Conceptualizing complex meaning systems: The case of management fads

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Statement of original authorship

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

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Abstract

Conceptualizing complex meaning systems: The case of management fads

The thesis is an attempt to apply complex systems thinking to the problem of meaning. It is in two parts. Part 1, Chapter 1 introduces the research agenda and overviews the thesis. Chapter 2 establishes the value of adopting a systems approach to the problem of meaning. The next chapter introduces key concepts of complex systems theory as they apply to sociocultural phenomena, and the last chapter in Part 1 reviews three theories of complex meaning systems (Donald Campbell, Jay Lemke, and Paul Cilliers) from which a preliminary model and agenda for theorising complex meaning systems is proposed. Part 2 of the thesis investigates the phenomena of management fads, applying the models of complex meaning systems formulated in Part 1. No primary empirical work is attempted; rather an analytical engagement is conducted using secondary literature on what we know about such fads. The literature, both primary and secondary, is reviewed and critiqued. The final chapters exemplify the problem of meaning using the theory building and agenda setting from Part 1. The concluding chapter reflects on the adequacy of a complex systems approach to meaning, critiques the process of the thesis and comments upon its contribution.

Chapter 1: The Field of Study and Introduction to the Problem

1.1   Overview of the research

This thesis investigates whether concepts from systems theory, particularly complex systems, can be fruitfully applied to the problem of meaning. To this end, it theorises the term "meaning system" and then attempts to exemplify the phenomenon of management fads in this context. It must be emphasised however that no primary empirical work is attempted; rather an analytical engagement is conducted using secondary literature on what we know about such fads. In this way, applying the term "meaning system" acts as a kind of thought experiment, a technique for controlled speculation about the existence of the social phenomenon we call management fads.

In this thesis, the term meaning system can be read in two ways. Firstly, the term is a generic way to describe a range of sociocultural phenomena that operate as interpretive frameworks (for example, superstitions, cultural codes, subcultures, religions or theoretical systems). Meaning systems are collective schema that stabilise and reify cultural phenomena from the position of the observer. The following examples help illustrate meaning systems. The list is not intended to be exhaustive, nor fully represent all the categories of meaning systems.

- extreme movements (as a manifestation of the ideology, e.g., racism, white supremacy, eugenics)
- religious movements (as a manifestation of the ideology, e.g., fundamentalism, mainstream religions, religious sects)
- sociopolitical ideologies (e.g., oligarchy, monarchy, democracy, 'western' society, feminism, bohemianism, environmentalism, nationalism, patriotism, gay rights, anarchy, socialism, liberalism, civil rights)
- sociocultural ideologies (e.g., values, superstitions, social norms, 'polite' behaviour, definition and relevance of 'art', success, failure, exclusion)

- sociocultural 'constructs' (e.g., education, the health system, social welfare, 'the nuclear family', urban planning, globalization)
- subcultures – (e.g., rappers, goths, teddy boys, punks, sloanes, skaties, emos)
- fads (e.g., fads and fashions, 'new age', 'netiquette', superstitions, corporate fads, diets and nutrition)

Of course, the term meaning system is a theoretical construct and, since it derives from systems theory, has specific formal conceptual components. This is the second way the term may be used. It is important to note that all meaning systems are examples of sociocultural phenomena, but not all sociocultural phenomena are necessarily meaning systems, but have the potential to become so. In addition, not all theories are meaning systems; for example, some mathematical and purely scientific theories do not usually require the interpretation of beliefs and values for them to be proven.

Using the idea of meaning systems to explain sociocultural phenomena requires an understanding, not only of how the outward appearances of particular phenomenon are experienced, but also, for example, how the values and beliefs that cause the phenomenon to exist in the first place form part of that explanation. Many questions can be asked about the dominant values underpinning the sociocultural phenomena and how these values are legitimated. But how might one begin to organise these questions into a cogent framework?

Research methodologies underpinned by a reductionist approach have long been considered the most suitable and intellectually acceptable method for analysis. Such analysis requires reducing sociocultural phenomena to explicable elements and then engaging methodological/empirical tools from various disciplines and theories to interrogate the most observable, and therefore measurable, elements. Of course, this thinking continues through many accepted contemporary research methodologies and intellectual disciplines. But reducing elements of our sociocultural system to only what we can see or comprehend limits the field of critical analysis.

The alternative is to take an holistic stance as this thesis does, or a systems theory approach. How can what is largely seen as a scientific discipline be engaged to interrogate the problem of meaning? Holistic interpretations of social (and physical) phenomena form part of every sociocultural tradition, it is

only in the last few centuries they were interrupted by more reductionist approaches. Meaning and knowledge as an interconnected 'web of beliefs' rests on long philosophical traditions, yet we tend to downplay the significance of relationship, marshalling our energies to instead focus on the components, because they are observable, and therefore measurable.

The transdisciplinary approach offered by a systems analysis also emphasises the nonlinearity and unpredictability of human sociocultural systems, and highlights the intrinsic order and interdependence of the patterns that serve to connect elements of the system. Ideas from complex systems thinking, it will be argued, can offer holistic explanations for the seemingly unconnected serendipitous events that serve to shape and mould the construction of social meaning.

Although engaging reductionist methodologies will always leave out (sometimes crucial) elements of the meaning system, to attempt to conceptualise an entire system itself may also be unrealistic. Because the idea of meaning systems has the potential to be all-inclusive, limitations to the analysis is required. One of these limits is the position of the observer. Another might be timescales – to the extent that they capture contemporary belief systems and values in a single moment of time. Yet another is agreed definitions within ideational paradigms. Underpinning all this of course is language and its socially constructed array of symbols and metaphor that have evolved over time to capture and document what is essentially the 'prevailing common sense' of a sociocultural system (Lemke, 1995).

The way this thesis engages the term 'prevailing common sense' should be explained here. The term common sense suggests a social dimension. It suggests there is an accepted way of understanding and behaving. Meaning systems that make up the prevailing common sense are usually conventional, accepted and often dominated by those in positions of influence. The justification and rationalisation that takes place to establish what meaning systems are accepted in any sociocultural system are usually so entrenched that it is sometimes hard to separate what stands for common sense and what stands for critique of it. Lemke (1997) discusses meaning systems or meaning making as a social practice in a community:

> It is a kind of doing that is done in ways that are characteristic of a community, not as a collection of interacting individuals, but as a system of interdependent social practices: a system of doings, rather than a system of

doers. These social meaning-making practices are also material processes that bind the community together as a physical ecosystem. In this kind of discourse about meaning we are led to examine the social functions and effects of the meanings we make: the politics of our texts (pp 9-10).

Setting limits to the analysis of meaning systems at one level could involve an analysis of various levels; identifying components, finding the linkages, and then modelling the terrain, all of which involve some element of evaluating, quantifying and measuring. It will be argued, however, that an empirical approach is not something easily applied to the interrogation of meaning systems. Put simply, it is easier to theorise a meaning system than it is to measure it.

A range of approaches has been applied to conceptualising meaning both as a 'discipline' and as a philosophy. (Second order) cyberneticians such as Klaus Krippendorf (1993, 1994), Francis Heylighen (1996, 1995, 1991, 1989) and Stuart Umpelby (1997, 1992) have taken more empirical approaches to determining meaning from acts of communication. Yet other conceptualisations of meaning involve the study of language and representation. Human meaning systems involve more than the study of linguistics, of societies and of history. In fact, the postmodern method of deconstruction is an attempt to unravel the textual contexts in which words and language are used. We could recall here the "… Chomskian argument against the possibility of a semantic level in linguistics rests on what he sees as the impossibility of separating purely linguistic knowledge from knowledge of the world" (McEvoy, 2003, p.6). However we frame it, the meaning of a sentence, communication exchange, sign or symbol is generated from the relationship between a semantic level, cultural context and individual intuitiveness. It is relevant that the scope of Berger and Luckmann's (1966) fourth level legitimation phase (incipient, theoretical and explicit being the first three) looks at whole-system concepts, the universe, or "matrix of all socially objectivated and subjectively real meanings, the entire historic society and the entire biography of the individual are seen as events taking place within this universe" (p. 114). Also their observations about socialization are important here, "Since socialization is never complete and the contents it internalizes face continuing threats to their subjective reality, every viable society must develop procedures of reality-maintenance to safeguard a measure of symmetry between objective and subjective reality" (Berger &

Luckmann, 1966, p. 147). This can serve to ground the knowledge of a society, for example in common sense, rather than just ideas or theory.

Consequently, given this vast theoretical tapestry, limits must be applied to the current analysis, for theories of everything fast become theories about nothing (Wilson, 2004). Using the concept of complex meaning systems, we can draw upon a range of disciplines and theories that take their relevance from the position of the observer thus applying comprehensible limits to the analysis. In essence, applying systems thinking to meaning sees it being dealt with as a cyclical or dynamic process, rather than in static reductionist terms.

1.2   Viewing social systems through the lens of complex systems

Research into the uncertainty and unpredictability of human social systems has recently turned to complex systems theory – not because of the inexplicable nature of human behaviour, but because the application of such theories offers explanations for patterning in social systems. This is especially important because such patterns were previously believed to be only random or inexplicable. Once patterns are observed, new insights into the way systems react and interact can be discovered. Many theorists (among them Emery, 1993, 1981; Kauffman, 1993, 1995; Wolfram, 2002; Stacey, 1996, 2000; Capra, 1996, 1989; Wheatley, 1994; Dawkins, 1989, 1986; Waldrop, 1992; Gleick, 1988; Axelrod, 1984; Bertalanffy, 1969; Lemke, 1990, 1995; and von Foerster 1981, 1996) have applied systems theory to disciplines such as biology, physics and economics, because it offers explanations about complex patterns of behaviour and change and proposes some predictability about future states.

Concepts of 'chaos', 'complexity' and the suite of theories from this 'new kind of science' are dynamic and work with visual patterns and with the numerical algorithms that explain these patterns (Wolfram, 2000). Wolfram (2000) suggests that "one of the most striking features of the natural world is that across a vast range of physical, biological and other systems we are continually confronted with what seems to be immense complexity" (pp. 1-2). Yet, as Wolfram discovers through painstaking mathematical modelling of cellular automata, many simple programs produce great complexity through vast almost incalculable iterations. Moreover, the same basic forms of behaviour occur over and over again, almost independent of underlying details, suggesting that

there are "quite universal principles that determine overall behaviour and that can be expected to apply not only to simple programs, but also to systems throughout the natural world and elsewhere" (Wolfram, 2000, p. 4). This of course gives rise to an important dichotomy, faced at one time or another by many thinkers who have traversed the field of social behaviour: is our 'reality' only defined by our experience, or does it depend on other more complex patterns of relationships, universals, or forms? It must again be emphasised that the systems approach distinguishes itself from the more traditional analytic approaches (for example, behaviourism) by highlighting the interactions and connectedness of the different components of a system. Although the systems approach in principle considers all types of systems, it in practice focuses on the more complex, adaptive, self-regulating systems that we might call 'cybernetic' (Heylighen, 1999). Hence, the discussion in this thesis will focus on the relevant theories that have emerged from such systems inquiry. The suite of systems theories discussed will be channelled towards theorising the idea of 'complex meaning systems'. Chapters 4 and 7 discuss the essential ideas from complex systems theory that are relevant to this thesis, and applies them to an explanation of management fads.

According to the systems view, the essential properties of an organism or a living *system* are properties of the whole which none of the parts have on its own. They arise from the interactions and relationships among the parts. These properties are destroyed when the system is dissected, either physically or theoretically, into isolated elements. Although we can discern individual parts in any system, these parts are not isolated, and the nature of the whole is always different from the mere sum of the parts. Hence, the basic premise of systems theory becomes that, despite the complexity of the world we experience, explanations can be found by discovering universal concepts and principles that might describe the behaviour of other systems (Heylighen, 1999; Capra, 1996; Kauffman, 1995; Waldrop, 1992). The oft quoted example - dissecting an ant does not tell us very much about the behaviour of an ant colony - provides a simple, yet vivid mental image of this theory.

Such reasoning is also to be found in the foundational material of general systems theory and in later work where writers (for example Nicklas Luhmann, 1995; Michael Lissack, 2000; Ralph Stacey, 1994, 1996; Stephen Guastello, 1995; Margaret Wheatley, 1994; and others) invoke notions of languaging, holons,

and sensating – innovative ways of mapping patterns of connection – to explain human and organisational behaviour. We can also trace links back to the romantic view of nature, which Goethe (1749-1832) describes as "one great harmonious whole" and which led scientists of that period to extend their search for wholeness to the entire planet and see the earth as an integrated, subtly balanced life support system.

