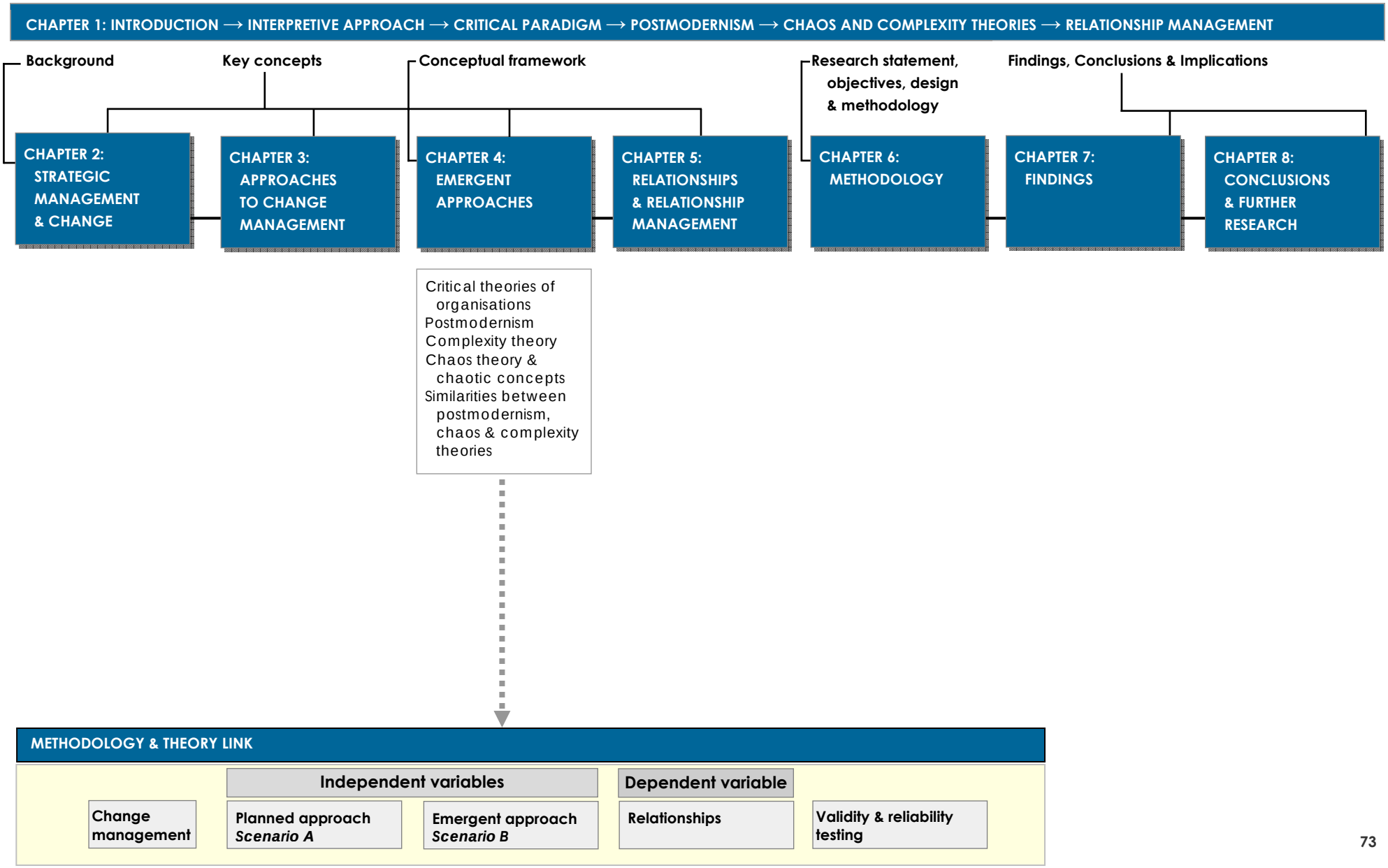
OVERVIEW OF CHAPTER 4: *Emergent Approaches: Postmodernism, Complexity and Chaos Theories*



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CHAPTER 4:

Emergent Approaches: Postmodernism, Complexity and Chaos Theories

4.1 Introduction

This chapter expands on the metatheoretical approach of this thesis, which was briefly outlined in Chapter 1. More specifically, postmodernism, chaos and complexity theories will be elaborated. Both chaos and complexity theories are considered postmodern theoretical approaches in this thesis. Arguable similarities and differences between all three theoretical approaches can be found at the end of this chapter.

4.2 Postmodern theories of organisations

Metatheories consider notions that are beyond the theories themselves, including the way theories are viewed and approached (Reinard, 1998, p. 48). Littlejohn (1992) also describes a metatheory as a

> *body of speculation on the nature of inquiry that goes beyond the specific content of given theories (p. 29).*

This implies that metatheory comprises of or encapsulates many different theoretical perspectives and has a multi-disciplinary approach. *Postmodernism* is an example of a metatheoretical approach. As Cova (1996) puts it, postmodernism refers to

> *a philosophical perspective replete with epistemological assumptions and methodological preferences (p. 16),*

which places it on the level of metatheory. Postmodernism spreads over different fields of study and domains and it offers a re-conceptualisation of how we view the world around us (Chia, 1995, p. 579; Cova, 1996, p. 16).

4.2.1 Postmodernism

Although there can be no unified postmodern theory or collective set of approaches to mark postmodernism (Kilduff & Mehra, 1997, p. 455), it is possible to say that there are countervailing trends in postmodernism. As Cilliers (1998, p. 114) puts it, postmodernism is: "incredulity towards meta-narratives", which is a contrast to modernism, which appeals to meta-narratives. In organisational terms this implies that organisations should challenge what it traditionally holds as sacrosanct, namely, its culture, legends of how it came about, how it creates meaning; in other words, its meta-narratives (Sherman & Schultz, 1998, p. 28; Kreiner, 1992, p. 37).

In terms of the broad concept this means that different groups within society take on different perspectives of reality and truth, each trying to make sense of their environment in order to achieve their goals and to give meaning to what they perceive and experience. Since these approaches or views are created out of unique circumstances of each group, it is impossible to unify or conform these views into one single grand account or description of reality (Kreiner, 1992, p. 38; Cilliers, 1998, p. 114). Postmodern authors such as Derrida, Foucault, Lyotard, Jameson and Baudrillard reject the Marxist idea that material reality determines social forces; rather that society is determined by information through the media (Cova, 1996, p. 15; Mickey, 1997, p. 271).

Postmodernism is termed as a response to the failure or natural consequence of the shortcomings of modernism. Implied here is the underlying question about the rationality of the scientific approach to theory (Jackson & Carter, 1992, p. 1; Cova, 1996, p. 16; Chia, 1995, p. 579). Cova (1996, p. 15) describes postmodernism as the integration of new models into a "generic perspective on life and human condition" and an epochal swing from modernity, breaking free from functionality and rational thinking. He adds that postmodernism rejects epistemological postulations, contends methodologies, refutes accepted theories, and contrasts modernist realities in almost every sense. Theory and science according to the postmodernists can never be seen as the truth, rather an interpretation of the theorist at a certain point in time (Holtzhausen, 1999). It is important to mention, however, that postmodernism is inexplicably connected to modernism in that postmodernism is the modern in an embryonic state. It can only be articulated

through the modern while the modern can only be expressed as a passing phase of the postmodern (Chia, 1995, p. 580; Cilliers, 1998, p. viii; Cova, 1996, p. 16).

Postmodernism is considered a critical theory and consists of a loose group of ideas or theories brought together by their interest in the quality of communication and influence on society (Littlejohn, 1992, p. 16). Critical theories borrow from other genres of communication, especially from interactional-conventional theories which acknowledge the way in which communication can influence culture. Postmodernism also shares with interpretive approaches the concern over language and how it brings about changes in society. As Littlejohn (1992, p. 16) points out, critical theories examine values that can be used to criticise institutions, powerful groups in society and systems. In other words, critical theories, such as postmodern theories, are "powerful agents for change" (1992, p. 17).

