogilvy 1984; Schwartz and Ogilvy 1979; Loye 1977, 1978, 1980). These distinct theory expansions represent seemingly different theories at various stages of evolution. In fact, these theoretical expansions are part of the co-evolutionary progression of the universe. The deliberate separation of organization theory from the evolutionary process is artificial. However, the isolated mapping highlights recursiveness and illuminates achieved stages in the evolutionary process that interdependent systems are taking.

Loye and Eisler acknowledge the integral importance of the human dynamics dimension. Yet, for the most part, subsequent work on the applications of chaos theory to organization theory and management have primarily focused macro-level explanations.

In open systems theory's assimilation of chaos theory, the pull toward conceptualizing an alien theory through existing accepted theory is evident. Since open systems theory appears to be most closely related to chaos theory, some scholars who are exploring chaos theory's applicability to organization theory begin with open systems as their conceptual frame (e.g. Smith 1986; Gemmill & Smith 1985; Forrester 1987; Kiel 1989).

The Applications

In one of the first exploratory articles published on chaos theory applications to organizations, Smith (1986) credited von Bertalanffy (1975) as being the first to call for

inclusion of principles of nonequilibrium into open systems models to denote change processes. Nonetheless, the primary emphasis of open systems theory development remained with "change strategies geared at restoring equilibrium" (Smith 1986, 203). Indeed, there was little need to explore von Bertalanffy's far-from-equilibrium state when our world was characterized by near-to-equilibrium, steady, incremental growth.

According to Smith, others were exploring whole system and nonincremental change, labeling the process by various names, such as organizational transformation (Nystrom & Starbuck 1984); paradigmatic change (Sheldon 1980); quantum change (Miller & Friesen 1982a); and morphogenetic change (K.W. Smith 1984). The common quest of these various theorists to effect survival through whole system change countered the theory's dominant focus on restoring equilibrium as the means to ensure survival. Nonetheless, those authors' works represent more inclusive views of systems' change.

Smith's (1986) purpose was to demonstrate the need to extend open systems theory to include the less-frequent phenomenon of nonequilibrium. In so doing, Smith related the intuitive applicability of dissipative structure principles to social systems. Smith insufficiently defines dissipative structures as open systems that change or transform "within turbulent conditions through the breakdown and rebuilding of a structural arrangement" (204).²

² Harvey & Reed's (1996) more sufficient explanation of dissipative structures was cited in the Introduction chapter.

However, he did recognize the need to distinguish the dissipative structure's model of human or social systems from those in the physical sciences. A focus on the effect of subsystem changes on the larger system, inclusive of those "occurring in the individual human psyche and in patterns of small group relationships" (211) is crucial. Human beings in social systems have the ability to choose "to foster the conditions necessary for the transformation-regeneration process" (211).

This important insight opened the door for the study of human dynamics as the basis for understanding organizational phenomena. But to further the development of the model's applicability to social systems, Smith called for future research to study such factors as "culture, leadership, individual innovators or high-performing teams" (210). While any of these traditional arenas of research could lead to a co-determined view of human dynamics, in the past, none has succeeded.

Gemmill and Smith (1985) also explored the dissipative nature of organizations, grounding their view in Lewin's (1951) field theory and whole-system change. Drawing from Argyris and Schon (1978), and Miller and Friesen (1982b) to augment Lewin's propositions, the authors denoted the common thread running between the scholars, viz., awareness of the dissipative nature of organizations. Specifically, change in organizations

is most often induced by system jolts, turbulent environmental conditions, or internal conflicts, all of which act as catalysts for the profound transformations that take place (752).

Since this view of organizational change stems from physical science's definition

of dissipative structures, Gemmill and Smith proffered chaos theory's applicability to organizations that "face turbulent or highly uncertain environmental and internal conditions" (753). The dissipative structures concept appears to be the point of synthesis for explanations of transformative processes in organizations.

Until further research is conducted, Gemmill and Smith stated that their claim necessarily has to be considered exploratory and inferential. Nonetheless, they provide a key to make the transdisciplinary applications more than simply analogous. Drawing from Bohm's (1980) notion of the implicate order, the authors recognized the self-similarity or replication of systems principles at multiple levels of analysis and across various disciplines.

This notion of an implicate order (Bohm 1980), if applicable in this case to general system dynamics, would account for the sometimes striking parallels and convergences which emerge (both within organization theory and across scientific disciplines) when theorists attempt to explain and construct models of system transformation processes (760).

Although they merely pondered the notion of self-similarity's applicability to system dynamics, the query proved to be insightful. Chaos theory's principle of mutual causality serves as the basis of self-similar behavior at different scales of observation. The multi-layered, interconnected subsystems and encompassing systems of increasing size within the universe exhibit self-similar properties and dynamics (Young, 1991). Seemingly spontaneous theory emergence across those disciplines follows evolutionary changes that characterize the subsystems studied by the various disciplines.

Gemmill and Smith's exploratory article addressed system-level or macro-level

concepts. Likewise, their suggestions for further research were at the systems level. However, unfortunately, the authors' wording reifies the organization and thereby implicitly credits any transformation solely to the organization as an entity. Human dynamics and interactions seemingly would be relegated to an incidental role to that somehow played by the "organization" itself.

Perhaps the authors recognized this dilemma. In their concluding remarks, Gemmill and Smith acknowledge the difficulty in studying social systems' dynamics of dissipative change. A crucial difference between non-human systems and human systems is that "social actors appear to have an opportunity to build upon their history or discard it" (764). In essence, that observation re-elevates the significance of studying human dynamics and interactions to grasp more holistically chaos theory's application to organizations. In sum, this introductory article represents the nascent tentativeness with which chaos theory was embraced; likewise the authors' seeming vacillation and somewhat contradictory explications suggests the difficulty with which social scientists have in importing an alien theory to the field. Although the authors of this nascent article set out only to explore ramifications of chaos theory for organizations, they perhaps inadvertently set the course for future applications limited to the macro-level.

Interestingly, as the journey continued, Loye and Eisler's, as well as Gemmill and Smith's reticence to view chaos theory's applicability to the social sciences as anything but metaphorical, dissipated. Intuitive applications were rapidly displaced with the recognition and acknowledgement that social systems are indeed nonlinear. The

theoretical underpinning of open systems theory was premised on nonlinear dynamics, although that term had not been utilized. Essentially, open systems theory's axiom that illustrates how one part of the system generates changes in other parts of the system and in the system as a whole mirrors that of chaos theory. Yet the axiom was needed only to plan for incremental change characteristic of the era during which open systems theory gained currency. Its far greater significance--the ability to explain nonlinearities--was not only irrelevant to the times, but also was antithetical to the positivism and our predilection toward linear thinking.

In consequence, functionalist thinking has dominated our interpretation of open systems theory. Analysis was reductionistic. Parts of the whole were studied. Our social construction of reality mandated maintaining achieved equilibrium, condoning only incremental changes or adaptations for survival. The mandate served well our need to control and predict outcomes.

Daneke (1988-89) in his cogent argument for a paradigm shift towards advanced systems thinking returns to original general systems theory literature prior to its co-optation by linear thinkers. The original tenets incorporated a holistic view of systems and recognized isomorphism across systems (Gigch 1978, 48-49). The turbulent field which characterizes our present context provides the impetus to reexamine general systems theory's original tenets. And in Daneke's view, chaos theory's migration into the social sciences arena provides the theoretical link with which to augment open systems theory's foundation.

The apparent leap of faith from metaphorical applications to claiming valid application stems from resurrecting general systems theory's original tenets. Changing conditions necessitate that we collectively reconstruct our reality. Still, and not surprisingly, the positivist scholarly mindset demands proof that open systems are indeed nonlinear.

Forrester (1987) described the long-standing bias against the incorporation of nonlinearity into social systems models. Despite the realization that much of "real-life behavior arises from nonlinearities," social science research was forced to ignore nonlinearities until the advent of computer simulations (104). Even with the ability to formulate computer-generated nonlinear models, Forrester argues that the recognition of nonlinearity "usually destroy[s] the simplicity, elegance and universality by which research papers are judged" (104). Easily generalizable results provided by linear models are sacrificed. The continued research bias towards linear conceptualizations will be conducted "at the expense of faithfulness in representing the real world" (104). Even though nonlinear models are "less generalizable," Forrester espouses the view that the results will be "more relevant" (108).

Forrester followed Smith's (1986) view of nonlinearity. Both view nonlinearity as an existing but seldom explored aspect of open systems. Both Smith's and Forrester's renditions can be construed as the pull toward legitimating links between seemingly disparate theories through familiar and acceptable functionalist paradigm standards. However, both scholars explore and expand open systems theory by importing the

concept of nonlinearity to conceptualize the theory more accurately and holistically.

Leifer (1989) offers one of the most lucid explanations of organizations as dissipative structures. It dovetails nicely with Forrester's, Smith's, and Gemmill and Smith's applications. He addresses the bias against nonlinear thinking through his review of positivistic, functional organization theory that has dominated our world view. Most notably, Thompson's Organisations in Action (1967) has constituted the dominant force in management's emphasis on equilibrium maintenance in organizations. Leifer draws upon Pondy & Mitroff (1979) for a summary of Thompson's central assumption that

organizations are designed in such a way as to operate 'under norms of rationality.' Under norms of rationality, a somewhat degraded state of technical rationality, organizational decision makers should design intendedly rational buffer zones to smooth out input and output transactions and anticipate and adapt to environmental changes which cannot be buffered or leveled, as well as rational technical cores which operate with the efficiency of a closed, certain, resource-available system. All of these are devices for reducing the influence of the uncontrollable environment so that rational choices can take place (902).

Leifer notes that Thompson views the organization as a form distinct and separate form from its environment, an environment with which the organization is often in conflict. The organization has to adapt to disturbances in the environment. Thompson's view hence denies chaos theory's principle of mutual causality. He does not acknowledge that the organization co-creates its environment.

Thompson (1967) also declares that organizations are "subject to the criteria of rationality and hence needing determinateness and certainty" (10). Leifer argues that

Thompson's declaration eschews chaos theory's view. He counters.

Determinateness and certainty of an organization can only occur if the environment is assumed to have the structure and coherency assumed by the Newtonian paradigm. That is, an underlying assumption is that there is some underlying environmental order (organized complexity) which the organization attempts to match (903).

According to chaos theory's principle of mutual causality, environment is not a separate, autonomous entity, which has an independent order. Moreover, co-determinacy precludes certainty and predictability.

Nonetheless, Thompson's view is not only easier to conceptualize, it provides the answer to our need to predict and control outcomes in order to derive a sense of security. Furthermore, Thompson's theory was effective for years, which in turn elevated its status to that of a predominant world view. Not until scholars began turning to chaos theory to understand why Thompson's axioms were increasingly ineffective did his view come into question.

Leifer credits Scott (1987), Metcalf (1981), Baburoglu (1988), and Rifkin (1981) among others for exposing the mounting ineffectiveness of Thompson's model. Adaptive responses become increasingly less effective as environmental complexity increases. Competition over scarce resources and skills breaks down previously established collaboration and cooperation within and between the organization and others within its network. Rationality is replaced with irrationality as resources are expended.

Increasing structural instabilities, stemming from increasing turbulence, loss of control, and scarcity of resources and/or skills, create a critical condition called a *bifurcation point or point of singularity*...It is this far-

from-equilibrium situation that creates conditions for the emergence of dissipative systems (Leifer 1989, 904).

In other words, the organization's coping mechanisms have been exceeded at the bifurcation point. At this choice point the system can remain chaotic, decline, or reconfigure to "handle increasing amounts of uncertainty and complexity" (904). To achieve the latter, the organization must transform, incorporating new forms of thinking and activity generating processes. The internal metamorphosis requires fuel imported from the environment and simultaneously generates energy internally. The energy exchange keeps the organization in a far-from-equilibrium state.

On the other hand, when an organization attempts to dampen change and restabilize its equilibrium, the organization decreases its alignment with the environment. The misalignment sets up a spiral. No longer can the organization effectively extract resources from the environment. Failing to extract external resources intertwines with deteriorating coping mechanisms within the organization. The organization declines.

In effect, we see two strands of the spiral: the transaction process that denotes energy exchange with the environment; and secondly, the organization's internal maintenance process. Both strands are subject to entropy, the energy needed to fuel the processes. Internal system maintenance depletes energy (positive entropy). An organization that attempts to buffer itself from environmental energy, declines. But in reversing the spiral, an organization that successfully imports energy from the environment has a net gain (negative entropy). As Leifer explains,

the sudden increase in negative [entropy from the exchange process-importing energy] actually fuels *increased* entropic processes. It is the sudden increase in negative [entropy] that makes possible the successful transformation of organizational processes...Dissipative structures maintain continuous entropy production and dissipate the accruing entropy through exchange with the environment (911).

This phase of the self-renewal process requires a constant energy flow to maintain any achieved transformation. Initially, the process is inefficient. Efficiency will follow when a new stabilization--a new order--has been achieved. The organization that remains continually open to new energy from the environment will transform more readily when it encounters future turbulence. In chaos theory terms, the organization maintains an inner non-equilibrium that denotes its openness or receptivity to the environment's energy.

Leifer's explanation of chaos theory dynamics to describe organizational transformations offers managers a clear visualization to distinguish it from the traditional view of the organization, so greatly influenced by Thompson. He illustrates how chaos theory explains general systems theory's more obscure aspects. What Leifer does not offer managers is a micro-level interpretation that managers can apply. Leifer's macro-level or system-level explanation affords managers little insight into how they should behave differently. He only states that the "organization needs to operate qualitatively different [sic] than it did previously" (905); especially needed is a line of action that "involves the education of system participants in the art of decommitting themselves from existing processes and values" (907). In sum, Leifer offers a more in-depth

interpretation of chaos theory tenets than his predecessors, but his explanation focuses on the macro-level inadvertently reinforcing reification of organizations.

Smith, Gemill and Smith, Forrester and Daneke concluded just as Leifer did that chaos theory explains general systems theory's more obscure aspects. In this light, transdisciplinary conceptual synthesis reveals equivalent processes recognized by two parallel fields utilizing different nomenclatures. Whereas open systems theory recognized the potential for dramatic changes resulting from one part of the system's impact on another, efforts to explore this evolutionary phenomenon were thwarted. In the physical sciences, despite similar resistance, chaos theory, once accepted and legitimated, eradicated the resistance. Once this feat was accomplished, an avenue for a similar journey opened to the social sciences.

As this perspective suggests, the nonlinearity in social systems has simply been ignored. A link between systems studied by the physical sciences and those studied in the social sciences has been established, constituting a resplendent example of self-similarity within the implicate order. Forrester (1987) quotes Kovach (1960), a mathematician who spoke of the irony of our failure to perceive the self-similarity:

Strange that these nonlinear phenomena that abound so widely in nature should be so intractable. It is almost as if Man is to be denied a complete knowledge of the universe unless he makes a superhuman effort to solve its nonlinearities...So far, our efforts to scale the nonlinear barrier have consisted of chiselling a few footholds which are low enough so that we can always keep one foot on linear ground...(218-225).

Kovach captures the tentativeness with which organization theory is embracing chaos

theory. At this nascent stage of exploration, chaos theory is interpreted in various ways. Multiple interpretations of chaos theory's meaning for organizations are being offered.

For example, Svyantek and DeShon (1993) attempted to explain why organizational cultural change efforts frequently fail. Their explanation, which incorporated the significance that human behaviors and attitudes hold in cultural change, necessarily included the parallel significance human dynamics hold in chaos theory. To draw the parallel, Svyantek and DeShon suggested that personality serves as the organizational attractor.³ As a logical extension, they argued that organizational culture can also serve as the organization's strange attractor⁴ and claimed that chaos theory provided the foundation for their claim. The authors stated that "Briggs and Peat (1989) proposed that personality operates as an attractor" (344).

Actually, in their discussion on brain research, Briggs and Peat (1989) quizzically

³ Briggs and Peat (1989) define an attractor as a "region of phase space [an imaginary map in which an entity's movement takes place] which exerts a 'magnetic' appeal for a system seemingly pulling the system toward it" (36).

⁴ T.R. Young (1991) explains that a strange attractor is "strange since it has a pattern but its geometry is not Euclidean; dynamics are marked by turns, twists, skips and reverses. It has a fractal dimension; a fractal dimension is an estimate of the efficiency with which a given system occupies the space available to it" (291). More simply put, a strange attractor is strange precisely because of the irregularity present in how much of the available phase-space an entity actually occupies. With a strange attractor, the phase-space is somewhere between a two-dimensional and three-dimensional space (Briggs & Peat 1989). And as Briggs and Peat (1989) note: "[s]ystems under the influence of a strange attractor bounce around chaotically following the attractor" (46). The strange attractor is therefore the attractor for turbulence and chaos.

entertain the notion of personality as an attractor, wondering whether or not the "brain's overall expression, the personality" could be considered a strange attractor (168). Their ensuing review of diverse brain research being conducted was utilized to stimulate the reader's imagination. However, Briggs and Peat did not go so far as to claim that personality is a strange attractor. Even though Svyantek and DeShon appear to overstate support for their proposition, their contemplations warrant a continued exploration of chaos theory's ability to help us understand organizations.

In their sensemaking, Svyantek and DeShon utilize a linear model for overcoming resistance to change. Changing the "configurational information system" at the core of the organization will result in changing attitudes among the employees (343). According to the authors,

The issue for change becomes one of careful identification of such leverage points and an understanding of the proper application of 'force' (i.e. resources) at such points.

As their own interpretation infers, employees are relegated to variables that can be manipulated and whose behavior can be changed directly.

Svyantek and DeShon's exploration represents an effort that falls short of grasping chaos theory's usefulness for organization theory. However, other scholars' efforts may in hindsight represent seminal work in the field. Kenyon De Greene's prolific works have explored chaos theory's significance for organizations and their management since the early 1980s. His continuing argument is well-constructed, incorporating the

Kondratiev (1984) Cycle/Structure⁵ as the organizing principle to explain co-evolution. De Greene's conceptual frame is based on Lewin's (1951) field theory and Emery & Trist's (1965, 1973) turbulent field environmental dynamic. The frame facilitates his focus on system-environment interrelationships. Most of De Greene's work centers on strengthening the case that our world is now characterized by nonequilibrium conditions (De Greene 1982, 1988a, 1988b, 1990a, 1993), micro-macro interrelationships (1978a, 1989) and the need to manage organizations guided by chaos theory principles (De Greene 1982a, 1987b, 1990b, 1993).

By 1990, De Greene had concluded that chaos theory's application to organizations had moved beyond metaphorical application. Indeed, with advancements in chaos theory and some physical science "chaosticians" applying the theory to sociotechnical organizations (Shieve & Allen 1982; Prigogine & Sanglier 1985), the case had been made. De Greene (1990a) explains that,

[t]he structure, function, and behavior of system and environment are outgrowths of interactions that may be nonlinear, fluctuate, be unstable and induce qualitatively different properties at successively higher hierarchical organizations of matter, energy and information (49).

According to De Greene, our greatest challenge may be to attempt to understand how

⁵ The Kondratiev cycle is usually classified as a business cycle. De Greene (1993) states that "[f]our Kondratiev cycles/structures have been identified, the first beginning with the Industrial Production Revolution about 1785. We are now...in the depression phase of Kondratiev number four...[Number four] started around 1940 at the end of the Great Depression of the 1930s. The rising leg of recovery and prosperity lasted until about 1970 when the system entered the Kondratiev phase of recession" (281-282).

"properties at a more microlevel interact or aggregate to produce emergent, macrolevel properties," simultaneously recognizing and acknowledging that fluctuations yield an uncertainty and unpredictability (49). De Greene believes that a key to understanding micro-macro interactions lies in the awareness that

[o]rganizational rationality may be bounded, and aggregates of individual, short-term rationality may generate a collective irrationality. Indeed, external turbulence is probably systematically related to the goals and interests of companies, nations and economies (49).

De Greene calls our attention to Sterman's (1985) model of Kondratiev's cycle/structure (economic long wave) to expound upon this notion. In the computer model, policies (with bounded rationality concepts incorporated) intended to restore equilibrium were introduced. Initially predictable outcomes obtained. However, as the interconnected system increased in complexity, rational system behavior deteriorated and increasing oscillations were generated. The system's balance was lost. De Greene maintains that this model as well as organizational case studies, which he presents, constitute evidence that

the phases of the economic long wave possess different macropsychological⁶ characteristics, for example, epochs of optimism and

⁶ De Greene coined the term "macropsychological" to explain chaos theory's concept of order parameter as it applies to our social world. Macropsychological is characterized as "collective mind, collective intelligence, collective perception, collective belief structures, and collective anxiety. Moods of the time and overall social climates are expressions of macropsychological order parameters. Group and organizational cultures, climates, and cognitive styles are order parameters that may encourage or impede problem solving, learning, competition, and adaptation. Like other evolutionary features, order parameters rise and fall as the stability dynamics of the situation change" (De Greene 1993, 280).

pessimism. Long-wave phases may be differentially sensitive to perturbations and fluctuations. Certain cognitive and decisional processes may induce more environmental turbulence at one phase than another (51).

In this article as well as others, De Greene clearly believes that linear thinking precludes a manager's ability to make decisions appropriate for the turbulent field, which characterizes this era. In fact, he claims that the linear-based cognitive models many managers employ may actually exacerbate the turbulent conditions. More fundamentally, he is one of the few chaosticians who addresses the micro-level of the implicate order (specifically human dynamics) in an explanation of chaos theory's application to organizations.

In a polemic, De Greene's (1990b) exasperation with managers who cling to linear thinking surfaces:

The linear, rational, analytic/reductionist Newtonian model may have become an encumbrance. A number of interrelated theoretical and practical ideas lie behind the American system. These in varying degrees include Frederick W. Taylor's scientific management, time-and-motion study and the quest for efficiency, Henry Ford's assembly line, psychometric testing and related personnel evaluation and placement methods, behaviorism in psychology, human factors, systems analysis, operations research, and more recently artificial intelligence and expert systems. These approaches have in common the breakdown of wholes into parts, the treatment of parts in isolation, the following of rules, the treatment of activities as sequences, and the search for quantitative precision and exactness. Collectively, these approaches comprise a Machine Model of Humanity (164).

De Greene fears that if managers continue to think in a linear manner, their organizations will have increasing difficulty in adapting to the increasing turbulence and complexity of our times. He notes that as uncertainty increases, "organizations and societies more and

more seek rules to guide their actions. The situation is exacerbated by the increasingly bureaucratic nature of society" (165). Viewing micro-macro interrelationships reveals that the

myriad decisions and actions of individual persons and organizations, and the interactions among these system elements, help induce this turbulent field (166).

De Greene attributes this phenomenon to the unacknowledged realization that people are "not rational cognitive beings; they are nonrational cognitive/emotional beings" (166). As such, managers engage in self-preservation--implementing rules and processes designed to control other people--and actions designed to reduce ambiguity--looking for "quick fixes," channeling energy to solve straightforward problems through instituting linear systems (167). However, when these devices fail so that the "manager's needs for order and control are not met, anxiety is generated" (167).

De Greene's work serves as a conduit for overcoming linear thinking to envision holism. Moreover, his recognition of the emotional field--one of the fields within fields--that undergirds managers' thinking, behavior and actions, invites exploration of this level within the implicate order. De Greene resists recommending strategies for effective management. Rather through his well-constructed explanations of chaos theory, he attempts to circumvent individuals' linear thinking patterns and transform those to nonlinear thinking.

Gordon (1992) appeals to our acceptance of mathematical "proof" to demonstrate that social systems can be chaotic. He constructed computer models to display how

nonlinear interactions between people induce chaotic behavior. In applications to three social systems, Gordon's computer simulation reveals self-similar behavior. Changes in behavior, policies that accelerated activity or shortened-time frames soon were followed by rapid oscillations. Perhaps since the process appeared as similar in all three social systems, Gordon's conclusions implicitly lean toward the possibility of developing a sophisticated model of control. By mapping nonlinearities and feedback loops, oscillations can be anticipated. From there activity can be damped or accelerated to either forestall chaos or induce it.

The caveat, of course, is that even if we learn to conceptualize the process and subsequently change our behaviors and actions to impact the process, we will still be unable to predict and control outcomes. Gordon did not mention this caveat. His article subtly seduces us to believe that there may be ways to plug in formulas to predict and control outcomes, then change our behaviors accordingly to evoke desired change. That temptation must be resisted lest we bastardize chaos theory. Gordon's most valuable contribution centers on his inclusion of human behavior and interaction in understanding turbulence.

Broekstra's (1991) work represents creative thinking being sparked by chaos theory's explanatory power. Broekstra (1991) finds evidence for the shift from management's preoccupation with linear thinking towards more holistic management principles. He resurrects Barnard (1938) as the seminal thinker in conceptualizing organizations as holistic. As such, Barnard balances linear reasoning with the need for

intuitive reasoning. Broekstra considers Barnard's elevation of individuals in the organization to demonstrate their integral significance in shaping the organization particularly advanced in light of scientific management's dehumanization of the workforce. He compares Barnard's dualistic views regarding reasoning as well as Western management philosophy on the whole with the ancient Chinese philosophical concept of yin and yang. Broekstra states that

in Chinese philosophy, it is recognized that the two opposites are the extreme poles of a single underlying 'Undivided Wholeness in Flowing Movement,' as physicist David Bohm would have it. It may be no coincidence that in times of profound change in the world, this ancient Taoist, and for that matter, ancient Eastern wisdom receives a great deal of interest. After all, the ancient Chinese culture recognized that change and transformation are the essence of the universe; it is innate to everything (53-54).

To Broekstra, Western management's "preoccupation with specialization and fragmentation has led us astray" (54). However, he believes that Peters & Waterman (1982), Peters (1987), Rowan (1986) and Agot (1984) have all approached management from the yin-yang balanced perspective and thereby represent more holistic management approaches.

His assessment of Peters and Waterman's (1982) and Peters' (1987) management prescriptions may prove to be less holistic than portrayed. Nonetheless, the significance of Broekstra's contribution lies in his ability to gather seemingly disparate threads to illustrate the coalescence of thought. Interestingly, Broekstra did not mention Ralph Stacey's (1992), Managing Chaos: Dynamic Business Strategies in an Unpredictable

World. Stacey grasps chaos theory's significance for management.

Stacey (1992) incorporates principles from chaos theory to assist business managers in competing innovatively, consequently successfully, in today's rapidly changing environment. He advocates that managers abandon their mental models or mindsets, which he sees as teaching "stability, consistency and cohesion as the prerequisites of business success" (80). The "stable equilibrium" (17) mindset has resulted in managers "installing some form of systematic management process to enable top managers to control the future development of business in terms of outcomes" (153). Stacey contends that "the stable equilibrium mindset is a defence against anxiety, one which blocks creative work" (17).

If viewed from the perspective of chaos theory principles, organizations are seen as dissipative structures and far-from-equilibrium systems. Stacey's approach relies on periods of instability and crisis to generate creativity and innovation.

A system encountering changes either internally or externally moves from a state of equilibrium toward a state of explosive instability. But first it "passes through a phase of bounded instability in which it displays highly complex behavior" (63). Stacey contends that this border area is the chaos phase defined as

constrained instability; a combination of order and disorder in which patterns of behavior continually unfold in unpredictable yet similar, familiar, yet irregular forms (63).

The key to Stacey's approach is to create conditions in which people can engage in double-loop learning. Organizational defense routines have to be exposed so that

assumptions about learning can be explored. Stacey views human interaction as constitutive of organization. Since human interaction and group dynamics are an integral part of the strategic management process, neither can be "parcelled off as organization behavior or change management as if these were separate areas of concern" (120).

The interaction among organizational members will determine whether open-ended issues will be discussed and what choices will be made, rather than the processes instituted to govern information flow and analysis. The difficulty for the manager, who is attempting to create structures to allow the double-loop learning needed to generate creativity, is overcoming the anxiety provoked by open-ended change.

Stacey maintains that anxiety invokes single loop learning as a defense against that which we cannot control and predict. The manager therefore needs to set structure within the chaos or the bounded instability to allow the emergent and unfolding properties of creative thinking. Power can be distributed around circumstances. Conflict can be encouraged to spur changes in perspectives. Teams comprised of representatives from variant organizational cultures and hierarchial levels can be formed to operate as self-organizing groups. Managers must learn to acknowledge that outcomes cannot be predicted, that cause and effect is not a clear and discernible relationship, and that the organization co-creates its environment. With this new mindset, managers can cope with the inability to predict outcomes, but gain an appreciation for the unpredictable journey.

Stacey's contribution is valuable to furthering the effort to carry the principles of chaos theory to the managerial level. His recognition that human interaction constitutes

the organization, and that it is at this level that the manager can be most effective, aligns with the argument presented in this study.

Harvey and Reed (1996) offer a summarizing assessment of the growing body of chaos theory applications to organizations that capsulize works cited thus far in this literature review.

The mounting volume of writing in deterministic chaos theory seems to belie the title 'new science' that is often used to describe the deterministic chaos paradigm. Yet, when we survey that literature, the variety of subjects encountered, the tentativeness of the findings reported, and the personal uneasiness many practitioners express both in their writings and in their conversations with other researchers, we see that the worldview of deterministic chaos is still undecided as to its final course. Another sign of its fledgling status lies in the feeling among its practitioners that all is still possible, that nothing is as yet 'set in stone' and that nothing, as yet, is fully forbidden. This liberating sense often fills chaos researchers with a certain abandon and recklessness that both rankles and frustrates their elders (322).

The authors issue this observation almost as a warning. The thrust of their essay is to establish the ontological compatibility between chaos theory for physical science and its application to social systems. More specifically, their inquiry centers on any ontological limits imposed on methods a social scientist can utilize to study chaos theory's application to social systems.

Harvey and Reed ground their argument in Bhaskar's (1978, 1989a, 1989b) philosophy, which "advocates a realist ontology and a modified scientific naturalism in the area of epistemology" (296). Bhaskar's "critical naturalism" stresses sensitivity to structural differences between nature's world and the social realm (296). Bhaskar's

critique of scientific method and findings is two-pronged. First,

science and its findings, despite the claims of some of its apologists, is a human product and bears the same indelible markings as all else that is produced by human hands. Like other human endeavors, science is a historically open and continually evolving enterprise. It has an ideological dimension, and its practices and findings reflect the cultural commitments of the society that house and nourishes it (298).

Yet, Bhaskar also avows that "science is anchored in an intransitive domain, in a world whose autonomous constitution stands independent of the knowing subject and his or her parochial interests" (298). From that conceptualization, the second prong of Bhaskar's critique flows.

[T]he findings of the physical sciences seem to build upon one another and to form a more or less irreversible compilation of factual knowledge about the structure and functioning of the world...Science's cumulative laying up of knowledge from one generation to the next proceeds by progressively stripping away layer after nested layer of reality. With each new advance, science probes deeper into nature and uncovers ever more fundamental levels of physical reality (299).

Bhaskar concludes that reality must also be so constructed and organized. Reality is ontologically nested, emergently related hierarchical layers consisting of both physical and social systems. The hierarchical nesting necessitates different "investigative protocols" (300). Physical science's and social science's exploration into deeper levels of ontological reality is prefaced by "symmetry-breaking mechanisms [that] provide the ontological foundations for the emergence of new levels of reality from established levels" (300). Moreover, breaking symmetry facilitates the reorganization of social science's and physical sciences sets of distinctive governing principles. During the

periods of broken symmetry, communication between the two sciences increases.

Following Bhaskar's sensitivity to structural differences, Harvey and Reed argue for a new world view--

one grounded in the axioms of deterministic chaos, and which is cognizant of the profound differences separating the social world from that of nature. Such a dynamic realism is capable of sustaining the particularity and plurality of the social world while preserving rational canons of scientific understanding (296-297).

The authors argue that simply applying the "deterministic chaos paradigm into social scientific research will prove nugatory"; but even with limitations, physical science still provides a "rich heuristic base from which social scientists can work" (297). Their thoughtful construction is intriguing and convincing.

Harvey and Reed contend that the concept of dissipative structures bolsters Bhaskar's logic. Indeed, it simultaneously explains the fundamental assumptions Harvey and Reed make regarding the "ontological structure of the everyday world" (300). Those assumptions are:

(1) the world is real in the sense that it exists and operates independently of our knowledge of it; (2) the world is ontologically layered, that is, it is made up of structurally irreducible levels that form a loosely organized hierarchical system; (3) while not specified by Bhaskar, there is strong scientific evidence that symmetry breaking is central to producing this stratified complexity; (4) the progressive accumulation of scientific knowledge points to an irreversible time frame through which the world develops; and (5) the emergence of one layer from another suggests that the world is an open, evolving entity (300-301).

The discovery of dissipative structures led to the identification and description of the co-evolutionary process. In essence, it deepened our understanding of ontological

reality. In itself, the discovery of dissipative structures represents the peeling away of deeper and deeper layers of nested systems. With the discovery, light was shed on the futility of physical science's claim of superiority over social science methodology and illuminated the value of their interconnected distinctiveness. As Harvey and Reed warn:

the empirical appearance of reality should never be mistaken for those generative structures and mechanisms whose powers and limitations actually produce the world of appearance...The empirical world can reflect, but never give us direct access to the causal mechanisms of reality (301).

The concept of dissipative systems, and the accompanying explanation of co-evolution, logically include dissipative social systems as a "subset of dissipative systems" (305). The study of this subset, according to Harvey and Reed, must "begin with an accounting of the economic and ecological components that mediate between societies and their natural milieu" (305). Additionally, the interrelatedness of cultural phenomena should be addressed. But above all, what

separates dissipative social systems from physical ones is the fact that societies and their institutional activities are constructed by the collective action of human beings, and thus, are profoundly influenced by the way in which humans subjectively define themselves and their actions (306).

Thereby, the inclusion of human will--most especially, their "innovative abilities" (306)--is paramount to the distinctive methodologies governing investigation of dissipative social systems.

Harvey and Reed make a most convincing argument for inclusion of human dynamics in the study of social systems. Failure to recognize this "indeterminate aspect

of human nature, will result in that reification that is so common in positivist and behaviorist interpretations of social life" (306).

Chaos Theory Applications in the Public Organization Management Literature

Section Introduction

The preceding section reviewing applications of chaos theory in the generic organizational literature reflects Harvey and Reed's (1996) assessment of the state of the art. Their own work, as well as De Greene's and Stacey's, represent more holistic offerings to which social scientists should aspire.

Historically, public organization theory has borrowed heavily from generic organization theory. However, in chaos theory applications to public organizations, the typical chronological distance has been collapsed. Public organization theorists seized upon chaos theory's intuitive appeal about the same time that generic organizational theorists discovered chaos theory's relevance.

Public organization theorists are displaying conceptual struggles similar to those in which generic organizational theorists are involved. This section describes those struggles. To date, very few chaos theory applications to public organization management have been published. In fact, one scholar, L. Douglas Kiel, has published more writings than other public administration scholars combined. I will explore plausible explanations for the lack of literature that specifically addresses public

organization management. To accomplish that task, I highlight concurrent paths espousing different orientations, but that are bound together by the united call for a paradigmatic shift in public organization theory.