Since these organising relations are patterns of relationships immanent in the physical structure of the organism, organismic biologists assert that no separate, non-physical entity is required for the understanding of life. This has echoes in Aristotle's notion of entelechy 'life-force', Plato's Forms, Kant's 'reasoning', and Hume's 'causality'. The key point is that the understandings that come from 'relationships' are much more than the substance or matter of those systems. Put simply, there exists a dichotomy between matter (substance) and form (pattern). I will elaborate on these principles in Chapter 3, where the significance of systems theories for sociocultural phenomena is examined. Suffice to add at this point that the relevance of these ideas will become clearer as the nature of systems is explored. In other words, matter and substance corresponds to what *we* experience, our tangible knowledge of the world; form and pattern are the things that serve to shape the experience, social or collective meaning. This thesis can broadly be seen as an enquiry into the 'patterns' of meaning making using complex systems theory as the guide.

1.3   Seminal theorists working within the nexus of sociocultural systems and complex systems theory

The theories of Donald T. Campbell (1987, 1974), Jay Lemke (1995, 1992, 2000) and Paul Cilliers (2001, 1998) have influenced the direction of the research in this thesis. This is because they offer significant inroads in the application of complex system theory to sociocultural phenomena. Their ideas, and how they have contributed to the complex meaning systems field, will be elaborated upon more fully in Chapter 4 and used throughout this thesis. For this reason they are briefly outlined here.

1.3.1 Donald T. Campbell's concept of evolutionary epistemology

Evolutionary epistemology sees knowledge as a product of the variation of natural selection processes that characterise evolution. The primary function of knowledge under this theory is to enable the survival and reproduction of the organism that needs the knowledge. This theory has its roots in traditional evolutionary theory where an organisms' better knowledge of the environment is assumed to correlate with better survival within that environment. Thus, evolutionary epistemology also applies to 'ideas' or pieces of potential knowledge. When we apply it to epistemological frameworks, we find variation in the generation of hypotheses because of ontological influences about what is valued, and the weeding out of those hypotheses that turn out to be inadequate (selection) (Heylighen, 1997).

Campbell was interested in the quality and appropriate use of specific operational measures, in particular how to measure reliability and validity of knowledge. His focus on experiments and quasi-experiments aims at the heart of philosophers' concerns about avoiding explanations and theories based upon what might be accidental regularities. Campbell was also concerned about the tension between the goal of objectivity in science and the individual interpretations of scientists and the social construction of knowledge by scientific communities (after Thomas Kuhn). Finally, he studied the root problem of philosophy: how to know which theories are more or less truthful and how sciences systematically move toward theories that are more truthful, winnowing out those which do not add to scientific endeavour.

1.3.2 Jay Lemke's notion of ecosocial systems

Inspired by Bakhtin's (1986) social linguistics and Halliday's (1978) functional semantics, Jay Lemke's notion of ecosocial systems unites the fields of complex systems and sociocultural systems in a kind of unified theory. Lemke (1993) sees that social semiotics is integral to our understanding of how our social world is constructed because it enables us:

> … to make meaningful actions (including utterances) by deploying these resources in recognizable, mostly habitual (and marginally creative) ways. The habitual ways in which we deploy them are identifiable as semiotic formations: the regular and repeatable, recognizably meaningful, culturally and historically

specific patterns of co-deployment of semiotic resources in a community. (para. 9)

Although Lemke's ideas do not necessarily offer anything new about complex systems, where Lemke's thinking diverges is at the point of exchange between the material processes and the semiotic processes. In so doing, Lemke effectively throws a net around this nexus, and captures patterns of connection not well-traversed in the literature of complex systems. His ideas are at the cutting edge of understanding how semiotic processes may be described using approaches from systems theory, observing that such things as cultural domination are representational of other forces within the system controlled by the sociocultural milieu.

Although Lemke believes the unity of ecosocial systems is somewhat hidden from view by our failure to appreciate the pervasiveness of the material-semiotic coupling, often it is circumstance that impedes our understanding of material processes in our sociocultural system. This means we can collectively indict entire social groupings, cultures, and eras for failing to address biases. (Although Lemke (1997) rightly points out that our own culture carries ideological biases of a dominant class whose interests favour a view of the world as indefinitely exploitable materially and infinitely flexible culturally.) Finally, Lemke (1997) raises the problems of predictability, control, and responsibility within ecosocial systems. Lemke's description of the capacity for human social systems to be predictable and controlled is worthy of further elaboration, and is highly relevant to the conclusions in this thesis.

1.3.3   Paul Cilliers' theory of representation

According to Cilliers (1998), a theory of representation is essentially a theory of meaning. Representation attempts to explain how the words of our language or the structures in our brain become meaningful. This means, of course, that such a theory must be cognisant of the individual and embrace the unique ways in which we process information we see and attribute it to the language we understand. Thus representation can be something mechanical and simple like a mathematical formula, which has elements/concepts that stand for something in the formula. Or theoretically, representation can model, on an individual or mass scale, how collective agreement is reached about certain social meanings.

However, according to Cilliers (1998) when we come to model or try to capture such things as natural language or human sensory capabilities or human emotions, the simulation of higher and complex cognitive processes is not possible, even using the most advanced computers. This is because the process of representation is incapable of being formularised. How do we represent (or model) such things as the meaning of a particular word, or cultural artefact, or behaviour? More pertinently, do certain words mean different things to different individuals? How can we begin to understand this, and how might this be precisely modelled? Can pattern-recognition and approximation be modelled successfully? As Cilliers (1998) points out, before any of this can be attempted, it is necessary to explain the processes by which the relationships between symbols and the world are established (p. 59). Are rule-based representations and network representations capable of being analysed together? When we search for a more empirical flavour to our research, such questions are a good starting point, but the adequacy of logarithms and even cellular automata does not seem to fit well with understanding some of the more complex notions of human systems. Such notions form part of a long tradition of philosophical reflection on the relationships between language, meaning and the human condition. The core proposition of this thesis is that one way to progress this theoretical maze is through the concept of complex meaning systems.

1.4   Complex Meaning Systems

To illustrate the idea of 'complex meaning systems' this thesis develops a six-phase model (Figure 1.1). This model is described in Chapter 4 and theoretically 'tested' in Chapter 7 through its application to the explanation of management fads. For the purposes of introducing this concept, we will here simply state the terms of the theory and leave the discussion for later chapters. It is also useful to signpost at this point that the six components introduced in this figure as a way of describing and analysing complex meaning systems are instrumental in the development of the discussion.

Emerging
uncertainty

6

Chaos

1

Complexity

2

**Complex
Meaning
Systems**

5

Diffusion and
acceptance

4

Situational or
contextual
reality

3

Contingent
complexity
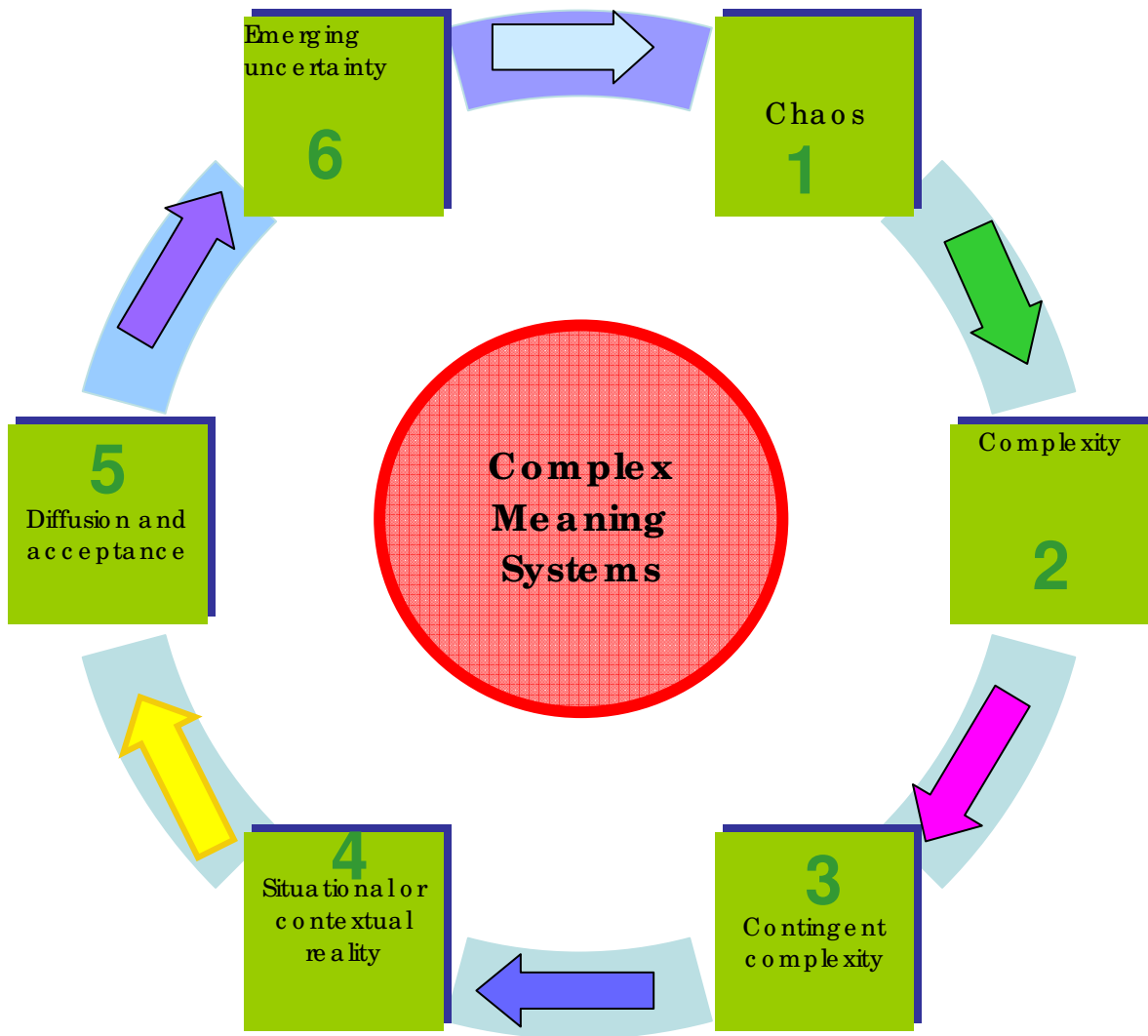
Figure 1.1: The six-phase model of complex meaning systems

A sense of the chaotic embodies the first phase, a phase where perhaps little information of any sort is available, and there is even less information about how this meaning system connects to others. Therefore, Phase 1 – Chaos – can often initially present a sense of order in the system, but this order is not apparent because of the extreme fluctuations in what people perceive it to be. What order exists is fragmented and inconsistent throughout the whole system. The second phase (Complexity) is where information begins to gather around the system. This could be in the guise of powerful personalities, basic tracts, beliefs or ideas, for example. This can also be the stage at which a large array of information becomes available. The third phase (Contingent

Complexity) is the phase where dependencies become apparent. Contingent complexity indicates that some meanings rely on others for currency and validity. Phase 4 – Situational or Contextual Reality – sees the complex meaning system grappling with its surroundings, trying to best fit with the prevailing common sense in which it is situated. Diffusion and acceptance (Phase 5) follows, indicating that the complex meaning system has found its way into the mainstream – or has been accepted as the prevailing common sense. It has become so entrenched in the whole system that no one seeks to question why it is there. Finally, there is the emerging uncertainty that has been prompted by the questioning of various sectors in the society (Phase 6). This is where those connected with the system 'rebel' against the prevailing common sense; rebellion leading back to the first phase, Chaos. This model is applied to explain the phenomena of fads in Part 2 of this thesis.

1.5   Management fads: characteristics and critique

Chapters 5 and 6 of this thesis introduce and examine in detail the nature of management fads and the body of critique that exists in relation to them. Fads seek to improve the world of organisations (and indeed the profits of their shareholders). But there is growing evidence to suggest that many of the organisational interventions advocated by management fads are anything but successful, particularly in the long term (Huczynski, 1997; Rigby, 1998; Collins, 2001; Miller, 2004).

Therefore, the first task for Part 2 is to highlight the differences between legitimate organisational intervention theories and management fads. It is posited that, thus far, the success claims of change management interventions have not moved beyond the rhetoric of the literature of the interventions themselves. This is because the literature of interventions has largely ignored the sociocultural systems that invariably interconnect with the organisation itself. This compartmentalizing of knowledge about fads is described in Figure 1.2. This represents an early attempt at the conceptual framework which will be built upon in later chapters.