Postmodernism describes an era depleted of a dominant ideology or suggested worldview, and is satiated with paradoxes, juxtaposed assumptions, and diversity of styles and views (Cova, 1996, p. 16). It is through this continuous struggle that ideology is shaped and meaning is created because, as Holtzhausen (1999) puts it, "an ideology can only exist with some opposing ideology". Some of these paradoxes or binary oppositions are the 'truths' of men's dominance over women, speech over the written word, and logical reasoning over the natural flow of the world. Postmodernism questions the legitimacy of an absolute, objective core of meaning and truth and the use of binary oppositions that imply the superiority of one meaning over another.

Discourse is an important concept in postmodernism and refers to the use of language in communication by "forming structures and conveying meanings" (Holtzhausen, 1999). Holtzhausen (2000) explains that meaning is not formed through language itself but through the debate or discourse of different points of view, as well as in the ways knowledge is structured. Discourse thus creates and structures ideas, beliefs and ideologies.

Postmodernism criticises language and culture; moreover, it propagates critical thinking as a way of achieving greater political autonomy (Mickey, 1997, p. 272). Critical theory sees the media not only as entertainment, but also as forming

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society's way of thinking about the world. The media, as Mickey (1997, p. 272) puts it, is "a consciousness industry".

Although Holtzhausen (1999, p. 42) argues for a holistic societal approach to the study of public relations rather than restricting the study to a mere organisational perspective, this thesis, however, does concentrate specifically on organisational change and, more importantly, thus the impact of postmodern views and approaches on organisations. It must be stressed that a holistic approach is not denied here, but is in fact advocated since organisations and public relations are considered a part of society's macro-system.

4.2.2 Critical and postmodern views of organisations

Postmodern architecture has been described by Kilduff (1997)

> *as combination of modern techniques with something else in order for architecture to communicate with the public and a concerned minority (usually other architects) (p. 457).*

This definition can easily be adapted to postmodern organisational theory in the way that it consists of a thorough knowledge of traditional management techniques, as well as the applicability to contemporary external and internal organisational settings. Eclectic perspectives are interwoven, and boundaries that were used to differentiate between academic approaches or disciplines are totally ignored. Postmodern organisational research is seen as combining various research methodologies to challenge dominant models of knowledge, and to produce new forms, or often under-utilised forms of research.

From a management perspective, postmodernism has emerged out of post-industrialism as a way of questioning and criticise the relevance of business thinking during the Industrial Age (Sherman & Schultz, 1998, p. 27). The paradigm shift from a mechanistic worldview to a more organic worldview of management, has now promulgated the view of organisations as organisms not exempt from natural laws of evolution and transformation. Modernist approaches may have ceased to contribute to the development of management theory, and postmodernist approaches have stripped modernist concepts of its rational objectivity (Chia, 1995, p. 580; Jackson & Carter, 1992, p. 1).

Many theorists such as Jackson & Carter (1992, p. 2) have criticised the body of management knowledge that is repeatedly taught and used in industry and training as deeply flawed, and "not producing the returns promised" (Jackson & Carter, 1992, p. 2). The integrity and effectiveness of management theory is being questioned on all levels. Kreiner (1992, p. 38) especially notes that in postmodernism the frames of reference of management and organisational theory are blurred because of the improbability of identifying a common theoretical paradigm. In other words, it is difficult to distinguish basic assumptions and clearly defined methodological borders. Consequently, the use of scientific methods to create and understand organisational epistemology is ignored; even popular literature on the organisational experience is accepted as valid depictions of reality.

As Chia (1995) points out, a hyper-reality has been created out of language where words such as 'organisation' and 'competition', which support modernist discourse but ignores the real nature of organisations. Modernist concepts have ironically made it difficult to get to the 'truth' about organisational life. The validity of modernist management thinking is questionable; it s more fad than empirical theory (Jackson & Carter, 1992, p. 2). Furthermore, modernist management theories pursue courses of action that are disadvantageous to the organisation such as chasing profit at the detriment of the ozone layer. As Kreiner (Kreiner, 1992 p. 39) argues, organisational practices and formal structures are "masks" or manifestations of organisational culture.

Jackson & Carter (1992, p. 4) criticise of modernist management practices and education as being more like theology than science,

> *requiring acts of faith on the part of its adherents and their acceptance of a belief that modernist management knowledge works, independently of whether it does or not (p. 4).*

Similarly, according to Kreiner (1992, p. 39), actors in the organisational game use symbols and structures to create meaning but the 'truth' of these formal representations are questionable. These "actors" or role players ought to constantly remind themselves that the organisational environment is only a theatre, and the challenge lies in not falling into the trap of taking these roles too seriously, but to participate ethically.

In Chia (1995), a further distinction made between modernist and postmodern thinking with respect to organisational studies, where modernism sees organisations as

> *isolatable real entities or attributes which can be systematically described and explained and, therefore, meaningfully compared (p. 583).*

Knowledge in organisations, in effect, is seen as attempts to reflect what is 'out there', that is, representationalism, which is an ontology of being entrenched in modernist thought. As Chia sees it, even when modernists talk about *process*, they are referring to "static process" that is discrete, linear and sequential. In contrast, postmodernists would refer to process as of intricate patterns and networks of interactions and relationships.

'Resistive postmodernism' offers some radically new understanding of the discipline of management where the apparent authority of science and its power of rationality and objectivity are questioned (Jackson & Carter, 1992, p. 2; Kreiner, 1992, p. 1). The emphasis is now placed on ambiguity, conflict, debate, uncertainty, ideology, subjectivity, relativity and diversity. More profoundly, the unquestioned soundness of capitalist practises is challenged in order to make more room for humanistic values such as creativity and quality of life.

4.2.3 Postmodernism and public relations

It must be stated upfront that the view of public relations that is being criticised by postmodernists coincides with the asymmetrical models of public relations such as the press agentry model. As Grunig et al. (2002) note, in these models, communication is

> *one-way, top-down, and designed to control the behaviour of employees in ways that management desires... Asymmetrical communication remains popular among dominant coalitions that strive to increase their power and to control others, rather than to empower employees throughout the organisation (p. 487).*

Asymmetrical models have the specific aim to persuade publics to do and think what organisations want them to do and think. However, recent models and

theories of public relations have moved away from the use and management of the image of organisations to the management of reputation (Fombrun, 1996; Grunig et al., 2002).

In contrast, the symmetrical views of public relations, as propagated by theorists such as Ledingham (2000), Grunig et al.(2002), and Grunig & Huang (2000), are considered more ethical, two way symmetrical, and more responsible towards the publics (Grunig, 1992, p. 308) than is regarded in the postmodern view of public relations (Holtzhausen, 1999, p. 26). Taking this into account, the more positive models, namely, the way public relations is mostly practised in industry, as criticised by the postmodernists are examined here in this thesis.

According to Cova (1996, p. 16) and Mickey (1997, p. 2), this is considered the publicist or journalistic view of public relations and communication management, where symbols and the texts are produced as vehicles or events to communicate with publics. The focus of this interaction is the exchange or action itself, not the message or material exchanged. The media and messages are not reflections of reality but a creation of the mind, that is, hyper-reality. Language and culture create reality for society. In this case the question of practising public relations ethically and responsibly is inevitably raised.

Holtzhausen (1999) proposes that postmodernism provides a critical approach to public relations because it focuses on questioning our ideas about society, organisations and how they function. Modernism has produced systems and institutions that justify domination and control over groups that want to break away from coalitions that were in power. Public relations is a product of modernism and capitalism, which aim at safeguarding the status of organisations that comply with the capitalist system (Holtzhausen, 1999, p. 24).

On the contrary, according to Mickey (1997, p. 3), postmodernism sees public relations as “a statement of difference”, where the people involved look for symbolism, ethical codes and social scripts in all communication. Public relations is the creation of images which have become more important than reality itself; and what society perceives and believes are desires and images attached to the true idea but not the truth itself. Baudrillard, an important contributor to postmodernist

thought, describes public relations as depending on the media to create a society that is bounded by consensus (cited in Mickey, 1997, p. 3). The signs used in public relations, such as company logos and image, are not signs of reality. As Mickey (1997, p. 6) also notes "if an organisation or a cause does not create a sign, it is not heard". The powerful and rich have the means to create these symbols and signs; but once they are created and stored, counter-signs tend to compete with difficulty.