The Applications

To date, L. Douglas Kiel has been public organization's most prolific scholar in chaos theory applications to public organizations. Gemmill and Smith's influence seems apparent in Kiel's (1989) initial work on nonequilibrium theory's implications for public organizations. Kiel perceived the concept of nonequilibrium as a useful explanation of the turbulence within which a public organization is enveloped in our "increasingly interactive and complicated global system" (1989, 547).

When viewed from a nonequilibrium perspective, Kiel (1989) suggests that public administration's environment can be viewed as consisting of myriad organizations at various stages of their evolutionary development. A democratic society reflects a host of interactions among systems that can "generate instability among a variety of subsystems" (547). As such, "politics is one variable that may push administration beyond its boundaries of stability" (547). According to Kiel, the manifestation of instability is reflected in "crisis-hopping or reactive management" (548).

In this initial article, Kiel explored the systems-level relevance chaos theory held for public organization management. But, only in one proposition for future research did Kiel acknowledge the value of studying human dynamics and interactions in

organizations:

The level of employee commitment to organization renewal will determine the duration of the period of chaos prior to effective reorganization (549).

The wording of this proposition is more congruent with the functionalist managerial approach of finding strategic variables--in this case, viewing commitment as a variable that can be manipulated to improve productivity. As such, the proposition is reminiscent of those appearing in organization theory when the human resources school emerged.

Subsequently, Kiel (1991) cites advances in research that strengthen chaos theory's applicability to social or human systems. In his review of such advances, Kiel reiterates his acknowledgement of the relevance of studying human dynamics as integral to understanding social systems and organizations as dissipative structures. Drawing from Artigiani's (1987) study of political revolutions, which denotes the importance of an individual actor's role in societal evolution, Kiel referred to individual action that can "expedite change" in a social system. Individual action is the equivalent of a random fluctuation that "appears to generate symmetry breaks" in a social system organization (436).

Although he mentioned the need for studying human dynamics, Kiel's own research has been directed toward developing dynamic models that methodologically substantiate chaos theory's applicability to social systems. By developing tools that are useful to public managers, Kiel is attempting to reduce the skepticism that functionalist public organization theorists hold toward chaos theory.

In 1993, Kiel set forth his methodology: nonlinear dynamical analysis. It allows "the observer to view the oscillation and rhythms of organizational work" over time (151). Kiel posited that fluctuating service requests generate erratic oscillations within the governmental agency. Variability in service requests represents environmentally or externally imposed disturbances that amplify nonlinear interactions within the system. As a result the system is pushed beyond its boundaries of stability toward its bifurcation point.

Kiel successfully adapted physical science's quantitative methods to investigate fluctuations in a state-level agency's service requests. The application has provided further substantiation that human systems are equivalent in process to nonlinear systems in the physical realm. In fact Kiel's achieved demonstration led him to claim that indeed

[h]uman organizations are clearly nonlinear systems where the relationships between variables are dynamic and where complex behavior occurs over time (1993, 144).

With his verification, Kiel believes that his analytical method will provide managers with a tool to achieve their task of maintaining "a degree of order within the apparent chaos" (143) through either "damping external or internal disturbances" or "generat[ing] order from the apparent chaos" (149). Kiel thereby fulfilled the functionalist paradigm's continued insistence upon approved methodological substantiation for legitimizing theory expansion.

However, his method can be misinterpreted by functionalists as implying that it can be used to predict and control. In essence, it is a tool with which managers can

achieve desired outcomes. Some of his wording is reminiscent of Thompson's (1967) views toward organization adaptability. The use of such standard terms as "variable," lead to further difficulty. It perpetuates the temptation to think linearly. More significantly, the use of the standard term points to a greater problem: language adequate for describing nonlinearities has not been developed.

In his first full-length study, Managing Chaos and Complexity in Government (1994), Kiel dispelled the myth that complexity can continue to be managed solely by incremental changes. He argues against traditional management practices that are based on linear cause and effect thinking, juxtaposing chaos theory's alternate conceptualizations to illustrate the difference.

Kiel conceptualizes public organizations as self-organizing systems. Evans (forthcoming) notes that Kiel

demonstrates a clear understanding of the contextual complexity peculiar to public management--one which considers highly permeable the boundary between an agency and its body of external political actors and takes into consideration the dynamics of agency activity over time.

His reconceptualization resonates with what administrators find in everyday life. And more significantly, he supplies the theoretical conceptualizations, which public administrators can articulate the phenomenon.

As noted in his other works, a major theme in Kiel's book centers on the computer-based model he developed for public organizations. His activity-based costing (ABC) offers managers a tangible tool or method to understand the overarching order that

subsumes smaller, seemingly erratic fluctuations in work performance and productivity. The reframing reduces the manager's tendency toward attempting to control productivity by incrementally pushing the limits of existing work methods. Instead, Kiel's method assists the manager in examining processes in a manner that might suggest which ones can be fundamentally altered so as to improve work performance.

The fact that his model is reminiscent of Deming's (1986) philosophy and methods is no accident. Not only does Kiel incorporate Deming's statistical methods into his model, he sees total quality management's compatibility with chaos theory's view of nonlinear organizations. By conducting non-linear time series analysis and phase-space charting to plot rhythms and dynamics representing variation, managers are able to grasp nonlinearity visually. Kiel's activity-based computer program represents a fundamental departure from linear-based input-output measurements and should prove to be a useful tool to public managers.

However, its drawback is two-fold. First, Kiel reinforces traditional managers' emphasis on rational processes as the primary, if not sole, means to effective management. Secondly and interrelatedly, while Kiel appropriately encourages managers to analyze the patterns to detect causes in particularly slack times in productivity, some of his examples come close to viewing employees as variables. In one example in which the manager conducted an experiment to improve productivity, the analysis of a specific slack period could be attributed to employee "soldiering" (118). As Kiel explains,

[i]f this explanation is accepted, the order in the work may be an

indication that employees have reached a comfort zone for work output that may not be questioned by management. Soldiering obviously does not serve the interests of agency performance or the taxpayer. Some managers may attempt to learn whether soldiering exists by increasing demands for output from employees...Only through the risk of such experiments can the manager determine whether employees are performing up to their full potential or if a total redesign of work processes is necessary to improve performances (118).

Kiel seemingly contradicts his continual calls for worker involvement and empowerment simply by the type of experiments he recommends to managers (i.e. managers make decisions regarding needed and continuous improvements and then have workers implement them). Furthermore, he misses an opportunity to convey mutual causality's most fundamental significance. Nonlinear thinking teaches us that behavior arises out of the interactions among and between constituent parts over time. The accumulation precludes searching for a direct cause and effect that are closely linked by time or space.

Although the primary focus of his work is macro-level, Kiel devotes several sections to the inclusion of human factors in the workplace. Primarily, his discussion centers on incorporating traditional concepts from the organizational behavior literature into new methods for managing nonlinear dynamic systems (91). Traditional, linear views of human behavior and the accompanying techniques used to motivate employees to increase productivity appear to be inconsistent with the nonlinear view of public organization systems. For example, Kiel (1994) stated that

[t]hese elements of behavior such as motivations, interests, and values are important when one attempts to understand the outputs and outcomes public managers are trying to generate. These aspects of human behavior are one element that adds to administrative complexity. Individuals are

clearly nonlinear as we change from day to day and as internal and external factors impact our abilities to accomplish our objectives (91).

In Kiel's passage, human behavior is seemingly viewed as an element, or another component in the system of which the manager must be mindful. Functionalists can relate to Kiel's explanation; however, his explanation stops short of identifying the subtle, but crucial difference, revealed in chaos theory's principle of mutual causality. Although factors can impact individuals, individuals also impact the system and the environment; and, in turn, the system and the environment influence the individual. The individual does not independently generate behaviors, nor are behaviors caused by a pattern of linear variables. Behaviors are co-determined.

Similarly, Kiel's treatment of organizational members' tendency to resist change aligns with a linear view of human behavior. Resistance to change is treated as a variable when he advises that

[a] certain proportion of government managers and employees will resist the unstable nature of the self-organizing agency. Since organizational development and similar behavioral approaches to change were initiated in the 1970s, public management thinkers have attempted to create more positive attitudes toward organizational change (95).

Resistance to change is a complex phenomenon. To be consistent with principles of chaos theory, resistance to change needs to be viewed nonlinearly and holistically. In his discussion of resistance to change, Kiel cites Goldstein's (1988) far-from-equilibrium approach to resistance to change. The title is somewhat misleading. Goldstein draws from chaos theory, information theory and family systems theory to

explain the phenomenon. Kiel collapses Goldstein's discussion with the synopsis that managers can use the notion of "difference questioning" to ask employees essential questions about change.

Such questions, combined with employee involvement, may calm many employee and management fears over potential changes. The task for the public manager is to inform employees fully of the benefits of such change. The applied task is to develop work processes that ensure employees the nature of work will be both more productive and more rewarding (197).

Goldstein introduced "difference questioning" to demonstrate its efficacy in understanding how the points of greatest resistance to change signify the work group's strongest area of identification. That resistance serves as a survival mechanism. Resistance to change has an affirmative core (Goldstein 1989). Following the notion of dissipative structures and self-organizing principles, difference questioning exposes variance in individual perceptions within the group, thereby constituting new information. The new information opens the internal system so that the group can re-define itself. Kiel's tasks for managers misapplies Goldstein's conceptualization. In fact, when Kiel calls for managers to "inform employees fully of the benefits of such changes," resistance to change may escalate.

Kiel's forte is developing methods and tools to capture the nonlinearities that characterize productivity variances, but which generally baffle administrators. His efforts have garnered recognition by some prominent functionalist academics and practitioners for several reasons. He is the first public administration scholar to explore this newly

charted territory.⁷ Kiel casts aside Daneke's (1988-89) and Forrester's (1987) dire predictions for those who dare to defy conventional functionalist thinking.

Secondly, the compilation of his works--especially since they are all written so that non-physicists can understand them--is helping to disrupt the mindset dominated by linear thinking. That mindset is particularly visible in our bureaucratic structures. The second point particularly softens the edge of my critique centering on his treatment of human dynamics and behavior. In writing for laypeople, Kiel's intention appears to be to create an alternate vision for managers rather than address every complex detail of chaos theory's principles. My critique hones in on those details.

Thirdly and relatedly, Kiel joins managers and public organization management where it is presently to demonstrate the efficacy of chaos theory's view of public organizations. In particular, his activity-based costing program taps into the present mindset and simultaneously offers an improved rational process.

And lastly, Kiel's work represents a beginning exploration--just as this dissertation attempts. Furthermore, he is one of the very few who have begun work on public organization theory work guided by chaos theory. As more venture into the arena, each one's work will trigger connections for others. The depth of understanding will increase. Someday, Kiel will most likely be regarded as the seminal thinker in the field.

⁷ Kiel's first articles were rejected by reviewers at Public Administration Review. In a telephone conversation I had with Doug Kiel on June 12, 1996, he discussed the rejection of his initial efforts. However, my assessment that Kiel turned to concepts with which functionalist are familiar to re-educate the mindset is based on my own speculation, rather than any explanation Kiel offered.

Louise Comfort is one of only two other public administration scholars to broach chaos theory's applicability specifically to public organization management. Comfort (1994) explored self-organizing properties of dissipative structures found in complex systems. In her study of community efforts to ameliorate the effects of the 1988 oil spill in Pittsburgh, Comfort analyzed the components and characteristics of the system.

As reinterpreted by Comfort, these characteristics reveal the crucial role of human dynamics within the system. In her analysis of the actual event, Comfort found that the lack of a central communication center inhibited managers in different organizations in understanding the limitations of others in coordinating organizations.

Under these conditions, elements of distrust and disagreement developed among managers, which consumed energy and caused distraction from the primary goal of operations...During the Pittsburgh oil spill, there was extraordinary cooperation among agencies where the managers [already] knew each other and trusted one another. Conversely, there was serious disagreement and inability to adjust behavior to the requirements of unfamiliar operating conditions...(404).

Comfort's observations reveal co-determinateness. The analysis notes that the system's lack of a central communication facility impacted human behavior. Conversely, human behavior impacted the system's performance. As illustrated in this case, human behavior is not self-generated, but interdependent with the actions of other participants.

The significance of Comfort's analysis centers on her inclusion of macro-level and micro-level observations. Incorporation of the spectrum of interconnected and interdependent elements leads to a more holistic view of social systems in the context of the larger environmental system. Her analysis of an emergency situation throws into

clear relief one of chaos theory's central tenets: the interconnectedness of humans in relationship and their interconnectedness with the environment. The analysis also illustrates technology's evolution and its symbiosis with humans. In her conclusions, Comfort seeks not to predict and control, but rather to enhance the self-organizing capacities of a system. Comfort's thoughtful study begins to encompass the holistic perspective of chaos theory.

Lastly, Overman's (1996) exploration of chaos and quantum theory as metaphors and methods for public administration contains management implications. After introducing readers to the languages of the "new sciences," (76) and distinguishing chaos theory from quantum theory, he argues that both theories offer apt descriptions of events and situations public administrators encounter routinely. Nonetheless, progress in dealing with complexity has been slowed because administrators are unfamiliar with the theories and have only "outdated models of scientific inquiry" (75) at their disposal. In addition to providing public managers with more effective research and analysis methods and tools, chaos theory enhances understanding of administrative behaviors.

It fosters an appreciation, not distrust, of chaos and times of uncertainty and stress in organizations and management. While most managers and management methods attempt to seek some equilibrium through various control processes, and apply them even more tightly when order is dissipating, real change and new structures are found in the very chaos they try to prevent (81).

Quantum theory metaphorically constructs new mental models for interpreting administrative sciences.

Expectations of objective reality, certainty, and simple causality are incomplete. In their place are intersubjectivity, uncertainty, context, many worlds and minds, nonlocal causes and participatory collusion. The new administrative sciences focus not only on the tangible but on energy not matter, on becoming not being, on intentionality not causality, and on constructing our reality not waiting for it to be determined (87).

For example, performance evaluations when subjected to a quantum interpretation are seen as intersubjective, rather than objective; behavior causality is viewed as nonlocal and multiple, rather than attributed solely to the individual. Reminiscent of Simon's (1946) challenge, the reinterpretation dispels myths and rationalizations held by administrators.

Overman's presentation argues well for nonlinear thinking to underpin administrative sciences. In his view, reconceptualizing human behavior and developing methods grounded in chaos and quantum theory to capture complexity can serve as the basis for 21st century management science. Overman's article, published in the Journal of Public Administration and Research, utilizes public administration examples. However, his article readily pertains to generic organizations. His overall objective appears to be to educate the reader about the distinctions between chaos theory and quantum theory.

The Gap in the Literature of Applied Chaos Theory: Public Organization

Management

Section Introduction

Although chaos theory currently appears to be enjoying prominence in the generic organization literature, the dearth of literature in its application to public organization management is obvious. Two other trends in public organization management literature possibly account for the dearth: (1) other nonlinear public organization theories that prescribe management theories of action exist and are found in the literature; and (2) chaos theory is being applied to many components and specialized subfields within public administration's vast arena. In this section I first highlight other nonlinear public organization management writings primarily to suggest that the possible dearth in chaos theory applications to public organization management may be partially attributed to the fact that other nonlinear public organization theories already have been developed. Secondly, I mention various other chaos theory applications within public administration's vast arena: budgeting, financial management, information control systems, policy, economic-based planning, and urban planning. The various applications suggest that chaos theory is significantly impacting public administration as evident by the aggregate of writings in the field in general. Public organization management is just one of many constituent parts comprising the field of public administration. I then conclude by critiquing selected offerings from business management to point out the

pervasiveness of the tendency to corrupt chaos theory when applying it to organization management. The conclusion sets the stage for introducing family systems theory as a viable body of theory that can serve as the basis for a management theory of action complementary of chaos theory--one that serves as a corrective to the emerging trend of the theory's bastardization.

The Applications

The dearth of literature of applications of chaos theory to public organization management is obvious. However, when recent prescriptive public organization management offerings are examined, we do find at least a nascent trend towards incorporating nonlinear thinking into new management approaches.

Kiel noted parallels between chaos theory and Total Quality Management (TQM) principles. Barzelay's (1992) Breaking Through Bureaucracy: A New Vision for Managing in Government, Carr and Littman's (1990) Excellence in Government, Cohen and Brand's (1993) Total Quality Management in Government, and Osborne and Gaebler's (1992) Reinventing Government all denote public administration management's quest to develop more effective management techniques for our changing times.

Although TQM philosophy is compatible with strategies espoused in many chaos theory applications to organization management, the parallels are not wholly consonant. Deming's method aims to control and reduce variation (Gabor 1990). In the end, TQM seeks to predict outcomes based on the rational statistical process Deming espouses.

Underlying this functionalist objective, Deming pays attention to processes--which are definitely nonlinear--rather than production rates. Moreover, he advocates employee empowerment and regards the worker as a "resource rather than a cost" (Gabor 1990, 13). His inclusion of individuals comes temptingly close to the principle of mutual causality; still, shades of a view of individuals as variables, even if they are a resource, hold sway. Nonetheless, Deming's regard for individuals and their underlying emotionality and personal development slants towards chaos theory's lessons concerning relationships for managers.

Perhaps the next theory melding will center on an explicit comparison between chaos theory and TQM. For the present time, public administration management theorists' diversion into TQM's relevance to the field appears to be a circuitous path towards a more holistic management philosophy. Interestingly, converting a public organization's management to TQM signifies the internal fluctuation that will affect the environment and in turn, re-influence the internal structure of the organization. In other words, the conversion signifies self-organization.

Other public administration management theorists are traveling different paths, ones that skirt chaos theory applications. For example, Kaufman's (1991) Time, Chance and Organizations follows chaos theory's explanation of co-evolution to explain change, survival, and/or decline of organizations. Yet, he does not mention the relevance of chaos theory to his thesis, nor does he allude to any relevant works from the field. Kaufman's intent is to provide a "map" for public administrators.

A map does not tell people where to go but it lets them know some of the obstacles standing between where they are and where they are headed. Such knowledge does not ensure the success of their journey; it merely permits them to avoid some hardships they might otherwise suffer and perhaps reduce the odds of fruitless endeavor (129).

Kaufman does not set out prescriptions for managers, but merely enlightens them so that they may draw their own conclusions.

In The Pursuit of Significance (1993), Robert Denhardt chooses another path to reshape public administration management. He seeks to replace outdated approaches rooted in "rationalism" and "managerialism" (11) with a value-based approach. Denhardt's model includes five interrelated approaches: (1) a commitment to values; (2) priority to serving the public; (3) empowerment and shared leadership; (4) pragmatic implementation (pursuing a wide variety of unexpected opportunities); and (5) a dedication to the public service.

Nonlinear thinking undergirds Denhardt's humanistic view. Nonetheless, the nonlinearity must be teased out of his decidedly normative view. Through empowering individuals to "make decisions that affect their work," each member contributes to transforming the "internal operations of the organization." Simultaneously, as organizational members pursue their own significance in this way, there are "important spillover effects for the public as well" (280). The public will be viewed as "persons of significance" (281). The principle of mutual causality underlying Denhardt's words speaks to his vision of the interactive mutual elevation of all persons.

Denhardt's work represents one of many calls to move beyond our traditional,

functional management approaches that are grounded in linear thinking. His work melds variant theories--chaos, feminism, transformation--into an approach readily grasped and embraced by public administrators. Perhaps its most valuable contribution lies in Denhardt's ability to evoke self-reflection on the part of public administrators.

The Transformational Theory of Organization (White and McSwain 1983; McSwain and White 1993) appears to serve as the conceptual basis for Denhardt's prescriptive work, although he does not cite White and McSwain. In its own right, the Transformational Theory of Organizations serves as the only theory-grounded path yet discussed. The others are technique-driven and derive from practice as opposed to espousing a theoretical base. Grounded in Jungian psychology, the theory's "ontological commitment [is] to the reality of the *unconscious* in humans and consequently in organizational life" (McSwain and White 1993, 83). As such, [t]ransformational theory ...understands the human condition to be governed preeminently by the unconscious" (83). Human development and maturation occur through transforming undifferentiated energy of the unconscious to enhance conscious life.

When extrapolated to organizations, the central emphasis on human development obtains.

The baseline goal that the organization or any human system must pursue is the development of the people within it; other matters, other goals must come after. Indeed from the transformational point of view organizations *are nothing* apart from the individuals who comprise them and who are each pursuing consciously or unconsciously his or her own developmental agenda (86).

The multi-dimensional theory views organizations as "an expression of human psyche" (White and McSwain 1983, 297) in which four levels of reality subsist: structural, social relations, nomological and human-encounter levels.

These four levels of reality are linked by transformational processes that convert unconscious energy to form the human ego (at the nomological level), social relations, and social structure (1983,294).

First, a structural analysis entails recognizing "deep structural characteristics of social situations...that are archetypal in nature" (1993, 88). A structural understanding of social situations

indicate[s] what ego mechanisms are likely to be evoked and what dangers are inherent in the situation if the ego mechanisms are chosen to the exclusion of a mediated relationship to the unconscious (88).

Secondly, a structural analysis "yields insight that adds to the degree of conscious *reflexivity* that a person can bring to a situation" (88).

Structural analysis is operationalized through a "*process model of action*" that is "achieved through establishing a *correct dialogue* about the situation within which or toward which the action is to take place" (89). Although not precisely formulated, correct dialogue is based on attaining an authentic relationship.

Such relationship is one in which the parties to the situation subordinate themselves to a process grounded in their commitments to their relationship as well as the dialogue by which the relationship is developed, and the situation is resolved (90).

In part, this requires that projections be resolved so that individuals can learn from each other. Indeed, such resolution furthers human development and maturation.

In sum, the Transformational Theory of Organizations describes what occurs, but is rarely made explicit. Its value to organizations encountering increasingly frequent discontinuous change, in the authors' opinions, is that it may "in the end be employed simply as a temporary bridge into this new social world and new consciousness" (95). On the other hand, if its central thrust towards human development can be realized, a paradigmatic shift may occur.

The call for a paradigmatic shift in re-conceptualizing public organizations can be heard from postmodernists. Bergquist's (1993), The Postmodern Organization: Mastering the Art of Irreversible Change and Reed and Hughes' (1992) Rethinking Organizations to name only two, incorporate chaos theory to explain the complex phenomenon of changes the world and organizations within it. These divergent paths offer a possible explanation for the dearth in direct chaos theory applications to public organization management literature. As will be seen, another trend bolsters the explication.

Chaos Theory Applications Within Public Administration's Vast Arena

Chaos theory applications to the whole of public administration's vast arena are increasing. Some aspects of public administration--budgeting (Kiel & Elliott 1992), financial management (Daneke 1995) and information control systems (Overman and Loraine, 1994) for instance--have produced only single articles. Other aspects have witnessed myriad explorations and applications. Most notably, the public policy arena

is burgeoning with such offerings.⁸ Paralleling advances in chaos theory applications to social sciences, some policy scientists were expressing their growing dissatisfactions with traditional policy making models. First generation cybernetics, operations research, rational approaches, and incremental approaches encrusted by linear thinking were viewed as increasingly limited for dealing with the complexity our world now encounters (Dobuzinskis 1992). Realization of these limitations and anomalies catapulted some policy scientists into exploring nonlinear analysis as the metatheoretical, theoretical and methodological alternative with which to view policy analysis.

Numerous scholars have raised their voices in either exposing the limitations of traditional policy-making models (e.g. Fischer 1980; Deising 1982; Callahan & Jennings 1983; Healy 1986; Bobrow and Dryzek 1987; Dunn 1994) or in advocacy for nondeterministic, nonlinear thinking in the pursuit of public policy planning (e.g. Feldman 1989; Forester 1989; Kiel 1991, 1993, 1994; Overman & Cahill 1994). Additionally, scholars have begun developing methodologies specific to policy analysis

⁸ In March 1994, Philip Kronenberg reported the results from an electronic survey he conducted to identify researchers who were "applying concepts from chaos, complexity and evolutionary theories to the study of planning and public policy." Eighty researchers from around the world responded electronically to identify their areas of interest, research, and publications. According to Dr. Kronenberg, "the survey summary is available on the Virginia Tech computer using either anonymous ftp or GOPHER." In addition, there are numerous electronic conferencing networks and on-line data sources for those who are interested in various applications of chaos theory to the social sciences. The results of the survey coupled with the numerous electronic networks attest to the veritable explosion of interest and research in chaos theory applications to the social sciences.

(e.g. Allen & McGlade 1986; Overman & Loraine 1994, Comfort 1994).

Nonlinear thinking, specifically through second generation cybernetics and advanced systems thinking (Daneke 1988-89) has already contributed to the policy inquiry arena. More specifically, on the metatheoretical level, infusion of nonlinear thinking has resulted in a "gestalt shift" (Dobuzinskis 1992, 365). Linear cause-and-effect thinking is being replaced by a perspective that views social processes as co-determined and co-created. The advances signal the paradigmatic shift toward postmodernism. In Dobuzinskis' inimitable phraseology, postmodernism

turns radical or Cartesian doubt back upon itself, insisting that reason itself is dependent on the very processes which it is supposed to judge, such as social practices and linguistic conventions (1992, 356).

And, the new theories and methodologies expose this paradoxical nature of relationships in the policy arena.

Dispelling the traditional mindset in the policy arena is bolstered by the numerous applications of chaos theory in the field of economics, and in particularly to economics-driven policy planning, formulation and analysis. Baumol & Benhabib (1989) explored how chaos theory exposes the limitations of extrapolation and structural forecasting models, as well as the insights into understanding seemingly random behavior, and economic sources of oscillations. Malaska and Kinnunen (1986) developed a mathematical model that demonstrates the nonlinearity of a firms' goal setting objectives for growth. Radzicki (1990) argues for a holistic model of institutional economic theory.

[T]echniques such as stochastic re-causalization and insights from chaos

theory and theory of self-organizing systems, can be joined with institutional economic theory to produce pattern models that will yield important insights into the dynamics of societal evolution, and act as laboratories or 'microworlds' for the development of improved socioeconomic policies (96).

In addition to exploring the complexity of institutional dynamics, Radzicki offers an extensive reference list of the myriad of chaos theory applications to economics.

In a related arena, urban geographers are developing models that track the spatial evolution of urban areas (Allen & Sanglier 1981; Allen 1982a, 1982b; Allen et al. 1985; Engelen 1988).

The primary common thrust found in offerings from policy sciences, economics, and urban planning has been to import mathematical models that demonstrate nonlinearity in human systems. The emphasis parallels Kiel's work and direction. Micro-level explorations of the implicate order needed to formulate public management theories of action grounded in nonlinear thinking represent virtually uncharted territory. Without such explorations, public managers may adopt popular, but problematic, theories of action such as some coming from business management.

Problematics From The Business Management Literature

Evidence that chaos theory can be easily bastardized and corrupted mounts with only a cursory look at the business management literature. Nonaka (1988) and Priesmeyer (1992) particularly illustrate such corruption. Gould (1987) sent an early warning to business management scholars about this danger.

Nonaka (1988) argues for the purposeful inducement of crises in order to generate employees' creativity. As the basis for his call, Nonaka draws upon chaos theory's self-organization principle. In its far-from-equilibrium state, change can occur.

An organization that creates information is nothing but an organization that allows a maximum of self-organizing order or information out of chaos. What is important here is that the more chaos or fluctuation an organization has inside its built-in structure, the more likely it is to have a lively information-creation activity. Chaos is used here interchangeably with such concepts as freedom, fluctuation, randomness, redundancy, ambiguity, and uncertainty. A lively activity is created since the positive role of fluctuation or chaos widens the spectrum of options and forces the organization to seek imagination and new points of view (60).

At this point, Nonaka is not arguing anything that is different from others previously cited who understand that the far-from-equilibrium state evokes creative changes. As others, Nonaka recognizes that traditional management strategies based on linear thinking thwart such creativity.

Bureaucracy represents an organization from which chaos has completely been eliminated. But for an organization to evolve continuously, it is necessary to allow freedom among the constituent units in the organization to generate creative conflicts between them, and to maintain an expanded possibility to take in chance information (64).

With this as his foundation, Nonaka proceeds to recommend managerial strategies to induce chaos. Managers need to have a flexible decision-making style--one that changes as situations change. Managers need to question the "ultimate essence of the all management phenomenon" (64). The questioning itself generates chaos--or openness--that creates opportunities for organizational members to engage in self-reflection. Managers also need to encourage confrontation and disagreement between employees and

themselves. When conformity and agreement prevail, exploring new ways of thinking stops. Job rotation helps break up like-minded thinking. Similarly, the tolerance of co-existing countercultures within the organization spark diversity in thinking. Managers should also encourage risk-taking actions as experiments for learning.

Following these somewhat sensible recommendations, Nonaka stresses that the fluctuations created by these recommendations need to be amplified. To form a new order from the fluctuations, the "inertia or defensive routines of the organization" have to be overcome (66). Amplification exposes contradictions, not unlike Bateson's (1979) "double-binds." The contradictions demand new perspectives to problem-solve.

But then Nonaka recommends that managers intentionally create crises to achieve the needed amplification. According to Nonaka, conveying an on-going sense of crisis keeps employees thinking creatively. He quotes a manager of a large corporation for support:

It's like putting the team members on the second floor, removing the ladder, and telling them to jump, or else. I believe creativity is born by pushing people against the wall and pressuring them almost to the extreme (66).

Nonaka mentions that a crisis can also "mark the start of a company's demise" (66). Yet, he advocates that on-going crisis-creation without regard to the human cost. The caveat to his approach is found in our understanding of the effect of stress and continued anxiety on human beings. Awareness of these effects ethically precludes such an application. The preceding quote suggests a disregard for human being's health and

dignity. Too, the unintended consequences of prolonged stress and anxiety most likely override the creativity supposedly generated. It is almost inconceivable to believe that artificial crises *need* to be created given the societal, economic, social and organizational conditions that have persisted in the past decade.

Priesmeyer (1992) seeks to develop nonlinear analysis techniques that will increase profits. He proposes a model that shifts managers' focus from utilizing aggregate data and indicators to examining changes and underlying patterns of various elements. The thrust of Priesmeyer's developed tools are geared toward enlightening managers to the value of viewing the interconnectedness of often ignored patterns in external and internal conditions. Through "visioning" where the company should go, instead of forecasting what will happen to the company in the future, managers can manipulate factors to direct desired outcomes.

Priesmeyer cites employees as being an "integral part of the organizational system" (164). Consequently, human factors were included his nonlinear model for management. But in so doing, Priesmeyer relegated the significance of including human factors as merely that of another set of variables--leadership styles, motivational techniques, and compensation. His point is that those variables could be manipulated to effect structural changes needed to foster dynamic, but incremental changes in the organization. Keeping the organizational structure in alignment with the changing environmental context insures continuation of the firm and more importantly, continuing profits. His perspective is decidedly reminiscent of the population-ecology model.

Unfortunately, Priesmeyer's relegation of human factors to the status of a variable in his equation fails to capture the co-determined nature of human and organizational dynamics. His interpretation ignores Bohm's concept of the implicate order. It is in this cornerstone of nonlinear thinking that human dynamics are recognized for their co-determined role in organizations. His work and that of Nonaka's illustrates the danger that the theory can be misconstrued, misapplied and corrupted.

Gould (1987) warns of the problem that can occur when one discipline's theory is applied to another.

In each formal field of inquiry, within which we dwell professionally as beings who seek to illuminate some chosen portion of our physical, biological or human realm, we attach particular meanings to words. Within the close and familiar world shared with our co-workers and co-thinkers, such meanings are precise, familiar and useful. But language is slippery and ambiguous: outside of a particular discipline or line of research, other unintended meanings may be placed upon the same words, and may create confusion...(211).

Gould's passage intendedly served as the preface to his ensuing critique of the application of dissipative structures to the human realm. His polemic addressed limitations that mathematical models place upon our understanding of human systems. In essence, those models constrict our view of human society. Gould argues that

the mathematical structures we have chosen and imposed, do not provide any evidence of bifurcation--nor can they. Bifurcation lies wholly as a possibility within the methodology we impose, and not in the spatial histories of the human world we are trying to illuminate (217).

Gould further contends that we run the risk of believing that mathematical models can wholly describe the human realm.

To believe that human systems are simply describable into the future as statistical smears generated from systems of non-linear, and, therefore, bifurcating 'functions' (on-to-many mappings), constitutes a belief that human change is predicated only upon the possibilities of bifurcation (219).

If we succumb to that misconception, we cut short our exploration into understanding the human realm. Gould would most likely agree that some of the above-cited scholarship is leading to such a consequence.

I concur with Gould's critique that a predominant focus on mathematical formulations can limit a fuller exploration into the human realm. More specifically, in chaos theory applications to organizations, stressing the development of mathematical formulations perpetuates the focus on rational processes as the key to effective management. Additionally, the emphasis on rational processes and the accompanying macro-level explanation reifies the organization and tends to attribute linear causality to events.

In reviewing the literature, a preponderance of evidence attests to this trend. In addition, when micro-level dynamics are addressed, too often a distorted view of human dynamics--one consonant with that of traditional organizational behavior models--is being replicated. More alarmingly, some authors imply veiled, and sometimes overt, advocacy of chaos theory's use for prediction and control in organization management. Not only does the predilection toward prediction and control violate a fundamental tenet of chaos theory, but it relegates human behavior to variable status, reinforcing linear

causality. Unless offerings consistent with chaos theory's grounding principles counter the thrust of such views, the theory will be corrupted and bastardized. In essence, the functionalist world view could assimilate chaos theory as merely a sophisticated methodology for prediction and control. Too, if traditional management theories of action grounded in linear thinking are offered as ways to manage organizations reconceptualized as nonlinear, the theory's power will not be realized. Furthermore, it will most likely be discarded as ineffective. The opportunity for chaos theory to serve as the catalyst to engender nonlinear thinking will be lost. De Greene's notion of macropsychology may well help to explain why these possibilities might occur. Given our present social climate, our macropsychological order parameters may work against new learning encapsulated by nonlinear thinking. Paradoxically to ward off anxiety accompanying this turbulent era, collectively we may be unable to relinquish theory that supports the belief that we can predict and control outcomes.

However, the trend in management offerings need not continue down this path. Family systems theory offers a frame truly complementary to chaos theory, one with which the co-determined nature of human dynamics can be understood or utilized in action. It specifies chaos theory applications to organizations at the micro-level, where it counts. In addition to its descriptive value, it provides prescriptive value to managers.

Of the works reviewed, only De Greene recognizes the emotional field inherent in human interaction. Family systems theory elaborates, expands, and enhances De Greene's holistic construct. The chapter following is an elaboration of the contention

that family systems theory can prevent the bastardization of chaos theory at the level of management practice.

CONCEPTUAL FRAME

Bowen theory, one of three prominent family systems theory models,¹ and chaos theory have been traversing consubstantial paths. Equivalent underlying principles have guided both theories. Despite being grounded in synonymous principles, the two theories paths have only recently intersected, but still have not converged.² Both theories are being proffered here to explicate the social processes that comprise human systems. The convergence of the two theories appears to hold great promise, as their complementarity enhances our understanding of organizational dynamics.