Established Theory Level

low

Management
Fads

Critique of
Management Fads

Epistemology
(Knowledge Systems)

Meaning Systems
(Ontological Systems)

Power Relations

high

Deep System Level

The Prevailing Common Sense

Sociocultural Systems

Complex Systems
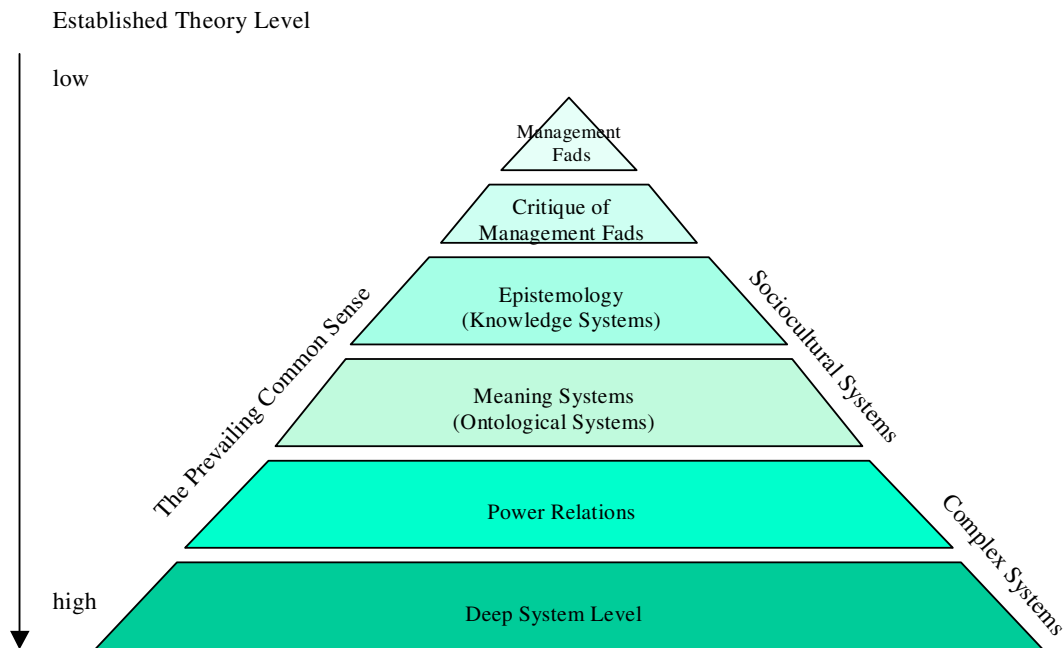
Figure 1.2: Interpretive paradigm for management fads

According to the model in Figure 1.2, the first, superficial level is that of the existence of management fads and the fact they are confined to the realm of business. The second level explores reasons for the proliferation of management fads, offering critiques of the fads. However, if we do not proceed past this point, we will fail to gain a sense of the context of management fads. Hence, the third level looks at why fads have come to be accepted as part of the prevailing common sense that is management. The fourth level examines what types of knowledge and foundational meaning allow social phenomena, such as management fads, to exist (this is time and context dependent). Further, at the next level we can look at power-relationships that cause the dominance of certain meaning systems and worldviews. At the sixth level, we leave behind traditional analytic theory and discover that there are a range of other paradigms with which to explore the nature of sociocultural phenomena, such as notions explored through the theory of complex systems. The research agenda will be governed by the relevance of all these levels and their interconnection.

Although the focus of Chapters 5 and 6 is management fads and their critique, it is important to first establish the way in which the thesis engages the term fad. When we think of the word 'fad', the various crazes and trends of the fifties, sixties and seventies immediately come to mind. When we use the word fad, therefore, we typically conjure up something that was once trendy and fashionable, but for whatever reasons lost popularity either quickly or slowly.

However what is significant here is that fads can also return and more importantly become absorbed into a culture if there is widespread acceptance. Those crazes and fads which are absorbed into a sociocultural system and move from a trend to being accepted by a society as common or familiar may lose the tag as a fad. Here we can think of such things as the internet, video games, 3-G mobile phones, television, denim jeans, vitamin therapy and organic food now being so familiar and widespread, that they can no longer be considered faddish (as they once were). This notion of embededness causes the fad to lose its status as a craze or trendy fashion.

Therefore when the term management fad is used in this thesis the assumption is that management fads have a temporal dimension. They grow in popularity and wane in popularity either dying out or becoming mainstreamed. This is not to criticise the fad or its authors, nor is it to conclude that because it is termed a fad, we must view it in the pejorative sense. Many fads have been demonstrated to improve organisations, even if they are transient. Management fads can include terms that becomes fashionable for example, 'excellence', 'user pays' or 'best practice' or they can be a major intervention in an organisation, such as implementing 'self-managed teams' or restructuring an organisation to achieve a 'balanced scorecard'. Some management fads can start of as academic theory, or their ideas borrowed from scholarly papers or even scientific and psychology journals. Here we might identify creating T-Groups or conducting personality testing to align employees with the 'mission and vision statement' of the organisation. Although this will be discussed in detail in Chapters 5 and 6, the diagram to explain how ideas start as theories and end as fads is reproduced here. The key point is that however they arise, management fads are an example of a meaning system - an interpretative framework that are utilised by managers to make sense of organisational phenomena.

	Start as Theory	**End as Fad**
Theories	**1** Wholly theoretic	**2** Theories that become fads
Fads	**3** Fads that become theories	**4** Wholly fads

The final two chapters theorise and analyse management fads as complex meaning systems, examining their interconnectedness to the broader sociocultural system and how they form part of the prevailing common sense. The behaviour of management fads might lead to a better understanding of why and how they are legitimised and why they dominate the corporate world; and how we define such notions as success or failure.

Chapter 7 characterises management fads in terms of the key elements of both complex systems and meaning systems. The chapter also looks at the stages in the life of a fad: the context for the birth of a fad, how fads are selected, and how they are maintained especially in relation to the role of language. For example, management fads can be seen to evolve through a kind of variation and selection process, often characterised as maximising and optimising fitness in the organisation and the business world. This is the reason that themes such as 'adaptation to change' or 'uncertainty' characterise many so-called management fads, because fads too have evolved to cope with the changing business landscape.

Some writers have used empirical research to look at the uptake and abandonment rates of various fads (Rigby, 1999; Ettorre, 2000; Miller, 2004),

others have even applied a broad discourse analysis of particular fads (Huczynski, 1997; Jackson, 2002; Collins, 2001). Further, some (Marion, 2002; Stacey, 1995, 2001) see complexity as a tool for bridging the gap between more traditional methodologies, employed in the social sciences in general, and the formalised and mathematically rigorous ('hard') sciences. These approaches do offer some explanations for particular fads – for example, how the fad emerged, and how it affects organisations – but the explanation of management fads as a social phenomenon is not forthcoming from these accounts.

The thesis' final chapter reflects on the effectiveness of the various concepts explored to explain the idea of meaning systems and apply this knowledge to the understanding of management fads. Although a complex systems approach does offer new ways of describing sociocultural phenomena, it does not adequately address the notion of the ontological and axiological values present in social behaviour. Adding such themes into a complex systems analysis via the term complex meaning system ensures that meaning, values, ethics, reason, and so on, are included in the analysis. That is, the inability of complex systems to adequately deal with these features of social systems prompted the theorisation of the notion of 'complex meaning systems'. The notion of a 'complex meaning system' incorporates and embraces the position of the observer, thereby allowing a level of subjectivity in the analysis. In particular the thesis has implications for understanding how managers come to give meaning to the problems they face and act on.

In summary the thesis agenda revolves around the following two questions:

1. **Can a new theorisation of meaning systems be advanced by synthesising perspectives from traditional sociocultural systems and complex systems theory?**

2. **Can this theoretical framework be 'tested' by developing an explanation of the phenomenon of management fads?**

In order to address these questions, the thesis will proceed in two parts:

Part 1

Chapter 1 – Field of Study and Introduction to the Problem

Chapter 2 – Theorising Meaning

Chapter 3 – Complex Systems and Social Phenomena: Key Concepts

Chapter 4 – Sociocultural Systems as Complex Meaning Systems

Part 2

Chapter 5 – Management Fads: Characteristics and Examples

Chapter 6 – Management Fads: The Critical Literature

Chapter 7 – Applying complex systems thinking to explain the phenomenon of management fads

Chapter 8 – Conclusions: Reflections on applying complex systems concepts to the analysis of management fads.

1.6   A Note on Research Methodology

It must be reiterated here that this is a theoretical thesis, not an empirical one. Part 1 of the thesis builds theory and then part 2 of the thesis seeks to understand the phenomenon of management fads by applying this theory. The research methodology then becomes one akin to a thought experiment that tests the theory.

> "A 'thought experiment' is an attempt to draw instruction from a process of hypothetical reasoning that proceeds by eliciting the consequences of an hypothesis for which, for aught that one actually knows to the contrary, may well be false. It consists in reasoning from a supposition that is not accepted as true – perhaps it is even known to be false – but is assumed provisionally in the interests of making a point or resolving a conclusion." (Rescher, 1991, p. 31)

The technique of thought experiment has been used extensively in science and philosophy since pre-Socratic times. Thought experiments are also characterised by their explanatory character and use of analogy. According to Irvine (1991) there are several general characteristics of thought experiments:

- A thought experiment must be relevant to the testing of some hypothesis (or to the answering of some set of questions) which has arisen within a particular observational/theoretical context.

- Many, although not all, of the assumptions within the through experiment must be supported by independently confirmed empirical observation. In short, at least some features of the thought experiment must be grounded in the observable world if it is to have any relevancy to general scientific inquiry.

- The thought experiment needs to be set out in enough detail (in a controlled enough environment, so to speak) that it is capable of being repeated. Good thought experiments, like most good physical experiments are repeatable.

- It must be possible to identify a number of independent (or antecedent) variables within the thought experiment in order to determine correlations between variations of these variables and a further set of dependent variables used to characterize the experiment's outcome.

- The outcome of the thought experiment should have repercussions for the original background theory. The reasoning involved concerning the particular hypothetical event, or state of affairs in question should provide evidence either for or against some general conclusion regarding the world or our environment. This will in turn lead to either a supplementing or a revising of the thought experiment's original theoretical context.

(Irvine, 1991, p. 159)

This thesis engages the technique of thought experiment because it attempts to test a theoretical model – that of a complex meaning system – by illustrating how it applies to management fads. In doing so it utilises a large amount of secondary published empirical data on fads. It clearly articulates the steps and processes being tested for public scrutiny and articulates relevant contextual and process variables. The outcome the testing process is then used to reflect back on the original theory of complex systems.

1.7   Contribution of this Thesis

As outlined previously, the major contribution that the idea of a complex meaning system brings is that it provides a structured account of the process of meaning making in a social system. In other words it advances understanding of the processes by which communities of 'knowers' attribute meaning to a phenomenon. In applying complex meaning systems we have the potential to get beyond the more traditional research tools available to explore the

contemporary situatedness of the system (for example, social phenomena) and expose underlying concepts. This breaks intellectual ground by applying complex systems to the problem of meaning-making. It is hypothesised that applying the six-phase process to other complex meaning systems will reveal ways of understanding that may not be made available through more traditional and accepted forms of research.

The problem of meaning will always be one that is difficult to address through any method of research, since it is dependent upon clear articulation of what contribution is made by the social phenomena in which it is situated. Where this thesis makes a contribution is that it attempts to get beyond a linear approach to synthesise what we know about certain meaning systems, and articulates a process to assist in this. Although other social phenomena have not been tested against this model, it is the opinion of the writer that the potential for replication of similar outcomes to that exposed by this thesis is promising.

This thesis then can be considered to make a contribution to epistemological issues in human knowledge systems in general, and the construction of management knowledge in particular. These are discussed in the final chapter. The work has implications for ontological issues in knowledge systems too, and these are also touched on, though not developed in depth, in the final chapter.

Chapter 2: Theorising Meaning

Meaning is embedded in human culture. We can also argue that all meanings are connected; that is, meanings can only be understood by referencing one another. This gives rise to the idea that meaning may be framed as a system. Thinking of meaning in terms of systems foregrounds notions of relationships, context, networks, patterns, adaptation and self-organisation. The discourse of complex systems, usually applied to material systems will also be discussed in to speculate whether we can apply it to the problem of meaning. Thus this chapter conceptualises meaning in terms of systems, for example, how it emerges, adapts to the sociocultural milieu, connects to other meaning systems, or is abandoned.

2.1   Towards a framework for theorising meaning

So that we may develop an argument and begin to frame the problem of meaning, this chapter commences with the observation that there are broadly two perspectives from which meaning is usually understood: rationalist and empiricist.

For nearly two and a half thousand years, and since Protagoras' idea that 'man is the measure of all things', most attempts at developing a theory of meaning see it "not as a static property external to human beings but rather as an aspect of dynamic human thought grounded in human nature" (Turner, 1992, p. 91). Thus, philosophical discussions about the nature of meaning tend to be polarised between the idea of meaning as a relationship with the thing in itself (the rational approach) and meaning as the sum-total of what we know through our experience/senses (the empirical approach).