Postmodernism further criticises public relations for imploding boundaries between images, entertainment and politics (Holtzhausen, 1999). This entropy in society causes a collapse of borders where distinctions between classes, cultures, political approaches and, essentially, between image and reality.

When Cova (1996, p. 15) examines postmodernism from a marketing perspective, a number of public relations assumptions and paradoxes can be deduced. The hyper-reality that Cova sees is a model of the 'real' without source or truth; namely, Disney World, Universal Pictures, IMAX theatre, computer games, and the Internet's cyberspace. Society now prefers the image, hype, or simulation to the 'real' thing and all depth and substance are lost. Trying to see the essence and meaning underneath the superficial image is therefore a futile exercise "The image is the substance" (Cova, 1996, p. 17). Consumers use products not for the functionality of the product, but the image portrayed by the product. Juxtaposed upon this is that the consumer has becomes a protagonist in the creation of their world, wanting to part of process, and needing to participate. From this public relations perspective, individuals want to be part of the creation of relationships with organisations with regard to those issues that touch their lives. Ultimately, according to Cova (1996),

> *The essence of postmodern experience is participation: without participation, the consumer is merely entertained and does not experience (p. 18).*

Individual members of the public create different subjective meanings from messages, as they join groups that identify with their changing concerns (Cova, 1996, p. 18; Holtzhausen, 1999, p. 38).

Another juxtaposition proposed by Cova (1996, p. 18) is individualism versus the importance of community: the postmodern society is fragmenting because of developments of technology. Consider how individualism and free choice are promoted through the availability of online shopping, while virtual tribes are formed without the necessity of face-to-face communication, as through emails. Individuals can no longer be classed as according to modernist tools of sociological analysis. Holtzhausen (1999, p. 34) echoes this insight in suggesting that shared meaning can be used as a postmodern segmentation technique. The classification of groups according to socio-economic class or social status is further complicated by the flexible positions of individuals as according to their different needs or roles (Cova, 1996, p. 19; Holtzhausen, 1999, p. 35).

Other contrasts and paradoxes from the postmodern marketing perspective with regard public relations is the juxtaposition of relationship marketing and the individual through communal marketing. This is a personal approach, with the aid of computerised information systems would be where the marketer reacts to the immediate needs of consumer and attempts to build a trusting relationship with them. Recommending at the same time that the consumer might want to link to the rest of the community, the marketer may extend this as an invitation to become part of the firm. In this way, the postmodern approach to public relations recognise the building of relationships between organisations and its publics as the most important function of the practitioner (Ledingham & Bruning, 1997, p. 24). The borders between the organisation and its publics are therefore to be eliminated so that the publics can become part of the organisation and their creation of meaning (Sherman & Schultz, 1998, p. 169). This also means moving away from data based segmentation to qualitative and participatory approaches, such as action research and ethnography (Holtzhausen, 1999, p. 28).

From a marketing perspective, Cova (1996) recognises that image marketing and branding are closely related. In particular, branding from a postmodern perspective is important because people make decisions based on the images associated with decisions. Advertising and publicity are powerful mechanisms that transfer meaning from the constituted world to the product or idea. At the same time, Cova (1996) recognises that consumers are not passive targets for image marketing but are actively involved in the creation of meaning.

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> *It is a fundamental shift in the role and purpose of marketing: from manipulation of the customer to genuine customer involvement, from telling and selling to experience and sharing knowledge and emotions (p. 20).*

In other words, this is *participatory marketing*. This same shift is present in public relations where publics want to be active participants in the creation of meaning (two-way symmetrical model) as opposed to being persuaded by the organisation (asymmetric models) (Grunig, 1992; Spicer, 1997; Holtzhausen, 1999, p. 39; Grunig et al., 2002, p. 308). According to Cova (1996, p. 22), this is as *ethno-marketing* from a marketing perspective, and "participation is the essence of postmodernity". In a similar vein, and from the viewpoint of public relations, ethno-public relations should enable practitioners to transfer meaning ascribed to issues from organisations to publics, and vice-versa, in an atmosphere of trust.

When looking at public relations from the cultural and critical studies perspective, the concern is not with the text alone but with what the text actually communicates to society (Mickey, 1997, p. 7). People are struggling to live sensible lives, while the signs they live by grow more meaningless. Postmodernists plead for a more critical view on all the signs used in the hands of powerful groups, and propose that images should be debated and questioned. If images portrayed and enhanced by the media are not questioned they become part of public opinion. The danger is that these images are very often a false version of reality (hyper-reality), thus degrades public relations to 'spinning' or mere publicity.

To reiterate, that postmodernism is characterised by the co-existence of different discourses and paradoxes, but with the important distinction of being part of a complex set of relationships and interlinked networks (Cova, 1996, p. 16; Holtzhausen, 1999). This network of our society fabricates knowledge which results in an explosion of information. Moreover, the different clusters in this network have an organic life of growth, constant interaction, participation, change and self-organising processes through which meaning is created. The non-linear relationships in the network of society interact around the competition for resources and boundaries are constantly challenged. In effect, order to create meaning it is necessary for systems to be unstructured and diverse because

diversity creates the potentiality of rich information that can be managed to become knowledge and wisdom.

In short, postmodernism pleads for public relations practice to be transparent, open and democratic, playing an important part in marginalising groups through responsible knowledge management (Holtzhausen, 1999, p. 25). Practitioners should instigate conflict to draw out diverse views but should steer clear of strategies that totalise systems or set up conditions for the *persuasion* model of public relations. As the persuasive model is a psychological approach to public relations, that is, it aims to control the decisions and thoughts of the subject, it would be heavily criticised by postmodernists.

4.2.4 Change, transformation and the role of public relations

Change, in postmodernist terms, is not something that is willed or designed, but is a process borne out of learning, understanding and knowing. This epistemology entails that an organisation should be brave enough to discard an idea if it is outdated or despite its usefulness in the past (Sherman & Schultz, 1998, p. 27). According to Chia (1995, p. 579), modernist thinking has a 'strong' ontology of being, whereas postmodernist thinking has 'weak' ontology, that is, one of consistently becoming, transforming or transient. Because organisations are in constant flux and are thus not representable in a cross-sectional point in time or state, it is suggested that instead of looking at organisational structures, attributes and outcomes, organisations should be studied in terms of interactions, relationships and complex changes. The ontological commitments and theoretical conceptualisations differ, and change is not considered abnormal, accidental, willed or malfunctioned.

Because of the fact that language constitutes our everyday life, transformation can only take place if current discourses are contested and dialogue is encouraged around social and political issues (Mickey, 1997, p. 272). Postmodern theorists argue that power is spread throughout systems in society and should be challenged thereby inherently causing transformation (Holtzhausen, 1999). In this sense, postmodern public relations should play an important role in empowering marginalised groups by empowering all stakeholders through participation.

Furthermore, it should create diversity and dialogue, and especially recognise differences and dissension between organisations and their publics. Postmodernists stress a strategic and holistic view of public relations and discourse; in other words, a critical approach ought to be promulgated to bring about change (Mickey, 1997, p. 2).

Holtzhausen (1999, p. 12) suggests that because meaning is always changing and new ways of understanding are constantly found, the context within which communication occurs should always be considered before there can be understanding. Meaning is socially constructed through interaction and relationships, thus changing society inevitably and continuously occur. In parallel, the struggle for power is also a changing force, constantly affecting all existing relationships. Holtzhausen suggests that the ethical public relations practitioner will serve as a change agent in postmodern organisations by criticising the decisions of dominant coalitions, striving for complete transparency, and creating participatory structures (Holtzhausen, 1999, p. 25; Chia, 1995, p. 580). The emphasis of postmodern public relations practice will lie in conflict management, management of new technologies, raising the level of discourse to a level of struggle, and managing relations with activist groups.