This convergence is facilitated by the fact that Bowen theory, although developed as a theoretical explanation of dynamics within families, has been expanded to the organizational and societal levels (K. Kerr 1982; Sagar & Wiseman 1982). The rationale behind this is the idea that generic emotional processes inhere in all human relationships.

¹ Structural family systems therapy represented by Salvador Minuchin's work and strategic family therapy represented by Jay Haley's work comprise the two other prominent family systems theory models (Guerin 1976). Although both models espouse concepts applicable to organizational dynamics, neither has explored the potential.

² However, Paul Dell, a structural family theorist developed "an evolutionary rather than a homeostatic model" (Hoffman 1981, 5). According to Hoffman (1981), Dell conceptualizes "families, as well as all living systems, as evolving nonequilibrium entities capable of sudden transformation" (5). Dell derived his evolutionary epistemology from the works of Prigogine and Maturana, with whom he had collegial relationships at the University of Texas. However, Hoffman credits Gregory Bateson for his seminal thinking in nonequilibrium and evolutionary change in human systems. Hoffman concludes that all family systems theory streams are moving in the direction Dell proffers.

Overview of Bowen Theory's Interrelated Principles

In Bowen's conceptualization, an "emotion is the automatic response of an organism to its environment, including others with whom the organism is in relationship" (Comella 1996, 5). The "emotional process" denotes how emotions are transmitted between and among system members affecting the functioning of one another (6). In essence, humans' foremost response to stimuli in the natural environment is an emotionally-based response, rather than a rational, intellectually-based one. Quintessentially, Bowen theory is "about the emotional functioning of the human species" (5). Family and organizational systems are both relationship systems. Based on this fact, Sobel (1982) concludes that "the process inherent in human relationship systems provides the basis for comparing organizations and families" (1).

Predominantly, family systems theory applications to organizations incorporate interrelated concepts theorized by Dr. Murray Bowen (Guerin 1976). Extensive readings in a broad range of disciplines including the physical and social sciences, as well as the humanities, led to Bowen's formulation of how human relationships are played out in nature's balance of forces (Bowen 1982). As noted by his student, Michael Kerr (1981), Bowen believed that the

idea of a balance of forces is central to systems thinking, whether it is a cell, a cardiovascular system, a person, a family, or an entire society that is under scrutiny (235).

In a human relationship system, Bowen identified the two counterbalancing forces

as "a force towards individuality or autonomy and a force towards togetherness or fusion" (Kerr 1981, 236). The instinctual drive in humans to be independent is counterbalanced by the instinctual need in humans for togetherness, or a sense of feeling connected to others. The human being's drive for connectedness is manifested in emotional processes, such as the pressure individuals place on each other for togetherness—including both thinking and acting in given ways. The continual push and pull of these two counterbalancing forces create a dynamic, as opposed to static, system. Human relationships in organizations are likewise influenced by these same counterbalancing forces (Bowen 1976; Kerr 1981; Papero 1996).

Interestingly, the emotion-based processes, which shape the push and pull, "are so automatic" that they "operate largely outside of our awareness" (Kerr 1981, 236). Nonetheless, human functioning is not limited to behavior based on deeply ingrained emotional processes. Humans also have the capacity for intellectually-determined functioning. In Bowen's view

when these two systems can remain functionally separate and operate in harmony with each other, [a person] has a choice between operating on an intellectual, objective basis, or on an emotional, subjective basis...When these two systems are not functionally separate, [a person] loses that choice and his [or her] behavior and thinking become more emotionally-determined (Kerr 1981, 236).

This core principle serves as the grounding for Bowen's conceptualization of differentiation of self, one of the two building blocks of his theory. In essence, differentiation of self is based on the recognition that people have differing or varying

abilities to manage the counterbalanced forces for individuality and togetherness in their lives.

To explicate its meaning Bowen (1976) visualized a theoretical continuum that distinguishes various gradations of differentiation of self. At the lowest end of the continuum, people are "totally relationship oriented," thus they devote all of their energy to "seeking love and approval and keeping the relationship in some kind of harmony" (65). This focus interferes with the person being able to set independent life goals. Bowen (1976) depicts people at the lowest end of the continuum as

spend[ing] their lives in a day-to-day struggle to keep the relationship system in balance, or in an effort to achieve some degree of comfort and freedom from anxiety...They grow up as dependent appendages of their parents, following which they seek other equally dependent relationships in which they can borrow enough strength to function (70).

Often in such relationships, one individual overfunctions and the other underfunctions. A balance, albeit unhealthy, is maintained.

Increasing gradations toward self-differentiation indicate an individual's ability to achieve an "optimum mix or balance" of the individual and togetherness forces, which "permit the person to be a well-defined individual in his or her own right" (Kerr 1981, 246-247). A well-defined or self-differentiated person theoretically would fall along the mid-to-upper range of Bowen's continuum. He or she would be a "calm leader, who can step forward at critical times and define a direction based on principle" (Kerr 1981, 247).

This view of a self-differentiated individual describes a person who recognizes the difference between intellectual and emotional functioning within oneself (Kerr 1981,

236). Cognizant of this pull toward togetherness and with respect for and empathy with the needs of others, the well-differentiated person constructs decisions through the harmonious synthesis of emotional regard for self and others, congruence with one's values, and intellectual reasoning. Thus, the mid-to-upper range of the continuum represents the balance of desired emotional qualities with the rational and logical abilities needed for decision-making. The "heart" and "mind" achieve a balanced harmony that constitute our humanness.

In the workplace, it is essential that the leader be self-differentiated. According to Boverie (1991), a family systems consultant to organizations,

[i]n order to run an organization, the leader must be differentiated to function optimally. Since what happens at the top affects the entire system, the leader must work to define his or her own goals, while staying in touch with the rest of the system (67).

To Bowen, this description of differentiation of self refers to a person's basic level of differentiation, or "solid self" (Bowen 1976, 473). Yet, in his view, there is "another fluid shifting level of self...the pseudo-self" (473). The pseudo-self or functional level of differentiation is "acquired under the influence of the relationship system [and] is negotiable" (473). The functional level of differentiation describes the changes in the "degree of fusion between the intellectual and emotional system that are based on shifts in the level of anxiety that the person experiences" (Kerr 1981, 247). As Kerr describes,

Pseudoself can look like solid self, "This is who I am and what I believe," but the clue that it is not solid self is in the discrepancy between what a

person says and what he/she actually does when under pressure from the relationship system (247).

Anxiety generated by fear of expulsion from the group can prompt an individual to succumb to group pressure and forego an individuated stand. Absent such pressure for togetherness (and the attending anxiety), the discrepancy dissipates. In that event, the individual can readily take a differentiated stand. However, the "real" test in an individual's ability to take a differentiated stand comes in the face of group pressure. Friedman (1985) refers to an individual taking a differentiated stand under these conditions as "defining self" in the situation (30). The individual who defines self in the situation is cognizant of the emotional pressure, but contains his or her own tendency to be reactive. Instead, the individual defines self by declaring a position based on his or her values and concern for others.

Bowen's second interlocking building block, namely the degree of chronic anxiety within a system, is needed to explicate the processes at work in this functional level of differentiation. Remote threats extending over an unspecified period of time render individuals chronically anxious. But in addition to nebulous chronic anxiety, an imminent threat which evokes a response of acute anxiety,

constrains the range of responsive options available and in this manner limits functioning across the full range of responses (Comella 1996, 6).

Simply stated, as anxiety increases in an individual, the ability of the individual to maintain the separation of feeling and intellect decreases and behavior becomes

increasingly automatic in response to an intense feeling process (Papero 1996).

Thus, in an anxious family or organizational system, individuals will tend to make more decisions based on the pressure of others, all of whom have emotional needs and expectations. As anxiety floods the brain, it prevents it from "working efficiently, biasing one's observations of self and others" (K. Kerr 1982, 5). Anxiety is the "response of the organism to stress, not the stress itself" (K. Kerr 1982, 5). Anxiety is also contagious and can spread throughout the system as one person responds to another's anxiety and feeds it back through the system (K. Kerr 1982, 5).

Together these two interlocked building blocks of the Bowen Theory elucidate his view of family, as well as organizational systems, as an emotional field:

A [family] systems orientation addresses the interdependence and mutual influencing of relationships. It places the individuals and the individual relationships in the context of the entire system and focuses on the emotional field in that system and on the emotional forces at work in the system (K. Kerr 1982, 3).

The concept of projection, well-accepted in psychology, was perceived by Bowen (1976) to be the process through which the level of differentiation was transmitted from parents to children in the family system. The process spans multiple generations. It is closely linked to functional roles of various members of the system, as well as sibling positions of those members (Kerr 1981). Undifferentiated parents can project their inadequacies onto one child and thereby attribute causality of their problems to the child.

On the organizational level, an equivalent phenomenon is seen in scapegoating. Gemmill (1989) argues that

[b]y attributing dysfunctions or inadequacies within the system to the personal failings and inadequacies of an individual member, the dysfunctions and destructive aspects of the social system itself go unexamined, as does the covert collusion among group members in creating and maintaining the role of the scapegoat (410).

Additionally, the projection process can result in ejecting a person from the system through firing or even hospitalization, for example. When a person is blamed for systemic failures, generally that person is fired. In a more implicit phenomenon, ejection can also be manifested as the scapegoat developing a stress-induced illness that necessitates hospitalization. Consequently, upon a physician's recommendation, the individual resigns to seek a less stressful position in another organization. The projection process also explains frequent turnovers in one position in the hierarchy (Kance 1995). As Gemmill (1989) noted, the pattern driving scapegoating goes unexamined. Dynamics in the projection process lead to expelling the scapegoat. The scapegoated individual is replaced with another who becomes the scapegoat.

Anxiety and the multigenerational transmission of level of differentiation are spread through the human relationship system via triangles. Bowen viewed a three-person formation as the smallest "stable relationship system" because when tension infuses a two-person system, the dyad draws in a third person to diffuse the tension (Bowen 1976, 76). The conflict or discomfort felt by one member of the dyad is alleviated when that person "resolves the relationship dilemma by moving towards relationship fusion with a third person"--hence forming a triangle (Kerr 1981, 241).

Analogous to a two-legged stool, when there is tension or unresolved conflict in

a two-person relationship, the stool or relationship is in jeopardy of tipping over. The two-person relationship can be stabilized--much like adding a third leg to the stool--by unconsciously shifting the focus to another individual or issue. The dyad then can unite in their concern about the triangled third person. In this sense, triangles are functional for the dyad.

When there is little tension, the triangle is composed of two closely linked members with the third member on the periphery of the dyad. When tension increases, the configuration shifts as the most uncomfortable member of the dyad gravitates toward the third member to reestablish the equilibrium. Dynamically, each member of the triangle then attempts to occupy the outside position in order to avoid the effects of the tension.

Correspondingly, when the tension level escalates in a triangle, others are drawn in to form a "series of interlocking triangles" (Bowen, 1976, 76). Triangles can become dysfunctional when the underlying tension in the dyad is continually masked by the triangulation process and hence never resolved.³

Emotionality drives triangles. According to Kerr (1981), "the greater the togetherness orientation of people, the greater potential anxiety and the greater likelihood of triangling" (242). Or, if the system is encountering stress from outside, anxiety will become elevated and persons within the system will react typically through an increase

³ The scapegoating projection process Gemmill (1989) discusses inheres in the triangulation process. When the expelled scapegoat is replaced by an individual who then becomes the scapegoat, the latter has been similarly triangled.

in triangling (K. Kerr 1982, 7).

Bowen (1976) recognized that the concept of triangles was not limited to families.

He contended that in the workplace

the tensions between the two highest administrators can be triangled and retriangled until conflict is acted out between two who are low in the administrative hierarchy. Administrators often settle this conflict by firing or removing one of the conflictual twosome, after which the conflict erupts in another twosome (75).⁴

Interlocking triangles among various levels of systems transmit societal-level anxiety. To Bowen, this macro-level emotional process describes forces toward individuality and togetherness that "operate to counterbalance each other on a societal level in a manner similar to what exists in individual families" (Kerr 1981, 251). Kerr (1988) elaborates.

When people become anxious, the pressure for togetherness increases. During high-anxiety periods human beings strive for oneness through efforts to think and act alike. It is ironic that this striving for sameness increases the likelihood that a group will become fragmented into factions. These are a product of the pressure for oneness and the intolerance of differences which is associated with it. Fragmentation and emotionally determined alliances reflect the loss of differentiation in a group (50).

As societal-level anxiety increases, the calmness in which individuals balance their rights as individuals with their concern for the total group shifts toward an intolerance for differences. At this point, according to Kerr (1981), intensely fused subgroups fight

⁴ K. Smith (1989) maps triangles and interlocking triangles that "split" along vertical and horizontal hierarchical lines in a town's educational system. His fascinating exposition illustrates the pervasiveness and extent unresolved conflict had throughout the system and surrounding community. Mapping or charting the triangulation and splitting processes adds value and prescription to Bowen's assertion.

among each other and the larger structure. This phenomenon leads to societal regression defined as the

anxiety-driven emotional process in society that interferes with society's ability to solve its problems. The rising rate of violence, rising divorce rates, instability of government and a host of other parameters are symptoms of this ever-intensifying emotional process (Kerr 1981, 252).

Sobel (1982) believed that Bowen's concept of societal regression has particular significance for government agencies. Public organizations more than private corporations are subject to escalating demands for accountability, increasingly severe reductions in budget and manpower and shifting political pressures. Friedman (1995) concurred, noting that societal regression is characterized by the "absence of significant change, change that doesn't recycle--in families, institutions and the government." Friedman (1995) has observed that our society is displaying an adaptation towards weakness, which is counter-evolutionary. Concomitantly, leadership training, based on the functional social science model that focuses on techniques and development of expertise, denies societal-level anxiety and thereby denies emotional processes.

Societal-level anxiety filters through public organizations and institutions to individual families. Reciprocally, anxiety is projected from individual families through public organizations to the societal level (Friedman 1995).

Kerr's (1988) and Papero's (1996) work on the anxiety-instability spiral illuminates the phenomenon occurring in many public organizations today. Changes,

such as reorganizing or restructuring plans,⁵ signify instabilities suspending (at least temporarily) known and predictable hierarchically-established role-related functions, behaviors and actions. As changes impact the organization, corresponding changes in an individual's perception, sensitivity and behavior occur. As Papero (1996) notes, the instability is based on the

perceived lack of predictability and lack of control in the absence of a clear group structure. That perceptual instability leads to each individual's focus on the relationship system, on the position of each with regard to other(s). The focus on the other(s) coupled with the increased interactional intensity results in the various behavioral indicators of increased instability in the group (49).

As such, changes in an individual's behavior are noticed by others. If this heightened sensitivity infects the group, individuals will no longer be able to predict how others will behave. Instability in the social system accompanies the loss of predictability. The anxiety level increases, spreads throughout the system via triangles and organizational members experience a feeling of uncertainty and a sense that they are losing control over their immediate as well as long-term future. The factors create an anxiety-group-instability spiral.

Transmitting anxiety via triangles can alternatively diffuse anxiety. The distinction between anxiety diffusion and intensification rests on certain interconnected conditions. Papero (1996) explains.

⁵ Reorganizing and restructuring more fundamentally reflect, re-create and re-enact societal-level instabilities. Public organizations situated along the continuum from individuals to the societal-level of the implicate order both contribute to the instabilities and are affected by them, often in a reactive manner.

Whether anxiety spreads and whether it intensifies as it spreads depends upon the interplay of at least the following variables: the severity and magnitude of the actual stressor(s), the state or condition of the relationship network at the time of the stressor (where it would fall on the continuum from unstable to stable), and the ability of key individuals to maintain functioning (both mental and behavioral) in the face of changes and pressures in the network marking the intensification of anxiety or increasing instability (50).

In an organization the spiral is detected by assessing organizational members' perceptions. Some indications of the spiral are individuals' increasing sense of loss of control over choices, the perception that the situation is worsening, and individuals' perceptions that they can no longer predict events that impact upon them. Behaviorally, members externalize anxiety manifested by an increase in conflictual situations. These in turn are accompanied by a noticeable escalation in triangling.

An increase in dysfunctional coping mechanisms such as substance abuse, workplace violence, and sexual harassment can also occur (W. Smith 1996). The dysfunctional coping mechanisms signify the "binding of anxiety" (Kerr 1988, 48). The organizational members can then focus on the bounded anxiety as the problem, redirecting attention away from the more fundamental problem.

The key to reversing this process begins with individuals' work on self-differentiation (Bowen 1976, Kerr 1981, Papero 1996, Friedman 1995). The ability to tolerate anxiety and the resulting thoughtfully made decisions leads to reversal of the contagiousness and infectiousness of anxiety in multi-layers of human interactions. Inability to tolerate anxiety leads to poor decision making and projection of anxiety

through triangling.

The overview of interlocking concepts that comprise Bowen theory describes a wholly different perspective for understanding human behavior in organizations than the ones offered in the traditional organizational behavior (OB) literature. The shift in thinking is from traditional management theories' predominant focus on managing others to the Bowen theory focus on self. Comella (1996) noted the difference as OB's failure to realize that the emphasis on managing others constitutes a projection and failure to recognize the impact one has on others (and others have on self) versus family systems theory's explicit emphasis on this dynamic. Through an individual's successful work on self-differentiation, others will, in principle, respond with an increased ability to tolerate anxiety and there will be a corresponding reduction in reactivity. A brief description of these two theories of action's distinctions may add clarity to how a managerial theory of action based on family systems theory principles (i.e. nonlinear thinking) differs from one that is grounded in dominant and traditional linear thinking.

Distinguishing a Family Systems Theory-based Managerial Theory of Action from one Grounded in (Traditional) Linear Thinking

Two fundamental differences distinguish the two theories of action. First, the manager whose theory of action is grounded in family systems theory conceptualizes the organization as a relationship system. Thereby, the manager attends to emotional process rather than predominantly focusing on rational process (K. Kerr 1982, 4). Or in

Wiseman's words (1982), it is the recognition and awareness that if you are working in an organization, you are "working with emotional process in an organization," while at the same time, shaping "the rational components" of the organization (40). To achieve the organization's goals, the manager concentrates on the differentiation of self and others realizing that through these efforts a "healthy," productive system will thrive.

In contrast, the reverse generally holds when managing from traditional models. The manager develops rational processes designed to pursue goals efficiently. Organizational members implement the strategies within the structure, thereby merely representing variables or the means by which goals are accomplished. In this rational model, emotions are necessarily suppressed, marginalized, or taken into account primarily when they interfere with attainment of the organization's goals. This approach ignores the centrality of emotional process. Although the manager may consider factors such as worker satisfaction and job-related stress, those are seen as attitudes existing "on top of an emotion-free machine" (Hochschild 1993, ix).

A second essential difference, and one that undergirds and drives the first, encompasses the polar views of nonlinear and linear thinking. This underlying assumption frames the way the manager interacts with others in the organization. The nonlinear precept views individuals' behavior as co-determined. An individual's behavior is seen as the manifestation of interaction with another. Interaction taking place among the various individuals within the relationship system extends the process so that individuals are not seen as discrete or independent entities. Rather, individuals interact

as part of the whole, influencing its behavior while concomitantly being influenced by it. The interaction will be different if the individuals shift positions. Therefore, co-determined behavior, as well as the behavior of the whole, depends upon the position each individual occupies in relation to another in this network (Friedman 1985). The manager attends to interaction within the network's structure. The focus supplants the notion of individual as an isolated entity.

Linear thinking assumes determinant and proportional cause and effect relationships--meaning that an individual's specific behavior is seen as traceable to a direct cause. Most commonly, an individual's behavior is attributed to his or her personality or to discrete situational events, constituting a direct cause and effect relationship. The causal chain does not have to be only "one-to-one." Linear thinking also underlies theories of multiple causation where several discrete factors combine to cause an individual's behavior (Friedman 1985). The search centers on finding the cause or causes of someone's behavior.

The manager whose theory of action is guided by family systems theory operates from the conviction that an individual's behaviors are mutually determined by interaction with another. The system of interaction produces behavior. Guided by the principle of self-management, this manager focuses on changing his or her own behavior rather than attempting directly to change others' behaviors. Behavioral techniques designed to motivate others are de-emphasized. The manager works on his or her self-differentiation and concomitantly fosters others' functional level of self-differentiation.

The manager who employs the traditional model more likely holds a linear view of causality. In the case of a manager searching for the cause of an employee's (problematic) behavior, "the cause is predefined as external to the person or persons defining the problem. The cause is 'out there' in the external world or in someone else..." (Weakland 1976, 114). The notion that one can directly change another's behavior flows from that basic assumption. This translates to management strategies' focus on changing the employees' behavior through instrumental techniques designed to motivate and increase behaviors that will lead to increased productivity.⁶ Once again, in this instance, the manager focuses on rational processes. Guided by linear thinking, the manager views rational processes as the means to achieve goals. Those fundamental differences distinguish a manager's theory of action that is based in family systems theory and more broadly nonlinear thinking from a manager whose theory of action is undergirded by linear thinking.

In the next section, I seek to strengthen further the legitimacy that family systems theory can have as a viable basis of a public management theory of action. To accomplish this objective, I annotate effluent applications of chaos theory to family systems theory as well as to consubstantial social science theories grounded in nonlinear thinking. My purpose in exploring the broader arena comprising nonlinear thinking in

⁶ Certainly, individuals can be conditioned to respond in desired ways through behavior modification. That knowledge leads to the flawed assumption that an individual's behavior can be changed directly by another. Even more damaging, when the techniques are ineffective, the individual is blamed.

the social sciences is to lend credence and support to the value that both chaos theory and family systems theory can offer public administration.

Effluent Applications

Bowen theory has been traversing a path complementary to the one that has brought chaos theory into the purview of public organization theory. Their confluence appears imminent.

Perhaps not coincidentally, structural and strategic family systems scholars are exploring chaos theory's relevance to therapy. A common theme has been to dispel the primacy attached to homeostasis and by extension, the fallacy of therapy directed towards reestablishing the family's achieved equilibrium. Taken together, these scholars' views reflect their collective agreement that chaos theory expands family systems' understanding of the change process as well as deepening understanding and appreciation for the principle of mutual causality. The enhanced view furthers therapists' work with families.

In 1981, Momy Elkaim convened a roundtable to discuss areas of mutual interest to structural and strategic family systems therapists and the Prigogine group. A transcript of the conversation was subsequently published in Family Process. Elkaim noted that family therapists' understanding of the change process could be enhanced by adopting the notion of dissipated structures, especially to re-examine the significance family therapists attach to homeostasis.

The conversation addressed the relevance of nonlinear interactions, acknowledging the primacy of the principle of mutual causality and the significance of chaos theory's definition of openness to family systems therapy. Regarding the latter, Isabelle Stengers addressed three respects in which openness has significance: first, Bertalanffy's construct of "open" systems, which depicts continual flux rather than one stable equilibrium; secondly, in addition to a state of flux, noting that a dissipative structure "lives on its openness"; and thirdly, openness as it relates to willingness to modify theoretical constructs for increased understanding (Elkaim et al. 1982, 69).

Stengers' last point captures the tentativeness with which scientific communities risk tradition to de-stabilize existing doctrine. She simultaneously captured the same hesitancy evidenced by the round table discussants. Despite its only inchoate level of exploration, the discussion signaled cross-disciplinary sharing--a somewhat novel experience for both camps.

In contrast to the discussants' tentativeness, Dell (1982)⁷ draws upon Maturana and Varela's (1980) notion of autopoiesis to argue boldly that family therapy's long-held homeostasis principle is epistemologically flawed. Defining homeostasis as the system's self-regulation mechanism perpetuates dualism, thereby denying duality or mutual causality. Dell advocates replacing the conceptually flawed notion, homeostasis, with the principle, "coherence."

⁷ As noted earlier, Dell's association with Prigogine and Maturana influenced his family systems model's construction.

Coherence simply implies a congruent interdependence in functioning whereby all aspects of the system fit together (31).

The homeostatic principle becomes superfluous when coherence is understood. Dell concludes that the

coherence of interactional systems needs no explanation other than that the coherence is a natural, spontaneous phenomenon that arises when living organisms spend time together. Homeostasis is not needed to explain the 'force' or 'principle' that *holds together* the interactional coherence. The interactional coherence is a coevolved coupling whose possibility of being realized is immanent in the various *potential* correlations and complementaries of the respective behavioral coherences of the organisms involved (36).

Dell points out that therapists have long been aware that homeostasis cannot account for the change process, and engage therefore in "paradigm-protecting maneuvers" (35) perpetuating erroneous thinking. In the final analysis, the argument is simple yet elegant:

[n]ot only do all behaviors issue from the coherence, but they recursively affect the coherence. To paraphrase Heraclitus...there is a sense in which the same system cannot behave twice--because in that very behaving it makes itself different! *A system cannot behave without altering itself* (31-32).

Subsequently, Elkaim (1985) arrived at the same conclusion. Based on previous involvement in the roundtable discussion with the Prigogine group, he continued to explore the relevance of the idea of dissipative structures to family systems therapy. Just as Dell had realized, Elkaim noted the dissonance between the stated goal of working toward equilibrium restoration, while witnessing change associated with a far-from-equilibrium state. Incorporating principles from chaos theory prompts a re-examination

of the dissonance and reframes the issue. Furthermore, the preeminence of mutual causality or co-determinativeness is re-established. Structural as well as strategic family system therapy models tend to subjugate its paramount significance by conceptualizing the system as made up of individual entities which interact.

Ward (1995) explores the relevance, noting that "[a]lthough the terminology used by chaos theory and by family systems theory is different, both deal with similar processes" (632). She points to the value of family systems theorists' incorporating chaos theory's language to describe more aptly the self-similar processes. For instance, family rituals, when conceptualized as attractors and the basis of attraction, describe one way family life is organized but also include a flexibility that the term homeostasis precludes. The notion of strange attractors elucidates new patterns of behavior that families exhibit.

Drawing from another school of thought in chaos theory, Ward equates the family's developmental process with self-organizing principles. She views the healthiest families as ones who achieve the openness chaos theory purports as necessary for transformation. To be viable, a system needs

high levels of communication among its members, a highly flexible organization, a minimum of rigid constraints, effective positive feedback processes, and a constant flow of new information (634).

In effect, to facilitate transformation, the system should be poised at the border separating ordered behavior from chaotic behavior. Abusive families represent those that are unable to transform during the chaotic period, and rather than eliminating the

turbulence, become more polarized.

Ward concludes that chaos theory brings more than just new jargon to family systems theory, it brings new insights to previous limitations "arising from the concept of circularity and a failure to show the relationship between order and disorder" (635). Nonetheless, the relevance needs further exploration. Issues, such as the efficacy of developing mathematical models to analyze family dynamics, need to be resolved.

Chamberlain (1995) finds the notion of the strange attractor particularly relevant to understanding dynamics in family systems. In her view, a strange attractor is "the process that unfolds through the complex interactions between elements in a system" (268). Even with rapid oscillations, the vacillation remains within certain parameters. The notion of strange attractors may account for pattern order. Yet, the system is considered chaotic "because there is never an exact repetition in any of the 'orbits' around the attractor points" (268). When extrapolating the concept to family systems dynamics, Chamberlain suggests that a family who seeks therapy during periods of instability may do so to "establish a new strange attractor point that can restore order to the increasingly chaotic interactions in the system" (270). The therapist then "perturb[s] family members to act differently in order to complete the loop from chaos to a new order" (270-271).

In the marital dyad, the relationship process involves the "weaving of separateness and togetherness so that the complex pattern of intimacy emerges" (272). The push and pull, pursuing and distancing, and other rhythms that constitute the weaving suggest that

the "strange attractor pattern in relationships is the fluctuation between fear (loss of other) and love (loss of self)" (272). When the relationship becomes problematic, the therapist, conceptualizing the strange attractors as fear and love, can "perturb" the interaction toward either individuality or togetherness so that the couple can move toward a more effective level of functioning.

Chamberlain believes that the "fit between chaos and family systems theory seems inescapable" (269). Both are theories about patterns, not predictability. And it is these

patterns of organizing principles or behaviors that constitute the strange attractors in families and provide stability when the family is in danger of moving outside the limits (269).

Goldstein (1995) takes a broader view regarding the fit between chaos theory and family systems theory. Essentially, he implies that chaos theory principles can dispel myths about psychoanalytic theory and move the field toward re-conceptualizing its model as a systemic model. Elsewhere (Goldstein 1988, 1989, 1990) he has built his case for re-examining Freud's views in light of developments in chaos theory. Indeed, Goldstein is just one of many psychologists who are re-examining the psychoanalytic model from the standpoint of chaos theory (e.g. Butz 1992, 1993; Krippner 1994; Abraham & Gilgen 1994; Kincanon & Powel 1995; Robertson & Combs 1995). Collectively, their efforts appear to be moving the field away from the individual as an isolated entity and the functionalist, as well as structuralist, dualism that dominates psychology towards grasping and acknowledging nonlinearity and mutual causality. The trend replicates the one seen in management and organizational theory.

The brief excursion into chaos theory applications to family systems theory and psychoanalytic theory reveals self-similar patterns simultaneously occurring in other social sciences field. Interestingly, but not coincidentally, the relevant insights mark the equivalent, but nascent conclusions noted in the literature review regarding chaos theory applications to organizations. More specifically, chaos theory as applied to organization theory reframes the primacy of maintaining equilibrium to ensure survival. That revelation has simultaneously occurred in the field of psychology.

Secondly, explorations in both fields claim only tentative applicability. Various implications, interpretations, and degrees of "fit" are being contemplated. Systems are seen as nonlinear, but neither field has "proved" the claim. The caution is necessary.

Peat (1995) continues to warn that while

chaos theory and fractal descriptions are capable of simulating a wide variety of natural processes, it remains an open question as to the extent to which such theories actually offer a full account of the inner workings of nature and society. For example, while repeated iterations can generate complex results, this does not necessarily mean that such iterations are part of the actual generative processes of nature itself (360).

Nonetheless, Peat intuits that the merging of chaos theory and psychology may well lead to a deeper understanding of holism.

Clearly, we are touching something very deep in these universal forms and images that are at one and the same time manifestations of the internal dynamics of the cosmos and the structuring of human consciousness (361-362).

Peat's warning mixed with optimism echoes physical scientists' equivalent reservations.

Physical scientists traversed the same ground when nonlinear properties in physical

systems were first examined. Now chaos theory has sparked social scientists to explore nonlinear properties in human systems.

But there is a critical distinction between these two types of explorations. Social science has historical precedence for viewing nonlinearity in human systems. Nonlinear thinking is not new to the social sciences. Rather, it has been marginalized by linear thinking that undergirds the dominant world view. In the physical sciences, when nonlinear properties were "discovered," the theory base expanded to accommodate the distinction between linear and nonlinear phenomena.

In the next section, I cite the broader longstanding arena of nonlinear thinking in the social sciences to illuminate the historical precedent and foundation developed in nonlinear social science theory. This exploration reveals equivalent underlying tenets in family systems theory, chaos theory and nonlinear social theories, which have established credence in the social sciences.

Consubstantial Non-linear Thinking in the Social Sciences

George Herbert Mead, John Dewey, Mary Parker Follett,⁸ and, subsequently, Anthony Giddens represent a number of scholars who have based their social theories on the principle of mutual causality (although different terms were used). Their nonlinear thinking relegated them positions outside mainstream thinking. Although their voices

⁸ Dede (1996) fully explores the consonance and differences among Dewey's, Mead's and Follett's views, concluding that the three views are consonant in "nearly every substantive sense" (109).

were subdued by the clamor from functionalists and structuralists, their messages represent the most sensible approaches to managing threatening economic, political and social turbulence of their respective eras.

Collectively, these scholars establish precedent for nonlinearity in social theory. Additionally and in light of this dissertation, Follett's (1924) and Giddens' (1979, 1984) works, especially, mesh with, enhance and are enhanced by both Bowen theory and chaos theory. When applied to management and organization theory, their interweaving elucidates different levels of observation within the implicate order.

Weinberg (1993, 1996) found that [Bowen] family systems theory supplements, explicates and specifies human interactional process inherent in Follett's (1924) doctrine of "circular response" and concept of "integration." Although both theories hold that human behavior is co-determined and, in turn shapes and is shaped by the environment, Bowen theory enhances Follett's construct through inclusion of emotional process inherent in co-determination.

Indeed, recent Bowen theory applications to organizations further accentuate the two theories' consonance. Moreover, both theories explore co-created or co-determined dynamics and processes inclusive of the societal level of the implicate order, thereby strengthening their congruence and relevance to public organization management.

Giddens' (1979, 1984) social theory of structuration replaces the dualism proffered by structuralism and functionalism with holistic duality. The principle of mutual causality, synonymous with Giddens' term duality, undergirds his intricate theory

explicating co-produced and inseparable elements--co-presence⁹ in individual interactions, including the role of the unconscious; social reproduction; structural properties of social systems; social and system integration, social change--all patterned within and across the time-space dimension. Conceptually, structuration

involves that of the duality of structure, which relates to the fundamentally recursive character of social life, and expresses the mutual dependence of structure and agency (1979, 69).

Duality of structure implies that "the structural properties of social systems are both the medium and the outcome of the practices that constitute those systems" (69).

As such,

rules and resources are drawn upon by actors in the production of interaction, but are thereby also reconstituted through such interaction (71).

Essentially, agents (human actors) and structure are inseparable co-producers of societal totalities. The duality is present and interconnected in and between all levels of observation.

Giddens' presentation of duality decidedly infers the notion of implicate order found in chaos theory. His treatment of integration echoes Follett's perspective. Inclusion of Goffman's co-presence in face-to-face interaction mirrors the significance Follett attaches to social interaction. Bowen theory incorporates and expands the notion

⁹ Giddens incorporates Goffman's (1963) concept of co-presence to explicate how human behavior is co-determined through face-to-face interaction. Goffman stresses linguistic and non-verbal communication as primary in the process. Giddens adds spatiality to Goffman's thinking and states that "co-presence is anchored in the perceptual and communicative modalities of the body" (Giddens 1984, 67).

of co-presence to include emotional process. Concomitantly, it also enhances Giddens' explanation of routinization¹⁰ utilized by individuals to quell unconscious sources of anxiety.

Giddens' deconstruction and revised reconstruction of evolutionary theory of social change bears striking resemblance to chaos theory's notion of co-evolution. Mutual causality is preeminent in, and undergirds, both theories. In different, but equivalent terms, Giddens speaks of episodic change, sudden discontinuous change, time-space distancing, and randomness, and replaces the concept of adaptation with co-creating environmental and human interaction. The processes and patterns inherent in societal co-evolution Giddens theorizes are the self-same processes and patterns identified by chaos theorists. At face value, it may appear that the two theories are necessarily separate to explicate governance in the physical and human realms. However, Giddens would most likely contend that humans in their social construction of reality identify and label the processes governing chaos theory's notion of co-evolution. Further, humans appropriate and allocate all within the physical realm in the process of their advancement. In the end, there is no distinction, there is but one universe and all contained therein mutually interact and are co-determined.

In sum, structuration theory, as a social theory, may be viewed as the most universal of the three consonant theories. The same statement can be made regarding the

¹⁰ Giddens (1984) maintains that through daily routines, individuals "sustain a sense of ontological security"--a sense of control and predictability (282).

relative positions of Bowen theory, Follett's work, and chaos theory. Yet, Follett and Bowen theorists provide the most insight for public administration management, simultaneously enhance and are enhanced by Giddens' work and chaos theory.