Rationalists claim that our concepts and knowledge are gained independently of sense experience. This group embraces many philosophical and quasi-scientific doctrines from classical Western philosophy traditions such

as continental rationalism, positivism, objectivism, modernism, epistemological fundamentalism, humanism, naturalism, Chomskian linguistic theory, and Cartesian rationalism. We could also call this group the 'a priori thinkers'. They boast an impressive pedigree of scholars; Plato's theory of the Forms is a type of rationalism. It proposes a 'reasoned' approach for human understanding and truth and avoids drawing upon such unseen (therefore refutable) things as belief and faith. Deductive logic through reasoning is one approach adopted by rationalists to provide a philosophical framework through which they can test other like concepts. This group sees the world as a rational structure where all relationships within it are characterised by a transcendent or universal reason which is independent of the uniqueness of human minds, brains and bodies. Such things as minds, brains, bodies, and even culture, get in the way of proper research and are thus often disembodied through this largely 'analytic' approach. The extreme version of this position would see human beings as machines, or simply as organisms in the great clockwork universe. Faith and belief become serendipity and chance; human senses and experience become superfluous to reason, which rules the analytic.

Empiricists on the other hand, see that everything we know is gained from what we experience through our senses. We can be sure of nothing unless it comes through our own experience of it, and it has been tested. The empiricist or relativist position denies that humans have purely innate ideas (for example the Platonic Forms) or indeed that anything is knowable without reference to experience. John Locke's idea of the mind as a *tabula rasa* is one such version of this approach. Nevertheless it is important to note that empiricism does not denote that we have empirical knowledge per se; rather, it entails that knowledge can only be gained by experience. As A.J Ayer (1946) famously puts it:

> There can be no *a priori* knowledge of reality. For … the truths of pure reason, the propositions which we know to be valid independently of all experience, are so only in virtue of their lack of factual content … [thus] empirical propositions are one and all hypotheses which may be confirmed or discredited in actual sense experience (pp. 86; 93-94).

Thus, while sense experiences may trigger processes by which they are brought to consciousness (*a priori* knowledge), lack of experience means we cannot verify the concepts or determine whether the information is actually true. The

extreme version of this position could support such things as fundamentalist religion, racism, and eugenics: analytical approaches would have eliminated the consequences of these concepts largely because rationalists require proof based on a logic and are able to exercise reflexivity without necessarily experiencing it.

The academic community continues to see conflict between the two positions. Of course we could have chosen to split the debate along the lines of realists and idealists, or pragmatists and metaphysicists; but to divide those who see the world from these perspectives provides us with a starting point, at the very least. Here we begin to see that the dichotomy between rationalist/empiricist positions is shaped by thinkers who develop these ideas: Plato, Descartes, Spinoza and Liebniz on the rationalist side; and Aristotle, Locke, Berkeley and Hume, accompanied more recently by the postmodernists Derrida and Foucault, Kuhn and Rorty (to a lesser extent), on the other. There is no intention here to discuss in detail the ideas of these thinkers beyond simply referring to them to demonstrate the breadth of knowledge that exists in both academic 'camps'.

However, as with all dichotomies, the rationalist/empiricist debate is complicated: rationalists who see that our understanding of some concepts is not gained by reason alone, and empiricists who see that our understanding is not gained from experience alone. Thus traditions of *both* positions must be taken into consideration if we are to critically evaluate the historical significance of theories about what and how we know what we know in order to hypothesis the problem of meaning. There are a number of theorists who have examined this very conundrum. Most notably, those working in and around the sciences of complex systems are quick to acknowledge that it is not necessary to see both positions in continual conflict and that it is preferable if we conceive of a framework where a multiplicity of perspectives can be somehow unified, at least at the boundaries of those theories. For example, Paul Cilliers (1998, 2000) has mapped this terrain with a blending of postmodernism and complex systems in the area of neural networks and languaging. Niklas Luhmann (1991, 1994) and his treatment of social systems also unifies the two perspectives to some extent, as do Lakoff and Johnson (1987, 1999) and their notion of embodied realism. These writers form the basis of the development of the conceptual underpinnings of this thesis and will be

discussed at some length shortly. In order to arrive at their contribution we need to first consider the nature of meaning from first principles.

2.2   Meaning – some preliminary thoughts

What is meaning? If I say something means something, what am I saying? If the government says something means something, what are they saying? If the church says something means something, what are they saying? If the popular media says something means something, what are they saying? If the CEO of an organisation says something means something, what is he/she saying? In all these cases the answer to what something means will be something different because of the ideational schema (language, beliefs, cultural artefacts, and so on) shaping the context in each situation. Overton (1994) poses it as the 'I mean'/'it means' relational matrix: "The 'I mean'/'it means' relational matrix becomes elaborated across domains of inquiry and across levels of analysis as issues of intension and extension, sense and reference, connotation and denotation, semantics and syntactics, hermeneutics and realism" (p. 1). 'I mean' is an individual, 'it means' is the prevailing common sense that fundamentally correlates to the symbols and things conveyed.

Meaning is not a unitary measure of understanding about one thing in a representational sense. For example, a red circle can represent many things depending on the context and the position of the observer. We might have knowledge or information about a red circle, but what this might really mean to us operates in a different thought paradigm. It will also depend on the physical context of the red circle: what it is drawn upon, its medium, how large it is, where it is and so on. I may know it is a red circle, but what it means to me may be ambiguous. Thus, knowledge and meaning are not the same thing. In the linguistic sense, the "potential for meaning is realized through supplementary action", according to Overton (1994, p. 29). For Overton (1994), meaning in the sense of a communication interaction between others depends on a 'protracted array of relationship' not only in the instant, but also depends upon how those relationships change over time and how indeed they are linked with society as a whole.

Thus, in order for there to be any meaning at all it must not only be connected to other meanings, to include perspective, but should be relational, and dynamic. Meaning therefore can never be static. In this sense it is analogous to the planet's natural systems (for example, under the Gaia Hypothesis). Essentially, the planet's natural systems operate under processes of self-regulation with homeostatic feedback systems, stabilised under such things as surface temperature, atmospheric composition and ocean salinity. It is as if the whole system has some kind of cybernetic function that somehow communicates with its components to shape the behaviour of the whole system. The same arguably applies to meaning. The entire system of meaning may also be seen to operate under processes of self-regulation, with homeostatic feedback systems stabilised under the prevailing common sense.

This holistic view can be contrasted with Lakoff's and Johnson's (1999) notion of the metaphor 'categories are containers' in which they explain that neural beings cannot help but categorize the world around them, breaking things down to ever-decreasing differentiations which in turn form part of our experience (pp. 17-20). Of course, one of the difficulties in examining the idea of meaning in this way is that cultural and social phenomena also have to contend with metaphysical aspects, such as belief and faith which are either difficult or discordant to categorise. This notion of categorisation will be returned to later in the discussion.

For now, and to provide an early signpost, this thesis proposes that the idea of meaning is taken to be a collective schema, a consensual approach implicitly and explicitly understood and agreed by sociocultural groupings about how things ought to be done. This also implies that that the idea of meaning embodies some dimension of power struggle. For if something means something in a society ('it means'), sets of circumstances have come together to ensure its representational survival above other like or similar meanings. Whether a living organism, or a gas, or an idea, or a concept, or an institution, or an ideology; something that endures has overcome the power relationships that cause resistance or competition during its lifetime. Often the circumstances that define a power relationship are not random, but carefully selected patterns of behaviour that become accepted over time because any opposition has been weeded out. These power relationships of course can be applied to physical, metaphysical and ideational systems.

Thus, meaning evolves and changes. From an evolutionary perspective, survival of the fittest ensures a species or substance will prevail over its rivals, at least for a time. From a cultural evolutionary perspective, only the fittest social practices, norms, beliefs, values and ideas survive because they have prevailed over other alternatives that arise from time to time. For example, we no longer burn witches at the stake nor imprison children for stealing an apple. If we think of the prevailing common sense (collective meaning systems), this means that the way 'things are done', or the way 'things are' has emerged from the continual struggle for the most constructive, beneficial social practices, values, beliefs and so on that will ensure the survival of that society – 'it means'.

This is not to say that alternative (or even unorthodox) ideas, beliefs and values cannot co-exist with institutionalised meanings in the dominant sociocultural system, but these are often marginalised as sub-cultures, therefore not valued, and in some cases, forcibly removed (made extinct). This particular discussion tangent invokes the notion of power relations, and if we turn momentarily to a Foucauldian perspective, the notion of collective social acceptance is not without resistance:

> At every moment the relationship of power may become a confrontation between two adversaries. Equally, the relationship between adversaries in society may, at every moment, give place to the putting into operation of mechanisms of power. The consequence of this instability is the ability to decipher the same events and the same transformations either from inside the history of struggle or from the standpoint of the power relationships...it is precisely the disparities between the two readings which make visible those fundamental phenomena of "domination" which are present in a large number of human societies (Foucault, 1982, p. 208).

Yet, the idea of meaning (in the sense of 'it means') downplays the notion of domination; instead, it diffuses and relegates any voices of resistance to the fringes of that society. As *au faits accomplis*, meanings are accepted and institutionalised as the prevailing common sense. The meaning of things is something we occasionally question but mostly accept because it embeds itself deeply and inexorably within the sociocultural system. If we care to tease them out, there are subtle (and not so subtle) power relationships present in the idea of meaning. If the meaning of something has endured, or remerges in

a society, a certain reasoning has prevailed based on shared or common understandings.

Interrogating meaning through a mind, matter, body, or brain syllogism as traditional philosophy often does (for example Descartes' idea of the mind-matter syllogism), may limit the field of endeavour because relationships only focus on the individual and his/her perceptions. On a broader canvas, not to acknowledge the relevance or even the existence of other connected meaning systems is to avoid the possibility of collective human understanding:

> Any theory of individual meaning that cannot be squared with the possibility of shared meaning would leave us not only with the unsatisfactory conclusion that social understanding is impossible. It would additionally leave us with the unhappy paradox that we could not understand the theory itself." (Gergen, K.J. (1994) in Overton, 1994, p. 20)

Some theorists, like Lakoff and Johnson (1999), see these understandings, or what we might term the prevailing common sense, resulting from cognitive science or cognitive linguistic frames based on a kind of collective view of such things as morality, time, self and causation. Human beings are physical beings, and as such their rational emotional self cannot be separated from the body in which it is contained; one of the critical points pursued by Lakoff and Johnson (1999) in their extensive body of research. Further, they argue that the conception of self is fundamentally metaphoric. This means that the metaphoric conception of ourselves is embedded deep within our unconscious, which cognitive scientists believe makes up 95 percent of all thought (Lakoff & Johnson, 1999, p. 13).

It is a biological and metaphysical necessity that human beings break things up into digestible chunks so we can better manage and understand them. This is part of the way in which our neural structure reasons to create specific categories to process contextual information (Lakoff & Johnson's notion of prototypes is relevant here). Thus the relationship between reasoning and meaning is causal. The process of categorising, lumping and splitting (reasoning) causes meanings to be created through various metaphoric associations or projections. If we look at this in terms of self-organising systems, information, irrespective of where it is derived, is differentiated and integrated

across various emergent levels. Just how this occurs is as contentious as it is speculative, and will not be discussed in detail in this thesis. Suffice to say that the limits of the cognitivist models relates to the static framework within which this activity occurs; the limits of other models may well be about their complexity. That is, meaning is an emergent and intentionalist representation of the symbolic universe, unique for each person. This position must be further explained so that it can build the ideas underlying this thesis.

2.3   Can Meaning be Captured as a System?

At this point, the realm of complex systems can be introduced as an alternate perspective to tackle the problem of meaning. If we see what we know and understand as an interconnected web of knowledge that synthesises both the rationalist approach and empiricist approach, then we begin to see that meaning can never be linear or causal. In other words, the notion that meaning is derived in a linear way by first questioning, then observing, then arriving at some kind of answer or position becomes infeasible. Moreover, if a meaning can be thought of as a system, even with boundaries, then it might exhibit all the qualities of a system, such as large numbers of interconnecting components, emergent properties, interaction-rich relationships between components, self-organisation and so on.

If the nature of meaning can be expressed in terms of the features of complex systems, then we can begin to think not only about what (subject) meaning is but also about how (context) meaning might be arrived at. Any conceptualisation of the problem meaning, of course, gives rise to an ontological or even metaphysical sense of the subject. But as Cilliers (2000) cautions, it is impossible to first establish the system of knowledge (meaning) and then identify the knowledge within that system because the two are in "continual transformation" (p. 9). However, if we acknowledge that the problem of boundaries is inherent in all complex systems, including that of meaning, then we can begin to capture meaning, not as an end in itself, but as a dynamic process. It has been proposed for some decades that the suite of general systems theories, including complex systems theory, can offer much, not only to material systems, but also to non-material systems such as social

systems or organisations (Simon, 1962; Emery & Trist, 1972; Emery, 1993, 1981; Kauffman, 1993, 1995; Wolfram, 2002; Stacey, 1996, 2000; Capra, 1996, 1989; Wheatley, 1994; Dawkins, 1989, 1986; Waldrop, 1992; Gleick, 1988; Axelrod, 1984; Bertalanffy, 1969; Lemke, 1990, 1995, 1997; and von Foerster 1981, 1996).