Postmodernist thinking thus justifies an ontology of change, emergence and transformation. The process of becoming in which the temporary and brief nature of 'truth' and reality is therein emphasised (Chia, 1995, p. 581). This ontology recognises that organisations are not mere units of analysis, physical objects or resources, but consist of complex relationships between the entities that make up an organisation. According to Cilliers (1998, p. 113), postmodernism has an implicit sensitivity to complexity theory as it acknowledges philosophical perspectives such as *self-organisation* and *connectionism*, which are crucial to complexity theory, and highly relevant to this thesis. *Complexity* theory will now be discussed from a postmodern perspective.

4.3 Complexity theory

The science of *complexity* is a multi-disciplinary study that has brought new insights into management and organisations. The worldview metaphors and

models offered by complexity theory provide new meanings for managers; in other words, a purposeful sense-making through interaction (Lissack & Gunz, 1999, p. 2).

Complexity refers to the fact that in a system "there are more possibilities than can be actualised" (Luhmann, 1985, p. 25). The distinction between 'complicated' and 'complex', according to Cilliers (1998, p. viii), is this: In a complicated system, the components (such as computers and jets) can be clearly identified; in a complex system, the interaction between the components of a system, and between system and the environment, are so intricate that it is impossible to completely understand the system simply by studying its components. Some examples of complex systems are societies, the brain, organisations and language (Laszlo & Laugel, 2000). A further important characteristic that makes these systems complex is that their relationships and interactions shift, change and transform, which make them even more difficult to study. As Cilliers (1998) points out,

> *A complex system is not constituted merely by the sum of its components, but also by the intricate relationships between these components (p. 2).*

It is not merely a linguistic occurrence, that is, in the way we describe systems that make them simple or complex, but complexity results because of the interactions between subsystems.

Organisations can be considered complex systems particularly when compared to a living system. The use of the word 'system' in this study does not relate to the use of the term as Stacey (2003) suggests. He relates a 'system' to a spatial notion of 'inside' and 'outside' with borders, hierarchical levels and rationalist causality. In this thesis 'system' implies a temporal notion of process based on paradoxical causality in perpetual transformation.

Within the framework of postmodernism, complex systems have the following characteristics pertinent to this study:

Table 4-1: Viewing organisations as complex systems

In complex systems in general	In organisations
Complex systems consist of a large number of elements	Organisations consist of varied elements in different dimensions
These elements all interact dynamically	All the different departments and levels interact constantly in order to reach the organisational goals
The levels of information sharing and interaction in complex systems are rich	All the different networks of organisations interact formally and informally on different level and with different abilities
The interactions are non-linear and asymmetric where small causes can have large effects, and there are power differences that feed this non-linearity	Organisations have many internal power levels and there is constant competition for resources
The interactions cluster together in networks because there are no controlling levels	Organisational information sharing is usually centred around groups that have to perform the same function and have shared goals and expectations
Feedback loops are interlinked in large networks, and information forces the system to constantly transform	Environmental scanning brings new information into the system, which forces it to adjust and transform
Complex systems are open systems that interact with the environment and other systems	Borders cannot be defined
These systems function under conditions far from equilibrium	Organisations that are stable and have no free flow of energy, that is, to force it to transform continuously and fight entropy, eventually ceases to exist
An effect of complexity is that individuals who function within complex systems will never fully understand and know everything about that system	CEO and management could never know everything there is to know about their organisation, therefore need all employees to share and manage information

Adapted from (Cilliers, 1998, p. 119; Lissack, 1999) and applied to organisations

According to Cilliers (1998, p. 10), the interaction of all the subsystems of a complex system, the role of the relationships formed, and the creation of information and knowledge through these interactions form the basis of the complexity approach. In order for a complex system to cope within a changing environment, it is necessary for it to be able to adapt quickly and store information for future use. With regard to representation, Cilliers (1998, p. 11) argues that the substructures of a system must have meaning, which is a result of a process that takes place in an open environment. Meaning is also not something that is

attributed to an element by itself, but is given only in the context of its relation to other elements. In societal terms, this would apply to people in any context, and would imply that a person or groups of people derive meaning from the relationships they have with other individuals or groups in their environment (Stacey, 2003). To the people of Africa, for instance, this principle is deeply ingrained in their culture and they very aptly refer to this concept as 'Ubuntu' (Boon, 1998, p. 31; Harrison, 2003). *Ubuntu* is described through the expression 'Motho ke Motho ka batho' (Sotho) or 'umntu ngumntu ngabanye', which means: *A person is only a person because of and through other people*. Boon (1998) alludes to Ubuntu as not being empirical, and says that it does not exist unless

> *there is interaction between people in a community. It manifests through the actions of people... One's humanity can, therefore, only be defined through interaction with others (p. 32).*

An organisation concept in Ubuntu terms is human interdependence and interconnectivity. This is a true example of complex systems.

Because systems function in complex environments, they must be able to adjust, and as Cilliers (1998, p. 12) argues, systems have to acquire mechanisms to adapt their internal structures to do this. These mechanisms are not centralised controls but rather complex structures that change the flexible relationships between elements of the system. This happens under the influence of the changing environment and the history of the system.

The following sections elaborate on two important characteristics of the postmodern theory of complexity that is pertinent to this study, namely, *self-organisation* and *connectionism*.

4.3.1 Connectionism in complexity theory

Cilliers (1998) posits that complex systems resemble linguistics and the brain's workings, and can be understood in terms of neural networks and artificial intelligence. This is an extension of Saussure's and Derrida's postmodern conceptualisation of complex systems, particularly in terms of the way relationships interact in time through their models of language as systems of differences. In this line of thinking, Cilliers (1998, p. 37) suggests that connectionist

networks are best characterised as "arising through large-scale, non-linear interaction". *Connectionism* is a method of information processing much like the way the brain works; that is, in the way that neurons are intricately interconnected via the synapses in the central nervous system. Information that is passed from one neuron to the next changes because of transfer characteristics of the synapses. Physical characteristics of the receiving neuron also influence the transfer. All these complex patterns of neural stimulation form the basis of the activities of the brain. Each neuron receives inputs from and provides outputs to other neurons. Weights are associated with connections between neurons, and determine the characteristics of the network. Values of weights have no specific meaning, but the patterns of the values in the system as a whole carry information. These patterns are complex and no abstract procedure can describe the process used by a system to solve problems. Complex patterns of relationships provide the solutions of any structure or system (Cilliers, 1998; Laszlo & Laugel, 2000; Stacey, 2003).

Before discussing the significance of connectionism in organisational and communication management, the next characteristic, namely, self-organisation, will now be discussed so that these concepts may be integrated logically.

4.3.2 Self-organisation in complexity theory

'Structure' relates to the internal device developed by a system to receive, encode, change and store information, while the system reacts to such information through some form of output. Cilliers (1998, p. 89) maintains that these internal devices can transform and evolve without the interference of any external creator or some centralised form of internal control. He further contends that a system will develop a self-organising process as a result of complex interaction between the environment, the current state of the system, and the history of the system. This self-organisation process refers to a "spontaneous emergence of order and structure" (Cilliers, 1998, p. 89), and is

> *a property of complex systems which enables them to develop or change internal structure spontaneously and adaptively in order to cope with, or manipulate, their environment (p. 90).*

Stacey (2003) adds to this and describes self-organisation as the process when evolution happens because of selection through dialectic forces of competition and co-operation. The overall behaviour of the system is thus paradoxical.

The characteristics of self-organisation may be understood by the analogy of a school of fish in a dam. That is, the condition of the school should be measured by the general size of the school, its well-being determined by the availability of food, the temperature of the water, the amount of oxygen and light, the season, and the like. These conditions change, and consequently, the size of the school varies and adjusts so that a good fit can be reached between the environment and the system. Out of experience, so to speak, the school will continue to adjust to changes in the conditions. No external force or agent determines how these adjustments are to be made; neither does each fish individually understand the total complexity of the system. The system of 'government' of the school emerges as a result of the interaction between the environment, past experiences (evolutionary processes) and current situation. Interaction between these constituents determines the internal structure and its progress. This system has a recognisable structure — it is able to adjust, and these adjustments do not take place on an individual level, because of the complex interaction between a large number of variables. By this analogy, all these variables are recognisable in organisations and society at large.