Despite the historical precedent for nonlinear thinking in the social sciences, presently chaos theory's application to organizational management appears to be generating excitement about and fascination with the potentiality. Perhaps not so ironically, public organization theorists are importing chaos theory instead of Giddens' theory to introduce nonlinear conceptualizations of organizations. In part, our proclivity toward importing physical science theories to the social realm stems from our tendency to grant superiority to physical science theories' provability.

Given the apparent trend supporting chaos theory's applicability to public organization management and given Bowen theory's complementarity to chaos theory, another brief explication of the "fit" may be helpful. Bowen theory not only complements chaos theory principles, it specifies those principles and boasts transferrable prescriptions. In this explication I seek to demonstrate the two theories complementarity by enhancing a popular "chaotic management" prescription via the addition of explanations and expansions from family systems theory.

Exploring the Implicate Order

Weaving excerpts from Margaret Wheatley's (1992) popular book, Leadership and the New Science, with concepts from Bowen theory shows how a perspective on the

implicate order can be gained using these approaches.

Wheatley's introductory chapter sets the tone for dovetailing the two theories when she states that "[w]e inhabit a world that is always subjective and shaped by our interactions with it" (8). The "new science," characterized by its movement toward holism, gives "primary value to the relationships that exist among seemingly discrete parts" (9). Wheatley's quandary about which was the most important influence on behavior in organizations--"the system or the individual," led her to conclude that

[n]one of us exists independent of our relationships with others. Different settings and people evoke some qualities from us and leave others dormant. ..If nothing exists independent of its relationship with something else, we can move away from our need to think of things as polar opposites...[it] is not an either/or question. There is no need to decide between the two (34).

Wheatley's query is addressed in Bowen theory's description of functional positions in systems and manifestation of the pseudo-self. In a work system, particularly,

[s]ince a number of different people can fill a functional position in the system, the behavior of a person is not necessarily a characteristic of that person alone, but indeed is also determined to a certain extent by the functional position that person occupies in that system (K. Kerr 1982, 3).

Kerr (1982) illuminates the cogency of this observation. An individual who is successful and responsible as a manager at work can also be passive, distant and ineffectual as a parent or spouse at home. The individual is not two different people, rather he or she occupies different functional positions in the two relationship systems and is intertwined with different people and emotional fields in the system, producing what appears to be

but really, are not different "personalities."

Based on her understanding of co-determined relationships, Wheatley calls for recognition of the need to facilitate process instead of describing tasks. Simply stated, as she and a friend discussed, "power in organizations is the capacity generated by relationships" (38-39). According to Wheatley's interpretation of physics experiments, relationships are, "indeed, affected by connections that exist unseen across time and space" (40). When consulting with organizations, Wheatley now looks "carefully at how a workplace organizes its relationships...the patterns of relationship and the capacities available to form them" (39).

Bowen's explanation of triangles would be particularly useful to Wheatley's endeavor to map relationships. Triangles are manifested in the unseen emotional field that negotiates the instinctual needs for individuality and togetherness. Organizational consultants who have grounded their method in family systems theory map triangles and interlocking triangles. Triangles are the primary vehicle for transmitting anxiety, as well as for negotiating the counterbalancing forces for individuality and togetherness. Detriangling is one method or technique that systems consultants utilize to alleviate anxiety, to improve relationships through reducing distortion in communication and resolving conflicts, as well as to foster self-differentiation.

Similarly, Wheatley uses "S-matrices" to think of lines connecting roles on a traditional organizational chart as "reaction channels, lines along which energy was transferred to facilitate the creation of new things" (70). Her insightful idea of rotating

the matrices diagrams that depict energy transfer within the relationship network helps clarify her visualization that the lines represent conduits for the dually directed energy flow. In other words, physically rotating the graphic diagrams reminds her that the directionality of energy transfer is two-way, not one-way.

Hirschhorn and Gilmore's (1980) and Gilmore's (1982) adaptation of a family genogram for organizational applications encompasses the equivalent of Wheatley's matrices diagrams. Moreover, the adapted genogram can also be utilized to decipher triangles, coalitions, communication distortions and a host of other interconnected relationship dynamics.

On the systems level, Wheatley believes that "[h]igh levels of autonomy and identity result from staying open to information from the outside" (92). Thus, the self-organizing organization is "both sensitive to its environment, and resilient from it...[and] it develops an autonomy that makes it unnecessary to be always reactive" (93). Wheatley's perspective is elegantly complemented by Bowen's description of a self-differentiated person. This individual is able to make decisions based on principles and values while remaining aware of and genuinely concerned for the needs of others. Such a person is not reactive under pressure from the group for togetherness when there is anxiety, nor reactive in response to pressures external to the system. Rather, the self-differentiated person is aware of the pulls and tendencies to be reactive, but remains calm, tolerates the anxiety and makes thoughtful decisions. Juxtaposing this micro-level explanation with Wheatley's system-level explanation illuminates the nature of the

implicate order. Self-differentiation achieved by organizational leaders and subordinates is reflected at the system level to produce the self-organizing organization.

In her interpretation of Jantsch's (1980) paradox of freedom and order in self-organizing systems, Wheatley supports individual autonomy--or fluctuations-- declaring that

[u]nder certain conditions, when the system is far from equilibrium, creative individuals can have enormous impact. It is not the law of large numbers, of favorable averages, that creates change, but the presence of a lone fluctuation that gets amplified by the system (95-96).

Wheatley's perspective, while partially correct, is the optimistic rendition of a dissipative structure. From Bowen theory concepts, we are also made aware that individual fluctuations, when driven by elevating or chronic anxiety, are also contagious. As such, just as creative individuals-- those deemed self-differentiated by Bowen theorists--can have enormous impact on the system, so can individuals who are anxious. According to Wheatley,

[i]f amplifications have increased to the level where the system is at maximum instability (a crossroads between death and transformation known technically as a bifurcation point), the system encounters a future that is wide open (96).

Wheatley focuses on the optimistic and positive alternative posed at the bifurcation point. But, the need to explore the alternative ("death" or continued chaos) seems imperative if we are to understand the influence of the characteristics of nonequilibrium (turbulence/chaos/instability) on humans and reciprocally, their influence on the system.

Paradoxically, the danger in such a study centers on the ability of theorists and practitioners to utilize the new found explanation to predict the system's path when it reaches the bifurcation point. Correspondingly, these same theorists and practitioners would be tempted to try to control or manipulate organizational members' behaviors. Already, some (e.g. Nonaka 1988, Priesmeyer 1992) are advocating the purposeful inducement of chaotic states in organizations in order to elicit members' creativity. The caveat to their approach is found in the our understanding of the effect of stress and continued anxiety on human beings. Awareness of these effects precludes such an application on ethical grounds. Too, the unintended consequences of prolonged stress and anxiety may override the creativity supposedly generated.

The preceding discussion seeks to demonstrate how inclusion of Bowen theory principles enhances Wheatley's chaos theory-centered view of organizations. However, it provides only a glimpse of how Bowen theory principles are translated into a managerial theory of action. An actual, practicing manager who consciously grounds his or her theory of action in family systems principles can provide the best example and description of what the theory means at the level of action. As I mentioned earlier, this is precisely what this study will present. Then, this illustration will be illuminated by contrasting it with a case account of a manager whose theory of action is based on a traditional management approach. The specifics of this design are what I wish next to elaborate.

RESEARCH DESIGN

Justification

The purpose of my research design is to produce a description of how one manager has integrated principles and concepts from family systems theory into a management theory of action. So as to give this description vividness and contrast, I will juxtapose this picture with one depicting a respected public manager's more traditional (i.e. one that is grounded in linear thinking) managerial theory of action.

Following Argyris et al. (1985), a theory of action refers to "complexly related propositions" that individuals form to simplify environmental stimuli (81). In this "sense making process" individuals construct a "manageable set of causal theories that prescribe how to achieve intended consequences" (81). More specifically, humans utilize the meaning construction process to "design action to achieve intended consequences, and monitor themselves to learn if their actions are effective" (80). Rather than constructing governing causal theories for every situation, individuals "learn programs for drawing from their repertoire to design representations and action for a unique situations. We speak of such design programs as theories of actions" (81).

The aim of the research is to describe the managers' theories of action. The research design must necessarily undergird, facilitate and elicit such a description.

A phenomenological perspective frames the research. Taylor and Bogdan (1984)

explain the rationale for using this approach.

The phenomenologist is committed to understanding social phenomena from the actor's own perspective. He or she examines how the world is experienced. The important reality is what people perceive it to be...In contrast to a natural science approach, the phenomenologist strives for what Max Weber (1968) called *verstehen*, understanding on a personal level the motives and beliefs behind people's actions (2).

In the study of human behavior and action, "human beings are both the subject and object of inquiry, which means that knowledge of society is a form of self-knowledge" (Hughes 1990, 93). To Hughes, this suggests that *verstehen*, defined as interpretive understanding, "gives social observers a method of investigating social phenomena in a way that does not distort the social world of those being studied" (93).

The phenomenological perspective falls squarely within the interpretive paradigm, which seeks to "understand the fundamental nature of the social world at the level of subjective experience" (Burrell and Morgan 1979, 28). Interpretivism is grounded ontologically in nominalism. The tenet holds that social realities are

intersubjectively constituted by persons relating to each other through practices identified and given meaning by the language used to describe them, invoke them, and carry them out (Hughes 1990, 117-118).

Interpretivism's non-positivistic epistemology asserts that the social world "can only be understood from the point of view of the individuals who are directly involved in the activities which are to be studied" (Burrell and Morgan 1979, 5). Hughes (1990), relying on Weber's reasoning, explains that social interaction

occurs when actions are reciprocally oriented towards the actions of others. Actions are reciprocally oriented not in any mechanistic fashion

of stimulus and response, but because actors interpret and give meaning both to their own and to others' behavior (95).

Phenomenologists, holding that "knowledge is an act of consciousness," assert that it is "through acts of consciousness, and through such acts alone, that the world is given and presented to us" (Hughes 1990, 140). Thus, studying the everyday world of social actors reveals the intentionality of consciousness, based on social interaction.

Positivist statistical methods may support social analysis but fail to capture the nature of social interaction and the essence of social action. Correlations and other statistical methods filter out the essence of social interaction, reducing meaning to a set of interacting variables. As such, positivist social researchers intentionally seek statistical data and averages to denote trends and to "look for the uniform, precise rules that organize the world" (Rubin & Rubin 1995, 32). Data gathered through precise methods supports the positivists' underlying ontological belief that the "accumulation of facts is the way to build an ever-closer approximation to a reality that exists independent of human perception" (32).

Qualitative methodology attempts to "reconstruct the subjective experience of social actors" (Hughes 1990, 93). It "produces descriptive data: people's own written or spoken words and observable behavior" (Taylor and Bogdan 1984, 5). Representing one approach to the empirical world, qualitative methodology is inductive, holistic, naturalistic, humanistic and emphasizes validity (Taylor and Bogdan 1984, 5-7). In summary, qualitative methodology focuses on description and understanding; quantitative

methodology emphasizes explanation (Stake 1995). The polarity is apparent.

Nonetheless, quantitative methodology eclipsed qualitative studies following World War II (Sjoberg et al. 1991). For instance, social surveys supplanted qualitative case studies as attention focused on growth in the economy, population and technological advancements. In its claim that surveys emulated the reliability and objectivity of the natural science model, such studies became the basis for funding human service projects, political campaigns, marketing new products, and a host of other ventures spawned by the post-war economic boom. Qualitative studies were devalued and criticized.

The incommensurable views of positivists and interpretivists filtered into debates among qualitative researchers. Perhaps the differences partially account for the lack of a single methodology emerging as the most appropriate for such research. Paradoxically, differences in perceptions among interpretivists simply reflect and reinforce their unifying ontological belief that reality is socially constructed, therefore variant.

As part of this debate, the time-honored qualitative case study approach was marginalized by yet another model. From within the qualitative arena, participant observation and ethnography were touted as methods able to elicit greater depth and understanding of the informants' world. But, Handel (1991) argues that participant observation is simply the

case study in another guise...[and while] most participant observations are case studies...all case studies are not participant observation studies (244-245).

Despite the ongoing sparring over superiority, the qualitative case study has maintained its legitimacy. Mitchell (1983) contends that it is the method of choice to elicit descriptive data when a particular configurative or idiographic social construction of reality is sought.

Method of Choice: Qualitative Case Study

In Stake's (1995) view, the case study that seeks to understand, describes phenomena "without expectation of causal explanation" (38). To do so, the qualitative case study researcher tries

to facilitate reader understanding, an understanding that important human actions are seldom simply caused and usually not caused in ways that can be discovered (39).

Stake's interpretation is consistent with the aim of this study. Moreover, Stake's view coincides with principles of family systems theory as well as those of chaos theory. The interpretive nature of the case study methodology appreciates the principles of mutual causality and co-determined behavior. The methodology itself is nonlinear. As opposed to testing a hypothesis, the researcher begins with "general research issues as the conceptual structure" (Stake 1995, 16). In an unfolding process, "etic" issues (those posed by the researcher) evolve and "emic" issues (those germane to the informants) emerge (Stake 1995, 20). Others support Stake's views.

In his quest to advocate the case study's appropriateness for studying families, Handel (1992) cites the difficulty associated with long term observation of families in

their environment. The researcher's presence affects family members' actions, behaviors and interaction, which of course affects the whole system. As such, the researcher distorts the very image he or she seeks to study.

In lieu of long-term observation, Handel relies on qualitative interviewing as the primary case study method when the goal is to understand the "emotional organization" (251) which characterizes the family and to understand the family's "most fundamental activity...the creation of meaning" (255). Handel's perspective logically extends to case studies in the workplace when the goal is to understand the emotional organization inherent in processes governing human relationships.

Yin (1989, 1994) upholds Handel's contention, arguing that the case study method is particularly useful when the researcher "desires to understand complex social phenomena" (3). In Yin's (1989) view,

the case study allows an investigation to retain the holistic and meaningful characteristics of real-life events--such as...organizational and managerial processes... (14).

Sjoberg, et al. (1991) concur. They claim that case studies are best suited for understanding the "micro social order of human interaction (broadly speaking), the shifting nature of historical processes, and the salient features of complex organizational structures" (52).

But the various theorists' diverge over the purposes for case studies. The quantitative-qualitative contention is re-enacted. Yin (1989, 1994) allows that case studies are not the domain of either methodology, but rather can be either quantitative,

qualitative or both. In Yin's estimation, "explanatory" case studies can incorporate quantitative methods, or even be limited to quantitative methods. In contrast, "descriptive" case studies utilize qualitative methodology.

To Yin, the delineation denotes the distinct purposes of the two types of case studies. Explanatory case studies seek to establish causality by asking 'how' and 'why' questions. Descriptive case studies are not based on a theoretical proposition about causal relations but are "simply supposed to be free to 'tell it like it is' " (Yin 1989, 103). Yin suggests that descriptive case studies are "less demanding" (103) than explanatory ones, as well as "less preferable" (107) to those utilizing theoretical propositions.

But, Stake (1995) views the distinction and rigor involved differently. Following von Wright (1971), Stake points out that different epistemological aims are associated with quantitative (i.e. explanatory) case studies and qualitative (i.e. descriptive) case studies. The aim is manifested in the research issue, although "understanding is sometimes expressed in terms of explanation" (38). Researchers conduct quantitative case studies to "search for cause and effect" and "to establish generalizations that hold over diverse situations" (39).

Researchers who conduct qualitative case studies strive to understand the "complex interrelationships among all that exists" (37). Understanding is characterized by empathy--"re-creation in the mind of the scholar of the mental atmosphere, the thoughts and feelings and motivation, of the objects of his study"; and, secondly, by

intentionality--to understand "the aims and purposes of an agent..." (von Wright, cited in Stake 1995, 38).

Given that the purpose of this study is descriptive, both Yin and Stake would agree that a qualitative case study is the method of choice. Describing a manager's theory of action requires the re-creation of which Stake speaks, and borrowing Yin's phrase, if one is to "tell it like it is."

Issues in Method Selection

Choosing specific methods to conduct the study is contingent, in part, on the defined unit of analysis. Sjoberg et al. (1991) suggest that determining the unit of analysis has been a source of contention among qualitative researchers. To some extent, the debate has been related to the "micro-macro distinction that surfaced as a significant theoretical controversy in sociology in the 1980s" (37). Essentially, the debate polarized sociologists--those who reason that the individual is the basic unit of analysis (e.g. Collins 1981) versus those who attribute the causality of human behavior to structural or macro-level influences. The latter insist that the macro-level is the appropriate unit of analysis (e.g. Mayhew 1980). As the debate persisted throughout the decade, others affirmed the integrity of both levels of analysis (e.g. Blau 1987), but argued that the researcher must choose one or the other.

In contrast, Sjoberg et al.(1991) recognize the "complex interaction between the micro and macro levels of analysis" (37). Drawing from George Herbert Mead's (1934)

construction of the human mind as a "product of social interaction," the authors contend that the "concept of the individual actor is foreign to such [a] theoretical orientation" (36). Not coincidentally, their view of the duality is concomitant with family systems theorists' view of co-determined behavior, as well as chaos theory's principle of mutual causality.

The director/manager is the informant who explicates his or her theory of action through behaviors and actions. However, understanding the difference between employing a theory of action based on family systems theory principles and a theory of action grounded in linear thinking, includes perceptions of organizational members who interact with the manager. Since each organizational member's behavior shapes and is shaped by interaction with the manager, their thoughts, views and perceptions are essential to constructing meaning. Thirdly, the mutually constructed theory of action affects the level of functioning of the organization. Reciprocally, that level of functioning affects the organizational members and the theory of action. The interconnectedness of the micro and macro levels magnifies the difficulty of delineating the unit of analysis.

Sjoberg et al. (1991) argue that the case study is the method of choice for viewing the micro-macro interaction.

The advantage of case studies (as we perceive them) is that researchers who utilize them can deal with the reality behind appearances, with contradictions and the dialectical nature of social life, as well as with a whole that is more than the sum of its parts (39).

In sum, interviewing an individual appears to specify the unit of analysis at the individual level. However, an interview with an individual reveals his or her social reality. That reality is constructed through mutual interaction with others, as well as through the reciprocal influence that exists with the individual and the organization. In essence, the delineation of the unit of analysis is reframed and redefined by the principle of co-determined behavior.

Perhaps, Daly's (1992) construct is helpful in clarifying the reframing. Her research with families leads her to view the unit of analysis as the relationship. Although the focus may be on one family member at a time, multiple perspectives inform the researcher about the relationship. Daly does not explicitly identify the underlying phenomenon of co-determined behavior as the basis of her reasoning, but her construct intuitively implies it. When the focus is on an individual, the observer is seeing the manifestation of the mutual influence based on interactions with others, including the researcher's interaction with the individual. That fundamental interactional process is present in all human relationships regardless of the setting. Defining the unit of analysis as the relationship encapsulates the underlying phenomenon argued by family systems theorists.

This discussion raises another issue in the quantitative-qualitative debate--the issue of researcher bias. In their efforts to acquire the respect accorded the natural science model, positivist social scientists have striven to develop quantitative methods that they claim are value neutral. In turn, positivists criticize interpretivists and their qualitative

methods for being subjective.

Recalling Hughes' (1990) explanation of how reality is constructed intersubjectively through interaction with others serves as the starting point to re-examine the issue of researcher bias. Family systems theory's principle of co-determined behavior as well as chaos theory's concept of mutual causality are ontologically consistent with the interpretivists' claim that reality is socially constructed. If it is through the mutual interaction with others that we socially construct our reality, then the researcher and interviewee are not immune from that phenomenon. The perspective reframes the issue to acknowledge that bias, defined as the researcher's influence in the interaction, is inherent in the process of constructing reality and creating meaning. That inherent bias cannot be eliminated, only acknowledged.

A final related issue centers on the validity of relying on a singular case for description and the selection process for choosing that case. Too often, the standards for quantitative studies have been misapplied to qualitative case studies (Lindblom 1987). If cases are not selected randomly or if a case cannot be demonstrated to be typical of representative cases, then validity is questioned by those using the quantitative standards' template. Mitchell (1983) argues that the misapplication of quantitative standards to selection of cases, and especially to the selection of one case as an exemplar,

confuses procedures appropriate to making inferences from statistical data and those appropriate to the study of an idiosyncratic combination of elements or events that constitute a 'case' (188).

To Mitchell, a case study is a thorough examination of an event that the researcher

believes "exhibits the operation of some identified general theoretical principle" (192). In other words, the specific case is selected intentionally. The researcher seeks to provide the reader with an "apt illustration" of the operationalization of a theoretical principle (193). When that is the researcher's purpose, analysis does not produce data or results which could be generalizable or typical. Rather, the case describes that which is novel.

A single case can also be intentionally selected to develop emergent theory. Drawing from Eckstein's (1970) delineation of heuristic cases, Mitchell proffers the notion of deliberately selecting an illustrative case to stimulate theory building. He notes that a "single case becomes significant only when it is set against the accumulated experience and knowledge that the analyst brings to it" (203). Once illuminated, the novel case stimulates the imagination into theory building.

Eisenhardt (1989) concurs with Mitchell's arguments for intentionally selecting a particular case. She, too, cites the researcher's aim as the criterion for selecting cases.

The cases may be chosen to replicate previous cases or extend emergent theory, or they may be chosen to fill theoretical categories and provide examples of polar types. While the cases may be chosen randomly, random selection is neither necessary, nor even preferable (537).

Both Eisenhardt's and Mitchell's arguments resonate with Weick's (1989) call for theory construction that is novel, interesting, plausible, and based on "disciplined imagination" (516). Weick does not specifically argue for the efficacy of using a single case. However, he allows that observations in a single organization can be juxtaposed

to existing theoretical views and assumptions. In that instance, "plausibility is a substitute for validity" (525).

In conclusion, these theorists' viewpoints align with and support the intent of my research. I seek to describe the actions of a public administrator who has grounded her managerial theory of action in principles found in family systems theory. The purpose, as well as the hope, for the description is to show that family systems theory entails a complete and workable schema for the practical application of core ideas like mutual causality--one that management theorists interested in chaos theory could well incorporate--thereby avoiding the currently occurring bastardization of the theory's key ideas.

Model

The in-depth interview method (Taylor and Bogdan 1984; Rubin & Rubin 1995; Stake 1995) advances the purposes of the case study--namely "to obtain descriptions and interpretations of others" (Stake 1995, 64). In Qualitative Interviewing: The Art of Hearing Data (1995), Rubin and Rubin detail their model. For the neophyte researcher, in particular, their specificity provides invaluable aid in designing a research project. Although uniqueness in design is the hallmark of qualitative studies, Rubin and Rubin's process description suggests an overarching frame that can serve as the template for a variety of case studies.

The authors' model is philosophically consistent with the "interpretive approach

to social knowledge" (31). In their view, the interpretive approach

recognizes that meaning emerges through interaction and is not standardized from place to place or person to person. The interpretive approach emphasizes the importance of understanding the overall text of a conversation and, more broadly, the importance of seeing meaning in context (31).

Their interview format thereby operationalizes the guiding principle in interpretivism, the one which holds that reality is socially constructed and interactively produced.

Rubin & Rubin (1995)'s model of qualitative interviewing modifies ordinary conversations to elicit what others know and think without the interviewer's imposing his or her world view (to the extent possible) on the interviewee. To promote the essentialness of interviewing as an extension and modification of conversations, Rubin and Rubin refer to the interviewee as a "conversational partner," explaining that the term

has the advantage of emphasizing the link between interviewing and conversation, and the active role of the interviewee in shaping the discussion. Moreover, the term suggests a congenial and cooperative experience, as both the interviewer and the interviewee work together to achieve the shared goal of understanding (11).

The investigator initially delineates the research arena in the process of requesting an interview with the conversational partner. To establish the boundary and scope of the study, the researcher intentionally begins the interview with an open-ended question, deemed a "main question" by Rubin and Rubin. Framed in an open-ended manner, the main question is sufficiently broad to "encourage interviewees to express their own opinions and experiences" (146). Simultaneously, it is sufficiently narrow to establish

the study's topic. The latitude within the identified boundary sets the tone such that the conversational partner actively shapes the flow and direction of the interview.

The researcher listens to the interviewee's response, then formulates additional questions to draw out the details, depth and richness of the conversational partner's response. Probes are used to clarify responses, fill in missing parts of responses, and to "signal the interviewees that you want longer and more detailed answers, specific examples or evidence" (148). Follow-up questions obtain depth in interviews by "pursuing themes that are discovered, elaborating the context of answers, and exploring the implications of what has been said" (150). Follow-up questions can be used within the initial interview to examine concepts offered by the interviewee. More typically, follow-up questions are used subsequently in a second interview after the researcher has analyzed the initial interview or the cluster of initial interviews with conversational partners. This basic format promotes the researcher's goal of hearing the conversational partner's meaning.

To hear meanings, the researcher is charged with listening actively and intently to key words, omissions, non-verbal cues and to the emotional tone of the conversational partner's response. Ensuing questions posed by the researcher seek to elaborate the conversational partner's initial response through clarification, examples, and details. The researcher's task of probing for depth is a necessary distinction from ordinary conversations. In the authors' words,

To get beyond ordinary listening and hear meanings, you have to focus

the discussion to obtain more depth and detail on a narrower range of topics than you would in ordinary conversations. You encourage people to elaborate, provide incidents and clarifications, and discuss events at length. The depth, detail and richness we seek in interviews is what Clifford Geertz (1973) has called thick description. Thick description, rooted in the interviewees' firsthand experience, forms the material that researchers gather up, synthesize, and analyze as part of hearing the meaning of data (Rubin & Rubin 1995, 8).

Questions formulated to elicit depth of the conversational partner's offering are embedded in Rubin & Rubin's overall design for qualitative studies. The authors describe a process that is "flexible, iterative, and continuous" in its design (43). Based on the modified conversational format, the design gradually evolves, following the direction the interviewee's responses establish. It is necessarily flexible in that the researcher suspends his or her "own assumptions about the way things work and actively solicit[s] ideas and themes" from each conversational partner (43).

Rubin & Rubin use an "iterative" process to keep the design flexible and continuous. The purpose of the process is to "obtain rich data to build theories that describe a setting or explain a phenomenon" (56). Within each interview with a conversational partner, the researcher is actively engaged in a process of "gathering information, analyzing it, winnowing it, and testing it" (46). Concepts, themes, and ideas offered by the interviewee become theoretical building blocks that are examined.

As interviewing proceeds, theory is built step by step. In the authors' words, "testing helps winnow ideas, so the weaker ones and the ones not supported by the interviews drop out" (62).

The process continues "until theoretical saturation occurs" (48). At this point interviews do not surface new data, contradictions have been explored and explained, and varied perceptions holistically describe the topic. As the authors summarize,

[t]he process of building theory out of your interviews, testing it, modifying the theory and retesting it, continues until fewer and fewer changes are made with each cycle (63).

Data Analysis

The iterative process also structures data analysis. In fact, the iterative process utilized within interviews and between clusters of interviews constitutes preliminary data analysis. The continuous nature of redesigning interview questions to follow the conversational partner's lead requires that the researcher identify themes presented in the interviewee's words. Formal analysis is a continuation of theme identification as well as the discovery of additional themes that "build toward an overall explanation" of the phenomenon being studied (226).

Final data analysis begins with categorizing material from the totality of interviews into separate themes or concepts. Comparing material within and across categories reveals nuances, variation and connections between themes. The process itself can lead to the discovery of previously undetected themes. Themes are then coded.

The authors' explain that their coding system is consistent with those developed by Spradley (1979) and Strauss (1987). However, their system focuses on coding "to group similar ideas together and figure out how the themes relate to each other" after

reading and re-reading interviews to note "core ideas and concepts, recognize emotive stories, and find themes" (Rubin and Rubin 1995, 229). Coding facilitates illuminating themes that are related. Grouping related themes, in turn, help the researcher "build toward a broader description or an overall theory" (234).

Coding itself is an iterative process. Rubin and Rubin suggest that researchers stage coding, beginning with several main categories inferred by initial readings of the interviews. Analysis, winnowing and testing may reveal that one category "blurs two or more separate concepts, themes, or stages" (239). That circumstance prompts the addition of new categories. Material that does not fit into the main categories then comes into view. Additional categories can then be constructed. With each successive re-categorization, all interviews must be re-coded.

The dissecting function of the coding process directs the researcher's attention to detail, nuance and isolated yet specific material that allows for categories to emerge. The categorized themes are then pulled together to "build an integrated explanation" (251). Rubin and Rubin recommend a two-stage process to accomplish this task. Material within each category is analyzed for consistent meanings and perceptions as well as for meaning within contradictions or varied perceptions. In the second stage, the researcher utilizes a similar critique to "look for linkages across coding categories" (253). At times, physically rearranging categorized materials to be in closer proximity with each other facilitates seeing connections with each new arrangement. Successive attempts and re-analysis eventually result in synthesis--a clear image, which is then

captured in the final report.

Rubin and Rubin's model is consistent with Stake's (1995) perspective. Through the meticulously described process, the nonlinearity synonymous with chaos theory and family systems theory is further illuminated. Rubin and Rubin's model appears to be a useful guide for this research.

The Research

Authorization to Conduct Research

At Virginia Tech, research is governed by the Office of Research and Graduate Studies through its Institutional Review Board for Research Involving Human Subjects (IRB). The university has determined that all research involving human subjects should conform to the legal basis for review and approval detailed in Title 45 Code of Federal Regulations Part 46 (45 CFR 46). In conformity with the university's mandate, I developed a protocol and the "Informed Consent for Participants of Investigative Projects" adhering to the prescribed guidelines and criteria. Both documents are included in the appendix.

The documents detail the purpose of the study, the purely voluntary nature of participants, and the risks and benefits to participants. I delineated the steps taken to assure anonymity, confidentiality and safeguards to secure any written or recorded materials constituting interviewees' contributions. After review, the IRB issued the

Certificate of Exemption of Projects involving Human Subjects (reference number 96-070) on February 26, 1996.

Piloting the Interview Format

To ensure that the format facilitated the interviewees' own conceptualizations as opposed to reflecting my assumptions about a manager's theory of action, I piloted the interview format with several public organization managers. Additionally, transcriptions from those interviews served as the basis for my Chair's, as well as my own, critique of my interviewing techniques.

To be consistent with Rubin and Rubin's (1995) techniques designed to "hear meaning," I needed to remain non-directive during the interviews. The pre-testing phase revealed that although some of my responses appeared non-directive, I would, at times, inadvertently add a word or comment that suggested my approval or agreement with the interviewee's disclosure. For example, one manager used a descriptive metaphor in making a point. I repeated his metaphor, adding the expression, "neat," and thereby conveyed the appeal the metaphor held for me. The interviewee reacted with pleasure to my approval. Crowne and Marlowe (1964) initially described this type of behavior as the approval motive. Rosenberg (1972) referred to the phenomenon as an evaluation apprehension. And Rosenthal (1965) discussed such a reaction as part of expectancy effects. Those scholars concur that the interviewee's desire to win the interviewer's approval constitutes a research bias. In this interview, the manager's train of thought

was temporarily interrupted and my comment may have further engendered his efforts to disclose what he perceived I would want to hear. More significantly, the example vividly elucidates the co-determined nature of relationships.

Reviewing the transcriptions concomitantly served as a critique of those techniques of Rubin and Rubin's that are designed to elicit greater detail and depth in the interview. Follow-up questions and probes may inadvertently evoke a response that supports the interviewer's assumptions. To minimize this possibility, I altered the technique in two ways.

First in a subsequent pilot interview, I provided a more detailed explanation to frame the topic and focus of my study. I informed the interviewee that I would ask three intentionally open-ended questions so that she could determine the question's meaning. I also stated that I was particularly interested in any recalled examples that would help me to understand her thoughts and descriptions.

Secondly, during that interview, I was able to limit my responses to repeating the interviewee's key words, use silence constructively to facilitate the interviewee's unpressured continuation (Van Manen 1990; Cunningham 1993), and only occasionally prompt for an illustrative example. In this interview, the more detailed preface or explanation appeared to cue the interviewee to volunteer more illustrative examples. Based on that iteration of the model, I used that same introduction during the interviews that I conducted in the two organizations.

Sample Selection

Since this study's practical purpose is to further public administration management, I did specify that a public organization would be used for each case study. "Public" in this context is defined with sufficient breadth to include private-non-profit organizations engaged in delivering human services. However, as delineated in the protocol and informed consent agreement, the agencies are not identified by name. However, in that the study centers on basic underlying principles that guide interrelationships, the identity of the organization is irrelevant. What matters is the interaction between the manager and individuals in the organization.

My purpose is to describe how a manager who grounds his or her theory of action in family systems theory principles thinks, behaves and acts differently than a manager who grounds his or her theory of action in traditional "linear" organizational management principles. Given that the former represents a somewhat uncommon or unique style, identifying someone who has consciously based his or her theory of action in family systems theory principles would seemingly present a challenge. Fortunately, my Chair knew such a manager through his consultation with two public agencies with whom this manager had been associated. My Chair made initial contact with the manager (identified as CW henceforth) to ascertain her interest in voluntarily participating in my study. After learning of her interest in the project, I contacted her directly. The manager supplied names, titles and addresses of the organization's director and the eight people in her unit.

I sent copies of the protocol and informed consent document for the director's review. Subsequently, I contacted him to ascertain if he had any concerns or questions about the study and obtained his written consent for me to conduct the study. With the director's permission granted, I then wrote the eight unit staff members individual letters. I enclosed a copy of the "Informed Consent for Participants in Investigative Projects" for each potential interviewee's review. In each letter, I stated that I would follow-up with a phone call during a specified time period to answer any questions and to ascertain each person's willingness to participate. All eight staff members agreed to be interviewed. CW (the manager) however, was not informed which staff members or how many agreed to participate.

While demographics could not be selected to attain diversity--as can be done in a random sample--surprisingly, diversity among the participants was achieved. Of the nine participants, including CW, there were two white males, one black male, one ethnic minority (other than black) male, four white females and one black female. Ages ranged from 25 years old to 52 years old.

The other manager was selected intentionally to represent an effective managerial theory of action based on more traditional principles from organization management theory. At my proposal defense, when queried about selection of the alternative manager, my natural inclination was to select an ineffective manager--one poorly regarded by his subordinates, perhaps. More than one committee member cautioned me to resist this temptation. The quality of my contrast would be enhanced if I selected an

effective manager.

Piloting the interview with several managers provided me with the opportunity to learn about different managerial models. One of these managers voluntarily expressed his interest in the study and his desire to participate in the actual study. In my initial estimation, this manager's theory of action appeared to coincide with McGregor's (1960) Theory Y manager.¹ I consider Theory Y managers to be effective and simultaneously to offer a challenging, yet illuminating contrast and comparison to one derived from principles found in family systems theory. After discussing the option with my Chair, I contacted the manager to ask him if he would like to participate in study.