It is possible to capture meaning in complex systems terms and explain why, for instance, certain environments limit the spread of certain forms of knowledge, and the types of variables that might be at play in those environments. For example, such things as new ideas (attractors) may create a new context (bifurcation point), thus destabilising the accepted state, and over time forcing (self-organising) the meaning system into a new paradigm (state of equilibrium).

As we have discussed, the application of systems theory to sociocultural phenomena is not without precedent in terms of principles. It is in fact pre-empted in Kant's or Descartes' ideas on issues such as morality, for example. What a systems approach offers is a new paradigm, new language and new concepts with which to explore areas of paradox, controversy and equivocality in human behaviour and the behaviour of its institutions. Concepts such as emergence, bifurcation, autopoiesis, reflexivity, attractors, self-organised, adaptive, landscapes, criticality, fitness, chaotic, non-linear, fuzzy, fractal, networked, entropic can now be applied to phenomena in the sociocultural realm.

Using the discourse of complex systems, with its notions of patterning, networks, novelty and connectedness provides a new perspective, by proposing a different way of conceptualising the talk and text (Silverman, 1992). Rather than engage in empirical data gathering to produce a model to analyse the behaviour of a particular management fad so we can predict the behaviour of other management fads, this thesis will instead engage in a theorization of meaning systems, exemplified by the phenomenon of management fads. This theorization and exemplification will engage traditional ways (recall the rationalist/empiricist polemic) of thinking about epistemological and ontological themes of our prevailing common sense and juxtapose them against the discourse (not the method) of complex systems. In order to exemplify how this might be achieved, this thesis will explore the nature of connectedness, complexity and relationship in meaning and apply it to the

social phenomenon of management fads. It must be emphasised here that management fads per se are not the focus of this study, but rather how they can be engaged to show how meaning can be characterised in terms of what it comprises and how that contributes to the totality of human understanding.

2.4   Meaning: Digging deeper

As we have already discussed, because meaning can be conceived of as a system, its contextual nature must be included as part of what it conveys. I will now briefly discuss the views of Lakoff & Johnson (1999), Cilliers (1998) and Luhmann (1994) to provide an overall context in which we might further explore the nature of meaning and understand why it can be analysed from a complex systems perspective.

2.4.1   Lakoff & Johnson

We cannot think about meaning and hypothesise it without seeing its connectedness to such things as historical context, cultural milieu and power relations. Nor can we ignore the situatedness of our physical selves and our biological predilection to categorise. To reiterate, when we categorise, breaking things up into digestible chunks, we construct what Lakoff and Johnson (1999) call the 'container metaphor'. At the level of the metaphor, containers have a spatial configuration (interior, exterior, rough, smooth, deep, shallow and so on), boundaries, can be placed in relation to other containers and inferences can even be made about other containers. However Lakoff & Johnson suggest that "conceptualizing categories as containers hides a great deal of category structure. It hides conceptual prototypes, the graded structures of categories, and the fuzziness of category boundaries" (1999, p. 20). Because conceptual categories are a neural structure (we make them with our reasoning), everything we know, including the meaning of things, is embodied. With all the research into neural networks (Cilliers 1998), this point is unlikely to be challenged, even by the most representational models (for example, Chomsky and Fodor). The notion of the embodiment of our concepts is important to cognitive scientists and embodied realists: "An embodied

concept is a neural structure that is actually part of, or makes use of, the sensorimotor system of our brains. Much of conceptual inference is, therefore, sensorimotor inference" (Lakoff & Johnson, 1999, p. 20).

2.4.2   Paul Cilliers

Cilliers (1998, pp. 65-66) identifies four characteristics of meaning to which a fifth is added.

1.   Meaning is holistic
2.   Meaning is in part a normative notion
3.   Meaning depends on the environment
4.   Meaning is a historical concept
5.   Meaning is embodied.

If we take these five concepts together, it is possible to conceive of meaning as a system – a complex meaning system. The meaningfulness of human life requires that we categorise all information available to us, including that in our unconscious. This information evolves and is relational and connected, thus creating a self-regulating system that cannot be fully representational. Here the discourse of complex systems can assist with how we might frame the enormity of this task. As already discussed, the notions of networks, approximation, pattern, rhythms, attractors, bifurcation and so on, can be engaged to theorise and explain the problem of meaning. As Cilliers (1998) points out, "instead of working with concepts or clusters of concepts, you work with a system of relationships at a sub-conceptual level that cannot be given, or rather, is not in need of a semantic interpretation …" (p. 71).

2.4.3   Niklas Luhmann

Niklas Luhmann has developed unifying theories to explain the behaviour of social phenomena based broadly on a systems approach. For Luhmann (1995), communication is the most important component of a human social system. If we think about human interaction, the failure to sustain what is meaningful in communication will render the system of communication unreliable, and the whole system may risk falling into decay and cease to exist.

This is where, for example, certain knowledge might begin to exhibit nonlinear behaviour, which creates a new feedback loop, resulting in changes to the main system. An example might be resistance to an economic impost by a government, such as the raising of taxes. If resistance becomes so intense as to erupt into widespread and large-scale conflict, revolution can occur, resulting in a complete transformation of the original system of government, even chaos. In this example, the communication between the government and its people failed to convince them that raising the tax rate was in their interests. Add that to their *experience* of the increased tax rate, which caused widespread poverty and protection of elites, and an overwhelming source of conflict is generated that the original system is incapable of sustaining. The emergence of the new regime then self-organises around what information and communication is meaningful to the most number of people (even if assisted by force), and will be characterised by chaotic disruption (from the many feedback loops), because information is fragmented and unreliable. Communication exchanges, peaceful in the previous state, now produce noise and instability between the components. This state of affairs will continue until the system stabilises with more reliable relationships between the components and less chaotic behaviour. In some cases, the removal of some components may assist in the longer term survival of the whole system.

This provides a crude example of Luhmann's theory because it focuses on communication between elements (relationships) within the system, rather than the experience of the people (components) within the system. According to Luhmann, communication is a synthesis of three dimensions: information, utterance (Mitteilung), and understanding (Verstehen). This tripartite nature of a communication is critical for Luhmann since it gives communication, and hence social systems, their irreducibly social nature (Luhmann 1995, p. 140; 1984, p. 195). Luhmann's ability to distance himself from the human subjects of social systems is often raised as a criticism, because he sees such things as favelas or ghettos simply as 'neglected environments' excluded from the totality of the larger system because they are economically, socially and politically redundant.

Although the criticisms of Luhmann's theory - that social systems consist of rules as well as communications - is relevant here, so too is the concept of autopoiesis, which Luhmann espouses as characteristic of social systems. The

term autopoiesis, coined by Chilean biologists Humberto Maturana and Francesco Varela (1973) was initially designed to differentiate living systems from nonliving systems. However, if we apply autopoiesis to social systems rather than biological systems we see that they are just as defined by their organisation and connectedness as well as their component properties. Looking more closely at Luhmann's (1995) account of social systems sees that they do not consist solely of communications but also contain a structural component which, unlike communications, subsist through change (p. 139-140). This raises the issue of the temporal nature of a system, a concept that is not easily addressed by either the rationalist or empiricist approaches to the problem of meaning. The very nature of a complex system is that it is constantly evolving; what we observe, or what we are capable of modelling is merely a snapshot in time. If we think about the problem of meaning in this way, its temporal nature becomes something for which we can easily find examples, even in one generation. Abolition of the death penalty, dependence on a globalised economy, the speed of information exchange, changes in racial and religious tolerance, and the war on terror are examples of meaning systems (or parts of meaning systems) that have adapted to the changing environment. If we care to move further, there are even connections between these examples. But change to meaning within sociocultural systems is mostly more subtle, so much so that we generally fail to see it in our lifetime, unless there are cataclysmic events such as wars or environmental disasters.

The notion that social systems can be characterised as "analytical models of empirically objectively existing organized aggregates of related actions, produced by their external observers" suited Luhmann's idea that a system could be identified by defining the unit of its operation and observation (Vratusa, 1999, p. 137). According to Luhmann (1984), this unit should be the communication or interaction of cognitive actions of meaning selection and construction of boundaries between the system and its environment. In this way differentiation can occur between the subsystems that is the result of communication, and those that form part of the environment. This is why Luhmann's idea of social systems is important to this thesis. The idea that social systems can be seen as networked, from the position of the observer - intricately connected and continually changing their links between the system

and the environment and within the system itself - see its 'meaning selection mechanisms' become competitive. Moreover, within this continual process of self-organisation, no part of the system can be in control without in turn subjecting itself to control. Luhmann's (1984) rejection of the idea that governments are fully in control of social systems ('modern society has no centre and no head') is replaced by an emphasis on this networked approach, characterised by competition and evolution at every level. The social sub-systems Luhmann refers to, in continual processes of change and self-referential controls, can be seen as a physical precursor to the idea of complex meaning systems. Any attempt to fully control the entire meaning system with all its components contradicts the principle of social differentiation and thus meaning-making. Since homogeneous units are not one of the characteristics of a complex system, a social system cannot function in the situation where all beliefs and ideas are the same in some kind of Utopian existence like Plato's Republic.

This is where the ideas of Luhmann's social systems coincide with the hypothesis of complex meaning systems. Luhmann has used the idea of complex systems to develop his theoretical perspective because social systems are not perfectly integrated, coherent, predictable and static. The same resonance applies to the problem of meaning. Groups of theories, knowledge and ideas, bound in ontological and epistemological frameworks (loosely called meaning systems at this point) and contextualised by time, are often interconnected, and sometimes even dependent, but never are they perfectly integrated, coherent, predictable and static. The capacity of the discourse of complex systems theories to capture this dynamic environment of a total system in continual change, dominated by certain powers that ensure the survival of some of its sub-systems, can equally apply to societies as it can to the world of ideas and knowledge. Thus, if we see the entire system as the sum total of all human understanding for infinity, then it becomes possible to theorise what this system might comprise, or in Luhmann's terms its 'unit of operation and observation'. This thesis proposes that this unit can be categorised as a 'complex meaning system.'

2.5 Thought as a system

It is also worth briefly noting the work of David Bohm (1994) because he regards thought as a system and something that should not be fragmented. Many of the problems of the planet, according to Bohm, could be addressed if we did not continue to separate out and constantly refine and categorise (recall Lakoff & Johnson, 1999) our knowledge about them. Separating thoughts (ideas) and fine-tuning them to such an extent that they 'forget' what they were connected to in the first place, is one of Bohm's greatest laments:

> What I mean by 'thought' is the whole thing - thought, 'felt', the body, the whole society sharing thoughts - it's all one process. It is essential for me not to break that up, because it's all one process; somebody else's thought becomes my thought, and vice versa. Therefore it would be wrong and misleading to break it up into my thought, your thought, my feelings, these feelings, those feelings. I would say that thought makes what is often called in modern language a SYSTEM. A system means a set of connected things or parts. But the way people commonly use the word nowadays it means something all of whose parts are mutually interdependent - not only for their mutual action, but for their meaning and for their existence. (1994, p. 16)

Because thought and meaning can be seen as a system, it includes all the things that surround it – feelings, the human body and its physical needs and local environment, thoughts passing back and forwards between people, the instutitionalisation of thought (the prevailing common sense), all evolving, adapting and changing in a process that has occurred since ancient times. This constant evolution and refinement of thought (meaning), is according to Bohm (1994), one of the great flaws of what we term the human condition:

> Now, I say that this system has a fault in it - a 'systematic fault'. It is not a fault here, there or here, but it is a fault that is all throughout the system…Thought is constantly creating problems that way and then trying to solve them. But as it tries to solve them it makes it worse because it doesn't notice that it's creating them, and the more it thinks, the more problems it creates. (1994, p. 111)

The reason for touching on Bohm's work is that his conceptualisation of thought as a system is related to the idea of meaning systems. Applying systems thinking to nonmaterial ephemeral phenomena like knowledge, thought and meaning does, however, run the risk of philosophical esotericism, which is why there must be caveats and limitations applied to this discussion.

2.6   Caveats and limitations

2.6.1   Caution on modelling

Thinkers like Guastello (1995, 1999), Stacey (1995, 1996, 2001, 2003), Wheatley (1992, 1997), White, Smith & Tansey (1994), White Smith & Barnett (1997), and many others, have applied some form of systems theory to some form of sociocultural issues. However, the relative acceptance of the application of system theories to sociocultural theory has been tempered with caution by some who see limits to its applicability in the real world, and have even labelled it as faddish (Begun, 1994; Johnson & Burton, 1994; McKelvey, 2002). For example, Richardson (2004) suggests that:

- Building networked models (cellular automata, agent-based simulation, etc.) does not mean you are a complexity thinker!
- Using words like 'emergence', 'self-organization', etc. does not make you a complexity thinker!
- It is very common to use nonlinear models in a linear way.
- Complexity thinking is more of an (philosophical) attitude towards such things rather than a particular set of tools.
    (Slide 4)

A complex systems approach to meaning might also attract criticism of those who see that 'complexity is incompressible' and that, therefore, reducing the system to mere models will lead to distortions (Cilliers, 1998; Richardson et al, 2000). Thus, the models we might use must be at least as complex as the subject itself; quite a task if we address the issue of why such things as management fads thrive. Stacey (2000) agrees:

> …extreme care needs to be taken in using (such) modelling as a source domain for analogies with human action. The very act of modelling requires an external modeller, and the specification of the model requires the initial design of a system, even though what is being modelled is an evolutionary process that is supposed not to depend on any outside design… Systems thinkers have tried to deal with this problem by widening the boundary of the system to include the observer, but in doing so they always locate some kind of agency outside the boundary (p. 26).