The attributes of self-organising systems are as follow (Cilliers, 1998, p. 90):

- The structure of a system is the result of interaction between the system and the environment, not of a predetermined design, plan or external conditions.
- A complex system can adapt in a flexible way to unpredictable changes in the environment.
- Self-organisation is not caused by linear processes of feedback or control but involves higher-order, non-linear processes.
- Self-organisation is a characteristic of the system as a whole, and happens independently of individual component inputs. Components only operate on local information and general principles. Thus the level of inspection of

a system will influence the level of understanding of the system or subsystem.

- Systems that self-organise increase in complexity as they learn from 'history'. The increased complexity leads to a reversal of entropy, which in turn causes a greater flow of information and energy into the system.

- A self-organising system always has some form of history—a complex system can remember and forget selectively.

- Because of the self-organisation process not being guided or regulated by pre-specified goals, one cannot talk about a 'function' of a system. A system's function can only be described in terms of the context within in which it exists.

- Self-organising systems cannot be reduced to simple levels or units because all the levels are intertwined.

There are certain preconditions for self-organisation to occur in any system and the following table is adapted from Cilliers's (1998, p. 94) characteristics of a self-organising system and then applied to organisational settings:

Table 4-2: Viewing organisations as self-organising systems

In self-organising systems in general	In organisations
The system must consist of a large number of small units that are undifferentiated and has no predefined structure.	An organisation consists of many small units that are sometimes undifferentiated; and the people involved cannot be defined homogeneously within any organisation.
The strengths of interconnections change because of local information only and the changes are often self-maintained, which cause the system to move away from the undifferentiated state that it is in.	The information created in an organisation because of interactions between parts of that system often has the effect of temporarily gaining more 'order' or structure.
Units of the system compete for limited resources, and limitations often cause the transformation of the system.	There is a constant competition for funds and resources, such as funding allocation between departments or the promotion of individuals.
Co-operation between units and association patterns and networks are also formed.	Departments have to work together to reach mutual objectives set.

In self-organising systems in general	In organisations
Interactions between units are non-linear. Small changes can cause large effects, and new structures evolve out of the relationships between older ones but not necessarily because of those interactions.	Small actions by managers could have major implications; for instance, strikes or low morale, leading to lower productivity. Team-driven project management could lead to new team member positions emerging; similarly, the formation of new patterns could cause new relationships and patterns, and these patterns are not necessarily linear combinations of the components.
Symmetry-breaking is a further precondition. Homogeneous systems will lead to too much symmetry inhibiting the growth and development of a system. Small fluctuations in the input of a system, as well as missing or incorrect connections lead to symmetry-breaking.	The diversity of employees in organisations indirectly leads to symmetry-breaking.
Entrainment implies that some patterns latch onto other patterns and start to become integrated into the larger pattern, which has a structure and order. This contributes to the formation of associations.	Structures emerge out of the communication between different groups as they work in teams and take on certain roles. Other team-based tasks can create different roles, so different patterns can emerge. As these patterns appear and reappear greater patterns start to emerge which creates structure and order.
Memory in a system should be stored in a disseminated fashion. This implies that complex concepts involve patterns of movement over numerous levels, which increases the strength of a system, and makes the association of different patterns an inbuilt feature of the system.	(In organisations information is communicated over various levels as knowledge is distributed, exchanged and created in many units throughout the system.

Because organisations characteristically resemble the preconditions for self-organisation in complex systems, it can be derived that self-organisation also occurs in organisations, and between organisations and its different stakeholders, in macro-societal systems. A number of philosophical issues about the self-organising ability of systems thus apply to organisations (Cilliers, 1998; Stacey, 2003).

4.3.2.1 The importance of relationships and patterns

Self-organisation provides the mechanisms by which complex systems can transform without the expected initial stages or transcendental interference (Cilliers, 1998). Complexity is created through the multiple interactions between subsystems and the environment. Any change in a system occurs because of the interaction between the modifications in the environment and the historical proceedings in the internal functioning of the organisation or system. These

changes cannot be caused by one single event. The contribution of postmodernist thought is evident. These thoughts include the ideas that attempts should be made to accommodate paradoxes and contradictions, and turn them into transforming and creative forces. The importance of relationships is emphasised where patterns (process of *becoming*) rather than essence (*being*) are sought (Stacey, 2003). One single principle cannot provide answers; rather that the process of transformation and change themselves create meaning and growth. A network of dependencies exist between an organisation and its neighbours in a business environment (Lissack & Gunz, 1999, p. 5). Interactions between these subsystems define the borders that are constantly in flux because of changes in the environment.

4.3.2.2 The role of history

All complex systems have to be considered within the historical context of that system (Cilliers, 1998, p. 107). Again it is important to remember that the system is not determined by its history but that past occurrences have an effect in the interacting with the present. It is the constant interplay of transforming characteristics of the environment and the system itself that constitutes the current state of the system.

4.3.2.3 Paradoxes: active versus passive, and stability versus prediction

A system both influences and is influenced by its environment; therefore, it is not merely a passive expression of the environment, but has an active role to play in changing the environment (Cilliers, 1998; Laszlo & Laugel, 2000). Changes are brought about because of a constant interplay between the active and passive, and between the external and internal forces. Changes do not occur because of one single intervention. If a single intervention has caused a change in a system's current state, the system will only stay stable as long as the environment is stable; it will not have the ability to adjust and change, and will eventually collapse. Unstable systems, from a traditional perspective, often refer to systems without order or causality. But unstable complex systems are not caused by single deterministic factors, but rather by an interaction of many factors, some of them illogical. As Cilliers (1998) explains,

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> *Complexity is not to be confused with randomness and chance, but cannot be described in first-order logical terms either... It is the interaction of complex constraints that produces interesting behaviour—behaviour that cannot be described as chance events or instabilities (p. 109).*

The fact that complex systems exist because of interactions of the passive and active further implies that a single observation of a system, captured in time, cannot provide a full understanding of the functioning of that system (Cilliers, 1998, p. 109). The complexities of the system created through the process of self-transformation and self-organisation will not be represented. These factors all make it very difficult to model or analyse complex systems. It is also difficult to predict behaviour in or of a complex system because no consistent or reliable rules can be found in any of the outputs throughout the history of the system (Stacey, 2003). This in turn means that the future cannot be predicted and strategies have to be modified constantly. Any rigidly controlled system will not be able to adjust to sudden changes in the environment, and the system will also waste resources when it tries to adjust to superficial changes. In order for a system to survive it has to be able to distinguish between strategic changes and superficial changes (Cilliers, 1998). This can only be achieved when the system is allowed to utilise its self-organising abilities effectively which, again, may only be achieved if the system has flexibility and openness.

Stacey (2003) views paradox as fundamental to organisational life and explains that paradox cannot be eliminated or resolved, but rather that paradox continuously transforms. Stacey specifically focuses on the paradox of control and unpredictability and says that management is a process of continuously rearranging the paradoxes in organisations and not attempting to control them.

4.3.2.4 Differences between chaos and complexity theories

Before discussing the implications of the emergent theoretical approaches, and assimilating the theoretical approaches and postmodern thinking, it is necessary to discuss chaos theory and its relevance to communication management. An important point to stress at this stage is that the chaos approach is sometimes described as different from the complexity approach because chaos is seen as a

state where no patterns can be made and details cannot be understood (Sherman & Schultz, 1998, p. 68). Complexity, on the other hand, postulates that systems have patterns and models if viewed from a distance and over time. It seems though, that this description of the differences is typical of the confusion between the two terms. According to Sherman and Schultz chaos is the one end of a continuum, and order the other, with complexity as the path in between these extremes. In their view chaos equates to total disorder and confusion, and as a state without pattern or comprehensible detail. However, as can be seen in the description of chaos theory perspective discussed in the next section, chaos systems only appear chaotic. They in fact display deterministic order and patterns when viewed from a distance (Murphy, 1996).

Another distinction is made by Cilliers (1998, p. 98) in that 'complexity' refers to a much broader category than 'chaos'. Complexity often refers to a state on the edge of chaos, between simple straightforwardness and utter wildness (Lissack & Gunz, 1999, p. 4).