The manager (identified as DP henceforth) agreed and provided the name and address of his supervisor, from whom I obtained permission to conduct the study. I intended to follow the same procedure as I had utilized with the other agency's organizational members to ascertain interest in participating. However, this particular agency's union representative has joint decision making authority regarding any event or situation that affects working conditions in the organization. The research project was determined to affect working conditions; therefore, the union representative distributed the informed consent forms among the unit's personnel. Organizational members were

¹ This manager was ultimately selected for the study. After subsequent interviews with him and his staff, I concluded that his managerial model also aligned with the "competing values framework" proffered by Quinn et al. in their 1990 book, Becoming a Master Manager. The authors describe eight managerial roles and identify three primary competencies to enact each role. The data from the interviews suggested that this manager constructs his managerial roles similarly.

requested to return signed forms to the union representative to indicate their voluntary willingness to participate in the study. Upon receipt of the signed forms, I contacted each volunteer to ascertain if they had any additional questions, confirm each's continued willingness to participate, and schedule appointments for the individuals' interviews.

Six employees (approximately 33%), in addition to DP, volunteered. All were white males. With the exception of one employee (approximately 30 years of age), all were over 45 years of age. Despite the seeming discrepancy in percentages of organizational members interviewed in the two agencies, a balance was obtained. Of those volunteering to be interviewed, two of the six are directly supervised by DP. Similarly, CW supervises directly three of the eight who volunteered for the study in her agency.

The Interview Format

In both agencies, I interviewed each participant individually in offices that assured privacy and confidentiality. Rapport had been initially established in greeting each worker informally during tours of each facility. At the initial interview with each participant, I stated that I was interested in learning what principles guided the manager in working with people. I informed the interviewee that I would be asking three questions that were intentionally open ended so that he or she could interpret a question's meaning and respond in any manner he or she chose. I added that I was particularly interested in illustrations, examples or stories that would help me to understand their

contributions. The interviews were audiotaped.

The three questions posed to the manager and to the staff members varied only sufficiently to distinguish the participants' role. To the manager (in each agency), I stated, "I would like to understand how you work with people." The three sequential questions were:

"What helps?"

"What gets in the way?"

"If you were queen (king) of the universe, what would you change?"

To each staff member (in both agencies), I framed the topic by stating, "I would like to hear about your working relationship with _____."
(manager's name)

During the course of the interview, I asked the same three sequential questions I had posed to the managers.

Data Analysis

Following the first round of interviews in CW's agency I followed Rubin and Rubin's iterative process to identify emerging patterns and to expose contradictions. What appeared most striking was the consistency of responses among organizational members describing CW's behavior and actions. All organizational members remarked about her openness, degree of nonanxious presence and her efforts to encourage each organizational member to make decisions within the realm of their authority and to

support the decision each worker makes. Moreover, the workers' remarks were wholly consistent with CW's self-description. Based upon the remarkable consistency, the absence of contradictions, and the lack of anecdotes that would constitute another descriptive theme, I tentatively concluded that the three themes or patterns captured CW's fundamental theory of action.

Following the initial round of interviews in DP's agency, I repeated the iterative process; however, I noted inconsistencies in both the manager's self-description and organizational members' descriptions of the manager. I interviewed DP again. During the second interview, he discussed his participation in a two-week experiential workshop on managing change. Data from that interview revealed the basis of many of the contradictions. I realized his subordinates' remarks, as well as his own remarks from the first interview, revealed a "before and after" description of his theory of action. In other words, the workshop was a pivotal event: DP gained insights that resulted in his dramatically altering his interactions with his staff.

My purpose in conducting the second case study was to illuminate the distinction between a management theory of action grounded in family systems theory and one considered more traditional, but effective. Therefore, to facilitate the illumination, I resorted the interview data from DP's agency according to patterns elicited from interviews with organizational members in CW's agency. My intent was to evoke similarities as well as differences between the two managers' theories of actions. Using the iterative process, I noted that organizational members (including the managers) in both agencies

used the term, "openness," as well as the phrase equivalent, "latitude to do one's job"; however, the definitions and meanings attached to those terms did vary. The distinctive meanings actually further illuminated the difference in the two managers' theories of action.

The data presented in the findings chapter are derived from single interviews (approximately 1 to 2 hours in duration) with each manager's subordinates; two face-to-face interviews with CW (and several phone chats); and three face-to-face interviews with DP (the third to clarify how DP's agency was implementing National Performance Review mandates). Additionally, I attended meetings in both agencies to observe interactions among organizational members, including the managers' interactions with their staffs. My observations served as a "triangulation" technique recommended by Patton (1990) and others as a source to confirm the validity of other data sources. I noted no inconsistencies in behavior or actions in either observation that would constitute contradictions to data previously gathered.

Reflexing

Cognizant of the co-determined nature of human behavior, and the researcher's lack of immunity from co-influence, I attempted to identify probable biases I might hold prior to beginning the interview process. I was well aware that I considered a managerial theory of action grounded in family systems theory to be more effective than a more traditional theory of action, but I had not specified what constituted my bias.

Certainly, my initial attraction to applying family systems theory to organizational settings centered on its diagnostic value. I had personally experienced that value. From that time forward, I was convinced of the theory's applicability to organizations. However, in my own experience I had never moved beyond using the theory as a tool for diagnosing organizational dysfunction. Nonetheless, I acknowledged that my "convert" status may well extend to family systems theory's value as the basis for a managerial theory of action.

I recognized that I must be ever mindful of my bias during the interviews. Asking the same open-ended questions to each person interviewed was one precautionary measure; however I also attempted to be mindful of my body language. I strived to maintain eye contact with each person interviewed and lean slightly forward towards the interviewee as I listened to their responses. In addition, I tried to exhibit a consistently neutral facial expression while listening to interviewees' responses. In other words, I avoided smiling fully or frowning and head-nodding, but rather attempted to smile only slightly so as to convey a pleasant expression. However, when an interviewee would tell a joke, I would respond naturally and laugh; likewise, if the interviewee conveyed a somber anecdote, I would change my facial expression accordingly. In essence, I attempted to guard against subtly influencing interviewees' responses through my body language.

After realizing that the case studies would center on one male and one female manager, I reflected on possible biases I may hold regarding gender. I acknowledged

that I do stereotype females as being more relationship oriented, and in tandem, more willing to express their feelings to others. I generally see males as less willing to express their feelings. Although, for the most part, my stereotype of women seems to hold after I have formed a relationship with almost any woman, I am also aware that once I have formed a relationship with an individual male, my stereotype of men tends to break down, as it did as I built a relationship with DP. Nonetheless, on the whole and in general, I do interact differently with men than I do with women. However, I interact differently with various males, as well as females. I again relied on asking standard questions and being mindful of my body language as I interacted with both genders.

A related concern was that a managerial theory of action grounded in family systems theory would be viewed as more suited to female managers since it is based in emotional process. I have not resolved whether or not this concern stems from my stereotype solely or if others may share this view. However, my concern diminished as I subsequently learned about DP's "transformation" after his participation in the managing change workshop. He readily learned to attend to emotional process.

In conclusion, I can best guard against my biases by acknowledging them and then continually monitor myself through reflexing to guard against them. I did have my own epiphany during the data analysis phase, however. I realized that I do not favor a family systems theory of action because of its specific theory base per se. Rather, I favor it because it is rooted in nonlinear thinking. Family systems theory adds value and specificity to a manager who grounds his or her theory of action in nonlinear thinking.

In the ensuing chapter, I present the centerpiece of the dissertation-- the findings of the two case studies.

FINDINGS

In this chapter, I introduce the data by explicating the frame that illustrates Bowen theory's complementarity with chaos theory. The complementarity simultaneously distinguishes the two described management theories of action. Contained within the overarching frame are three salient interconnected patterns that capture the essence of a management theory of action grounded in family systems theory principles, thereby distinguishing it from the other manager's theory of action. I begin with a detailed explication of the three patterns so as to specify terms and concepts that often have multiple meanings and interpretations. In and of itself, the pattern explanation describes the fundamental components of a managerial theory of action based on family systems theory principles. Next, I introduce the managers and present the chapter's centerpiece--the findings.

The Frame

The findings are presented in a frame that illustrates the two theories' consonance and complementarity by describing how one manager bases her theory of action on family systems theory principles. To illuminate the difference between this one manager's theory of action and a representative traditional management style, I juxtapose the description of a manager whose theory of action parallels the "competing values model," which synthesizes elements from rational goal, internal process, human relations

and open systems models (Quinn et al., 1990).¹ The findings illustrate and describe how one manager's underlying nonlinear thinking is manifested in behaviors and actions and contrasts that with another manager who sees processes as linear.

Within the overarching frame that counterposes underlying linear and nonlinear thinking, three salient and interconnected patterns reverberate throughout the data. The patterns delineate Bowen theory's consonance with chaos theory. Moreover, the patterns extend and specify chaos theory's explanation of co-evolution by exploring dynamics at the level of human interaction within the implicate order. Those patterns are:

*A disposition toward openness: Openness in this context is synonymous with receptivity. In chaos theory, openness connotes the internal system's receptiveness to environmental energy flowing into the system, as well as to its receptiveness towards energy generated by internal fluctuations. In its application to organizations, energy is imported in the form of information. For that information to be utilized to assist in the organization's co-evolution, it must be dispersed throughout the system to support creative change. That receptivity promotes a self-organizing system, which in Comfort's (1994) definition,

¹ The presentation of these two managers' thinking, behaviors, and actions cannot be considered as representative of all managers who either ground their theories of action in family systems theory or in more conventional management approaches. Indeed, we find variance in interpretation and implementation among all managers, just as we find variance in levels of competency regardless of the management style one has adopted. Even more significantly, such a claim would violate the very essence of the spirit of this interpretive research. For it is within the interactions with others that we socially construct our reality. The variance of our experiences and interactions with others not only precludes that generalization, but it is ontologically and epistemologically antithetical to interpretivism.

is

the ability to rearrange and reform their patterns of operation in mutual adaptation to changing needs and capacities of their components as well as changing demands and opportunities from the environment (396).

Comfort's definition appears to center on setting up a rational process--the channel through which new information about changing needs can be transmitted. Such channels are necessary; however, the operative words in her definition are "ability" and "capacities." Those key words necessitate that in addition to examining the communication channels, we also need to examine dynamics at the level of human interaction.

To state the obvious, the capacity of a system to self-organize is dependent on the unimpeded flow of information throughout the system (Luhmann 1989). According to Kauffman (1993), communication systems designed to control and regulate the flow of information restrict the capacity of the system to self-organize in rapidly changing environments. The system can become paralyzed or self-destruct. Humans design communication systems. The emotional processes operating in human relationships influence the degree of restrictiveness or on the other hand, the degree of openness built into the communication systems humans design.

Concepts from Bowen theory give meaning to the "capacities" of which Comfort and Kauffman speak. The theory's distinction between healthy and dysfunctional families parallels chaos theory's view of systems, which either reconfigure or remain chaotic and eventually self-destruct.

Openness or receptivity is inextricably linked to the functional level of differentiation that organizational members have achieved and to the level of chronic anxiety within the system. The functional level of differentiation or pseudo-self "is created by emotional pressure and it can be modified by emotional pressure. Every emotional unit...exerts pressure on group members to conform to the ideas and principles of the group" (Bowen 1976, 68). When the level of chronic anxiety is high in the system, emotional pressure increases the demand for togetherness and conformity. The system essentially "closes" itself to information that threatens togetherness.

Acute anxiety also can trigger the automatic, or emotional, reaction in response to the intense feeling process (Papero 1996). The goal then, in the Bowen theory therapy model is

to help individual family members to rise up out of the emotional togetherness that binds us all. The instinctual force toward differentiation is built into the organism, just as are the emotional forces that oppose it. The goal is to help the motivated family member to take a microscopic step toward a better level of differentiation, in spite of the togetherness forces that oppose it (Bowen 1976, 73).

A well-differentiated leader who promotes the functional differentiation of self and others facilitates that receptivity or openness through communication.

Satir's (1972) work on healthy and unhealthy families is instructive at this point. She identifies well-differentiated families by examining their unwritten rules governing communication and the resulting communication patterns. Those families communicate information directly, clearly, and congruently so that individuals can utilize new

information to promote growth and development. Simplistically stated, what is happening can be communicated.

For poorly differentiated families, change is so threatening that "rules," which govern the "shoulds" and "taboos" in what is communicated, remain fixed and rigid (96). New information is restricted through taboos; behavior is regulated by "shoulds." Communication patterns that maintain the existing rules include blaming, placating and secret-keeping.

In healthy families seeking growth and development, openness disallows keeping secrets. Following Friedman's (1985) view, the existence of secrets affects the emotional process in the system. Secrets serve to divide members of the system and create unnecessary estrangements as well as contrived alignments among members of the system. Secrets distort perceptions because only partial information is available to various members of the system. Most significantly, secrets "exacerbate other pathological processes unrelated to the content of the particular secret, because secrets generally function to keep anxiety at higher energy levels" (53).

Interestingly, when secrets are revealed, the overall level of anxiety in the system generally decreases. As Friedman succinctly summarizes,

when they [secrets] are revealed, more change usually takes place throughout the entire system than could have been attributed solely to the content of that secret. In short, secrets create and perpetuate triangles; they are always on the side of existing homeostasis, the labeling process, and the chronicity of symptoms. They are never on the side of challenge and change (53-54).

Drawing parallels between family functioning and that of an organization's self-organizing capacity illuminates the generic emotional processes within the implicate order.²

The second interconnected pattern elaborates the first.

*Defining Self and Promoting Others' Functional Level of Differentiation: There is a consciousness about human processes from family systems theory that shapes the manager's behavior. A manager whose thinking is grounded in mutual causality understands that one's behavior influences another, and simultaneously, one's behavior is influenced by the other in the process of interacting. Moreover, this phenomenon is not restricted to individual behaviors. Rather, individuals and the system are interdependent and therefore the same dynamic governs individuals and the system of which they are a part. This nonlinear conceptualization aligns with the holistic orientation that characterizes chaos theory thinking.

That thinking undergirds the manager's "capacity to define self in a relationship and to control one's own reactive mechanisms" to create the emotional space needed to foster healthy relationships (Friedman 1985, 42). Simply stated, defining self is the ability to take an individuated stand based on one's values and with concern for others, despite the pull toward togetherness. Through the process of defining one's self to create

² The comparison is not intended to categorize organizations as healthy or dysfunctional. Rather, the comparison is intended to identify emotional processes that extend and delineate chaos theory's macro-level explanation of the system's "capacity" and "ability" or receptivity to importing free environmental energy.

needed emotional space, others automatically become recipients of the same space. As the process continues, all within the system increase the capability to define self, thereby elevating the health of the whole system, which concomitantly impacts and increases the capacity of each individual to define self. In turn, receptivity and openness within the system increases, creating a general upward spiral. Viewing process in this manner fosters the manager's efforts to promote the functional differentiation of others. Functional differentiation dissipates the attending emotional reactivity (the pull toward togetherness).

This fundamental orientation or world view is antithetical to traditional linear-based orientations to improving effectiveness and productivity. Individuals are not viewed as variables whose behavior needs to be shaped to carry out rational processes seen as the means to achieve effectiveness and productivity. Instead, as Weinberg (1993) captures the essence of the orientation,

organization emerges in the process of human interaction... social relations are constitutive of organization...Importantly, the dynamic that fuels interaction is a product of the consciousness that people bring to the organizing process. And this consciousness itself emerges in the process of interaction. People's experience of organization thus influences their capacity to participate in a process that is either progressive or regressive, contributing to or detracting from the growth and development of individual as well as organization (3-4).

The consciousness about which Weinberg speaks is evoked through the process of reflexivity, bringing forth unconscious material and integrating it into one's consciousness. In White's (1990) view, through the process of "reflexivity,"

"persons retroactively consider unconscious material as it appears in their actions and otherwise in their lives generally" (216). When unconscious material spontaneously surfaces in our words or thoughts, reflexing creates a self-dialogue to examine its significance. But White (1990) explains that

[t]he fundamental mistake that consciousness makes, typically, is to assert 'shoulds' and 'oughts' against the teachings of the unconscious. Instead of reflecting on the meaning of a mistake, for example, we typically issue a criticism of ourselves ("How stupid of me") followed by an injunction against repeating the behavior that led to it. We are likely, then, either to repeat the mistake or find the message that it contains confronting us more directly in the form of another kind of error or other unconscious event (217).

Interaction with another individual serves as the mirror in which an individual sees the reflection (in White's example, interpreting signs and symbols that label the action a mistake). The notion is therefore congruent with the co-determinative principle. Just as an image is projected onto a mirror, the unconscious of one individual is projected onto another. For instance, if I am annoyed by another's behavior or actions (e.g. arrogance), I may well exhibit the same behavior only consciously fail to recognize that I do. Indeed as part of my conscious denial I may go to extremes to cover that behavior by behaving in a polarized manner (e.g. humble, self-deprecating). Resolving those projections becomes the major task in relationship building and thereby individual development (White 1990). But, when the conscious attitude overrides the unconscious--as in the mistake-making example mentioned--the opportunity created by the situation for the individual's development and individuation is thwarted.

Chaos theory's principle of mutual causality as specified at the level of human interaction by family systems theory's concept of co-determined behavior requires self-reflexivity to discern one's own part in mutually influencing dynamics. Concomitantly, Bowen's concept of the organization as an emotional field through which emotional processes ebb and flow underlies the value for discerning one's own part in the dynamics.

In this sense, reflexivity, then, is the process through which we acquire this self-awareness. In addition to having the knowledge that brings these concepts into consciousness, self-differentiation is assumed in this self-awareness. Reflexivity is a part of defining one's self.

Those whose thinking is linearly-based may well be advised to reflect on how their behavior may be impacting others. Management courses often include training in self-awareness. Excerpts from Quinn et al. (1990) elucidates the subtle, yet profound difference between recognizing one's influence on others and co-determined behavior--recognizing not only one's own influence on others, but concomitantly, others' influence on self:

To be a successful mentor, managers must have some understanding of themselves and others. Although all members of a work group have something in common, each individual is also in some way unique. The challenge is to understand both the commonalities and differences and how these cause people to relate to one another in various ways. By being aware, you can better understand your own reaction to people and their reactions to each other. This understanding, should, in turn, make you more effective (168).

In this passage, the phrase "you can better understand your own reaction to people and their reaction to each other" particularly reinforces the assumption that influence is primarily uni-directional from manager (in the mentor role) to subordinate. Too, attributing causality to "commonalities and differences" implies that individuals behaviors are independently determined (not co-determined). The same implication is present in the passage below.

...The importance of understanding your own values and behaviors is obvious. If you don't understand yourself, it is nearly impossible to understand others (170).

The authors come close to conveying family systems theory's notion of "focus on self" when they advise that

...[a] key to positive change is not in focusing on others but on ourselves. In fact we need to be sensitive and respectful of the need of others to be defensive. The secret to overcoming defensiveness in others is to overcome defensiveness in ourselves. If we provide a role model of sensitivity, openness, and learning we increase the probability of sensitivity, openness, and learning on the part of the other (171-172).

However, the crucial difference lies in the omission that "defensive" behaviors are also co-determined. Although such meaning may be intuitively grasped from reading the passage, the wording explicitly suggests a direct cause and effect relationship between the manager's behavior and that of the subordinate. In family systems theory thinking changing one's behavior does evoke a change in another's response, but one cannot predict or control what shape the other's "new" behavior will take--precisely because

behavior is co-determined.³

In sum, as is apparent in all of these excerpts in traditional theory, self and others are seen as separate. That view conceptually serves as the basis of self-awareness. Linear cause and effect thinking undergirds recommendations. Mutual influence is not considered.

On a more prescriptive level, a visible measure of the conscious overriding the unconscious can be found in the manifested behavior and action that Weick (1979) calls the double-interact:

the person performs some action, which is reacted to by a second person, after which the person makes some consummatory response to what the second person did (114).

This communication pattern blocks the opportunity to be reflexive. Further, once caught by emotionality, an individual typically closes communication, or attempts to control or contain any semblance of openness. Simultaneously, getting caught in the double interact pushes the system toward emotionally-based decision making while never attending to the emotionality. It serves as an anxiety generator.

Through reflexing, an individual can learn to discern double-interacts and refrain

³ Nevertheless, the authors' recommendation is extremely helpful. Even without being knowledgeable about the underlying theory, the manager who focuses on self and changes his or her actions will most likely notice corresponding changes in others' actions and behaviors. In practical application, the authors' recommendation echoes that of family systems theorists. However, if the subordinate responds differently than the manager intends or desires, the manager may well "blame" the subordinate. Understanding the principle of co-determined behavior may avert such an occurrence.

from getting caught in the emotionality and responding similarly. Individuals can utilize double-interact recognition as a tool to keep the intellect and emotionality separate but at the same time stay in touch with the emotionality. Rather than responding to the emotional hook, an individual can circumvent the dynamics by seizing the opportunity to promote the differentiation of self and other.

From family systems theory, the ability to observe triangles and refrain from being triangled is a consonant dynamic. Both the double interact and triangling are processes that become visible when one's thinking is grounded in mutual causality, but hidden from awareness if one thinks linearly.

The third interconnected pattern enhances the manager's capacity to openness in the system by creating the milieu through which the manager can define self and promote the functional differentiation of others.

*Maintenance of an Anxiety-tolerant Environment: The concept of nonequilibrium from chaos theory suggests that nonlinear interactions within the system are amplified when the system is suddenly impacted by either internal or external fluctuations. These disturbances and instabilities drive a complex system (or dissipative structure) to a critical point of instability known as a bifurcation point (Nicolis & Prigogine 1977). At its bifurcation point, the system can transform to a new structure that can deal with increased complexity. Alternatively, it can remain in a chaotic state until enough energy is imported to achieve a new configuration. Or, thirdly, the system can decline if new energy is not imported and entropy is not dissipated.

The theory suggests that there is a critical threshold between an external perturbation's ability to generate creativity and its ability to generate anxiety. Within the threshold band a critical balance hinges on organizational members' ability to tolerate anxiety so that creativity needed for transformation can be released. If the anxiety level is too low, there will be little impetus to change. Alternatively, if the anxiety level is too high, organizational members seemingly become "stuck" in "recursive or self-reinforcing sequences" (Hoffman 1981, 202) that block creative problem-solving needed for transformation. In essence, an optimal level of anxiety propels the change process. Beyond a certain level, the metaphorical threshold is crossed. Anxiety undermines the change process.

Bowen theory's complementary explanation of dynamics in human interaction sheds light on behaviors that can occur during the chaotic state. Papero's (1996) work on the anxiety-instability spiral illuminates this phenomenon. As changes impact the system, corresponding changes in an individual's perception, sensitivity and behavior occur and are noticed by others. If this heightened sensitivity infects the group, individuals and groups will no longer be able to predict with accuracy how others will behave. Instability in the social system accompanies the loss of predictability. The anxiety level increases and organizational members experience a feeling of uncertainty and sense that they are losing control over their immediate as well as long-term future. These factors coalesce to create an anxiety-group-instability spiral.

Preventing or reversing the spiral depends upon the capacity of the leader,

especially, to separate from the anxiety while not losing an awareness of its pervasiveness within the system. Guided by the principle of mutual causality, the manager can begin to impact the anxiety-group-instability-spiral. In essence, the view that human behaviors are co-determined through interactions with others and are affected as well as affect systems within the environment fundamentally undergirds the manager's ability to see the interconnectedness of emotion and instability in the organization. Recognition of this dynamic can in itself have a calming effect on the manager. The turbulence generated by changes is viewed as part of the process.

Armed with this knowledge, the manager strives to maintain a nonanxious presence. The ability to tolerate anxiety facilitates thoughtful and creative decision making. Inability to tolerate anxiety undermines creative problem solving and thereby increases instability. In Bowen theory terms, the manager who has difficulty tolerating anxiety and maintaining a nonanxious presence is less able to separate feeling and intellect. When that happens, decisions become more automatic--simply reactive responses to the intense emotional process that seeks togetherness.

In presenting my research findings I will address the three salient patterns within the overarching frame that distinguishes nonlinear and linear thinking. I separate the data to explicate the full dimension of each of the three patterns. However, this schema is in a sense artificial since the patterns are interdependent.

The Managers

Excerpts from the two managers' self-described theories of action will begin to illuminate the difference in their thinking. Their accounts reflect the social construction of their realities.

CW, the manager who grounds her theory of action in family systems theory, began her career as a social work clinician. As not uncommon in organizational career ladders, her competence catapulted her into managerial positions in state agencies, as well as to her current position as regional director of a nonprofit organization. Without a degree in management specifically, she relied upon her social work training as the foundation for her management style:

I didn't read different management styles and then decide to use this one. It evolved rather than being planned. I got real grounded in family systems and structural family systems when I worked on the addiction unit and saw the similarities--that an organization and a family are based on the same dynamics. When I first moved into management, I was conscious of how people bring their family roles to work and people did their parent thing on me. If you don't pay attention to that, you aren't going to get anywhere. A lot of the straight-up OB was male oriented--competitive -- and carrot-stick stuff that wasn't me.

The dynamics of how people work together and how people interact in groups are just the same in family and work to me. ...I don't see clinical work and administrative work as being tremendously different. I think when you are doing clinical work, the system that you are working with is a family and you're working on making that family as healthy a family as it can be. And when you are an administrator, the system that you are working with is the work group and you're making that as healthy as it can be. The rules are the same--it's about open communication, about not triangulating, not keeping secrets, but being straightforward and being clear about what the rules [governing communication] are.

...I never thought that seeing the same dynamics and interaction in families and work was unusual, but others do. I don't think I have to put

on a really different hat to be a manager than I do to be anything else. If I bring my actual self in and work from that whether you are working with clients, community groups, the board--I don't think you have to be different with all of them. The whole thing is about being authentic.

CW's focus clearly is on human dynamics and relationships among people who constitute the organization. She sees generic human interactional processes.

DP, the traditional manager, rose through the ranks of one public organization after beginning his career as an engineer in a discipline-specific position. As he progressed up the career ladder that brought him to the managerial level, his training included developing rational processes that maintained the organization's equilibrium and stability needed to accomplish the agency's mission. His indoctrination in the "way government does its business," is aptly captured by one of his co-workers:

DP was brought through the agency. He was here as a technician when I first got hired on and I saw his interaction with the old time managers--regimented, staunch in their positions...Most of the guys accepted those orders from management and DP was one of them. He left here and made his way through by doing the steps as most of us from that era saw them to be: moving from technician to staff specialist and supervisor over a small group and then program manager at headquarters. Then someone told DP he needed another level of experience and that's how we were blessed to get him.... We've learned through going through those channels that this is the way government does business. This is the way you manage--follow regulations--they are there so we don't break the law and DP follows those regulations. I do. There is no misinterpreting them because they are straightforward and right on with the way we do business. The government has a management philosophy that we support those people above us and support those policies no matter what it took, whether you felt it was wrong or not. You enact that policy and then go back and question it. If you're right, we'll change the policy.

The co-worker's explanation depicts how reality was socially constructed. Today,

that social construction has modulated as the agency has attempted to adapt to diminishing resources and the public's demand for efficiency. The modulation is most notable in the types of training the agency has offered in recent years--communication skills, employee involvement, participatory decision making, interest-based negotiations, managing change--all geared towards enhancing working relationships within the organization. The training has influenced DP's management style as evidenced in his response to my initial interview question, "In working with people, what helps?"

The first thing that helps me is knowing myself, being comfortable with myself before I can become more comfortable with the people I am managing... If I am comfortable with myself and know that I don't have to be out front and getting credit for everything...once I know the people I am managing then I can have faith in them, trust in their judgement and then I can just let them manage themselves and I can provide the resources they need. I don't need to be in the limelight. I don't need to be sitting down saying, 'Okay, I want to be involved in every decision you make because I know everything. I don't.'

DP subsequently related that his emphasis on knowing himself as the basis of his management style is a relatively new insight in his development as a manager. After serving for more than two years as manager in his current position, DP attended a two-week seminar on managing change. This experience proved to be powerful, and, also gave DP his first insight into the principle of co-determined behaviors.⁴ Through experiential learning that incorporated some family systems theory strategies, DP first

⁴ Actually, DP grasped that he influenced others' behaviors. He did not articulate any recognition that he also understood that others are influencing his behavior concurrently. However, he appears to intuit the principle of co-determined behavior. He became aware that his behavior changed even more when others responded differently to him.

grasped the notion that his behavior and actions influenced the behavior and actions of others:

I learned that I have to look inside myself to see how I am influencing others. One of the things the workshop leader helped me to see was that I was rigid. I came out with, did I want to be right, or did I want to make a difference? You can sit there all day and argue who's right or who's wrong. Or I can do things internally to make a difference. I chose to make a difference. I started interacting with the people I was having problems with differently. And it started coming back to me; they changed...I can make changes in myself, but I can't make changes in the other person.

His newfound efforts to adapt his management style to a world characterized by rapid change unfold throughout the data and represent what Argyris et al. (1985) describe as the discrepancy between espoused theory and theory in use.⁵ In one respect, DP's story represents his struggle to align his effectiveness as a manager for today's public organizations without the explicit knowledge that his undergirding linear based thinking continues to hinder his attempts. Said differently, his theory of action is in a state of transition. The workshop experience proved to be a pivotal event that has made a difference in DP's management theory of action, but has not been generalized nor integrated into his world view sufficiently to counter his linear thinking.

As DP clarifies subsequently, he is incorporating the insight into his management

⁵ According to Argyris et. al (1985), espoused theories are "those an individual claims to follow. Theories-in-use are those that can be inferred from action (81). The discrepancy is usually based on single-loop learning, in which new action strategies are used "in the service of the same governing variables" (86). DP's linear thinking--his governing variable--remains dominant despite his introduction to the principle of mutual causality.

approach to help himself and his employees accept the change created by reorganization demands. He realized that he could not perform all of his present duties as well as the additional ones mandated by the reorganization unless he learned to have faith in his employees' abilities to manage themselves.

With only this brief introduction to the managers, I now turn to the three interconnected patterns to elucidate CW's theory of action, demonstrating its alignment with chaos theory's principles. I weave back and forth between anecdotes from interviews with the managers and their staffs to sharpen the distinctiveness of each manager's theory of action.

Disposition toward Openness

The two managers define openness differently. Multiple elements comprise each manager's definition. In one element of her definition, CW construes openness as sharing all information she has with her staff.⁶

From her training in family systems theory, CW is aware of the problems that secrets create for open communication. After CW was hired as a regional director for the organization, the executive director told her that the organization had been operating at a deficit for several months.

We've been in a budget deficit since August and I came in October. I

⁶ I intentionally begin with this anecdote because it signifies CW's simultaneous incorporation of the three interconnected patterns into her theory of action.

know we'll get out of it. Looking at the figures for the past three years, they've been in deficits before, but the workers didn't know it. So my philosophy is about being open and having everyone know what the deal is. What's surprising is they thought they would all lose their jobs and we'd close the door and I am able to help them see it doesn't mean that.

I scared them a little by sharing all the deficit stuff. What I know is there is a way to get out of it. I can look back and see some things that weren't done. I can see exactly how they got into the deficit...and what we need to do from here. It's a myth that management can take care of everything--everyone has responsibility for making it work.

CW's disclosure initially alarmed many staff members. She was aware that it did just that.⁷ The key was that she coupled the disclosure with reassurances that the problem could be solved. In other words, she maintained a nonanxious presence. One staff member captured the sentiments of the others:

Her approach is very calm and low key. We had been in a crisis mode before she came because we were without a director. And we're in a budget deficit and she had brought it to us and said, 'This is our budget, this is where we're at.' And being clear and calm, 'We're going to be okay, we can feel good about things. This is where we're at and this is where we need to go.' That's helped a lot to have her convey budget issues with us. Even though we may sometimes feel this is alarming, she comes back with 'I think we'll be okay.' Being open about what's going on at the top level has made me feel more secure about my position. She rides the tide.

Another staff member echoed the sentiments of the first:

She's straightforward with information, but not an alarmist--not crisis-mode. For example, about the budget deficit, we're in the hole. A lot of people worried about their jobs. She's very open--the previous director wasn't--but she's open and at the same time says, 'We're working on this,

⁷ Friedman (1985) refers to this action as "delegating anxiety" to provide the impetus for change (19). Sharing the reality of the situation elevates the anxiety level sufficiently enough to challenge organizational members to participate in finding solutions.

there are ways to get out of this. It doesn't mean that we are shutting the doors, people aren't losing their jobs.' I have some concerns, but I don't go from day to day in a crisis mode worrying about if I will have a job tomorrow. I find her manner allays that for me.

Still another staff member shares the same feeling:

It's helpful to me that she shares the budget with us--it's new for us--I have a greater sense of where the agency as a whole stands, what the status of my job is. She's open and honest about that.

CW's definition of openness includes sharing information with the staff as she receives it from headquarters. Not revealing information until final decisions are made is tantamount to keeping a secret. One worker's appreciation for CW's communication is apparent:

CW approached me with the information that headquarters kept talking about reducing the deficit by possibly eliminating my position every time she was there. She said to me, 'I want to be fair with you and for you to know what I know, even if nothing is definite about your status. It is possible that your position will be eliminated and I don't want you to be blindsided if it happens. I don't know concretely at this point, though.' She didn't have to share that since it wasn't definite. But it gave me time to get other things going. I wanted to go to grad school and I had time to get that worked out and then I was able to resign when I knew I would be going to grad school and she also gave me time to make those arrangements. If she hadn't told me what headquarters was thinking, I wouldn't have had time to get my application in. I would have missed the chance. I didn't like hearing that my job was being considered for elimination, but I really appreciated CW sharing what she knew--even if it wasn't concrete. Most managers would have waited until it was finalized. That happened in a job I had before. I was given a day's notice that I was being laid off. One day I was working, the next, unemployed, and I have a wife and child. I was really upset. So I really appreciate what CW did. She was open and honest and understanding.

CW is accomplishing several tasks associated with family system theory's

prescription for a healthy organization. First, by disclosing the budget deficit coupled with her assurances that the problem could be solved, she created an anxiety-tolerant environment that facilitates creative problem solving. Second, by sharing ownership of responsibility with all organizational members, she promotes each member's own individuation or functional differentiation. Sharing the historical process to explain how the deficit occurred in the first place has focused staff member's attention on improving processes. As organizational members contribute ideas for improving processes, CW supports the implementation.

DP, the traditional manager, passes along information from headquarters to the staff. He has developed communication channels designed to convey information efficiently. DP explained how he has implemented the prescribed process to inform his employees about the on-going status of reorganization plan:

When headquarters was instructed by the NPR to reorganize and re-align, they started putting out a lot of information, pamphlets, e-mail, you name it..just a flood of information. I posted all that I got in the "re-alignment file" on everyone's computers and I'd write on the bulletin board that there was new stuff in their files about re-alignment. Then, we would talk about it at the All Personnel meetings, in the coffee room, wherever. Headquarters convened a regional team and they decided within the Washington guidelines how to structure the region. Then each region formed a leadership team and we [union representative/manager partnership] first went up for a week of training on interest-based negotiations. The union rep and I came back and explained to the staff what interest-based negotiations was. Then we went back up for two weeks and decided how to implement the unit structure. We came back and told the staff about the plan.