This is why there is no intention to "model" a complex system in this thesis in detail. Rather, through theorising and discussion, positions can be reached

about how we might conceptualise meaning systems so the manner in which they are formed makes sense.

2.6.2   Why Not Pursue a Foucauldian Analysis?

Although Michel Foucault has much to say about "meaning systems" this thesis is deliberate in its intention not pursue a Foucauldian analysis. The aim of this thesis is to analyse the dynamical process of meaning making. Thus, the focus is on process dynamics rather than power relations a la Foucault. A Foucauldian analysis of power relationships in society is a thesis in itself, and weaving the complexities of that discussion into the idea of meaning systems would overshadow other theoretical perspectives which this thesis seeks to introduce.

2.6.3   Language as a System

No matter what standpoint the arguments are from - cognitivist, social constructionist, rationalist or empiricist - language is, of course, considered fundamental to the concept of meaning. Whether as a framework for social discourse or developmental explanations, language is relevant to the theorisation of meaning. However, a detailed consideration of language is beyond the scope of this thesis and is raised only insofar as it relates to holistic conceptions of meaning systems. Some discussion of language as a system appears in Chapter 7.

2.7   Conclusion

This chapter has elaborated on the idea that the discourse of complex systems, usually applied to material systems, can equally apply to the world of knowledge and ideas; that is, the world of meaning. Applying the discourse of complex systems to meaning instantiates notions of relationships, context, networks, patterns and the other more 'scientific' discourse terminology associated with complex systems theory: bifurcation, attractors, fuzzy sets, and so on.

Usually, theorisations about the problem of meaning are discussed from within the major branches of philosophical thought - metaphysics, phenomenology, aesthetics for example - as well as more contemporary social constructivist theories such as existentialism, nihilism, and postmodern theories of language and culture. As this chapter has proposed, it is also valid that a discussion of meaning can be argued using the discourse of complex systems theory: conceptualising meaning in terms of how it emerges, adapts to the sociocultural milieu, connects to other meanings, or is abandoned, for example.

In terms of providing context to the debate, the rationalist versus empirical dichotomy is important in the theorisation of meaning because it provides a juxtaposition of alternative and valid explanations about what we know, how we have come to know it and its relationship to meaning. In other words, scientific discoveries and the knowledge of hindsight are not necessarily explicable through rationalist debate, and experience does not necessarily provide proof that something is meaningful. To conceive of meaning as a system or collective schema, a consensual approach implicitly and explicitly understood and agreed to by sociocultural groupings, about how things ought to be done sees that the complex patterns of meaning-making (the how) is as equally important as the epistemological and ontological frameworks it comprises (the what).

Chapter 3: Complex systems and social phenomena: Key concepts

The previous chapter argued that systems perspectives could be applied to understand problems of meaning. This chapter will build upon the discussion from the previous chapter and introduce concepts underlying complex systems thinking with the intention of offering "a transdisciplinary perspective that emphasises the intrinsic order and interdependence of the world and all its manifestations" (Banathy, 1998, p. 1). The chapter will explain how these complex systems concepts are relevant to theorising meaning. In particular it will look at how the idea of networks and patterns can be used to examine phenomena thought to be inexplicable through more traditional methods of inquiry. As a secondary theme, expanding briefly upon the Aristotelian notion that matter cannot exist without form (pattern), this chapter also contrasts belief in the certainty of Newtonian scientific knowledge with a position that recognises all scientific concepts and theories are limited and approximate. The position of the observer is also introduced and argued as integral to how individuals will understand and capture a complex meaning system.

The language and discourse of complex systems (that is the technical language as well as the concepts) gives us more tools to describe unexpected phenomena and the patterns of connection that may be at work within that system, particularly when we consider social meaning. Some of the concepts raised in this chapter require further elaboration, but the detail is foundational. To address this, I have provided Appendix A: Systems Theory: An Overview.

3.1   Introduction

Before we discuss meaning in terms of complex systems, some context is required. Instead of starting with philosophy and the nature of meaning, belief, epistemology, ontology and so on, to arrive at a complex systems perspective, I will commence from within the discourse of complex systems theory itself. Complex systems thinkers almost always justify their theoretical (and scientific) perspective by referring to the dichotomy between the old paradigm and the new paradigm of thought. The terms could be seen as simple, yet convenient labels to make an ideological point that requires no further elaboration.

Cannot we simply state there are multiple ways of understanding the world around us because of the unique position of the observer? It is important to articulate these positions because contemporary complex systems thinking operates in an alternative thought paradigm based in scientific and mathematical discovery. Those who write about (or model) complex systems often see themselves as having arrived at the end of a philosophical (and scientific) journey, by first examining and then discarding other modes of (reductionist) thinking. In terms of contextual analysis, particularly since this thesis engages complex systems theory, we need to see how and why complex systems theory (new paradigm of thought) has become an alternative to other more traditional ideological (rationalist) or scientific perspectives (old paradigm). However, there is no intention to detail the philosophical differences between these two positions, except insofar as it relates to the theorisation of meaning. I have provided Appendix A (Systems Inquiry: Basic Concepts and Foundational Research) to expand on the complex systems concepts raised in this thesis.

3.2   Complex Systems and Social Meaning

Complexity theory has become a broad-ranging interdisciplinary subject over the last four decades, as exemplified by authors such as Nicolis and Prigogine (1989), Waldrop (1992), Holland (1995), Belew and Mitchell (1996), Arthur, Durlauf and Lane (1997), Eve, Horsfall and Lee (1997), Kauffman (1993), Gleick (1988), Capra (1993, 1997), Wolfram (2001) and others. These researchers use complex systems theory to compliment their research in varying ways, for example, from Wolfram's (2001) challenging concept of cellular automata to Gleick's (1988) more accessible and therefore popularised theories on chaos. Definitions of complexity theory are broad-ranging, and what exactly a complex system might look like is also contentious. For example, Cowan (1994) sees complexity as:

> … [referring] to systems with many different parts which, by a rather mysterious process of self-organisation, become more ordered and more informed than systems which operate in approximate thermodynamic equilibrium with their surroundings … Complex systems contain many relatively independent parts which are highly interconnected and interactive and that a large number of such parts are required to reproduce the functions of truly complex, self-organising, replicating, learning, and adaptive systems. (pp. 1-2)

Similarly, "a complex system is an evolution generated by simple mathematical rules or physical principles that exhibits complicated, unpredictable behaviour" (Griffeath, 1992, p. x). Or, drawing upon the theories of Robert Rosen, Don

Mikulecki (2003) in his presentation called "Relational Systems Theory: An Approach to Complexity" sees complexity as:

> ... the property of a real world system that is manifest in the inability of any one formalism being adequate to capture all its properties. It requires that we find distinctly different ways of interacting with systems. Distinctly different in the sense that when we make successful models, the formal systems needed to describe each distinct aspect are NOT derivable from each other.
>
> (Slide 5)

Robert Rosen's differentiation between simple and complex systems is also useful: "A system is simple if all its models are simulable. A system that is not simple, and that accordingly must have a nonsimulable model, is complex" (Rosen, 1998, p. 292). Further, Rosen (1985) believes that the possibility of "complexity", in an intuitive sense, arises when a system acts in unexpected ways; that is, in ways that do not match the predictions of our models (pp. 421-422). Therefore, Rosen's definition provides an intuitive notion of complexity, rather than one which is defined. It is also important to note that complex systems are defined essentially in terms of what they are not (i.e., simple systems). This is done by specifying as minimal a criterion as possible (i.e., having at least one non-simulable model) in order to provide a precise, yet unrestrictive, distinction between simple and complex. In contrast, complex systems are, in a sense, open-ended: there is no apparent upper-limit to how complex a system can be constructed, and therefore, no apparent limit to what characteristics such systems might have. A brief summary of some of the differences between the two categories of system appears in Table 3.1.

Table 3.1: A summary of the key differences between simple and complex systems

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(Source: Gwinn (2003, p. 25))

A useful – if somewhat limited – model for the illustration of complex systems comes from the New England Complex Systems Institute (NECSI) website and is reproduced at Figure 1.2. Although this model contains all the elements of complex systems discussed, it has limitations in that it does not offer any real explanation for the existence or indeed behaviour of a dynamic complex system. It does, however, attempt to map out the terrain of complex systems.

Figure 3.1: Characteristics of complex systems
[Source: Marshall Clemens, NESCI Website, www.necsi.org]

Taking many authors together[1], ten key properties of complex systems are generally regarded as follows:

1. Large number of interconnecting components.
2. Components are non-deterministic and non-tractable.
3. Interaction-rich relationships between components.
4. Interactions exhibit nonlinear behaviour.
5. Interactions mostly exhibit short range information, but can precipitate long-range influence (sensitivity to initial conditions).
6. Feedback loops cause changes to the system.
7. Exhibit properties of emergence and self-organisation because the system also interacts with its environment.
8. Operate under far-from-equilibrium conditions.
9. Cannot exclude history (pre-programmed elements exist).
10. Each element in the system is ignorant of the behaviour of the system as a whole, and may only respond to localised information.

3.3   Complex Systems Applied to Social Phenomena

There have been a number of examples of the application of complex systems theories to an aspect of the behaviour of sociocultural phenomena, or an agent within the system, or its affect on the wider spatiotemporal system itself. For example, Sotolongo (2002) observes that "…societies exhibit the systems-like characteristics of self-organised systems far from equilibrium … (and) behave like nonlinear complex systems with a self-organised unfolding" (p. 105). Also, Gunderson et al. (1995), citing Holling's (1986) work, is typical of how ecological systems theory has been applied to social systems. Their understanding of function, hierarchy, and scale in nature incorporates Holling's now well-known theory of ecosystem function with hierarchy theory (Allen and Starr, 1982; O'Neill et al., 1986) into a general model of the dynamics of adaptive systems. Gunderson et al.'s complex adaptive systems model is applied to understanding rigidity and change in government wildlife management institutions. They review some relevant social change theories from the social

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[1] This list has been adapted from the theories of a range of authors such as Stephen Wolfram (2002), Stuart Kauffman (1996), Ludwig Bertalanffy (1968), Fritjof Capra (1996, 2002), Roger Lewin (1997), Mitchell Waldrop (1992), Fred Emery (1989), Francis Heylighen (1995, 1997), Paul Cilliers (1998) and Illya Prigogine (1994). In terms of social meaning, complex systems thinking offers an alternate explanation of such things as institutions or social phenomena because its behaviour can be analysed through the ten key properties as outlined above.

sciences, searching for, and finding, theories or components of theories that appear to mesh with their position. Turner, Horsfall and Lee's (1999) edited collection also promotes the use of complex systems theory and chaos to understand sociocultural phenomena. Teenage pregnancies, childhood friendships and communication patterns are examples of an emerging trend of areas where the suite of complex systems theories are being applied to social phenomena. Models, or at least diagrammatics, form a significant portion of this work.

Another example is L Douglas Kiel's (1994) work with public sector organisations. Focussing on the nonlinear and often chaotic behaviour of working environments associated with these workplaces, Kiel's research pre-empts circumstances that have the capacity for prediction. In other words, he looks at narrow ranges of issues associated with these work places. While this approach seems reasonable, it tends toward problem specific solutions only (for example time-series tasks), focusing on incremental change, yet omits the cultural, ethical, and epistemological context of those institutions. Nevertheless, as with other theorists who apply systems theory modelling to sociocultural phenomena, often the choice of circumstance is haphazard and largely restricted to western-style behaviourist models, even though some of the conclusions would suggest otherwise. However, such theories of complex adaptive systems generally incorporate a large body of well-researched ecosystem function and process into a general, nomothetic model of system organisation and change. The language of complex systems also serves to benefit any analysis as some of the terms offer new ways of interrogating the components of the system and the environment in which that system is situated. Fuzzy logic provides an alternative way of understanding uncertainty. From this new way of understanding can be derived innovative approaches and strategies for working with the uncertainty that so often characterises social systems. For example, according to Dimitrov (1997) the application of fuzzy logic to social systems creates opportunities to examine:

- contradictions and inconsistencies embedded in social situations;
- issues that have been repressed under critical social dynamics; and
- that which is concealed and beyond observed social phenomena.