Stacey (2003) has another view on the differences between chaos and complexity theories. According to him the self-organising systems in chaos theory cannot be transported from one attractor to another (the term 'strange attractor' will be explained in more detail in the next section). A self-organising chaos system will only change if some change is introduced from the environment. Complex adaptive systems however, have the capacity to move between attractors and also have the ability to evolve new attractors through the process of self-organisation. Complex systems display dynamics at the edge of chaos and diversity is amplified. The capacity to evolve into new life forms is a distinct characteristic of complex systems.

The chaos and complexity approaches described and followed by this study is similar to the 'complex responsive processes' which Stacey (2003) suggests as an alternative to the systems perspective to understand strategy and organisational change. The key concepts of this 'complex responsive processes' that Stacey supports are communication, relationships, and the processes (as apposed to systems) that support these.

For the purpose of this thesis, the similarities, not the differences, between chaos and complexity approaches will be highlighted, of which relationships, connectivity, communication processes and self-regulation are the most important shared characteristics.

4.4 Chaos theory and chaotic concepts

Chaos theory started out with the basic principles of the systems theory but has grown into what can be summarised, according to Overman (1996), as

> *the study of complex, dynamic systems that reveal patterns of order out of seemingly chaotic behaviours...the study of complex, deterministic, non-linear, dynamic systems...so complex and dynamic, in fact, as to appear chaotic (p. 487).*

Put another way, chaos is "the final state in a system's movement away from order" (Wheatley, 1994, p. 122). It can be understood as the state where a system can no longer sustain a stable pattern of behaviour because of an increasingly changing environment, and subsequently causes the system to reorganise itself to adjust to these changes (Dennard, 1996, p. 498). Chaos theory attempts to understand why systems seem to not function in linear, predictable and conventional ways; but when studied from a distance, display patterns and structures (Murphy, 1996, p. 96). It is a term that can be used to explain a number of both natural and artificial phenomena, such as weather patterns, stock prices, economies, traffic and even biological aspects such as heart arrhythmia (Overman, 1996, p. 487).

The term 'chaos' is actually a misnomer because, although it seems as if it implies total disorder and no traceable pattern, it is still deterministic and basically Newtonian in that it provides definite answers and methods (Overman, 1996; Stacey, 2003). Behind all the order and nonlinearity observed in chaos states lie order and patterns; and new relationships and structures emerge out of what seems to be incomprehensible and out of control. According to Wheatley (1994),

> *there is so much order that our attempts to separate out discrete moments create the appearance of disorder (p. 20).*

If we view chaotic systems over time and from a distance they always demonstrate inherent orderliness (Briggs & Peat, 1989, p. 14; Wheatley, 1994; Youngblood, 1997, p. 47). The chaos principles were derived from the 'positivistic' sciences, namely, physics, mathematics, biology and psychology and have also been applied to the administrative sciences and the management of organisations. Organisations can adapt, renew, maintain and grow through self-organisation brought about by chaos. The contribution of chaos theory to management lies in the appreciation of change, chaos and uncertainty, not in distrust and the need to control any disorder (Overman, 1996, p. 487). It also lies in the appreciation of the faith in the self-organising nature of chaos (Overman, 1996, p. 488; Dennard, 1996, p. 497). The interdependence of sub-systems, their natural co-operative nature and the wholeness of reality, are further contributions of the chaos theoretical approach to the management of organisations. The self-organising abilities of systems also contribute in the sense that they provide hope for management that individual actions can make a big difference (what is termed the *Butterfly effect*), and that there is order behind the chaos. Therefore, the perceptions of control and the need to predict make a shift to a much larger scale and order.

Chaos can be described as periods in an organisation when people are confused or overwhelmed and cannot make sense of anything. This happens when changes occur in organisations and people move from a state of comfort to something new. As Flower (1993) puts it, it is a time

> *When people move into such deep confusion that they let go of their present conceptions of how to solve a problem (p. 51).*

This state of confusion and falling apart is necessary for systems to create the capacity to reorganise themselves to be better adapted to the new environment. This self-ability to transform is not possible unless systems are willing to move into confusion, chaos, and change (Flower, 1993, p. 51).

4.4.1 Importance of interdependence, participation and relationships

A very important contribution of the chaos approach is the participatory approaches to change management. Traditionally the interpretation of data and information was done by management, which in turn led to filtering, subjectivity,

exclusivity and over-control. Wheatley (1994, p. 64) suggests a way out from the non-objective, chaotic and complex world of the new sciences in considering that there is interdependence between different subsystems in an organisation (as already implied by the extension of the systems theory to the postmodern and complexity theories). This interdependence suggests that all the subsystems should take part in the processes of the system. Participation could add to the richness of information, shared responsibility, more trust and transparency, and ultimately, to healthier relationships. This interdependency and participation in turn imply relationships, the sharing in decision-making, as well as in the dissemination and interpretation of information throughout the organisation.

The building of relationships is the key; and development and maintenance of these relationships are more important than the outcomes, players or objects themselves. Meaning is derived from relationships, not from the party in isolation. Because of the interdependency of systems with the environment, relationships actually give meaning to the entities; that is, meaning is not situated within the entities themselves (McDaniel, 1997; Stacey, 2003).

Youngblood (1997) defines a relationship as the

> *commitment of two or more people to supporting each other in the pursuit of a common goal (p. 247).*

He adds that relationships are not only relevant between people but also among all living systems. The key concepts here are *commitment*, *mutual support* and *common goal*. Grunig & Huang (2000, p. 43) further apply the concepts of *control mutuality*, which could include mutual support (joint acceptance of degrees of symmetry), *trust*, and *satisfaction* with the relationship through communication management.

Relationship building in organisations is an indicator of successful public relations and communication management (Grunig & Huang, 2000, p. 24). The natural flow and flexibility of living systems contribute to greater access to information, power and new technology and developments that renew (Youngblood, 1997, p. 71).

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4.4.2 Self-renewal and self-organisation from the chaos theory perspective

According to Jantsch (cited in Dennard, 1996) living systems have an ability to

> *continuously renew themselves and to regulate this process in such a way that the integrity of their structure in maintained (p. 497).*

While systems change there is nevertheless a recognisable holistic structure that maintains it. More importantly, this sense of maintenance does not entail separating the different subsystems that co-create environments and relationships.

Overman (1996, p. 488) illustrates the self-organising ability of systems with the example of a parking lot after a big game. At first the parking lot is quiet and 'balanced' or in equilibrium. Then suddenly, when the game is over, everybody tries to leave at once. So now the parking lot moves out of the state of being in equilibrium. As people move towards the exit simultaneously, amid all the chaos, people start to form lines, and although it is an unpredictable situation with a lot of frustration and uncertainty, drivers start to organise a system without the help of any traffic controller. This self-organisation eventually leads to fewer cars until the whole parking lot is empty.

In this line of thinking, chaos thus follows an inner logic. However, it is not a mechanistic order such that chaotic systems can be objectively observed and the laws and principles by which they run can be extracted (Murphy, 1996, p. 100). As Murphy (1996) points out, a chaotic system is

> *an unstable combination of randomness and plan, broken by flashpoints of change (p. 101).*

The mechanistic Newtonian view posits that a system in equilibrium maintains its stability by using entropy or negative feedback. Entropy, as Wheatley (1994) states, is

> *an inverse measure of a system's capacity for change. The more entropy there is, the less the system is capable of changing (p. 76).*

In this sense, the equivalent of negative feedback activities in management would be

> *planning, budgeting, measuring, performance reporting, analysing, and summarizing (Youngblood, 1997, p. 54).*

Positive feedback, on the other hand, would be when small disturbances prompt input that provide further inputs for more information, and which ultimately lead to more movement and new output. Initial uncertainties are amplified until they reach critical mass and escalate to total disorder (Youngblood, 1997, p. 37; Murphy, 1996, p. 97). But this positive feedback also means that some of the original information or patterns do remain or survive, so the system has continuity. Furthermore, the reinforcing loops lead to growth and advancement of the living system at a higher level or order. Which leads Youngblood (1997) to urge that management ought to use these disturbances by concentrating on the creative possibilities or lateral thinking naturally initiated by these situations, and by allowing the flexibility and "freedom of movement required to explore their potential" (Youngblood, 1997, p. 57).