Next, the union rep and I sat down with the coordinators [former supervisors] and negotiated a MOU. We've finished our negotiations and all the parties on the negotiating team have signed the MOU and now it's

just a matter of getting it printed and distributed. When we do that, we will sit down with everyone in our unit at the same time and the negotiating team will go over line by line that MOU and go over our intent, what we are going to do, what we plan to do. Everybody gets the same thing at the same time, so hopefully there will be no misunderstandings when we walk out the room.

DP's explanation delineates information sharing to convey decisions that have been made in the top-down structure. Subsequently, he stated that he believed that staff should be informed all along the way.

People are naturally going to fight change. If you keep them informed along the way, they are more likely to get on board. When you explain all the details in the MOU that have been worked out, there is a lot of gnashing of teeth and anger, but people still don't fight you as much if you have taken the change slowly and go step by step. You know the new joke about the game, post office, don't you? Now you spin the bottle and where it lands, you point the gun and pull the trigger. We don't want that here, so we tell them step by step where we are.

DP's strategy of keeping his staff informed gives the semblance of alignment with chaos theory's principle, but actually reinforces the underlying linear thinking that pervades the entire agency, not just DP's thinking. The purpose for keeping information flowing into the system is to overcome the resistance, rather than to generate creative problem solving among the members. Paradoxically, information is actually controlled and contained rather than being openly shared.

The concept of openness extends beyond sharing information freely and immediately. Open communication and an open door policy have become commonplace terms associated with effective management. The terms connote not only the unrestricted flow of information but primarily depict the channels established within the

communication structure. However, the terms do not take into consideration the emotional field and it is in that conceptualization that we find the difference in openness. Both managers adopt what they refer to as an open door policy to facilitate communication.

One of DP's employees commented on what was helpful in his relationship with

DP:

Probably what helps the most, being new to the agency, is open communication. He's often said on occasions he has an open door policy. You go in, like right now, if I had a problem or something I wanted to discuss, I could go in, shut the door and sit down and talk about it. Especially with someone new, trying to find my way around, get rooted here, it helps quite a bit.

Open also includes being able to discuss situations in a straightforward, honest manner:

I worked with DP when he was a technician back in the late 70s. It helps me relate to him now because of prior knowledge of him. We developed a relationship. It helps to have a relationship--good, bad, or indifferent. It helps because rather than having to guess how to approach DP, I base knowing how to approach him based on the previous drill.

I know him well enough that I can be open and not have to worry about any repercussions or any adverse. I can come to him with a problem and not have to worry about how to tell DP this because I'm afraid what will happen. It can be open and shut.

This worker described DP as someone who did not play office politics or engage in game playing, rather was genuine, trustworthy and authentic. He also alluded to an interesting caveat that DP incorporates into his definition of open communication. The following excerpt demonstrates one variance between DP's espoused theory and theory

in use.

What gets in the way more than anything else is a person who will not stand up and take responsibility for their actions and be accountable. I do not like excuse makers. You make a mistake, own up to it. Figure out what you did wrong, whatever you need to correct it and move on. It's not that big a deal.

I had a union rep that had a computer and one of the technicians took the computer and moved it to another area and the union rep came in and he was very upset about it and so we worked through that and talked to the supervisor and told him, 'You need to talk to your people. They cannot move things unless the union rep and I first agree to it.' And here go the excuses...and I said, 'Wait a minute, bottom line is we took the computer. Bottom line is it can't happen again.' When people start making excuses, I just stop them...'Bottom line, you are responsible. You made a mistake and it can't happen again.'

For the most part, everybody I have that works out here, when they make a mistake, it's 'Hey, boss, did I really mess up today!' 'Well, what happened?' As a matter of fact the technician that took the computer came up to me and said, 'I heard I made a mistake. I screwed up. I'm trying to get the computer back to the union rep and it won't happen again.' And that solved the problem.

DP's his underlying linear cause and effect thinking sets up his reality that someone is to blame; mistakes are attributed to an individual. Interactions embedded within the system are not seen as producing these behaviors. Yet, the scenario DP described connotes interactions and behaviors among the players that were manifested as action (taking the union rep's computer). The apology circumvented the opportunity to open communication which would explore the dynamics among co-workers. Note too, that DP got caught in the double interact. When he stated that he didn't want to hear excuses, the emotional reaction called for is an apology. DP's emotionally-based reaction is to absolve the guilt. But the interaction is left at the emotional level.

Moreover, contrition as a caveat to openness can lead to what Argyris et al. (1985) term "brittleness,"⁸ which can reinforce fear of failure and close off communication. A high fear of failure would lead to entropy by circumventing energy created by risk taking. Equating open communication with capitulation ironically interferes or shuts down the very openness that chaos theory suggests is essential. Self-expression is denied. Essentially, DP expects employees to conform to prescribed expectations. Variance would represent a loss of control. In Bowen theory, the conformity represents togetherness and denies individuation and the opportunity to develop self.

Despite his exposure to co-determinativeness in the managing change workshop, DP's linear thinking dominates this behavior. DP appears to equate the lesson he learned to look inside of himself and alter his behavior with "leading by example":

I try to lead by example. I may make excuses. I don't think I do. If I've made a mistake, I'll tell I've made a mistake. I've told my boss that many times...and many, many times, I walk up to a technician..sit down with a technician and say, 'Hey, I think I screwed up. I've made a mistake and I certainly apologize about that.' I don't have to. I'm the boss. But I don't know everything, so again, I try to treat them like I want to be treated and respect them. So, I'll say, 'I screwed up and I'm really sorry.' And I am sincere. That's the way I am. Hopefully, if I can lay my cards on the table, there isn't going to be too much

⁸ Argyris et al. (1985) define brittleness as "the predisposition to express an inappropriately high sense of despair or failure when producing error...reactions include, strong feelings of shame and guilt, loss of self-esteem and self-confidence, fear of new failure and fear of acquiring a bad reputation. Such reactions lead to a lowering of tolerance for failure...and in their turn reinforce the high fear of failure" (156).

excusemaking and not accepting responsibility. Because if I accept responsibility, then I expect them to accept responsibility.⁹

CW's perspective on mistake making differs:

We have had some foster parents who turned out not to be as wonderful as we thought they were and the first time that it happens you think there is something terribly wrong with your judgement and how could I have made this mistake. And the 100th time it happens, you know you take your best shot and you make judgements and sometimes you're right and sometimes you're wrong and you can make corrections along the way. I bring to these folks something they didn't know: this will happen to them, we'll always make misjudgments, so there is nothing wrong with them that isn't "wrong" with the rest of us and that this is not fatal. We're not after perfection, we're just after progress and we'll never have a lightning rod to discern who is a good foster parent.

These young staff members take themselves seriously and aren't able to see the pattern in things. They haven't been doing it long enough-to see the ups and downs and patterns, so I'm lending to this group a sense of maturity and calmness and a sense that things are going to be okay and we'll grow through this because I can remember almost everything that comes up here, I've been through before, so I know it's not fatal.

CW's view promotes the healthy functioning of her organization by focusing on what to do to improve processes and bypasses the emotional reactivity trap that DP's caveat sets up.¹⁰

A final distinction between CW's and DP's definitions of openness is insightful.

⁹ Note the resemblance of DP's statement to Quinn et. al's (1990) description of self-awareness cited earlier in this chapter. The match reveals the consistency with which DP follows recommendations from traditional management approaches.

¹⁰ Debating the efficacy of admitting mistakes and its implications for assuming responsibility for one's actions would miss the point that emotional reactivity can be triggered by such a caveat.

CW related that subsequent to being hired as manager, she learned that another organizational member had applied for the position.

I knew it could be one of those awkward situations so I just said to [name omitted], 'I understand that you had applied for this position...do we have a problem?' We talked about his feelings...getting it out in the open right away helped. That half hour conversation set the tone for our relationship. I could have tip-toed around it, like that story about elephants in the living room, but nobody talking about them. Family systems theory tells you to talk about the elephants, not ignore them or deny their existence. So, now we work together really well as a team...complement each other.

DP found himself in a similar position. When he became manager, he learned that another organizational member had applied for the position. The two have never discussed the situation. As described by the other organizational member:

When DP got here, we had a lot of problems because I had been used to doing my job my way. I resented DP when he first got here because we were bidding on the same job and he beat me out of it. So I resented him before he got here and his style of supervision that he wanted which was borderline autocratic was alien to me and others. I wasn't the only one who had problems with it, but I had enough sense to realize that a lot of my problem was due to myself and I was going to have to work through that.

DP spoke of this unaddressed impasse in the context of relating how the workshop on managing change represented a turning point in his managerial style. A segment entitled "Influencing Others" helped him deal with that worker's "performance problems."

In this workshop, I was describing the kinds of performance problems I was having with employees. I spoke of [name omitted] and how he had been my supervisor when I first started as a technician. He's been a first line supervisor for 25 years, and I was brought back in as his manager.

He had applied for the job. In the workshop, we were talking about how we influence others. I only could influence [name omitted] by virtue of my position. I was having trouble being his supervisor. That was my own baggage. The workshop leader helped me see how I was contributing to the problem. Instead of being rigid myself, so I was right and others were wrong, I should change what I was doing. One of the things that came out was that I could empower [name omitted] by giving him a special assignment that could further his career.

DP and his subordinate were at odds for two and a half years before DP attended this workshop and discovered another way to validate his subordinate and promote his functional level of differentiation.

In summary, CW's multi-element definition of openness aligns with the openness that chaos theory purports. She facilitates the free flow of information into the system to generate creativity needed to foster co-evolution; she eliminates interactional communication patterns and "rules" that exacerbate negative emotionality, which in turn block creativity. Instead, she directly confronts potentially deleterious situations and creates an environment in which individuals feel free to take risks. More significantly, CW's accounts attest to her ability to see process and interconnections.

Defining One's Self and Promoting Others' Functional

Differentiation

CW works consistently to define self and promote the functional differentiation of others. Reflexivity is at once the process through which she accomplishes her goal and the basis of her recognition of the need to define self and process interactional

dynamics within the organizations. Reflexivity promotes openness or receptivity through increasing the capacity of the members to define self in the relationship and, concomitantly, openness is the milieu conducive to reflexivity.

Systemic process thinking is evident in the CW's behaviors and actions:

Both [name omitted: clinical director] and the former director ran the clinical team. But when I came, I told [name omitted] that he was capable of handling the clinical team. I said to him, 'My intention is for you to manage clinical team. You make the decisions and make the assignments and work that out with the group.' I did that because when I first came, I felt the staff was triangulating me. If they didn't like what [name omitted-clinical director] said, they'd come to me and I was aware that that's what they used to do before I came. So I told [name omitted] that I would back his decisions 100% and not be triangulated. And if I did disagree with his decision, he and I would discuss it, but the workers wouldn't know that.

The clinical director's response demonstrates the implication of promoting other's differentiation:

She trusts me to do my job. The previous director wanted to stay connected to the clinical aspect for his own needs. But CW lets me make all those decisions and stays out of it. She doesn't go around checking up on me, she doesn't override my decisions. It really helps my professional growth.

At the time of the initial interviews, CW had been the manager for five months.

To my query "If you were king/queen of the universe, what about your working relationship with CW would you change?" the responses from various staff members attest to the strength of the emotional field's pull toward maintaining the established homeostasis under the former director:

I want more directness from her. It sounds like it contradicts what I said

earlier about her empowering me to make decisions and judgments, but some decisions are--you need someone to say, I've got your information and I got your information, and I got your information, and this is the decision I am making. I don't see that happening as much as I want to.

Generally, when we have clinical team and team meetings we discuss staff issues and issues in the week to come. I remember talking about an issue and it's left out there--nothing decided--so issues aren't closed, just a lot of opinions. At clinical team, the former director let an issue sit on the table, then everyone including him would chip in, then he'd summarize and say this is what we'll do.

Another staff member expressed similar sentiments:

I wish she were more involved clinically, but I do recognize that isn't her position, her direct responsibility. She's more administrative and so on. It's that I've come to pick up some of her viewpoints and clinical direction and I respect that, so I wish she were more into the clinical. The previous director did very much get clinically involved...

But as CW's own rationale for staying out of the clinical team reveal, she quickly realized she was being triangled. CW's openness (no secrets) reduces the possibility for triangling:

I've told CW some things and she says, 'Oh, [name omitted-the clinical director] told me.' It's weird that she would tell me that he told her--like nothing is a secret. Some things do have to be confidential. Like if I was having a problem with [name omitted-the clinical director], then I wouldn't feel like I could go to CW because they are a team and what she knows, he'll know. Unless I say specifically, 'Don't say that.' But I don't know that she'll even honor that. It would be nice if I shared things and it wouldn't be "we" know. She is above him ultimately--not like she would go and say, 'I'll make this decision regardless of what you think,' because she's not like that--she's a team person and gets everybody in there and gets everyone's opinion. And vice versa--if I say something to [name omitted-the clinical director] I might not want it shared with CW and I know it will be because that's how they work. So that makes me back off and say, 'Maybe I shouldn't say it.'

From this excerpt we see the interplay between openness and triangling. Openness

as delineated by having no secrets discourages triangling. The worker intuits this message as evidenced by her statement, "Maybe, I shouldn't say it." If the communication "rule" was "secrets are kept, anything you say about a co-worker is confidential," then the worker may go to CW if she is having problems with the clinical director. In that instance, CW could be triangled. The opportunity for the worker and the clinical director to resolve the problem would be diminished. Instead, the "open/no secret rule" is more conducive to the worker's eventually discussing her issue with the clinical director directly.

Another worker is beginning to grasp CW's intent, but would prefer to continue the interactional dynamics that occurred prior to CW's appointment. The staff member related how she would change her relationship with CW:

I guess it would be nice, it may not be professional, but it would be nice to be able to express some of the difficulties I am having with the clinical director. It would be nice to be able to say how I'm feeling about that and have that be okay. But it's probably not the way office politics really work. If I could say, 'Gosh, I wish he would change,' and bounce that back and forth with her. I don't always feel I can do that and I don't know if it is appropriate.

I then probed, "Don't feel you can...?"

Well, she'd probably tell him. They share everything. But from how she handles other stuff, she'd probably say I should be telling [name omitted-clinical director] this. It's a feeling about how she is because of how she handles things.

DP has been in his present managerial position for five years. He and his staff both avowed how DP has transformed from a "quasi-autocratic" manager to one who

gives employees the latitude to do their own jobs. Trust was slow to build during the first two and one-half years that DP was manager. As mentioned earlier, DP credits the new insights he acquired at the workshop on managing change as the pivotal event that marked the beginning of his transformation. He attributes his initial style to the stance he had to take at headquarters:

I have changed. I came out of Washington from a high-pressure position and bringing that high pressure method to the field just doesn't work...in DC, I was, 'Let's beat them up and kick them out the door and bring in somebody who can do it.' I worked with a contractor on a \$105 million project and every time I'd go out to find out how the project was going, I'd hear a bunch of excuses about 'Well, we are going to be another month or two...'. I'd say, 'That's not acceptable and this is why and you better come to me tomorrow about how you can cut it in half.' And then I'd have to meet with the administrator and tell why things were going good or bad.

And once I remembered what it was like to be in the field, I went back to my old method. That method didn't work in DC. They would have viewed it as a weakness and you never would have gotten anything done. So you need to come in and be at least as strong as the person you are dealing with. You've got to get away from this 'Let's talk about this.' There's no discussion on this...this is it.'

And so when you come back to the field, then you've got to re-adapt to what works out here--'Let's sit down and talk about this. We've got a problem here and I'm not sure what it is and help me understand what it is.' One of the things I always try to do is to tell them [when an employee has a performance problem], and I mean it, is 'Help me understand what's going on because maybe I don't understand.'

DP's account illustrates Bowen's discussion of the pseudo-self or functional level of self-differentiation. The emotional field in organizations exerts pressure on individuals to conform to the group's principles and philosophies (Bowen 1976, 68). In tandem, the individual acquires a pseudo-self that promotes emotional harmony within the group.

When DP returned to the "field," he initially enacted the pseudo-self he had acquired at headquarters, however the emotional fields in the two locations were different. From one organizational member's perspective we see how modulation in one's pseudo-self can occur. The excerpt demonstrates the significance of the emotional field, illustrates mutual influence, and describes dynamics and triangling that can take place unbeknownst to the manager:

...at [this location], we had a reputation of getting out more SMPs than anyone else. In one year we got out 28 SMPs. When DP came, he said he wanted total control over SMPs and my first question was 'Why? We're doing better than any other unit.' DP told us we as supervisors weren't allowed control over SMPs over \$250. He would handle them.¹¹

The other supervisor and I took that as an insult because we hadn't misappropriated funds, we were getting the job done and now he was shutting it down. I looked at him and said, 'I just realized your problem. You basically don't trust us do you?' And he said, 'Not when it comes to money.' And I said, 'No! Not when it comes to anything. There's no such thing as quasi-trusting people. You either trust them or you don't.' So what happened is we did exactly what he wanted. We turned it all over to him and for the next eighteen months absolutely nothing--well, we got maybe a couple done--because his plate was full anyway. ...It basically overwhelmed him. We slammed him against the wall to where he had to start delegating stuff out and to his credit he realized his mistake and said, 'Hey, I've got to change here a little bit.' And I'd say it's a normal progression...now he's laid back and relaxed a lot more...But that quasi-autocratic style he had shut everything down. The five of us got together and either consciously or subconsciously changed him.

¹¹ From a traditional management viewpoint, instituting "organizational control systems" are a critical element for effective management (Quinn et al. 1990, 112). DP instituted a financial control system that insured his ability to monitor fiscal matters. Quinn et al. (1990) address the importance of the task as a legitimate part of the coordinator's role (109-121) and make recommendations about how to reduce human resistance to control (114).

The supervisor's description is rich with complex and interconnected dynamics. Pseudo-self is acquired and modified by the emotional pressure of the group. In this case, the emotional pressure involved the two primary supervisors triangling DP and subsequently an interlocking triangle referred to as the "five of us" by the supervisor, was set in motion. Not surprisingly, the supervisor who related this incident was the one who had previously applied for the manager's position. Following Bowen's (1976) assertion, this issue is likely a manifestation of the unresolved conflict between DP and this supervisor.

The confrontation about trust is a double interact. Once caught in the emotionality both parties reacted defensively. Moreover, reflexivity is unlikely to occur when blame is being projected. DP's focus on control countered the principle of promoting the other's development. From the supervisor's perspective, not only was his own development impeded, but the organization's operations were negatively affected. Linear thinking shaped DP's belief that power over, power by virtue of position, could shape and mold others' behavior (Quinn et. al 1990, 272).

To reiterate DP's revelation from the managing change workshop, it was during an experiential exercise that DP gained the insight that he was influencing the dynamics in his relationship with this supervisor. In essence, DP learned to be reflexive. He acted on the suggestion of the workshop leader and promoted the supervisor's self-development by allowing the supervisor to develop ideas for improving an aspect of the agency's operations. The supervisor captures the dramatic change in their relationship that

resulted:

I'm content with our relationship now. If you want to see a definition of two people learning to row together and changing over time--I'll guarantee that DP has changed and I've had to change and we've been able to work together to create a relationship of mutual respect and trust that is so much better than we started out with.

When DP talked about his relationship with this supervisor, he felt similarly and acknowledged that what he had learned at the workshop made the difference. He shared with me a videotape made of him at the workshop. The videotape contains role plays depicting the interaction he had with this supervisor and two others, one of whom DP (in our first interview) had labeled, lazy and the other, incompetent. The purpose of the exercise was to demonstrate how managers influence the dynamics in any relationship by their own behaviors; but it also revealed the triangling that was occurring for the first two and one half years DP served as manager.

That morning I had told [name omitted] that I would be on annual leave for most of the day. I'd be back at 3:30 or 4:00, maybe as early as noon. My boss called at 12:30 and [name omitted] told him, 'I don't know where he is. He said he'd be back at noon.' And my wife called and [name omitted] said she hadn't seen me all day. Fortunately, [name omitted] was gone by the time I got there and found out about all that. The next day, I called her into the office and said, 'Are we having trouble working together?' She said, 'Not that I'm aware of.' And I said, 'Well, there's a lot of tension on this floor.' Then she said, and I don't know why she said this, 'Are you talking about your boss's call?' And I said, 'as a matter of fact, I am. You said to him that you didn't know where I was and you also told that to my wife.'

The interchange continued with the worker and DP defending what was said and what wasn't.

I said, 'Well, there's a lot of tension around here. And she said, 'Well, don't you think you are the problem?' I said, 'I'll accept some of the responsibility, but we're talking about your action right now. She said, 'Well, I don't know what the problem is. I said, 'There's a lot more to this. You defer everything to [name omitted- supervisor #1]. He sees incoming mail before I do. Phone calls are routed to him before I get them. That's creating tension.'

The employee explained that she did that when DP wasn't available because supervisor #1 had been here a long time and knew how to handle situations. She added that she didn't route things to another supervisor (supervisor #2) because "you know how he is."

In the critique of the role play the workshop leaders helped DP see his behavior was contributing to the employee's defensive reaction in what Weick calls the double interact. Their critique pointed out how DP collapsed two issues and collected evidence to make the employee wrong to press her into capitulating. Secondly, the leader noted that DP emphasized right and wrong in his conversations with subordinates. In fact, his focus on who was right and who was wrong was so strong that even his feedback team in the workshop began their remarks by commenting that they thought DP was right.

In addition to that critique, the leaders also recommended that DP designate supervisor #2 as "acting" when DP was absent to shift the dynamics in the triangle, although they did not share the concept of triangles with the group participants. Basically, the triangle in which the reprimanded employee and supervisor #1 distanced DP shifted each time supervisor #2 was designated "acting manager."

DP stated that he did indeed hear the message and adopted the workshop leaders motto: "Do you want to be right or do you want to make a difference?" His new

awareness that he did couch things in terms of right and wrong helped him return to previously learned skills in active listening, reflecting feelings, and trying to understand the situation from the other's perspective.

I remembered how effective I used to be before headquarters. In fact, in one of the assessment center scenarios that I went through as part of the application process for this position, I said, 'I have a problem and maybe it's because I've failed to do something or give you something and you can't do your job. So help me understand.' And the people grading me thought that was a great way of doing it and I didn't realize I had been doing it. It just comes natural to me....

...So if you have a performance problem and I deal with performance problems, the person's already having problems and I don't want to go over there and create more problems. I need to know why is the person having a performance problem. What do we need to do to help that person improve and give that person an opportunity to improve versus some theories are you go in there and start pounding away off the bat. You know, 'Here's what's going on. I'm tired of hearing excuses and you straighten up or you're out of here.'

...I've gotten more done by just sitting down and 'Let's have a chat.' You know, 'I have some concerns and maybe it's my deal and let's talk about it because maybe I'm not being clear in my direction to you and help me understand why you're not able to do what I've asked you to do or what I think you should be doing.' And I've found that works a whole lot better than going in and slamming someone against the wall and saying, 'Okay, this is it, enough is enough.' Because when you do that you put someone on the defensive and I normally try to keep myself on the defensive, figuratively speaking, and that way I get more out of the person when I'm sitting down with the person, uh, defensive is probably a bad term, I don't want to walk in and say, 'Ok, here's what I think you're doing wrong and I want to know why you're doing it. Immediately, the person is gonna back into the corner, regroup and come out fighting. A better method would be as I just stated, 'I'm having some concerns, I'm having some problems and it's what I perceive as a lack of, you know, performance. Now maybe it's because I haven't made my position clear to you.' And that always keeps it off of that person, so that person, hopefully will feel more at ease...'Well, he's not really beating me up, maybe he really wants some answers.'

From the workshop, DP gained the self-awareness that his behavior influenced other's reactions. The insight resulted in DP changing his behavior. DP has been able to see that his subordinates do respond less defensively. Yet, his linear thinking still dominated. The individual is viewed as having the performance problem. It may well be a missing link in his espoused theory and theory in use.

DP left that workshop with another critical and timely insight:

The main thing they talked about was looking inside of yourself and seeing what you need to do so you can handle change. And one of the things that came out of it is: this is what's so, and I knew we were going into this reorganization at that time, so this is what's so..now what. You can fight it, get on board, whatever.

...And I realized that with the reorganization coming, I couldn't do everything I'd been doing. A lot has to be delegated... I have to move to become a resource person for them.

The following excerpt from a videotaped interview the leader conducted with DP documents DP's actual reflexivity:

Leader: Define being influential.

DP: It means being able to effect change in people. It means having access to powerful people, either real or perceived. It means getting work done through others. It means how we interact with people. We mentioned earlier today, how we influence people just when we pass them on the street. Daily interaction.

Leader: With regard to influence, how would you assess your influence over those you directly supervise either individually or collectively?

DP: Collectively, I'd say I have influence based on my position. Let me take one unit. I have influence over that person because..let me back up. The person I was speaking about this morning--that person [supervisor #1] is way over retirement age. I'm not sure I have any influence over him. He's not a risk-taker. He hasn't survived a lot of sector managers by

being a risk-taker. He's ultra-conservative. So I don't know if I have any influence over him or with him. Another person looks to him as her supervisor. I am trying to do some things. Being from Headquarters, I have some contacts and can get this supervisor some things for his unit. The second supervisor is very headstrong. I finally got his attention by giving him a lower performance evaluation than he had ever received. So, I've had a great deal of influence over him because he has made a complete turnaround. Not just because of what I did, but because he wanted to change.

What I've tried to do, and I didn't realize this course was also about empowering people, what I have been trying to do is to give these people responsibility and accountability and let them make the decisions. I'd like to say to them, this is your project, this is your accountability, but if you fail to meet your objectives, that will be reflected, as it will be on my evaluation. But I want to make sure that there are also some places I can check that they are doing a good job. I don't want to make decisions for them because it's easy for them to say, 'Well, you told me to do that and that's what I'm doing.'

Leader: To what are you committed?

DP: I would really like to empower my supervisors to take on their area and work it. If they make mistakes, I'll go to my boss and say we're making mistakes but we're learning.

Leader: What would you say is one of your greatest strengths you can use in forwarding that commitment?

DP: I'm willing to take risks. And that is certainly a big risk in the way we run our agency. I'm willing to admit that I make mistakes and be a risk-taker. I'd really like to learn to let them come to me and say, 'Here's the problem' and I'd say, 'Okay, what's the solution?' And they'd come up with the solution. I'm not there and I'm not sure I could abdicate my responsibility and accountability for that in this agency, but I could say 'You tell me what you think is best.'

The excerpt from the interview represents a remarkable example of reflexivity.

DP first described the linear version of empowerment that he brought to the workshop

and that he had been attempting to utilize at his organization. He begins to resolve his projection regarding risk-taking. We see reflexivity in action. After defining his strength, he crucially modified his view of empowerment. In effect, DP was empowered; he began to define self in the situation. Despite the fact that his own supervisors dissuade risk-taking (often through issuing low scores on performance evaluations), DP articulated his value for genuinely empowering self and others and took a stand based on those values. His definition of self in the situation was based on his commitment to that value. No less remarkable was the change in DP's behavior and actions when he returned to his agency. As DP described:

At that time, some of the staff had retired. They didn't like the looks of the reorganization. With the agency's goal to reduce staff, we figured those positions wouldn't be filled. What we had to do was prioritize what your jobs are. And I didn't do that. What I laid out to the staff was 'These are some things that need to be done and you tell me which ones need to be done and let's do those.' And that's what we did. When I've got one of the units that I have out there generating nine years of work [technical measure used to assess performance], authorized six people [staffed fully] and only 3 [on staff] and they did 85% to 86% of the work that year. And my boss couldn't understand why I gave them all outstanding. They are supposed to be doing 95% of this and that. Well, that's all fine and wonderful if you're fully staffed, but these people are each doing the work of two people and they got 85% of the total work done...that's not outstanding? It is in my mind. And now they give me 195% because I had faith in them..I mean, not 195% in numbers, what they do is anything that needs to be done, they will do it for me because they know I will fight for them.

I got cut back. My boss gave me a satisfactory because the numbers weren't there and I said, 'That's fine with me, I could care less.'

During the interviews, DP's staff frequently cited the change from "quasi-autocratic," "micro-managing," and "controlling everything because he was afraid to take

a hit [from his boss] to giving staff latitude to do their jobs:

DP believes that people know how to do their jobs. So he doesn't look over your shoulder. Even if he had wanted to do it, he wouldn't have the time. But he's the kind that says, 'You go do your job and if you need help call me.'

Or as another staff commented:

He doesn't watch over my shoulder. He doesn't micro-manage me. He seems to have the attitude that people know what needs to be done, so he gives you the freedom to do your job. That's certainly not an open invitation to do what you want and think you'll be covered. If you break a rule, then obviously he's not going to stand behind you breaking the rules.

With the reorganization gearing up, DP is relinquishing more control. According to a supervisor:

He wants a leadership team under this new re-organization. He recognizes that he doesn't know everything that's going on. He wants a leadership team here where you'd utilize the coordinators [new title for supervisors], the union rep and himself because the coordinators will be involved in the daily operations and we'll be most intimately involved in what's going on. The union rep opposed it. I told the union rep that DP was right. DP had already said this is what I need. So the union rep finally agreed to it. DP recognizes there's no way he can know what's going on everywhere and he's also confident enough in himself now to take recommendations from other people--something he's grown into.

The insights gained at the managing change workshop marked the beginning of DP's self-initiated changes. The impending reorganization and the workshop constitute fluctuations impacting the internal system. During the oscillations, DP was open to change. Most fundamentally, the changes represent a beginning shift away from linear thinking--seeing others' behavior as isolated from one's own, the right versus wrong

ideation, and attempting to mold subordinates' compliance--toward beginning to grasp the principle of mutual causality. Further, DP began to learn to engage in reflexivity to discern how his behavior influences the behavior of another and through reflexing, he began to define self in the situation.

On a visible level, many of the issues with which DP initially struggled were viewed as issues of trust. Trust in others, again, in linear-based thinking, is based on projection, since trust, actually, is more a capacity to have faith in one's own ability to work through situations than faith in others. Trust is thereby part of one's own self-differentiation. When viewed nonlinearly, recognizing processes as systemic contributes to the belief that one has the capacity to work through situations.

CW's view, undergirded by nonlinear thinking, expresses the notion this way:

One thing that helps me from life [experience] is that I'm a Pollyanna--not from lack of experiences or naivete, but from the opposite--life experiences. I've been through more than most people. I believe things will be okay and people move toward the good. The universe is an organism that moves toward the light--sometimes we get confused and move toward an artificial light, but I have an optimism.

...An underlying thing from life, is I have a strong sense of spirituality that informs and proceeds everything else that goes on. It helps me get the horns and halos off--a sense that everything will be alright.

In applying this undergirding holistic philosophy to organizational life, we learned earlier that CW sees "the pattern in things" and knows that mistakes are not "fatal." Her attention is not directed toward trust issues at the individual level. Rather, her attention is directed toward understanding process:

This part of the agency is very young--three years old--and we're going through the kind of normal dips and spurts and chugs that new entities undergo and I've done that enough times now that I know this is just a phase. It's like normal growth and development. Like when you have your first child and they are two years old, you think you are raising a sociopath. When you have your second and they are oppositional--you aren't stunned by it.

The developmental process of the whole is reflected in each individual's development so that trust at the individual level is not the issue per se, rather promoting individuals' development is important. CW's own work toward self-differentiation is key to the process:

I've done a lot on my personal growth. I can see myself as a stand-alone--it's quite a journey. I've been in therapy for years and done my own genogram and I think it's important for everything you do and that includes management. Because managers who are working out their own stuff on the backs of their organizations isn't going to work well. That's probably why it is so much better to work for [my present boss] than for [my previous boss]--his own mental health. [My present boss] is a much healthier man and it shows. Have you read The Addictive Organization? It says the organization is only as healthy as the leader.

From the significance CW attaches to her own differentiation and personal growth, we can also glean that her ability to stand alone is crucial to her belief in her own capacity to work through situations. The need to focus on trusting others is diminished. The projection is resolved.

On the behavioral and action level, this underlying nonlinear view appears to have manifested itself as automatically trusting people when she began as director of the agency five months previously:

She's supportive in a trusting way. She trusts my judgment. In our jobs,

you're out there doing things and making decisions...I feel with CW directly that she trusts decisions I make that are going to affect the child, foster parents, the agency--and I know she'll back up my decision.

Another worker expressed a similar view:

She lets me draw conclusions myself. She will guide me if I have a managerial question. She will encourage me and give me ideas, but ultimately empower me as far as 'I trust you to make a good decision' and will say, 'What do you think you should do in this situation?' And those are difficult, but I appreciate it because it allows me to come to conclusions on my own and think through it.

Significantly, everyone in the agency related a similar experience when asked what was helpful in their working relationship with CW. Perhaps, even more remarkable is the fact that CW had only been the agency's manager for five months at the time. At its face value, CW appears to have faith in others automatically, perhaps reminiscent of the "self-fulfilling prophecy" (Rosenthal 1966). But CW's view is more holistic. She recognizes that promoting other's functional differentiation is integral to having a healthy organization. That part of the process bleeds into CW's efforts to promote the functional differentiation of others by promoting their individual development.

She stretches you. Sometimes I feel inadequate, like I can't do something. But I say, 'Hold on, let me go step by step' and she supports that and if I need help, fine, she will. Like the computer, she will guide you, but she's not going to stand over you and do it for you. She's sending me to Windows class to help me do my job better and she's taught me things on the computer.

Another worker notes:

She's interested in and promotes my professional growth. I just finished my doctorate and now I'm teaching Intro. to Community Counseling. She's supportive of that and works it out because she knows it will help

me grow.

At a more personal level, one worker stated:

She pushes me to be on my own. I sort of keep going back to her as this mother figure asking 'Is this okay?' And she says, 'I trust you to do that.' She pushes me to be independent, which is scary sometimes, but it pushes me to grow as a professional. There was one instance where I asked her what to do and she said, 'That's up to you--it's your call.' I still didn't take on that responsibility because I then went to [clinical director] and asked him what he thought I should do. But even though I didn't take on the responsibility totally, it was a good thing that she was pushing me to take on that kind of responsibility.

And with letters I'd write. I'd take them to her and I'm not doing that as much. After hearing that my letters were fine, it was subtle, and I just realized that I didn't have to bring them to her.

I can see it happening that she's pushing my professional development--and it will happen as I get older and wiser.

The excerpts point out that CW uses the same process with individuals, but each person's specific needs are addressed.

DP also promotes his staff's professional development. As mentioned previously, one supervisor has pursued developing a special project. The supervisor hopes it will garner him a promotion since his current position is changing so drastically. Additionally, all of the technicians at the agency undergo specialized training needed to perform their duties. Two other anecdotes were shared:

What helps me out personally, as I stated earlier, [is that] he recommended me for my current position. His open statement to me was that anyone who was looking to go ahead, he had no problems with it, that he feels his job as manager is to be able to train somebody to be able to take his position for some reason he was to go somewhere else and take another position. In lots of ways he did that to prepare me for his position.

Another employee related:

I talked to him recently--a supervisor position came open and nobody else wanted it, so DP asked me, even though I've only been here three and one-half years. So I went in to express my concerns that I'm not that experienced with the paper work or just to get his reaction of what he expected of me. And he said he wasn't going to set me up to fail. He was going to work with me. It wasn't one of these--this is what you're going to do, now go do it.