Fuzzy logic is suited to studying such 'subtleties' in social systems because of its ability to:

- deal with vague, ambiguous and uncertain qualitative ideas and judgements;
- concentrate on paradoxical and enigmatic aspects of decision situations;
- focus on the margins of any decision making 'space'; and

- appreciate the uniqueness in any decision making act.

To summarise, the application of complex systems theory to explain sociocultural phenomena is not without problems, but there is a growing body of literature dedicated to the task. Two overarching themes found in this literature warrant further discussion here, namely:

1. The role of networks in complex systems thinking about sociocultural phenomena; and

2. The importance of pattern in such work.

3.4   Networks

As the scientific community began to embrace systems methodology, new and innovative ways of describing phenomena emerged. For example, the new science of ecology enriched the emerging systemic way of thinking by introducing two new concepts: community and network. By viewing an ecological community as an assemblage of organisms, bound into a functional whole by their mutual relationships, ecologists facilitated the change of focus from organisms to communities and back again, applying the same kinds of concepts to different system levels.

As the network concept became more and more prominent across a range of scientific disciplines, systemic thinkers began to use network models to view organisms. They saw that organisms, as networks of cells, organs, and organ systems, could be understood as networks of individual organisms, like ecosystems. The view of living systems as networks provides a novel perspective on the so-called 'hierarchies of nature'. Since living systems at all levels are networks, we must, according to Capra (1996, p. 35), visualise the web of life as living systems (networks) interacting in network fashion with other systems (networks). In the 'the web of life', every phenomenon and living organism is interconnected, echoing ideas from the Gaia Hypothesis (Lovelock, 1979). Living organisms are characterised by a continuous exchange of energy and matter and therefore we can visualize the web of life as made up of living systems interacting continuously in a network fashion with other systems. Analysing complex phenomena in terms of networks and related relationships can be traced back to the theory of organisation of living systems.

At each scale, under closer scrutiny, the nodes of the network reveal themselves as smaller networks. We tend to arrange these systems, all nesting within larger systems, in a hierarchical scheme by placing the larger systems above the

smaller ones in a pyramid fashion. But this is a human projection. In nature there are no 'above' or 'below', and there are no hierarchies; each part of the system is as important as another for they all operate collectively to form the entire system. Just how these patterns of relationship work between the components becomes the focus for understanding the behaviour of the network. Therefore, drilling down to the pattern and relationships, rather than concentrating on the components themselves, is key to a systems thinking, or the networked, approach. Such things as hubs and connectors become important as the analysis of a network takes shape. As Barabási (2003) sees it:

> …networks are not en route from a random to an ordered state. Neither are they at the edge of randomness and chaos. Rather, the scale-free topology is evidence of organizing principles acting at each stage of the network formation process. There is little mystery here, since growth and preferential attachment can explain the basic features of the networks seen in nature. No matter how large and complex a network becomes, as long as preferential attachment and growth are present it will maintain its hub-dominated scale-free topology. (p. 91)

Another key criterion of thinking about networks is the ability to shift one's attention back and forth between systems levels. In general, different systems levels represent levels of differing complexity. At each level the observed phenomena exhibit properties that do not exist at lower levels (Capra, 1996; Guastello, 1995; Kauffman, 1994; Cohen and Stewart, 1992; Waldrop, 1992). The systemic properties of a particular level are called 'emergent' properties, since they emerge at that particular level. According to Capra (1996) in the new systems thinking, "…the metaphor of knowledge as a building is being replaced by that of knowledge as a network" (p. 56). As we perceive reality as a network of relationships, our descriptions, too, form an interconnected network of concepts and models in which there are no foundations, only relationships. This means that relationships can also shift between states as components manoeuvre to seek out the best position for their survival or replication. This is where the notion of nodes, hubs and connectors becomes important as they signify where the prevalent and most sought after components are situated in the network. This is especially useful in system modelling or simulation. The following diagram (Figure 3.2) represents a map of an enzymatic reaction in a typical cell. The reason for including this diagram is that it provides a useful visual for a complex web of interaction. It is simple to observe that the nodes and hubs have increased activity and the smaller dots could represent an individual, or indeed a minor communication exchange. There is no need to interpret or overanalyse this diagram; it is simply presented for the purposes of illustration as an example of a complex network of interactions.

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Figure 3.2 – Complex Network

(Source: Alberts, 1994, p. 228)

However, this new approach to science immediately raises an important question. If everything is connected to everything else, how can we ever hope to understand anything? The logical conclusion to this connectionist model is the position that infinite meanings equals zero meaning; where the final sum game is nothing. For example, applying this thinking from the new paradigm of thought to the world of ideas and knowledge sees that all meanings are connected. Thus, each component of a theory or an idea rests on other theories and ideas from first principles or 'phenotype'. The remarkably complex nature of meaning therefore, would indicate that there are as many meanings that stand for something (representational meaning) as there are individuals.

And in order to understand one meaning, we must understand all others. Grand unifying theories such as this are mind-bendingly complex, and not usually well-respected because they often omit some aspect important to some discipline, serving to irritate some area of the academic community. This obtuse argument will not take us very far in any debate. Therefore, a position must be reached in order to break this philosophical impasse.

Turning once again to the natural world, if all natural phenomena are ultimately interconnected, in order to explain any one of them we need to understand all the others, which is obviously impossible. What makes it possible to turn the systems approach from abstract science into something more applicable to social phenomena is the acceptance that there is approximate knowledge. This insight is crucial to all of modern science, where the position of the observer also key in understanding the systems perspective. The old paradigm is based on the Cartesian belief in the certainty of Newtonian scientific knowledge. In the new paradigm it is recognised that all scientific concepts and theories are limited and approximate. Science can no longer provide any complete and definitive understanding (Capra, 1996, p. 41). If we accept, for example, that there is more than one truth for an idea, then we can also accept Luhmann's (1984) notion that there is functional differentiation of meaning in modern society. 'Shades of grey' and prevarication over the realm of *'possibles'*[2] is analogous to the struggle for existence in the natural world. The notion that there can be approximation of concepts, and that meanings generated can be either homogenous or heterogeneous depending on the position of the observer, also forms the basis of the idea of complex meaning systems developed in later chapters in this thesis. That this can be conceived through networks of meaning is important to the developing argument that patterns can be observed to better analyse problems of meaning.

3.5   Pattern and Complexity

The idea of a pattern of organisation – a configuration of relationships characteristic of a particular system – became the explicit focus of systems thinking in cybernetics and has been a crucial concept ever since. As we have seen, from the systems point of view the understanding of all systems begins with the understanding of the patterns which connect. Throughout the history of western science and philosophy there has been a tension between the study of substance (matter) and the study of form (pattern). The study of substance starts with the question, 'What is it made of?' The study of form starts with the question,

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[2] Lemke often italicises this word to highlight his point.

'What is its pattern?' Just what these patterns might mean, and how we study them is something that has perplexed the scientific and indeed the philosophic community for many centuries (Capra, 1994).

One of the main themes in this thesis is that the key to a comprehensive theory of any system lies in the synthesis of those two very different approaches: the study of substance (or matter) and the study of form (structure or pattern). In the study of matter we measure and weigh things. Patterns, however, cannot be measured or weighed; they must be mapped. To understand a pattern we must map a configuration of relationships. In other words, matter involves quantities, while pattern involves qualities. Yet as Casti (1994) points out, patterns can be difficult to describe and even harder to recognise (p. 17). This is because even though the basic building blocks or components of the system may remain static, their relationship with other areas in the system is dynamic and may only be available at certain times.

The study of pattern is crucial to the understanding of all systems because systemic properties, as we have seen, arise from the properties of a pattern. What is destroyed when a living organism is dissected is its pattern. The components are still there, but the configuration of the relationships among them – the pattern – is destroyed, and the organism dies. Most reductionist theories become captured by empiricism and fail to grasp the importance of pattern (Gleick, 1987; Casti, 1994; Kauffman, 1992; Waldrop, 1992; Lewin, 1992; Rosen, 1991; Capra, 1987, 2003). Although the science of networks claims some inroads into the understanding of patterning, those at the vanguard of research admit there is still far to go towards its acceptance as a major discipline within the study of complex systems (Watts, 2003, p. 305).

One complex systems scientist who sees recurring patterns as critical to understanding all natural phenomena, including human behaviour, is Stephen Wolfram. In short, Wolfram's (1983, 2002) work on cellular automata largely consists of calculating the entropy of configurations generated by different rules, and saying that, while the rules are simple, the patterns they potentially generate are complex and intriguing. The graphic below (Figure 3.3) demonstrates a simple rule, through many iterations.

Figure 3.3 - 3-color totalistic cellular automata showing repetitive and nested behaviour.

(Source: Wolfram, 2002, p. 63)

Wolfram's (2002) key text, *A New Kind of Science*, declares that the failure of modern science to address the nature and dimension of complexity in the natural world led him to pursue his research into the behaviour of cellular automata. At the risk of over-simplifying his vast body of work, essentially, his thesis is that the natural sciences study 'regularities' because they can be easily observed (Wolfram, 2002, p. 861). When mathematics is applied to model these regularities it sometimes creates universal laws that govern the behaviour of natural systems, leading to predictions about like systems, and even their adaptation to non-material systems, like organisations and human behaviour. Yet, according to Wolfram (2002), these universal laws have failed to explain the patterns of complexity, which have been largely ignored (p. 861). The position taken by Wolfram is demonstrative of the dichotomy between the old and new paradigms of thought which, despite many years of debate, is no closer to being settled.

The debate about the scientific relevance of pattern is raised here merely to illustrate the depth of research, and also to acknowledge that some of these concepts are conducive to the theorisation of meaning. Wolfram's notion of the computational irreducibility of some complex patterns also lends itself to the conceptualisation of meaning in this way. For example, there are some ideas that cannot be reduced to simple semantics, and defy so-called rational explanations of behaviour, such as the notion of faith. So too, his principle of computational equivalence which asserts that:

> [complex systems]…tend to be exactly equivalent in their computational sophistication. So this means that there is in the end no difference

between the level of computational sophistication that is achieved by humans and by all sorts of other systems in nature and elsewhere (Wolfram, 2002, p. 844).

Wolfram's point is that the behaviour of all complex systems, whether they are gases, the human brain, a biological organism or cellular automaton broadly corresponds to algorithmic patterning. This of course challenges the assumption that complex systems like social phenomena are special because Wolfram's principle of computational equivalence demonstrates that abstract systems like cellular automata can achieve exactly the same level of computational sophistication. This is precisely why this area is contentious. What the principle of computational equivalence encapsulates is both the ultimate power and the ultimate weakness of science. For it implies that all the wonders of our universe can in effect be captured by simple rules, yet it shows there can be no way to know all the consequences of these rules, except in effect to watch and see how they unfold (Wolfram, 2002, p. 846).

Applying this principle to the problem of meaning, there are patterns of connection between certain meanings, some of which are self-evident and some contingent on other meanings. Yet, the simple rules, or universals accepted, for example, as the prevailing common sense, are often impossible to interpret because we cannot get beyond the discourse of what we seek to observe. In other words, the patterns exist, but we only see part of them because we are either too far away from their 'reach' or we are so close that we cannot separate meaning from our own experience of it. This is why it is theorising meaning as a dynamic system, rather than a concept in stasis, may enable us to draw upon the patterns that emerge to better understand how they are networked to other meanings. Also at issue is the idea of institutionalised meanings. Once accepted as a pattern of behaviour (or understanding), the energy required to retain and preserve these meanings is less than the energy need to question or remove them. Because it is easier to accept, institutionalised meanings, or the prevailing common sense, make individuals less capable (because they are arguably less energetic) of accepting other possibilities. This is why fads and fashions develop persuasive patterns (or meaning systems) that attract or co-opt followers. This thread will be elaborated further in Part 2 of this thesis.

3.6   The Relationship between Networks and Patterns

Having appreciated the importance of pattern for the understanding of life, we can now ask: Is there a common pattern of organisation that can be identified

in all living systems? One of the most important properties of a living system is that it is a network pattern. Whenever we encounter living systems – organisms, parts of organisms, or communities of organisms – we can observe that their components are arranged in network fashion. Whenever we look at life, we look at pattern and we look at networks. As Watts (2003) observes:

> By specifying precisely *how* connected systems are connected, and by drawing explicit relationships between the structure of real networks and the behaviour (like epidemics, fads, and organisational robustness) of the systems they connect, the science of networks can help us understand our world. (p. 303)

The recognition that networks and patterning could be important in understanding the behaviour of living systems came into science in the 1920s, when ecologists began to study food webs. Soon after that, recognising the network as the general pattern of life, systems thinkers extended the network models to more complex levels. Cyberneticists, in particular, tried to understand the brain as a neural network and developed special mathematical techniques to analyse its patterns. For example, the whole brain can be divided into subsections, or subnetworks, which communicate with each other in network fashion. All this results in intricate patterns of intertwined webs, networks nesting within larger networks (Varela et al. in Capra, 1996, p. 82). This particular method of viewing complexity at work has also been used by those such as Cilliers (1998) who uses neural networks to demonstrate aspects of human interaction.