Dissipative structures or self-renewing systems use their energy to recreate themselves and to change to new forms to deal with new information. They have the distinct characteristics of resilience and flexibility; ever changing rather than stable or in equilibrium (Wheatley, 1994, p. 92). According to Wheatley (1994), as this fluid nature of living systems matures, the system becomes

> *more efficient in the use of resources and better able to exist within its environment (p. 92).*

This is particularly important because the flexibility and flow of living systems are necessary for renewal, health, and growth. Flow, as Youngblood (1997) points out, is the

> *principle mechanism by which self-organising systems overcome energy and matter dissipation and renew themselves (p. 69).*

If a system is isolated and flow is stopped, it will disintegrate. It is by over-controlling that management often blocks the natural flow in organisations. The freedom of flow of "information, power, personnel, money, and technology" (Youngblood, 1997, p. 71) could free organisations and allow for creativity and growth.

4.4.3 Butterfly effect and bifurcations

Because chaotic systems are flexible and changing, sudden variations in a system can bring about points where the system may rearrange itself around its underlying structure (Murphy, 1996, p. 97). These points, called *bifurcations*, mark the many different directions a system may take in its evolution (Wheatley, 1994, p. 96). According to Briggs & Peat (1989, p. 143), bifurcation is the "place of branching or forking"; and the effect is comparable to the flapping of a butterfly's wings in one part of the world causing interactions in other parts of the world of such unpredictable amplitudes as the size of a tornado (Aula, 1999, p. 191). If these amplifications have reached a stage where they become completely unstable, or described in Wheatley's words, as "crossroads between death and transformation" (1994, p. 96), the bifurcation can open up futures that are totally unpredictable and exciting. The paradox between stability and instability, as well as that between predictability and unpredictability is apparent (Stacey, 2003). In this line of thinking, a person can change the course of an organisation by contributing in small ways, such as asking questions or making suggestions that have not previously been thought of. Tiny causes can lead to big effects. Hence illustrating once again the nonlinearity between cause and effect; therefore, small actions have potentially powerful effects when they are accumulated (Dennard, 1996; Stacey, 2003).

4.4.4 Strange attractors

A disordered system may be driven by what is called a 'strange attractor'. This is a deep structure within any system that is a natural order behind the disorder, and this order is established by an 'attractor' as it traces its path in a regular pattern (Evans, 1996, p. 492). According to Murphy (1996),

> *An attractor is an organising principle, an inherent shape or state of affairs to which a phenomenon will always tend to return as it evolves, no matter how random each singe moment may seem (p. 98).*

A system that appears to be totally out of control and unpredictable may have this underlying deep structure—its *attractor* (Murphy, 1996, p. 98). Most chaotic systems never go beyond certain boundaries because they are it is contained within 'shapes' held together by the *strange attractor* (Wheatley, 1994, p. 21). Briggs &

Peat (1989, p. 73) refer to systems being constantly pulled apart and iterated towards change, transformation and disintegration, while at the same time, some magnetic powers drawing these systems into order and shapes so that

> *...eventually all orderly systems will feel the wild, seductive pull of the strange chaotic attractor (p. 77).*

Some authors describe organisational culture as the strange attractor that keeps organisation from oscillating into total chaos and disintegration (Murphy, 1996, p. 98). Others describe it as purpose and information. Wheatley (1994, p. 134), in particular, describes organisations that have been in total chaos because of reorganisation and buyouts, and yet there are employees who create meaning for themselves and carry on working productively. As Wheatley (1994) observes,

> *Employees were wise enough to sense that personal meaning-making was their only route out of chaos (p. 135).*

If the often quoted function of communication, that is, communication is "the process of creating meaning" (Spicer, 1997, p. 188; White & Dozier, 1992, p. 99) is taken into consideration, the potentiality of communication management as being a *strange attractor* in organisations is irresistible and powerful.

4.4.5 Non-linearity, scale and holism

Systems are interdependent and all levels combine to form a 'big picture' (Youngblood, 1997, p. 47). All the actions and reactions created by changes in a system should be considered in their entirety rather than in parts. Small changes in chaotic systems can lead to amplified effects that are unpredictable. That is, even though the process of the growth and changes in a system are non-linear, when viewed from a distance and over time, patterns and cycles can be observed. One single event at one given point in time presents only a limited view. The scale from which chaotic systems should be viewed to see the order is what distinguishes the science of chaos from traditional Newtonian science.

In Newtonian science, Newtonian universal laws apply whether something is observed at the micro or macro level (Murphy, 1996, p. 97). Chaos theorists insist that significant differences can be observed in the structure and dimensions of a

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phenomenon depending on the point of view taken and the measuring instruments used. The scale of observation thus makes a difference in seeing an order out of what seems to be out of control and chaotic.

4.4.6 Fragmentation and interdependence

When observing a system holistically, an observer may have an opportunity to identify relationships between forms at various scales, and patterns at various degrees of magnification and complexity (Murphy, 1996, p. 100). Each pattern takes on something from the one that precedes it, and thus builds a history that can be traced over time. These patterns are all interdependent such that changes in the one affect the other. In seeing particles as a set of relationships and interactions is, according to many quantum physicists "all there is to reality" (Wheatley, 1994, p. 32). The differences between entities in different relationships make for a fluid and flexible system but also makes prediction and identification of boundaries impossible (Wheatley, 1994, p. 34).

An important affirmation of chaos theory is, as stated by Fitzgerald (1996),

> *that the stronger the connections between the diversity of elements comprising a system, the more capable the system will be of sustaining itself when far-from-equilibrium (p. 29).*

Similarly, Flower (1993) observes that because of the interdependence of systems and the connections that form between entities, borders are therefore broken down, so

> *The universe is energy fields coming into relationship with one another, forming something temporarily (p. 53.)*

Networks of information fill spaces and give rise to bifurcations which in turn form new systems and networks (Briggs & Peat, 1989, p. 178). A system that has to exist amid constant environmental changes, and other growing networks, eventually become a 'borderless' aggregate.

In this manner of thinking, when Kiel (cited in Evans, 1996, p. 491) adopts the principles of chaos theory to organisational management, he contends that an organisation's boundaries become blurred and that external factors and

stakeholders, such as citizens and the government, define the parameters of dynamics and change over time. The structures of this system constantly change and give rise to instability; however, this instability is necessary to enable systems to respond to the demands of the environment. Processes should support the organisation's ability to renew, develop and change, or as Evans (1996) puts it,

> *The way work is organised, the attitudes employees hold, and the technologies they use all serve to create the boundaries of performance boundaries which emerge through dialogue and process (p. 492).*

Here lies another big paradox of chaos theory. Openness to the environment leads to a greater sense of identity because of the self-organising ability of open systems. According to Wheatley (1994),

> *High levels of autonomy and identity result from staying open to information from the outside (p. 92).*

That is, the processes of exchange and interaction ironically lead to greater freedom from influences from the environment. If an organisation builds on its core competencies, it can adjust and respond much faster to new opportunities. At the same time, it remains sensitive to the changing markets, consumer needs, and threats from other groups (Wheatley, 1994, p. 93; Marlow & O'Connor Wilson, 1997, p. 43; Graetz et al., 2002, p. 79).

Self-renewing dynamics can account for the boundary-spanning nature of development (Dennard, 1996, p. 496; Wheatley, 1994, p. 29). Democracy, therefore, is maintained through the building of stable relationships with consumers, citizens and all affected parties of the organisation. This is a feature of "co-evaluation" that Dennard (1996) speaks of,

> *Co-evolution is how living systems co-create environments and relationships that sustain and accommodate everything within that environment (p. 497).*

Therefore, the ability to change an organisation lies in the challenges of relationship management, and not in changing the structures or functions of individuals (Fitzgerald, 1996, p. 31). Communication will strengthen these connections between entities of an organisation.