In both accounts, the employees imply that promotion of their professional development was not solely for their own growth. The innuendo suggests that the organization's needs are paramount.

Examining this interlocking element illuminates the connection between utilizing reflexivity as the process that underlies defining self and promoting the functional differentiation of others. The examination strengthens the consonance Bowen theory has with chaos theory's call for the internal system to be poised and receptive so that when sufficient environmental energy is available, the system can reconfigure. We are able to trace CW's ability to think systemically. That view directs her efforts toward defining self and promoting the functional differentiation of others while realizing that individuation counters the togetherness, which in turn discourages the creativity needed for co-evolution. In the course of interviewing, I heard no anecdote that suggested that CW gets caught in the double-interact. Her consistent message to her staff--that each of them find solutions to their own problems--successfully avoids double-interacts.

The consonance between the two theories came into even sharper focus when we were able to see how DP's introduction to the principle of mutual causality so

dramatically interrupted the existing, deleterious interactional dynamics. DP's reflexivity enabled him to define self in the situation and to take a significant step toward promoting the functional differentiation of others.

The third interconnected pattern furthers the first two patterns. It is the milieu that nurtures openness and enhances one's capacity to engage in reflexivity. Concomitantly, openness, defining self, reflexivity, and promoting others' functional differentiation induce an anxiety-tolerant environment.

Maintaining an Anxiety-tolerant, Stress-Reduced Environment

In this interconnected pattern, Bowen theory actually informs and elaborates chaos theory. We have examined the receptivity that fosters the creativity needed to assist the organization in its co-evolution. What is not sufficiently addressed in the literature is the crucial threshold that separates the generation of creativity under conditions of change from its generation of anxiety. Bowen theory has well explored this phenomenon and cogently argues that anxiety must be tolerated and reduced to prevent organizational members from crossing the threshold.

I turn to CW for an interpretation of how a manager can maintain an anxiety-tolerant, stress-reduced environment. At least three (potential) anxiety-generating factors are occurring in CW's agency: (1) CW is a new-to-the-staff director; (2) the budget is in deficit; and (3) the inherent stress associated with human services work is high. This stress is produced by the specific client population; working under the auspices of state

policy; addressing conflicting views and demands of various stakeholders; and crisis-generated tasks.

CW incorporates several principles in her effort to maintain a low-anxiety environment. A brief segment from my initial interview with CW seems to capture the primary elements:

We are going to have a retreat at my house and six hours of it will be on stress management and self-care. We're paying someone to come do it. I told [name omitted-the Director] at headquarters, 'I know we are in a deficit, but the staff really needs this. Part of why they need it is because we are in this deficit.' So he supported that and said he'd pay for it out of his budget.

...And this is related to stress management. We'd been talking about the budget crisis and I told the staff I was going to go get my hair cut. One said, 'With all this going on?' And I said, 'I can leave and we'll still have a budget crisis or I can stay and we'll still have a budget crisis. And I'd rather be cute for a budget crisis.'

Contained within that short segment is CW's perspective on the interrelatedness of anxiety and instability. She consciously monitors the stress level of organizational members as well as her own. She attends to her own health as well as facilitating the opportunity for her staff's well-being. In the exchange with her staff, CW's humor conveyed a nonanxious presence and also alleviated the seriousness of the moment.¹²

Those principles constitute the manifested behavior and actions overlaying CW's reflexivity, ability to define self in the situation, and openness. Again, CW's nonlinear

¹² Friedman (1985) views playfulness as one of the aspects of the nonanxious presence: "Anxiety's major tone is seriousness...It is always content-oriented. Its major antidote is playfulness, especially with those for whom we feel too responsible" (209).

thinking underlays her strategy, for she sees the interconnectedness of anxiety and instability. Perhaps more fundamentally, CW adheres to the principle that human process constitutes the organization and thereby the status of its health and productivity.

By her own admittance, recognition of the importance of self-care did not come naturally:

Actually, I'm better at taking care of myself and stress management, but wasn't always. I hadn't learned to do that when I was young--self destructive things like drinking, smoking, not sleeping. I've learned a lot more about that. I'm in mid-life and doing all those looking back and looking-in things.

But CW has benefitted from learning self-care and now would like her staff to learn those benefits. It hasn't gone unnoticed by her staff:

She's very clear about taking care of herself and that's a good role model for us. It shows that it is valued. Our previous director never took a day off. He was always here and he didn't burn out. It worked for him. But we felt we couldn't [take time off] either. But CW takes time off and it gives us permission to do that too...that it is good to take care of yourself.

Another staff member has noticed that CW monitors the stress level of organizational members and acts to reduce it:

I think she's real in touch with the dynamics going on in the office--more than the previous directors have been. She'll pick up when people are stressed. She's using her clinical skills to pick up on that, when I think some people don't want to see it. For instance, when we do our retreat in April, she's set up so we'll do a whole day of stress management and I think that conveyed that she cares about us and recognizing that some of us are not...maybe need to build on learning stress management. So, I thought that was very insightful.

CW's efforts are not limited to the group level. She also attends to individuals.

She is supportive--at least she has been for me. A couple of months ago, I was frustrated and burned out because there were a whole lot of crises at one point and I came in the next morning and I hadn't talked to her about it, so I'm not sure how she found out. I was in the kitchen and she said, 'I'm aware that a lot is going on and I value your position here and your job and anything that I can do to make it easier on you right now.' Just a very supportive kind of approach which helped. I mean there wasn't a lot she could do at that point, but it helped knowing the director knew things were stressful and could be supportive. And that's one thing I stressed in my evaluation¹³ of [the clinical director], that administration needed to be more supportive and that this is an extremely high burnout field and very frustrating and there needs to be more support from the top.

Note, as well, the serious tone in the staff member's explanation. CW monitors that tone as a barometer of the anxiety level and deliberately uses humor to interrupt the pattern.

She has a sense of humor, light-hearted approach that is needed to convey optimism since we're dealing with stressful situations. When we were interviewing people, that was one thing we were looking for...At the time there wasn't a lot of optimism in the office and we needed someone who could convey optimism and I find that refreshing and appreciated that, but some people think she's too lighthearted and optimistic. But I still appreciate that.

We deal with dysfunction every day and you have to have a sense of humor or you're not going to make it. When things get to be real serious to me, I'll talk to CW and she's not joking it off, but keeps it in perspective that these are the clients we're working with, the system we're in and we can kind of laugh about it and not be so serious that we can't function...you can't get too consumed.

¹³ From all the interviews I conducted in CW's agency, this was the only instance in which performance evaluations were mentioned. The omission could be related to the fact that at the time of the interviews, CW had yet to conduct any performance evaluations. In my second interview with CW, I asked her directly about her views on performance evaluations. In essence, CW believes that if managers concentrate their efforts on promoting the development of each staff member, the usual saliency associated with performance evaluations dissipates. In contrast to the one incidence in CW's agency, almost every interviewee in DP's agency (including DP) mentioned performance evaluations. Often comments alluded to the punitive or reward value commonly associated with performance evaluations.

The majority of her staff appreciate her humor and realize it helps reduce anxiety:

She's helpful to the agency because she laughs about how compulsive she is, but she has an easy going air about her. With some of the finances that have been going on in our budget, it's nice to have someone who is not all anxiety, not have that free-floating anxiety about the organization...If she's anxious about something, she will say, 'I have some concerns about this.' So it's not like there is a hidden agenda and that's very helpful for the whole agency to function better.

But not all appreciate CW's humor:

Sometimes she makes jokes about things I take seriously and I wonder, 'Is she taking this seriously?' Like a serious problem with a family that I'm struggling with--she has a tendency to make jokes about it..she's trying to lighten it up, but I don't find that as helpful. But she does have a good sense of humor and she's pretty laid back and has been through this before. But it would be helpful more to me if she said, 'I can see how you'd be alarmed about this but let me allay your fears.' But not joke about it.

Or as another worker puts it:

Sometimes I don't think I appreciate her humor all the time. I'm on the serious end and she's not. My perception is I don't think this is the time to make a joke.

It is perhaps significant that every staff member commented on CW's sense of humor. Similarly, every staff member remarked about other aspects of CW's nonanxious presence, and in fact first became aware of it during her interview for the director's position. For example,

At the interview, she was calm and confident. I saw someone who could make decisions. She had a calming effect--not catastrophizing or reactive. The other director could be reactive.

Note the almost identical perception from another staff member:

At the interview, she was oozing with confidence, not overly sure of herself, but relaxed, non-threatening. She looks and carries and presents herself as if she knows what she's doing and she has proven to be that way--very consistent. She is who she portrayed herself to be initially.

A comment from one staff member denotes how CW's behavior and actions during her first month as director were directed toward maintaining a nonanxious presence and allaying possible fears of the unknown that commonly occur when a new director steps into the role:

When she started, she sort of slid in--spent time laughing and joking and came around to each person and respected that we had been here awhile and that we worked as a team and she'd join us. She didn't come in and change everything to fit what she wanted. She asked a lot of questions and also related incidents from her past that were relevant and I felt she had experience and could understand. Before we knew it, she'd been here a month. And she brought cookies in for everyone to mark the day.

Two further examples depict how her nonanxious presence is manifested:

When she reviewed the records, she found deficiencies that violated state policy. She gave us several weeks, a good buffer of time to correct them. She didn't say it had to be done now. No pressure--didn't react like 'Oh my God, we are out of compliance, it has to be done right now.' Then later, she e-mailed us to remind us about the deadline the following week. But didn't come around saying, 'Have you done it yet, have you done it yet?'

The final example captures CW's nonanxious presence in action. During my initial interview with CW, we were interrupted by another staff member:

'I hate to interrupt, but [client-name omitted] is truant and no one knows where he is and the [clinical director] had to leave because the skylight just blew off his house and remember I had asked you if I could leave

today at 1:00 because my company is coming...and I'm not sure...'

CW: 'Okay, you go ahead with you plans. Your staying won't find [client] and the rest will be dealt with. Yes, you are taking off and that's not going to make [client] come back or not going to get [clinical director's] skylight back on. Just because things are going on doesn't mean you have to not take care of yourself.'

That staff member later volunteered the interchange as an example of CW "not putting crap on you." She added that

I felt no guilt or condemnation. I've had bosses who would have said, 'You're deserting the ship for wanting to leave now.' She doesn't do that--doesn't put crap on you.

CW related that being nonreactive and simultaneously aware of the anxiousness around her helped her to "not get caught in others' frenzy, and especially regarding time-constrained, arbitrary deadlines." The statement describes the essence of her nonanxious presence. CW recognizes the need to take sufficient time to make thoughtful decisions and to improve processes that will enable organizational members to work more effectively. To illustrate, CW related a story from her previous position as director of the training branch of a state-level organization:

I was first asked to design the curriculum in three months. I said 'I could do that. We could go into a closet and write for three months and cram the curriculum down the workers' throats. Or, if I can have 18 months, I will get everyone involved to see what they think, have focus groups and go through this [TQM] process so that those who do the work can tell us whether it will work and then they will own it and use it.' The administrator said, 'Well, hire more people so it will go faster.' I used the analogy of a chicken hatching an egg--more chickens sitting on it will not make it hatch any sooner. 'Now either we can spend the time and hatch a chicken and it will be a living, growing, developing thing. Or I can give you an omelet in three months.' The process only takes a year, but if you ask for 18 months and finish the product in a year, you look

more efficient.

CW is using the same philosophy in her current position. Her nonanxious presence helps her to avoid being pulled by the organizational members' collective anxiety as well as that from Headquarters. Simultaneously, her nonanxious presence modulates the level of anxiety surrounding her. That ability appears to have contributed to her success in advocating for a new way of achieving the mission in her former agency. We can see more clearly now how reflexivity is integral to creating a nonanxious presence.

Similarly, DP's agency has multiple interrelated (potential) anxiety generators: (1) budget restrictions; (2) the politically-driven re-organization; (3) the stress related to the work they perform. This stress is produced by their responsibility for public safety, negative publicity at the national level, and at times being scapegoated at the national level by Congress primarily.

According to DP, the agency's reorganization plan melds National Performance Review (NPR) mandates and Clinton's executive order to form management-labor partnerships. According to DP, the executive order specifies that a designated union representative become a partner with the manager in every decision affecting working conditions for agency employees. Part of the intent of the NPR is to reduce micro-management. Managers are to delegate responsibility to front-line workers to make

decisions about how to carry out their tasks.¹⁴ DP stated, "A lot of the 'old-timers' didn't like this. They prefer to be micro-managed. But the reorganization plan stresses employee involvement." In his organization, work groups of front line workers will decide what resources they need to do their job and inform the union representative. Then the leadership team will prioritize and secure the needed resources.

The reorganization represents an unplanned change to DP and his staff. Traditional management views proffer strategies to overcome resistance to change. In their chapter, "The Innovator Role," Quinn et al. (1990) list sources of resistance and recommend rational approaches to plan how change will be introduced to overcome resistance.¹⁵ Nowhere in the chapter is anxiety discussed. Paradoxically, the list of types of changes that are "likely to provoke employee resistance" consistently appear to be anxiety generators (261).

Family systems theory stipulates that resistance to change should be observed and noted because it provides information about how work groups have formed their identity.

¹⁴ In contrast to "delegating anxiety," the attempt to delegate responsibility constitutes the strategy here. Friedman (1985) claims that no one can make another person "responsible by trying to make him or her responsible. The very act of trying to make others responsible preempts their own [assumption of] responsibility" (49). Hence, Friedman argues that anxiety instead of responsibility should be delegated.

¹⁵ Quinn et al. (1990) outline the three classic strategies for managing change: "Rational empirical," "normative-reeducative," and "power-coercive" (264-266). Their recommendation for effectively managing change blends concepts from the "rational-empirical" and "normative-reeducative" approaches (266). The recommended blended approach is fundamentally a strategy to overcome resistance. As such, it is based on linear thinking.

Rather than attempting to overcome resistance, though managers should join it--in other words validate it (Goldstein 1988).

DP adheres to the prescribed traditional thinking in managing change. As noted in the section, "Disposition towards Openness," information about the reorganization has been provided to the employees as each phase of the reorganization plan has been decided. Open and frequent communication has been maintained. At the time of the interviews, employees on the front line were about to be involved in deciding how to implement the change at their level. As one employee put it:

I think a lot of management, I won't say a lot, but some, just do not communicate to employees what they need to know or should know, don't give them enough guidelines and I think that's important in our job. For me to know what's going on not just at the technical level, but at the administrative level because everything is changing so fast.

He's tried to keep us abreast of the changes going on now--the reorganization--he's tried to keep us informed that our work, just how it's going to affect us and what we can expect. We need to keep up with the new concepts, which we're going to have to follow. You don't have too much choice when they come down. This is the way we're going to do business.

The phrase "this is the way we're going to do business," has become the prevailing byword throughout the process of introducing the reorganization. DP mentioned several times during our second and third interviews that he had accepted that this is the way things were going to be. When I asked him if there had been a certain point in which he had accepted the change, he responded:

When we first began hearing about the reorganization a year or so ago, I knew that's where we were headed and I have to try to make do....I

don't think there was a specific time I accepted it. I accepted it from the beginning. I may not like it, but I have accepted it.

He continued:

And I believe the ones who are left have accepted it, too. We had three people to retire: 'I don't like where we're going, so I am going to retire.' So those who couldn't change, retired. There was a lot of gnashing of teeth getting through this process. I have been very insistent that they see the union rep and I together as partners involved in making all these decisions and they fought that for a long time. The union rep and I being very consistent over and over again, they finally realized that this is the way it's going to be. I think a turning point occurred at a meeting the union rep and I had with them last September. We were going through how things were going to be and what we wanted them to do was participate in the decision making. A lot of people didn't like that. 'Tell us what you want to do and we'll do it.' And a fairly new technician politely told them, 'We are being offered a new way of doing things. DP is the boss and can make all the decisions, but we're being offered the opportunity to participate and it's better.' That planted the seed for them to change.

At least on the surface, they have all accepted it. They may not like it..especially the two supervisors who will become coordinators. They went with us to a regional meeting in February and they were quite vocal about their not liking it. At that meeting we went through the regional MOU and we went through the intent and this is what we meant, this is the way it's going to be, we have no choice, all of those kinds of things and I think people came away from there, uh, people expressed their anger, their frustration, there was a lot of shouting, but it was necessary--but they came away from there realizing that nothing we do is going to change where we're headed. We either accept it and try to make the best of it, or fight it and be miserable the rest of our careers. So most people around here are saying, 'Well, that's the way it's going to be, let's go on.' I mean, there's probably a lot who still don't like the way....And I think the hardest part for them is accepting the union rep's involvement. A lot don't think we need the partnership. But the partnership was started because nationally a lot of grievances were being filed and that costs money when it goes to arbitration. So the Clinton administration wanted to see if there was a way to resolve a lot of these issues at the local level and save all that time and money. So we negotiate everything and there's no need to file grievances.

The passage is significant for several reasons. It illustrates the strategy for managing change proffered by traditional management approaches. Meetings and open communication therein are used to overcome resistance. However, since employee involvement comes after all crucial decisions are made, the concept is misapplied or bastardized. Emotions are suppressed or "cooled out" after being vented. The traditional approach does not proffer ways to attend to the emotional process in organizations, but seeks to override those emotions. As a result, in DP's agency, the angry feelings are still festering eighteen months after the plan was first announced:

With this reorganization, it's affecting people negatively. There's a lot of resentment--resentment that the union rep is getting power without having climbed the administrative ladder. Resentment that energy is being wasted on negotiating working conditions when we are waiting on decisions to be made about resources we need to fix equipment. Resentment that the union rep now is so busy doing this negotiating stuff that he can't do his technician's job and the rest of us have to do it when we're short-staffed to begin with.

And there's uncertainty, bad morale. Like the new technology, GPS, it's supposed to replace jobs. I wouldn't say that people fear losing their jobs--just uncertainty of wondering what their job will be like. It may be fear--dangling uncertainty.

...We're coping with sarcasm, 'Yeah, we've seen this before so don't tell me how it's going to be, show me.' We old heads ignore a lot of this re-org stuff 'til it happens.

A supervisor spoke of his anger and sense of betrayal:

For me, it's mostly anger. We thought we would progress up the ladder. Well, two of us are now losing our titles as supervisors and going to be coordinators. Gore and NPR say we don't need these upper level managers, but instead they [the agency] are getting rid of 13s and 14s who are first line supervisors who know what's going on in the field and taking it to DP's level for approval. I'm angry. I have 7 years to go to retirement. If it stays like this, I'm leaving. If drastic changes are made

so I can make career advancements, then, I'd stay.

I'm stressed. No reflection on DP. He's affected by it as much as we are--he's getting more responsibility--some of what I had. I'm stressed because we were told, 'Hey, you are the future of the [agency]. Train yourselves well.' And we did and now it is sad to say the union rep has more authority than the people who did what they were told to do. I feel like the carpet was pulled out from under me.

And finally, [regional office] let us come up there in February for a big meeting to vent and we did and I won't repeat what I said because it was pretty crude...it is just such a waste, all those years of experience...all those talented people.

Several employees expressed concern about the five technicians in the unit who are either eligible or soon will be eligible to retire.

Congress has reduced our budget, which has reduced the technical force in our agency. If the ones who are eligible to retire go out tomorrow, there's nobody there. Training takes two to three years to get a guy up to the level where he can be of any benefit.

Others were also concerned and the anxiety surfaced as they talked about nothing being done to replace technicians who are eligible to retire, fear that they would not be able to achieve their public safety mission, but feeling like they would be blamed nonetheless. Several expressed their concern about DP's ability to evaluate their performance accurately because he would not have frequent contact with them.

Recalling Papero's (1996) indicators of increasing anxiety, these employees are displaying a feeling of uncertainty accompanied by a feeling of loss of control over one's immediate and long term future. Perhaps, in time, the anger will dissipate and the uncertainty will be diminished after the full reorganization plan has been implemented. For now, the shape of the final implementation is still an unknown. At the time I

interviewed, the employees knew that the changes that would most directly affect their functioning were soon to be announced. As an announcement date draws near, anxiety heightens.

Employees report that they rely primarily on their sarcastic humor to help them cope. One worker explained how technicians have traditionally used humor to relieve stress: "However serious the work is, humor proportionately increases to bring it down to a tolerable level. Some of the work is dangerous. You could be dead if you make a mistake, so those are the biggest jokes." Others explained how that coping mechanism for their daily tasks has been parlayed to coping with the bitterness they have about insufficient funds to do their jobs.

Examples of such humor were apparent at an "All Personnel Meeting," which I observed. The primary purpose of the meeting was to review policies and procedures regarding incidents and to evaluate how well those policies and procedures were followed during a recent incident investigation. One example typifies the type of humor used:

First person: They've changed the policy on certification. Now the one who certified last can certify after the incident as well.

Second Person: You mean they trust us now?

Third person: No, now they just don't staff you so you can do that.

DP did not join in when the rest of the people in the room either heckled, jeered or laughed, but waited to the chatter had subsided before resuming the meeting. Employees did report that DP laughs and jokes around with people and that this is viewed as DP's

way of creating a congenial atmosphere. Humor definitely appears to interrupt the seriousness at hand, just as we saw in CW's agency.

As we learned from CW, in addition to humor, stress-management techniques are considered an important aspect of maintaining an anxiety-tolerant environment. Traditional managers, too, are generally well-versed in stress-management techniques. Quinn et al. (1990) devote a section to "Time and Stress Management."¹⁶ Time management is considered a stress management technique (73). Ironically, effective time management is correlated with efficiency, but generally when managers are faced with budget restrictions and other constraints, training in--and time set aside for--stress management techniques are quickly sacrificed.

This is the case in DP's organization. DP has attended workshops in the past on wellness and stress management. In fact he was reminded of the importance of stress management and wellness when he attended the workshop on managing change. There, fitness was incorporated into the schedule and included walking or other exercise in the morning and at the lunch break. Healthy, low-fat meals were served, and time was allotted for each participant to have time alone each day to reflect.

However, as DP points out, "I just don't have the time to do all that now." At least one of his employees has noticed and discussed his perception of the strain the

¹⁶ Quinn et al. (1990) include a scale to assess the reader's own ability to cope with life events that produce varying amounts of stress. Another scale assesses stress-producing work conditions and expectations, then asks the rater to indicate the level of perceived control he or she has over the situation or condition (71-72; 77-78). The scales are designed to elicit self-awareness and to an extent promote reflexivity.

reorganization is having on DP:

I told DP, 'What I see in you is what I saw in myself eight months ago. You look burned out, you look like you're run down. You've been sick a lot lately.' He said to me, 'You've been there, so you understand it. I said to him, 'I do understand it. You need to reschedule yourself and take one day off just for yourself.' He came in today and said, 'I thought it over and I heard everything you said and I'm going to ask for reschedule and take one day off a week.' And I think that's going to help. He'll be forced to delegate more because one day a week he won't be here and there will be a time where things have to be squared away and he has to empower someone to do it.

Some in the organization believe DP's increased stress is directly related to the uncertainty surrounding how well the reorganization will work:

He'll schedule meetings with me and then forget them. That wastes time because I have to drive in from my unit. I'll walk in and he'll say, 'What are you doing here?' And I'll say, 'Here for the meeting.' And he'll say, 'Didn't I call you and cancel it? I have to do such and such.' It has happened six times in the last two months. Now every time I come into the office, he looks alarmed and asks if he forgot another meeting.

I think it's a transitory thing and will clear up in the not too distant future. DP will be supervising nearly everyone under the new structure--it's changing supervisors to coordinators--so they won't be doing counseling sessions, performance evaluations...I don't see how he's going to do it. I wish him well and will support him anyway I can, but I don't see how it will work like the [agency] says it will.

Quinn et al. (1990) point out, "stress that leads to physical, psychological, and emotional strain can negatively affect the productivity of managers and the people they lead" (73). More importantly, a manager who is viewed by his subordinates as "stressed" may actually be an anxiety generator.

He's stressed. He worries so much about what others above him think that it generates anxiety. We, the workforce, have a reputation of being "lazy" and "slovenly" to uphold of course, but we really do want to get

the work done anyway. So if you have a bunch of guys anxious to get out there and do something, but because it hasn't gone through all the levels of approval DP is looking for, we can't do it then it causes anxiety and stress. It filters on down the line because you've got all these people getting paid "big bucks" and then their hands are tied. It snowballs. ...A large percentage of us suffer from the old protestant work ethic. There's a direct correlation about how we perceive our work and ourselves. This job means more than most of these guys admit and our self-worth comes from how we do our job. The responsibility for public safety...it's always there--I don't know how far in back, that depends on the individual, how deep in your subconscious. But it's brought up to the forefront a lot. We are evaluated by our superiors and you're graded on your response time and areas that are related to putting out quality service. At the end of the year, depending on your evaluation, you may be blessed monetarily.

Others noted DP's already increased workload and the immediate effect it is having on others when he cancels previously scheduled meetings and tasks to "go put out another fire." Several reported that putting out fires is resulting in even more delays and fewer requests for resources being approved. Some expressed concern for DP's health and well-being as he will have to stretch himself further as his responsibilities increase even more. Several employees noted that DP just seems overwhelmed. One employee summed it up as:

He's always emphasized his role as a PR person with the coordinating agencies we serve. He would jump when they said to jump often at our expense, without checking to see what was going on here first. Granted, that's part of his role, to serve the community and coordinating agencies and to work with contractors, but he's going to have to drop something when he starts supervising everyone. Right now, he's trying to do it all. A lot of times he means to take care of something and just forgets or gets sidetracked. It makes us nervous to watch him get caught up in all this. Pretending everything is okay, when what he's doing makes us know it isn't.

As the comments from the employees suggest, DP's behavior is not perceived as emanating from a nonanxious presence. DP proclaims his acceptance of the imposed change, but adds that he doesn't like it. His behavior and actions reveal his underlying anxiety. He employs a reactive stance, which is manifested in attending to the crisis of the day and working overtime to meet encroaching deadlines. The union representative, his partner, is becoming more demanding of DP's time, wanting now by his own admission to meet daily instead of weekly:

I get frustrated when we plan to meet--like I called him last night to see if we had things to discuss and which ones--do we need to meet tomorrow. And he said 'Yes.' I told the guys I had to stay at the office, so someone else had to cover my technical responsibilities in the field. So I stayed all day, and we didn't even get started until 2:30 and then he got a call and is putting out fires. He'll say, 'I just wish I could get to the work I need to do.' And what happens is we get pushed to the deadline to do things. All of a sudden it's due tomorrow, so you aren't going to get a good product under that kind of stress, and I see that happening quite often. From my perception, we made an agreement to sit down at 9:00 o'clock. If something else happens, it has to wait, but I don't see that happening. So I'm here all day waiting and it's frustrating. But it doesn't affect me as a technician or the other technicians because we go off to the field and if we need resources we tell DP. Well, but, now we're hearing we don't have any money..in the last couple of years. Before that I never heard that.

So, anyway, we need to schedule better our appointments so I can use my time better. I guess I need to sit down with him and see how he perceives it because he may not see it as a problem.

Now we really need these daily meetings and like last Friday was a disaster. The secretary was out. And we'd be discussing things and DP would have to go put out a fire and I'd start trying to take care of something and then be in the middle of something when he got free--so it was just getting pieces here and there all day.

It's getting hectic and we're getting further behind...Anyway, he's putting out fires and it's not his management style, he has to respond to these things coming from the outside. And I thought it would get better,

but it is getting worse.

The union representative's anxiety is apparent in his narrative. DP and his union representative partner may well be caught in each other's frenzy, exemplifying how behaviors are co-determined. If this is the case, DP will have great difficulty in assessing his own level of anxiety, much less that of the others in the organization. In DP's organization, organizational members are expressing their feelings of anger, resentment and a sense of betrayal, all of which mask the underlying fear that stems from the uncertainty they face. The union representative appears to be the focus of at least several employees' anger, a condition that can precipitate the scapegoating process. Creative solutions rarely emerge under such conditions.

In summary, maintaining an anxiety-tolerant, stress-reduced environment does facilitate thoughtful decision-making and provides a nurturing milieu for creative thinking. However, from examining the issue in DP's agency, we can see that anxiety is tightly intertwined with the employees' roles in the change being handed down. Employees, including the manager, are expected to implement the changes decided above them. DP and other managers at his level were given parameters within which they had to devise a functional plan. The employees DP supervises are expected to figure out a way to make the plan devised at DP's level work. This linear-based "domino approach" is counterindicated by chaos theory's suggestion for receptivity needed within systems characterized by turbulent conditions. We are thereby provided an example of the anxiety-group-instability spiral described earlier.

Although I relied on a schematic presentation of the data, the interconnectedness of the three patterns is apparent. A disposition towards openness is interdependent with the manager's capacity to define self in situations and to promote other's functional differentiation. Reflexivity enables the manager to define self and others. Concomitantly, defining self promotes reflexivity. Maintaining a nonanxious presence creates the milieu conducive to reflexivity and openness. Functional differentiation is fostered in a non-anxious setting. Simultaneously, when one defines self in the situation and promotes the functional differentiation of others, anxiety in the organization's emotional field dissipates as individuation counteracts the pull towards togetherness. The nonanxious setting in turn, fosters openness. The patterns are inseparable, nonlinear in themselves. As the emphasis in this very explanation denotes, the focus is on the human interaction that constitutes the organization.

CONCLUSIONS

I began this study by noting that some public organization theorists are importing chaos theory from the physical sciences in order to comprehend and to manage more effectively public organizations besieged by instability and turbulence. Chaos theory offers at the minimum an apt metaphorical explanation of dynamics that characterize today's public organizations.

However, I argue that a number of interpretations of chaos theory's applicability to organizations violate the theory's most fundamental principle--mutual causality. This is a serious problem in that the very essence of chaos theory's explanative power lies in this basic tenet.

The literature review delineates the outline of this distortion. I describe problematic trends in the nascent endeavor to conceptualize and manage organizations based on principles from chaos theory. I suggest that many research offerings address only macro-level or system-level applications producing explanations that undermine chaos theory's notion of holism and simultaneously reify the organization. These interpretations also deny the principle of mutual causality.

There is an additional trend in the literature that violates the idea of mutual causality. That is, while some scholars, unlike macro-level theorists, do address

organizational members' significance or roles in the organizations, most then generally recycle traditional, linear-based organizational behavior models in explaining the human dynamics on which they are focussing. Some proceed to recommend well-utilized management techniques grounded in the linear view, techniques that assume that managers can directly change subordinates' behaviors--particularly when those behaviors are considered problematic.

Last, I point out that a few offerings in the literature either overtly or implicitly suggest that we can somehow develop sophisticated methods and tools that will enable us to predict outcomes. Even though chaos theorists emphatically state that we cannot do so, our predilection toward survival through maintaining order and predictability may contribute to a subtle and implicit drift towards such a distortion. This distortion can perpetuate our management philosophy of relying on instrumental controls to accomplish our organizational goals and to increase productivity. To the extent the distortion prevails, organizational members will continue to be viewed merely as variables in the equation.

As a corrective to this disturbing emerging trend, I argue that public organization management theorists need to develop management theories of action that complement and extend this new-found nonlinear conceptualization of organizations. I demonstrate the complementarity of family systems theory, as specified by Bowen theory and chaos theory, arguing that principles from Bowen theory can underpin a management theory of action congruent with chaos theory's fundamental tenets. Rooted in the same

nonlinear thinking, congruent in self-similar and equivalent principles, Bowen theorists' explanation of human dynamics carries chaos theory's macro-level explanation to the micro-level of lived human experience.

Bowen theory emphasizes the emotional field that surrounds and pervades relationships and the emotional process that denotes how emotions are transmitted between and among system members affecting the functioning of one another. This essential notion is often unacknowledged in traditional management theories. Yet when managers fail to grasp its significance, the functioning of the organization often diminishes. Moreover, productivity and performance "problems" are often "misdiagnosed," and frequently attributed to linearly-conceptualized causes. Understanding the emotional process is a powerful key to managing effectively.

I then present two case studies that reveal the polarity of linear thinking and nonlinear thinking as manifested in theories of management action. The data illustrate ways in which different ontological stances lead to different behaviors and actions.

From my interviews in the case studies with the two focal managers and their subordinates, three salient patterns emerge that distinguish a managerial theory of action grounded in family systems theory from a managerial theory of action grounded in linear-based thinking. These patterns demonstrate Bowen theory's congruence with chaos theory and extend its explanatory power to include micro-level dynamics that impact and are impacted by the whole system. These patterns are: (1) a disposition towards openness congruent with chaos theory's notion of receptiveness to available

environmental energy; (2) defining self and promoting others' functional level of differentiation essential to nurturing the needed receptivity, openness and creativity; and (3) maintaining an anxiety-tolerant environment, which appears to facilitate the organizational members' ability and capacity to deal with increasing complexity.

The data depict the recursive and iterative nature of the interconnected patterns. The patterns feed back upon one another, enhancing, fostering and building one upon the others. An anxiety-tolerant environment underpins the disposition towards openness and simultaneously facilitates organizational members' self-differentiation and reflexivity. Or, to continue this exercise in artificial beginning points, reflexivity and defining self engenders openness and toleration of anxiety.

In this chapter, I will first explore the significance of the findings. I will then conclude by discussing implications for public administration management and for teaching public administration management.

Significance of the Findings

When first looking at an ambiguous picture (a figure-ground illustration), one embedded image seems apparent. We fail to see the duality of images until we refocus, adjusting our perception. The findings chapter is analogous to this process. I call to the foreground emotional processes so frequently overlooked in our conceptualization of management. Rather than perceiving that there is an emotional side to organizations

laying adjacent to a rational side, and by extension, to management. the interviewees' anecdotes demonstrate the interconnectedness of emotional process, behavior and actions. The emotional field surrounds, penetrates, and flows through all of what we deem organizational life--including the rational processes we design to set needed parameters.

When we try to shift quickly back and forth between the embedded images in an ambiguous picture, we still see one image as dominant. With sufficient trials, the dominance begins to recede. In essence, our brains have found a new way to order and stabilize the experience. This "shifting" phenomenon is analogous to the process managers need to employ to grasp the principle of mutual causality and the integrality of emotional process.¹ Visualizing the duality marks the shift toward thinking more holistically. With the perceptual shift, we can begin to contemplate and explore the myriad layers of interconnections.

At the most visible or practical level, we learned that the manager CW seemingly turns traditional management on its head. She enfolds the three identified patterns into her behavior and action. Systemic thinking and the ability to see process undergirds her behavior and action and directs her attention to the human interaction within the organization. She focuses on developing self and promoting others' functional

¹Actually, figure-ground exercises are more than analogous to re-conceptualizing our view of organizations. The figure-ground exercises demonstrate perceptual acts and help us to understand how our brains structure the experiences we encounter in a world of "chaotic physical impingements" (Hastorf, Schneider, Polefka, 1970, 83). Physiological, psychological, cultural, and linguistic factors converge to form perceptions needed to bring order to stimuli that would otherwise be chaotic. In effect, it constitutes another level of the implicate order.

differentiation to foster the individuality that counterbalances the anxiety-driven pull toward togetherness--the pull toward togetherness that undercuts the creativity needed to further the organization's co-evolution. The rational processes and policies she institutes facilitate, foster, and bolster the functional differentiation of others. To borrow Virginia Satir's term, CW is "peoplemaking."