4.4.7 Diversity and creativity

Diversity refers to differences in terms of approaches to thinking, creativity, problem-solving, and areas of specialisation, as well as traditional differences such as race, gender and religion. The dynamics of networks and relationships form their own source of control in learning and changing systems. Over-control inhibits the creative development of an organisation but an unstable, loosely controlled organisation relies more on process than on structure (Evans, 1996, p. 492). Process implies the flattening of hierarchical structures, improving information flow and the participation of stakeholders (such as employees). Kiel (cited in Evans, 1996, p. 492) suggests that loosely bounded instability is essential in order to create relationships that can respond to changes in the environment. To go one step further, management should foster instability, such that it may open the door to diversity and creativity.

Although creativity leads to higher orders of existence and complexity, it is often the case that the opportunity for creativity follows much destruction and ending of the old ways (Youngblood, 1997, p. 56). This is an aspect of creativity that makes change difficult for organisations. According to Youngblood (1997, p. 59), there are three ingredients to creativity: "information, diversity and interactions". A creative process in an organisation leads to cross-fertilisation of a wide variety of information between diverse entities. The more information, diversity and interaction there are, the more unstable the system becomes; however, it is at the edge of this chaos that the growth and creativity will occur. It is at the edge of chaos, that is, at that complex point just before a system falls into disintegration, that a system has the greatest potential for change, growth, development and creativity (Youngblood, 1997, p. 28; Wheatley, 1994, p. 123; Briggs & Peat, 1989, p. 150).

4.5 Similarities between postmodernism, chaos and complexity theories

Chaos and complexity theories are both postmodern approaches. Some of the similarities between them are as follow (Cilliers, 1998; Stacey et al., 2000; Sherman & Schultz, 1998):

Table 4-3: Similarities between postmodernism, chaos and complexity theories

	Post-modernism	Chaos & Complexity theories
View of the organisation is organic and flexible	Organisations are viewed as organisms submitting to natural laws of evolution (Sherman & Schultz, 1998, p. 27)	Organisations are systems of environmental interpretations, where reality is constantly being reconstructed (Lissack, 1999, p. 11)
Structure and linearity is considered impossible because of the unpredictability of the environment	Postmodernism is against the structuring and over-theorizing of the basic philosophical concepts in the field (Holtzhausen, 1999)	Non-linearity is the basis of complexity theory; systems have periods of dramatic structural and behavioural changes where relationships between variables of the system may change (Lissack & Gunz, 1999, p. 3)
Diversity is a common feature, and conformity is criticised	In order to create meaning it is necessary for systems to be diverse, and not structured, because diversity creates rich information (Holtzhausen, 1999)	Diversity is a necessary and important component of the chaos and complexity view of change (Stacey, 2003)
Change and transformation is inevitable and uncontrollable	Power that spreads throughout systems in society should be challenged, thereby instigating transformation (Holtzhausen, 1999).	Cybernetic control is impossible in complex environments. Organisations are processes of interaction and are thus forever emerging (Stacey, 2003)
Relationships are essential and the crux of all interactions	Exchange is more important than the contents of messages (Mickey, 1997, p. 2)	Organisations are processes of communication, power relations and creativity . "It is the quality of relationships that determine whether an organisation had the internal capacity for creativity" (Stacey, 2003, p.383)
Conflict is natural and necessary, promoting growth and creativity	Knowledge is created by debating points of view (Mickey, 1997, p. 2)	Misunderstandings are essential aspects of transformative processes (Stacey, 2003)
Perspectives, ideas and views are contradictory and irrational	Juxtapositions, paradoxes and contradictions abound (Cova, 1996, p. 16)	Behaviour displays paradoxical dynamics of stability and instability at the same time – dynamics implying living with the ambiguity and anxiety created by the paradox (Stacey, 2003)
Theory is always temporary, and metanarratives designate the subject of authoritarian systems	"The role of the philosopher/scientist is to continuously cut free from metanarratives that have been transmitted through the rules, practices and norms of modernist institutions" (Holtzhausen, 1999, p. 14).	Whenever a small group in power forces people to share the same culture, or follow the same rules, they are in actual fact trying to manipulate and control (Stacey, 2003)

	Post-modernism	Chaos & Complexity theories
Power is never equal and has to be contested	Power is decentralised and pluralised (Holtzhausen, 1999, p. 17)	Systems should be emancipated and people should be able to transform the systems created by authority (Stacey, 2003)
Ethics should not be dictated by dominant system	Personal desire should be channelled through free choice and aesthetics, rather than through morals, rules and regulations (Holtzhausen, 1999, p. 17)	Leaders emerge because of mutual recognition and ethics are negotiated in interaction between people, not defined by leaders (Stacey, 2003)
Knowledge is a process of learning, and is not linear but borne out of discourse and debate	Knowledge is borne out of discourse and debate (Littlejohn, 1992, p. 32)	"Knowledge is not a thing but a process of making meaning, where meaning is continuously reproduced and potentially transformed in the action of communicative relating between human bodies" (Stacey, 2003, p.405)

According to Cilliers (1998) postmodernism has an implicit sensitivity to complexity, and acknowledges the importance of philosophical perspectives such as self-organisation and connectionism, which are important factors influencing the way chaos and complexity theories are approached. These approaches all accentuate the importance of interaction, relationships and self-regulation. These concepts will be explored further in the discussion of communication management and relationships.

The implications of the process or self-organisation upon organisational ethics directly affect public relations. While Hall (1963) describes ethics as "morality and character and the discovery of the nature of good", Cilliers (1998, p. 111) suggests that it is not merely a 'nicety' to have values in a system, but that they are essential for the survival and growth of a system. A flexible system increases its survival by decentralising control and self-organises in order to adjust to changes in the environment. So how does the concern for ethical behaviour come into this picture if it is not a question of 'good' or 'bad' but a strategy to decrease entropy? After all, it is reasonable to speculate teleologically that the consequences of unethical behaviour of a system might ultimately lead to its collapse. From a public relations perspective, ethical behaviour is advocating the building and maintaining of healthy relationships within and outside organisations, and ultimately working towards harmony in society (Seib & Fitzpatrick, 1995, p. 1).

4.6 Summary

Postmodern theorists believe that the differences between philosophies and paradigms ought to be broken down because they are all relative, transcendental, cross-sectional and ever-changing (Holtzhausen, 1995, p. 15). In this sense, barriers between different domains and disciplines should be brought down, starting from marketing, informatics, social psychology, strategic management, information technology, interpersonal communication, because their contribution to the development of relationship management are extremely valuable.

Stacey (2003) warns that many theorist who apply chaos and complexity theories do it from a systematic and cognitivist psychological perspective, and in doing so they lose the valuable insights that these two perspectives may offer. He argues that many theorists apply these approaches from a static systems thinking paradigm embedded in cybernetics. Within this paradigm organisations are approached from the perspective of powerful autonomous individuals who become external observers during change. System theorists apply the mathematical and modelling techniques derived from the natural sciences. These techniques enable forecasting models and provide simple rules, taken from living systems in nature, to conform and submit to harmonious wholes. Stacey argues that such approaches alienate people because they feel that they are part of a larger whole and that they have no influence on outcomes. They do not take responsibilities for their actions. When a small group of powerful people claim to predict the outcomes of behaviour in an organisation, they are actually trying to manipulate and control. According to Stacey organisations are not living systems, but rather, they are processes of communication and joint action. Stacey thus suggests that organisations are instead complex responsive processes of relating.

New approaches to management and change emphasise interrelationships of subsystems and stress the importance of defining patterns of interactions and dialogue. Another common denominator is the use of scenarios, that is, selecting different courses, introducing changes and then criticising them again. This process ensures that changes in the organisation are constantly monitored in parallel with changes in the environment.

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All these emergent approaches discussed in this chapter are not deterministic and do not provide simple plans and answers for change efforts. Conflicts may be generated through discourse, but resolutions may also be found through the interactions of the elements of complex systems. A free flow of information is suggested as an approach to dealing with change. In other words, emphasise relationship management and symmetrical communication for resolving conflicts; empower people to engage in appropriate activities for a quick response to changes; cultivate diversity in all roles for a more accurate perception; encourage a participatory approach in order to promote internal interaction, commitment and direction. These characteristics bind the emergent approaches to change management and produce a new way of dealing with transformation.

In the following chapter the concepts of relationships and relationship management will be explored in depth as it has shown to be an important characteristic of the emergent approaches to change.