From the data, we can glean several specific ways CW engages in "peoplemaking." She nullifies blame attribution, recognizing that mistakes are embedded in the system or have more to do with interactional dynamics than the "isolated" individual. This assumption allows her to focus on process improvement. With her training in family systems theory, CW is deftly able to avoid being triangled. She circumvents the double-interact by reframing situations so as to promote others' functional level of differentiation. Her techniques and strategies signify how she validates each individual.

The validation began when she first joined the organization. Organizational members' anecdotes reveal that, in their phrase, CW "slid in," and established one-to-one relationships. She used humor to mediate the disruptiveness of her entrance into the organization. Based on her knowledge of the change process, CW began drawing out reactivity when she appointed the clinical director sole head of the clinical team. The strategic move extricated her from triangles and promoted the clinical director's functional differentiation. The step toward individuation mediated the attending anxiety generated by the previous director's departure.

Sharing the budget crisis with her staff generated anxiety. CW was well-aware that it would and did. However, CW's continuing efforts to validate her staff promoted their functional differentiation and dissipated the anxiety and concurrent pull toward togetherness. And her nonanxious presence had restorative value.

Juxtaposing the two manager's theories of actions demonstrates the divergent manifested behavior and action that one's underlying thinking can produce. The power the concept of mutual causality holds for management was strikingly revealed when we witnessed DP's transformation as he grasped the notion that he influences his subordinates' behaviors.² The ensuing changes in his interactions with staff members were nothing less than remarkable.

Yet, DP's still-dominant linear view greatly influences his management theory of action. It shapes his definition of openness,³ which is somewhat counter to the one contained in chaos theory. His tendency to attribute blame to individuals circumvents the risk-taking needed to foster creative problem solving. Linear thinking continuously emerges to undermine his new-found exposure to reflexivity and defining self in the situation. But more so, the dominant linear thinking pervasive in the whole agency

²Recall DP grasped that he does influence and impact others' behaviors. He did not articulate that he "heard" the complete meaning--that others are impacting his behavior simultaneously.

³ In brief, DP shares information authorized by Headquarters; has an open-door policy, which gives any employee access to speak with him; and expects employees to be honest and forthright about mistakes they make, including accepting blame for those mistakes.

overpowers DP's attempt to incorporate his new found (albeit, partial) grasp of mutual causality. The dominance is symbolized in the byword, "this is the way government does its business." And the accompanying dissuasion to take risks discourages DP's efforts toward individuation. Nonetheless, we hear his striving toward individuation in his proclamation at the managing change workshop when he said,

I'd really like to learn to let them come to me and say, Here's the problem and I'd say, 'Okay, what's the solution?' I'm not there and I'm not sure I could abdicate my responsibility and accountability for that in this agency..."

The instrumental controls that thwart DP's wish are designed to maintain the established equilibrium, not to release the creativity needed to assist in the organization's co-evolution. And now, DP's attempt to reconfigure his interactions with his staff are overshadowed by his need to develop rational controls to make the reorganization plan work.

Thirdly, DP's dominant linear-based thinking precludes his ability to realize that he is caught up in the anxiety partially generated by the reorganization plan---fueling it and being impacted by it. Organizational members are expressing their anger, anger that actually masks the underlying anxiety. The need to develop instrumental controls and strategies to implement the reorganization consumes DP's time and attention. Those efforts are supported by his supervisors. The energy needed to reflex is being diverted towards shaping instrumental controls. Paradoxically, DP's own level of anxiety and concomitantly that of each organizational member, interferes with formulating rational

processes. Moreover, the emotionality influences the shape and form the controls are taking. DP's present level of anxiety may be clouding the partial recognition of co-determined behavior he discovered earlier. That awareness and its subsequent incorporation into his behavior and actions with employees will most likely resurface when the anxiety dissipates. The achieved improved manager-subordinate interactions attests to DP's ability to learn to think nonlinearly.

Juxtaposing the two management theories of action begins to bring to the foreground the significance that the principle of mutual causality as well as awareness of the emotional field holds for management. The essence of the difference between the two managerial theories of action lies in the polarity of linear and nonlinear thinking. Any managerial theory of action grounded in and shaped by nonlinear thinking could lead to a more holistic vision of organizations and circumvent our present reductionist view in which we view parts as separate rather than interconnected.

However, Bowen theory principles fundamentally further an individual's efforts to differentiate--whether in the individual's family or in the work group. In essence, its gift to managers is the means to develop a new way of thinking, behaving and acting. That difference then affects others, evoking a different response in them. And in turn, others' new responses influence the manager. Consequently, the "whole" is elevated and, in turn, further facilitates each member's differentiation.⁴ The process explicates

⁴ Bowen theory reframes the issue of improving productivity. It enables us to see that promoting the functional level of differentiation and each employee's development facilitates the individuation and creativity needed to achieve an authentic

the notion of the implicate order and duality.

At the prescriptive level, Bowen theory offers managers numerous insights upon which a theory of action can be constructed. First and foremost, family systems theory has extensively investigated, studied and explained the phenomenon of co-determined human behavior. From that, we know that if managers change their behavior, others will change their behavior. The carrot-and-stick approach appears to be a less effective technique.

Second, Bowen theorists have explored and demonstrated the interconnection between anxiety and the functional level of differentiation. Anxiety increases the pull toward togetherness, thwarting efforts toward individuation. Furthermore, the theory sheds light on how anxiety spreads throughout the system via triangles. Triangling also undermines conflict resolution and open communication.

Third, the family systems theorists' work on the change process offers managers invaluable insights for managing the numerous and drastic changes demanded of organizational members today. Indeed all of family systems theory's concepts and principles provide insights into appreciating the change process.

In sum, at the practical or prescriptive level, Bowen theory is not only consonant with chaos theory, but it has practical implications for public management. If chaos theory's power and potential for public administration is to be realized, a management

productivity. When employees are viewed as variables that can be directly manipulated, conformity is achieved, but creativity is generally suppressed.

theory of action consistent with principles of chaos theory must be employed. A theory of action rooted in nonlinear thinking is essential if co-evolution is to be achieved.

We already have a well-developed body of theory--Bowen theory--with which to accomplish the task. If however, we continue to drive organizational survival and co-evolution with management theories of action grounded in linear thinking, not only will our attempts be thwarted, but the nonlinear reconceptualization of organizations will most likely be abandoned.

Employing a management theory of action grounded in Bowen theory answers the question of how to apply chaos theory at the management level. More than a frame for diagnosing dysfunction, the findings demonstrate that Bowen theory can provide grounding for a management theory of action, one that affirms individuals' development as integral to dealing with complexity and the turbulence that characterizes our era. Yet, the theory's significance extends beyond practical implementation. Chaos theory conjoined with Bowen theory holds other implications for public administration. Together they offer a more holistic understanding of how management controls we institute are actually often contraindicated in solving complex problems.

Implications for Public Administration

One lesson we can derive from chaos theory, at least metaphorically, is that in order to co-evolve, we in organizations must learn to be open and receptive to energy created by fluctuations. Creating the receptiveness and openness is, in part, dependent

upon the communication channels we design to allow information to flow freely into the system and throughout the system. Historically, we have designed our management communication systems to control and contain information. We created these systems to buffer the organization's technical core from disturbances that disrupt the organization's achieved equilibrium. But more fundamentally, information systems designed to control and contain information reflect our attempts⁵ to thwart the anxiety evoked by disturbances threatening our equilibrium.

Our glimpse into DP's agency's management philosophy reveals the pervasiveness of linear thinking. DP has been deeply socialized into this philosophy. Vestiges of the machine model continually surface and shape the strategies handed down to managers at DP's level. This legacy--or residue--reinforces the notion that managers need primarily attend to developing rational processes and instrumental controls, even to improve employees' errant behaviors. Examining further DP's agency's plan to implement National Performance Review (NPR) mandates elucidates the point.

The reorganization saga recounted here suggests the significance of the emotional field. Nonetheless, linear-based thinking precludes its recognition. The machine view held by administrators throughout the organizational hierarchy compounds the limitation. The view denies emotionality.

Announcement of the impending change provoked a far-from-equilibrium state.

⁵ These attempts are for the most part subconscious and characteristic of the dynamic Bowen theorists refer to as automatic responses that "operate largely outside of our awareness" (Kerr 1981, 236).

At the upper echelons, administrators reacted to the announcement--the perturbation--with a traditional top-down implementation strategy. Additional parameters have been set by administrators at each successive level of the hierarchy. Managers at descending levels of the hierarchy have further specified and constricted the plan. Their reactionary stance attests to the strength of the pull toward maintaining achieved equilibrium and delineates resistance to change. More significantly, it represents an attempt to thwart the anxiety generated by the change. The classic top-down implementation plan fosters togetherness and suppresses individuation.

Descending through the implicate order, we can see DP's response to the initial announcement of impending change and his concomitant impact upon the process. When he went to the workshop on managing change, he already knew that organizational changes were being formulated by upper-level managers. The "crisis" or fluctuation disrupted the achieved equilibrium that DP's managerial theory of action seeks and created the openness needed for change. At that point, he was receptive to learning a new way of thinking, behaving and acting. DP's newly discovered strategies impacted positively his interactions with his staff members. Perhaps, DP's revelation and the ensuing adjustments in his supervisory skills represent the "butterfly effect," in which small fluctuations can lead to large effects. Still, he receives little support from his superiors for "flapping his wings."

Looking at the interaction between DP and the upper divisional managers sheds light on the difficulty DP encounters in "making a difference." The top-down strategy

filtering through successive layers of the bureaucracy stifles creativity and paradoxically heightens resistance to change, fuels the anger masking the anxiety it creates, and increases instability. The small opportunity for creative problem-solving left open for employees is negated by their attending anger and anxiety.

But this is only a partial view and one that appears somewhat to reflect linear thinking. I have implied cause and effect links that are close together in time and space. To strive towards a more holistic view of the complexity and interconnectedness of systems' behaviors, we need to peer into the deeper levels of the implicate order. Chaos theory conjoined with Bowen theory configures the systemic perspective needed to explore even more deeply the layers in the implicate order.

Peter Senge (1990) has developed a systems-based prescriptive perspective as well as useful language to facilitate analysis of systemic complexity. His work resonates with chaos theory and family systems theory, each illuminating aspects of the complexity. By conjoining the theory bases, we can explore the underlying "structural level"⁶ of which Senge (1990) speaks, adding insights from chaos theory and Bowen theory to elaborate his ideas, simultaneously using his view to enhance the other two.

At the structural level of observation in the implicate order, we can grasp the

⁶Senge (1990) constructs a typology to delineate multiple levels of explanation associated with the nonlinear systems perspective. "Event explanations--'who did what to whom'--loom their holders to a reactive stance...Patterns of behavior explanations focus on seeing longer-term trends and assessing their implications...and suggest how we can respond to change...The third level of explanation, the 'structural' explanation...focuses on answering the question, 'What causes the patterns of behavior?' (52-53).

significance of interconnected, nonlinear causality. The nation's economy, societal climate and mood, increasingly intractable problems, and the host of other globally interconnected factors have slowly accumulated and coalesced to produce the fluctuations we feel today. Individuals continually co-determine the slowly accumulating and worsening conditions that are manifested as today's instabilities.

Understanding how anxiety is transmitted is key to understanding this situation. Papero's (1996) explanation suggests an individual notices changes and there is a corresponding change in the individual's perception, sensitivity and behavior. Those changes are noticed by others. If the heightened sensitivity infects the group, members can no longer predict with accuracy how others will behave. Instability in the social system accompanies the loss of predictability. The anxiety level increases and organizational members experience a feeling of uncertainty and sense that they are losing control over their immediate as well as long-term future. These factors coalesce to create an anxiety-group-instability spiral.

Collectively, individuals in public organizations attempt to solve problems to reduce the uncertainty but all too often merely shift problems to other parts of the system, exacerbating the fluctuations (Senge 1990, 58). We fail to see the slow accumulation of systemic nonlinear causality and instead assume cause and effect is close in proximity. As our solutions fail to correct problems and indeed contribute to greater instability, our individual and collective anxiety escalates.

Senge (1990) argues that our mental models--"images that limit us to familiar

ways of thinking and acting"--(174) must change if we are to begin to redesign our ways of making decisions and, in turn, the system structure. Our mental models stem from organizational or system archetypes, defined as recurring patterns of generic structures. Those recurring archetypes "hold us prisoner" until we can learn to recognize them (94). Recognition "begins a process of freeing ourselves from previously unseen forces and ultimately mastering the ability to work with them and change them" (94).

Following Senge's delineation of archetypes, the National Performance Review (NPR) mandates currently being implemented by federal agencies depict the archetype he terms "shifting the burden."

An underlying problem generates symptoms that demand attention. But the underlying problem is difficult for people to address, either because it is obscure or costly to confront. So people 'shift the burden' of their problem to other solutions--well-intentioned, easy fixes which seem extremely efficient. Unfortunately, the easier 'solutions' only ameliorate the symptoms; they leave the underlying problem unaltered. The underlying problem grows worse, unnoticed because the symptoms apparently clear up, and the system loses whatever abilities it had to solve the underlying problem (104).

Said differently, NPR mandates represent yet another attempt to provide symptomatic relief to the anxiety attending the turbulence. Senge instructs us that "shifting the burden" induces temporary symptomatic relief but fails to attack the fundamental underlying problems. Following this view, NPR mandates may actually exacerbate that which it hopes to solve. To address the underlying problem, we need to leverage the system at the point that will weaken the symptomatic solution and strengthen efforts to address problems at the fundamental level.

We have the power within our grasp to leverage the system in a way that may facilitate solution. Here again, the notion of the anxiety-instability spiral comes into play. The leverage point is the anxiety thread of the helix-like spiral. More precisely, the logical and theoretically prescribed intervention point is our own individual level of anxiety.

Anxiety--"anticipating something might happen that we will not be able to manage"--is heightened in poorly differentiated people (M. Kerr 1996, 14). The well-differentiated person has a greater ability to separate the anxiety-related emotionality from intellectual functioning. That ability enables the individual to make thoughtful decisions through the harmonious synthesis of emotional regard for self and others, and congruence with one's values and intellectual reasoning. Bowenians maintain that although this solid self or basic level of differentiation is formed by the time of adolescence, adults can continue to work on their level of differentiation. In a therapeutic milieu, constructing a genogram to see the generationally transmitted familial level of differentiation provides insight into "leverage points" for an individual to begin taking an individuated stand to counter the system's pull toward togetherness.

However, suggesting that in order to become more effective managers we should work on our level of differentiation in a therapeutic setting evokes disdain. We also may jump to the conclusion that every manager needs therapy.⁷ We too often equate the

⁷ CW openly acknowledged that she had "been in therapy for years," constructed her genogram and learned how to take a differentiated stand in her family of origin. Learning to define self and take a differentiated stand in one's own family

need for therapy with personal inadequacies, and more frequently with mental illness.⁸ However, if we were to design a workshop for managers billed as a way to self-empower and empower others and construct genograms as part of the experiential learning to transform ourselves, the notion would be more palatable.

In principle, poorly-differentiated persons should rarely attain management positions.⁹ However, what we do find more frequently are managers whose functional levels of differentiation are deteriorating. In these cases, the pseudo-self mediated by the degree of chronic anxiety in the system as well as shifts in the level of acute anxiety responds to the pull toward togetherness. Those managers then take fewer individuated stands based on values and concern for others--ironically at a time when individuated stands are most indicated. This phenomenon could impact any organizational system--given the interconnection between instability and anxiety.

The significance of creating a nonanxious presence and maintaining an anxiety-tolerant organizational environment becomes even more powerful when we are made aware of how our pseudo-selves are vulnerable to the pull toward togetherness when

generalizes to taking such a stand in the workplace. She also noted the deleterious effects resulting from managers who "tried to work out their stuff on the backs of their employees."

⁸ It is precisely because CW is well-differentiated that she makes her declaration without reservation.

⁹ Framer (1993) found that in instances in which poorly differentiated persons do become managers, they attract a cadre of other poorly differentiated individuals. A critical ego mass forms that results in a self-perpetuating dysfunctional organization that inevitably declines.

anxiety heightens. An anxiety-tolerant environment underpins the disposition towards openness and simultaneously facilitates organizational members' self-differentiation and reflexivity.

Chaos theory as specified at the micro-level by Bowen theory counters our traditional mental models and can help us to configure new organizational archetypes. We have come full circle. We have a plausible leverage point.

From the different vantage points along the circle we can extrapolate several implications for public administration. First, changes handed down from top-level administrators can be viewed as counterproductive to chaos theory's notion of the organizational transformation needed for co-evolution. Such strategies do not facilitate the free flow of energy throughout the system that is needed in order to generate creativity. Ironically, imposed changes appear to generate resistance and anxiety.

Second, the nonlinear systems perspective affords us an understanding that this seemingly direct cause and effect chain (imposed change stifles creativity and increases anxiety) is not as simplistic as we make it out to be. Rather, the process is complex, and appears circular in nature. Metaphorically speaking, the process occurs in concentric circles. The levels of observation (event, behavioral, structural) we examined are part of a self-similar pattern within the implicate order. As such each layer affects other layers within the implicate order and the whole itself. In turn, each is impacted by the whole. Through nonlinear feedback processes all system phenomena are mutually influencing other systems.

Thus, third, this knowledge conveys the recognition that we, individually and collectively, can and do impact the system. We are not merely victims of external fluctuations. Improving our abilities to define self in the situation and work toward a more optimal level of differentiation may well mark the most efficacious beginning point in our attempts to dispel that myth. Well-differentiated individuals better tolerate the anxiety that attends the letting-go of that which is familiar and known.

There is an implicit thread running through the assertion that we need to begin reconceptualizing public organizations and organizational management in a nonlinear manner. Accepting the principle of mutual causality undermines what gives us great (albeit illusory) ontological security--our presumed ability to predict and control outcomes.¹⁰

Indeed, the rational processes and routinization that we use to control information, control others, and control outcomes facilitate ontological security and helps ward off anxiety. Indeed, reorganization plans represent the quest to ensure that same security. Perhaps that same ontological security is sought as scholars introducing chaos theory applications to organizational management are devoting efforts to develop methods and tools by which administrators can manage effectively. Wheatley (1994) sums it up:

...most of our focus as managers still keeps us from seeing the order in the chaos. We measure activity hourly, weekly, quarterly. We fear variances. We want employees to conform to prescribed expectations. We see unpredictability as a loss of control--the situation managers fear

¹⁰ Relatedly, "proof" that is at the heart of the methodological and epistemological debate is subsumed under this ontological security.

most (16).

It is a much easier task to continue to cleave to linear thinking, even at the risk that the rational controls we devise "may have become an encumbrance" (De Greene 1990b, 164). But such cleavage represents collectively our lack of differentiation and our inability to acknowledge our fears.

Wheatley implicitly confronts the strength of the pull toward togetherness. At the risk of redundancy, individuals working toward a better level of self-differentiation counter the strength of the pull toward togetherness. And if we can harness the power of chaos theory to see the order in the chaos, we have the potential to acquire a heightened sense of ontological security.

Efforts toward more holistic thinking also helps us realize that the plans we institute to alleviate complex problems merely address the symptoms. Frequently, those plans exacerbate fundamental problems. That recognition will facilitate efforts to reconfigure mental models that circumvent efforts to think nonlinearly and more holistically. Therein lie implications for educating public administration students.

Implications for Public Administration Management Education

In this dissertation, I have drawn from what others have already said. I combined various perspectives in a different way. My strategy was to drive wedges into existing mental models so that with the openness created, readers have the opportunity to reconfigure their existing mental models and to build upon newly emerging ones. In

chaos theory terms, perhaps the way I recombined perspectives constitutes a fluctuation that disrupts a known equilibrium. Our educational system should drive similar wedges in all types of conventional thinking.

Building a community conducive to dialogue evokes individuals' ability to see others' variant perceptions and through the process see something together that neither is able to see alone. The Center for Public Administration and Policy (CPAP) serves as a model in this respect. Inspired by Follett's thinking, the community creates the milieu conducive to such learning.¹¹ CPAP members intentionally create such a community. In this light, self-similar patterns obtain in community building that the findings in this dissertation designate for managing--a disposition toward openness, defining self and promoting others' functional level of differentiation, and maintenance of an anxiety-tolerant environment. The community necessarily has to be created and re-created. Co-determined human interaction governs the process.

Faculty in departments of public administration are not immune to the countervailing pulls toward togetherness and individuation to which those in other systems are subject. We are susceptible to using defensive routines (Argyris 1985) and the host of other behaviors found in many organizations. We experience the pressure to support the dominant functionalist paradigm's doctrine. And by extension, we impact and are impacted by the political aspects of publishing, including sanctioned

¹¹ Implicit in this community building process, we find parallels with CW's efforts in her organization. A generic process of human interaction is embedded in both.

methodologies. We are impacted by and in turn impact bureaucratic inertia. We are not able to compensate for the delays between new insights and publication dates.

Together these countervailing forces (at least partially) drive our continued emphasis on linear thinking. For example, in many management skills classes, linear thinking is equated with effective management. Driving a wedge into existing mental models could be achieved if readings in both traditional linear views and management views grounded in nonlinear systemic thinking were to be assigned. Juxtaposing these polar views would test assumptions, generate dialogue, and elicit endeavors to think more holistically. The action of comparison is itself transforming, an enactment of the duality of which Giddens, family systems theorists, and chaos theorists speak.

Granted, the paucity in nonlinear conceptualizations of public management hinders such endeavors. This lack simply highlights the need for continuing research to develop ideas about the applicability of nonlinear thinking to public administration further and to develop meaningful language with which to describe the connections between the two.

I do not find it coincidental that public administration scholars are discovering the power chaos theory holds for the field. Nor do I find it coincidental that CPAP scholars have led the field in seeing Follett's gifts in a different light. I am not surprised that Bowen theory applications to organizations are gaining currency and that there are an increasing number of voices that speak of the resonance between chaos theory and family systems theory. Indeed, more voices are expressing the realization that Follett, Mead, Dewey, and others envisioned the principle of mutual causality long ago. That those

perspectives should be resurrected today is also unsurprising. I see this not as coincidence, rather the slowly accumulating recognition that linear thinking does not explain the dynamics of human interaction. Giddens stresses that exact point in his theory of structuration. The far-from-equilibrium state in which we find ourselves presents the opportunity to transform our way of thinking. Perhaps the timing is right for those voices to be heard more clearly.

On the other hand, we as public administration educators and scholars can alternatively choose to ignore emerging illuminations. We can continue to ground our courses in linear-based thinking and hope that we can stave off our fear of the unknown by continuing to sing with the chorus that perpetuates illusionary prediction and control. We have a choice. And we have a leverage point.

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APPENDIX

Virginia K. Sweet,
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(540) 342-1536

Protocol

Justification of Project

The purpose of my dissertation project research is to describe a management style (deemed a managerial theory of action) that is grounded in principles from family systems theory. If my study is fruitful, I anticipate that the described model will contribute to public administrators' ability to be more effective managers in public organizations that are no longer stable and predictable, but are being restructured and dealing with increasingly conflicting demands from citizens, politicians and others. Description of the model is best obtained from a manager who has intentionally grounded his or her management theory of action in principles from family systems theory and from others with whom the manager interacts in the organizational setting. To illuminate this particular management theory of action, I will contrast it with a more traditional managerial approach. Therefore, I will replicate the study in a public organization whose manager is well-respected and experienced, but whose theory of action is based on more traditional managerial concepts. In both settings, I will observe a limited number of activities in which the manager and organizational members are engaged. Given the purpose of the research, a qualitative case study, featuring in-depth interviews, is the methodology of choice.

Procedures

The subject pool will consist of one female manager (who employs a family systems theory based managerial approach) and approximately three of her subordinates, both male and female; and one male manager (who employs a traditional managerial style) and approximately three of his subordinates (both female and male). Since purely voluntary participation is being solicited, the total number of participants in the study cannot be precisely specified in advance. The primary selection criteria is the manager's theory of action. Secondly, the manager must work in a public organization. Thirdly, the manager and at least three other persons who work in the organizational setting must voluntarily agree to participate in the study.

The Chair of my dissertation and I have identified public organization

managers who utilize one of the specified theories of action. I have contacted each manager to ascertain each's interest in voluntarily participating in the study. The managers have identify others in their organization and I will ascertain each one's interest in participating voluntarily. I will obtain written permission and approval for the study from the executive directors of the organizations.

Interviews will be unstructured. I will frame the topic for each interviewee by stating that I am attempting to describe how the manager works with people. Topic questions will include: "What helps you?"; "What gets in your way?"; "If you were king/queen of the universe, what would you change?"

I will attempt to derive detail, clarification, elaboration and depth by repeating key words uttered by the interviewee. When appropriate, follow-up questions will be asked to elicit depth of themes presented by the interviewee. Approximately three one-hour interviews will be held with each interviewee during a 4 week period. Interviews will be scheduled at the interviewee's convenience and at a location chosen by the interviewee. I will also be visiting the organization for time-limited observation of activities in which the manager and staff (who are participating in the study) are engaged.

Risks and Benefits

The participants are being recruited voluntarily and thereby have the right to refuse to answer any question that they may construe as jeopardizing their work relationships. Based on these safeguards and the perception based unstructured interview format, I do not anticipate any risks to any of the participants.

Potential benefits to participants include an opportunity to reflect on the quality of their working relationships, perhaps consciously reexamining strengths and areas for improvement. Participating in interviews generally provide the opportunity for participants to verbalize thoughts, and in so doing to re-think and re-examine situations and events.

Confidentiality/Anonymity

Each participant's responses will be confidential and anonymity will be assured by assigning an alphabetical code to each participant. The code will be used in all written or recorded documents. The code will be stored in a locked box at my private home office. The employing organizations will not be identified by name, nor any revealing description.

If the particular participant voluntarily agrees, interviews will be audiotape recorded. I will explain orally and in writing that the audiotape recordings will be used solely by me and the Chair of my dissertation as the primary source for data collection and data analysis. Each participant will be given the opportunity to edit their audio taped interviews prior to inclusion of any material in the study. The audiotaped interviews will not be transcribed unless the interviewee requests a hard

copy for editing purposes. The purpose of the audiotaping is to enable me and my Chair, if the need arises, to re-check any specific wording or phrases uttered by the interviewee to assure that I accurately code patterns and themes in the course of data analysis. Until the data analysis is completed, the tapes and any transcriptions edited by any participants will be stored in a locked file cabinet located in my private home office. Each participant will be given the option of personally destroying the tape (and any transcription) after analysis has been completed or having me destroy the tape (and transcription).

Informed Consent

I will not be reviewing any files or records during the course of my study. Therefore, the policy to obtain written consent from participating agencies to review records does not apply to my research.

Biographical Sketches

1. Primary Investigator: Virginia K. Sweet, doctoral candidate, Center for Public Administration and Policy, Virginia Tech.

I completed my Master of Social Work in 1971 at Louisiana State University. My unpublished thesis entitled, "The Significance Religious Beliefs have on Clients Benefitting from Therapy at a Mental Health Center," centered on a quantitative analysis correlating clients' religious denominational beliefs with progress in therapy for adjustment disorders.

I have 15 years of post-masters professional experience in clinical, supervisory, administrative and teaching positions. All of these positions entailed adhering to confidentiality standards and policies, as well as contributing to my skill development in interviewing. Additionally, I hold the Licensed Clinical Social Worker's certification in the State of Tennessee, as well as having been certified nationally by the Academy of Certified Social Workers continuously since 1975.

During my graduate studies at the Center for Public Administration and Policy (CPAP), I was assigned as a graduate assistant to the Virginia State Department of Social Services Project, an interagency agreement between CPAP and the Virginia State Department of Social Services. Under the direction of the project director, Dr. Renee Loeffler, CPAP, Falls Church, VA., I participated in the state-wide random moment survey of local departments of social services; participated in the quantitative and qualitative program evaluation of 3 pilot projects for school drop-out reduction in the Commonwealth of Virginia; conducted research on best practices in child abuse investigations for the External Review Committee for the Prince William Fatality; and facilitated task group sessions for the Customer Service Improvement Committee, comprised of selected employees of local department of social services in the

Commonwealth of Virginia.

2. Faculty Advisor (Chair of Dissertation Committee): Orion F. White, Jr., Ph.D., Professor, Center for Public Administration and Policy, Virginia Tech.

Professor White initiated a research program in 1964 with a comparative field study of the environmental relations of three state agencies, then conducted a field study of Wesley Community Center, San Antonio, Texas--a social service agency. Since these two initial studies, he has carried out research for approximately fifty article length studies both empirical and theoretical in nature. Empirical studies have been concentrated in the area of human service delivery. Theoretical studies have primarily concerned process theory, organizational development, and social change. Monographs and books include Psychic Energy and Organizational Change, What Manned Space Program after Apollo--Government Attempts to Decide (with E.S. Redford), and Intergovernmental Mediation (with Roger Richman and Mich Wilkerson). In addition to this published research, Dr. White has conducted approximately thirty action research studies as an organization development consultant, all of which involved intensive depth interviewing and analysis of depth interview data (the results of these studies, since they were carried out on a confidential basis, could not be published).

Approval of Research

I have read and understand this "Protocol" and the attached "Informed Consent for Participants of Investigative Projects. I have had all my questions answered. I hereby acknowledge the above and grant permission to Ms. Sweet to approach staff to seek their voluntary participation in her dissertation research project.

I retain the right to withdraw this permission and authorization at any time without penalty.

(Signature)

(date)

(Title)

(Agency)

(Witness)

(date)

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Informed Consent for Participants of Investigative Projects

Title of Project: Dissertation Title: Exploring the Implicate Order in Public Organizations-The Complementarity of Bowen Theory and Chaos Theory

Investigator(s): Virginia K. Sweet, doctoral candidate

I. The Purpose of this Research/Project

The purpose of my dissertation project's research is to describe a management style (deemed a management theory of action) that is based on principles from family systems theory in an effort to further public organization management theory. Description of the model is best obtained from a manager who has intentionally grounded his or her management theory of action on principles from family systems theory and from others who interact with the manager. To illuminate this particular management theory of action, I will contrast it with a more traditional managerial approach. Therefore, I will replicate the study in public organization whose manager is well-respected and experienced, but whose theory of action is based on more traditional managerial concepts. I will also interview others with whom the manager interacts. In both settings, I will observe a limited number of activities in which the manager and organizational members are engaged. Since purely voluntary participation is being solicited, the total number of participants in the study cannot be precisely specified. However, I anticipate interviewing no fewer than four members in each designated organization.

II. Procedures

I am seeking managers in public organizations who voluntarily agree to be interviewed about their management theory of action. In addition, I am seeking the voluntary participation of those with whom the designated manager interacts.

If you voluntarily agree to participate in the study, I will initially interview you individually and privately for approximately for one hour using open-ended questions so that I may hear your point of view. Rather than asking structured questions, I will be conducting what is termed an unstructured interview. Essentially, I will frame the topic of my research as attempting to find out how the manager works with people. Then I will ask an initial open ended question to begin the interview and follow your lead after that so that you can tell me what you think is important for me to know. I am interested in hearing your stories, examples and

perspectives that will help me understand and then describe how the manager works with people in your organization. Following the initial interview, I will look for patterns and themes you presented. To obtain more details and depth so that I may capture your perspective and meaning, I anticipate that I will need to interview you one or two more times within a 4 week period. I will interview you at your convenience and at a location you specify. With your permission, as well as other participants' permission, I will observe a limited number activities in which you and the other participants are engaged in your organizational setting. As a voluntary participant, you have the right to decline to answer any question that I may pose.

III. Risks

Based on the above described format and the type of data I am seeking, I do not anticipate any risks to you, either physically, emotionally or mentally. However, if you feel that a particular response you may give potentially may jeopardize your working relationships with other organizational members, you have the right to decline to give such information, or to retract subsequently any response previously uttered. Additionally, any scheduled interview that unexpectedly interferes with your responsibilities can and will be rescheduled to a time and location more convenient for you.

IV. Benefits

Although I do not anticipate that you will derive any tangible benefits from your voluntary participation in the study, I hope that the interview process will afford you an opportunity to reflect upon your working relationships with others in the organization. Perhaps, an opportunity to reexamine consciously strengths and areas for improvement in working relationships will strengthen those relationships.

On a broader scale, I anticipate that your participation will enable me to describe and contrast two distinct managerial theories of action. If my study is fruitful, I hope that public administrators can be given guidance to help them manage more effectively in organizations that are no longer stable or predictable, but are being restructured and dealing with increasingly conflicting demands from citizens, politicians and others.

V. Extent of Anonymity and Confidentiality

I will assure your confidentiality and anonymity to the utmost extent possible. I will assign each participant an alphabetical code. The code will be used in all written or recorded documents and materials associated with the study. The code will be stored in a locked box at my private home office. Your employing organization will not be identified by name, nor any revealing description. I will not share your responses with any other member of the organization.

If you agree in writing and orally, I will audiotape the interviews solely for my use and if needed, my dissertation chair's review. Any audiotaped interviews serve as the primary source for data collection and data analysis. The purpose of the audiotaping is to enable me and my Chair, if the need arises, to re-check any specific wording or phrases you uttered to assure that I accurately code patterns and themes in the course of data analysis. You will be given the opportunity to edit your audiotape prior to inclusion of any material in the study. Audiotapes will not be transcribed unless you request a hard copy for editing purposes. Until the data analysis is completed, the tapes will be labeled with your assigned alphabetical code and stored in a locked file cabinet at my private home office. After the analysis has been completed, you have the option of having me return the audiotapes to you or requesting that I destroy them.

Confidentiality is limited, however. In the event that you reveal any information involving harm or threat of harm to self or others, statutes require that such information be reported to the proper authorities.

VI. Compensation

No monetary or intangible contribution is associated with your participation in this study.

VII. Freedom to Withdraw

You have the right and privilege to withdraw your participation from this study at any time during the study without penalty. You are free to not answer any question posed during an interview. You have the right to retract any statement you utter, as well as the right and opportunity to edit your interview responses.

VIII. Approval of Research

This research project has been approved, as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University and by the Center for Public Administration and Policy, Virginia Polytechnic Institute and State University.

IX. Subject's Responsibilities

I voluntarily agree to participate in this study. I have the following responsibilities:

1. To be available for up to three separate interviews approximately one hour in length per interview.
2. To specify convenient times and locations for the interview and to reschedule any interviews that unexpectedly interfere with responsibilities in as timely a manner as possible.

X. Subject's Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Signature

Date

I give my permission for my interviews to be audiotaped. I have been informed of my right to edit those audiotapes and my option to have the tapes returned to me or destroyed by the investigator at the conclusion of the project.

Signature

Date

Should I have any questions about this research or its conduct, I may contact:

Virginia Sweet
2032 Mt. Vernon Rd.
Roanoke, VA 24015
(540) 342-1536

Orion F. White, Jr.
Center for Public Administration and Policy
VA Tech in Northern Virginia
2990 Telestar Court
Falls Church, VA 22042-1287

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