The four key properties of networks are identified throughout the literature as:

1. nonlinearity;
2. feedback;
3. relationships; and
4. time.

Because networks of communication may generate feedback loops, they may acquire the ability to regulate themselves. For example, a community that maintains an active network of communication will learn from its mistakes, because the consequences of a mistake will spread throughout the network and return to the source along feedback loops, such as story-telling. Thus, the community can correct its mistakes, regulate itself, and reorganise itself by comparing and contrasting current behaviours with that of the past (either favourable or not). Indeed, self-organisation has emerged as perhaps the central concept in the systems view of life, and like the concepts of feedback and self-regulation, it is linked closely with networks. The pattern of life, according to Capra (1996, p. 82), is a network pattern capable of self-organisation. And as Watts (2003) points out throughout his text, whilst

mathematics, modelling, calculation and calibration are producing concepts like random growth, percolation theory, phase transitions, and universality in the new science of networks, the map of this territory is incomplete without the input of other disciplines like economics and sociology which overlay and organise the components within them. To this list must be added contemplation about meaning, epistemological and ontological frameworks. Thus, theorising and modelling biological, physical and social networks reveals patterns of connection that, although may be difficult to explain, reveal potential for predicting future states. This thesis proposes that if this same theorisation is applied to the problem of meaning, the patterns exposed may reveal an alternative to rationalist or empiricist approaches. One of the paths through this theoretical maze is to further explore the dichotomy between form and pattern; substance and matter.

3.7   Form and pattern; substance and matter

The tension between mechanism and holism is an inevitable consequence of the ancient dichotomy between substance (matter, structure, quantity) and form (pattern, order, quality). It is this dichotomy that causes the struggle in intellectual communities between what is considered relevant and what is not; the micro and the macro; the linear versus the nonlinear; substance and form.

Aristotle was the first biologist in the western tradition to distinguish between matter and form but at the same time linked the two through the passage of time and the process of development. Unlike his teacher Plato, Aristotle believed that form had no separate existence but was immanent in matter – that matter cannot exist without form. Aristotle's view of matter contains the essential nature of all things, but only as a 'potentiality'. By means of 'form', this essence becomes real and capable of being observed and studied and capable of adapting. In this sense, Aristotle's categories attempted to classify the substance in order to understand the form by comparing both form and matter. As previously discussed, this view of scientific disciplines, metaphysics, ethics and politics as being explicable through a formal system of logic and a set of unifying principles, dominated thinking for more than two thousand years.

The great shock for twentieth century science, according to Capra (1996), has been that whole systems cannot be understood by analysis alone. The properties of the parts are not intrinsic properties, but can be understood only within the context of the larger whole. Thus, the relationship between the parts and the whole has been reversed. In the systems approach the properties of the parts can be understood only from the organisation of the whole. Accordingly,

systems thinking concentrates not on basic building blocks, but on basic principles of organisation. Systems thinking in this sense, is 'contextual' - the opposite of analytical rational thinking. Analysis means taking something apart in order to understand it; systems thinking means putting it into the context of the larger whole. Such things as pattern and organising relations are just as important as the agents and components of the system itself (Capra, 1996, pp. 28-30).

Table 3.2 provides another example of this approach, in terms of discourse. It is reflected on different scales by many texts that apply systems thinking to some form of social behaviour.

Table 3.2: Traditional and emerging perspectives of complexity

This table is not available online. Please consult the hardcopy thesis available from the QUT Library

(Source: Dent, 1999, p. 15)

As suggested in this table, the comparisons drawn reinforce the ancient dichotomy between pattern and matter, form and substance. Many permutations and combinations of this table exist in scholarly journals and texts, where the accompanying descriptors to such tables provide various recommendations about how to convert from the states on the left side to those on the right side. But mostly these prescriptions never reach a synthesis between

the two worldviews. The assumption is that somehow the states on the right side are superior or preferable to those on the left. Others have written about the times in the 'wilderness' (Ackoff, 1981) when the traditional views transcended those represented on the right hand side.

However, it is contended that both views are complementary. The history of intellectual thought across disciplines is reflected in the reasons *why one worldview dominates* the other, not how to *be* one or the other. It is the synthesis *between* these two worldviews that is key to understanding most sociocultural phenomena: the dichotomy between substance and form, pattern and matter, mind and body. How they fit together, connect or disconnect, is integral to the purpose of explaining, social phenomena especially. When we focus on the dichotomy between these two positions, rather than on the positions themselves, a new world of possibility and analysis opens. For example, using one or the other is not necessarily productive. Using both views together, concentrating on the patterns of connection between both sides, however, is. As Bateson (1972) suggests:

> … (my colleagues in the behavioural sciences) have tried to build the bridge to the wrong half of the ancient dichotomy between form and substance. The conservative laws for energy and matter concern substance rather than form. But mental process, ideas, communication, organization, differentiation, pattern, and so on, are matters of form rather than substance. Within the body of fundamentals, that half which deals with form has been dramatically enriched in the last thirty years by the discoveries of cybernetics and systems theory. (p. xxv)

3.8   Complexity and Knowledge

One of the most important by-products of the new sciences is that complexity affirms the idea that knowledge is no longer simple, nor linear. Different kinds of knowledge or different points of view describe different aspects of phenomena, whether they are biological, social or chemical. The systems view captures this knowledge under various disciplines which are seen to work together to describe, construct and even measure objects scientifically. In this way what is being described or viewed is the whole, with the parts interconnecting and working together to make the whole (Checkland, 1981; Churchman, 1968; Heylighen, 1999). The language and discourse of complex systems gives us more tools to describe unexpected phenomena and the patterns of connection that may be at work within that system, particularly when we consider social meaning.

This thesis proposes that just as a complex systems analysis offers explanations about the natural world, the same concepts may also be applied to ideational schema, such as knowledge, or ideas. Because knowledge or even understanding of a phenomenon requires the amassing together of different sets of information, all interacting to provide a cognitive understanding, it can be seen to mirror the behaviour of phenomena from the natural world. In other words, simple information in itself (like an inert gas) lacks context and can be without value, but – combined with other sets of information (or perceptions, or knowledge) – can produce understanding.

We can go further towards explaining knowledge in terms of complex systems if we engage the language and concepts of complex systems, such as bifurcation and attractors. For example, the idea that truth can be seen as an attractor in a chaotic process of collecting and accumulating knowledge (Casti, 1994) can be further developed; so too, the part that religion might play in shaping why societies behave in a certain way. A bifurcation may manifest as a war on accepted ideals because new sets of social conditions (for example, unionization) may serve to challenge the prevailing common sense. Some knowledge clearly escapes an empirical tag (truth, values, ethics, and so on), therefore a complex systems approach can be engaged to include the role of the observer as one of the key issues dealing with subjectivity and individual understanding.

3.9   Caveats

Although systems theory depends upon an 'organic' metaphor imported from biology, it is not as rigorously measured, calculated and applied as would be expected. In fact, some (Czarniawska, 1997) see that the word 'system' has become a gross metaphor, where the open systems metaphor of input-throughput, output, feedback cycles, differentiation, and integration is a reductionist set of categories, and defeats the very purpose it is designed for. In addition, the semantic arguments about what 'system' has come to represent have become embroiled in a philosophical conflict between traditional ideology (which condemns reification of humans) and science (which celebrates humans' part in Isaac Newton's notion of the clockwork universe). Others (Turner, 1997) observe that systems theory is a gross simplification of the multiplicity of incoherencies, fragmentations, and pluralities, and that people (and indeed their ideas) cannot be treated as an abstract object or component of that system. Cilliers (2000) is also critical of the application of complex systems to social phenomena, particularly in terms of modelling, "we

cannot make simple models of complex systems" (p. 31). In more complex models of course, as Cilliers (2000) points out, "it would be as difficult to interpret the model as to interpret the system itself" (p. 28). The suite of systems theories have "generated more than [their] fair share of misunderstandings, convenient myths, and gross misunderstandings", often providing scientific legitimacy for a raft of special agendas within the scientific or academic world (Eve, 1997, p. 270).

3.10 Conclusion

As with any (contentious) theory, there is ongoing debate in scientific and other intellectual circles about how complex systems thinking can be successfully applied to any phenomenon. Even within scientific disciplines, where widest acceptance of its practical application has occurred, complex systems thinking continues to be both lauded for its innovative nonlinear approach, and reviled because it lacks the prescriptiveness of more traditional, but reductionist approaches. Some (Cilliers, 2000; Richardson, 2004) believe complex phenomena cannot be effectively modelled, while others (Wolfram, 2002) do not believe the modelling goes far enough, and continue to push these boundaries. Within the limits of reasonable debate about how best to apply the principles that underlie complex systems thinking, however, there are a number of key themes, or elements that can be universally applied to any nonlinear system, particularly social phenomena.

To apply complex systems thinking to social phenomena means that first we have to elevate it from a discrete problem or issue confined by language, ideology or other artificial scope to one where the phenomenon may be intricately connected and networked to a myriad of other similar (or vastly different) social phenomena. Whether this is simply a criticism of more traditional approaches of analysis or whether it is born out of frustration through lack of understanding, the position of the observer is no less subjective from either perspective.

Also described as the old and new paradigms of thought, couching social phenomena in terms of complex systems presents similar challenges to analysing physical or material systems under the same lens. As noted above, being able to understand or at least map the patterns of connection in these systems is similar, for example, to Luhmann's (1984) idea that there is functional differentiation of meaning. Acceptance that there can be no absolutes or universals offers a partial explanation of this position. For if there are no absolutes or universals the 'shades of gray' and realm of *possibles'* enables us to push the boundaries of

traditional analysis to encompass and accept that social meaning can indeed be infinite. However embracing a method for analysis that has no boundaries is equally problematic as one in which the boundaries are artificially and unecessarily restricted. The position of the observer offers relief from this so-called theory of everything, because what an individual sees as relevant to an analysis is integral to how they will understand and capture a complex meaning system.

Chapter 4: Sociocultural Systems as Complex Meaning Systems

This chapter synthesises the relevant themes from Chapters 2 and 3 to advance the concept of 'complex meaning systems'. I particularly refer to the theories of Humberto Maturana and Fransisco Varela, Niklas Luhmann, Donald Campbell, Jay Lemke, and Paul Cilliers, who have theorised the nexus between complex systems and sociocultural systems. The relevant theories discussed in this chapter are autopoiesis, cultural evolution, evolutionary epistemology and social semiotics. What these theories have in common is the link between traditional sociocultural theory and complex systems theory. For example, many of these theories address why social and cultural properties have emerged, what ecological, demographic, technological, and economic factors might have set the stage for their appearance, and how they might functionally interrelate with others. These theories also suggest new lenses with which to observe sociocultural phenomena, focusing on the patterns of relationships rather than simply what they comprise. How this theorisation advances the problem of meaning will be addressed at the conclusion of this chapter.

Also, it is highlighted in this chapter that the major contribution the idea of a complex meaning system brings is that it provides a structured account of the process of meaning making in a social system. A formal framework for the analysis of meaning is not dealt with adequately in either traditional, rational approaches, nor from disciplines in the new paradigm of thought. This chapter introduces a six-phase model of complex meaning systems to address this position.

4.1   Introduction

For at least the last three decades, the sciences of complexity or 'nonlinear dynamical systems theory' as Guastello (1995) terms it, have been increasingly applied to explain sociocultural phenomena. Complex systems thinking has been applied to many sociocultural phenomena - from understanding the behaviour of individuals, groups and institutions to suggesting prediction models for the economy and future urban planning. Some thinkers, like Pondy (1976), have suggested detailed frameworks which build upon earlier models (Boulding,

1968) of hierarchy of system complexity. Originally presented in 1956, Boulding identified nine levels of system complexity. The following is a blending of Boulding's and Pond's levels from the same article:

Level 1 - Frameworks (geography and anatomy of the universe, narrative maps, story-telling)

Level 2 - Clockworks (simple machines, theoretical structure of physics, chemistry and economics)

Level 3 - Control Systems (thermostats, transmission and interpretations of information)

Level 4 - Open Systems (Self-maintaining, self-reproducing)

Level 5 - Organic Systems (blue-printed growth systems, plants – division among labour cells)

Level 6 - Image Systems (specialised information receptors; 'brain' – receipt of information leading to an image)

Level 7 - Symbol Processing Systems (self-conscious language users, human awareness of what they know)

Level 8 - Network (multi-cephalous systems, social organisation)

Level 9 - Systems of Unspecified Complexity

(Boulding, K, 1968 in Pondy, L.R. 1976, 'Classic Paper Series', ECO Journal, 2005, Vol. 7 pp. 121-122)

Yet for all the promise of these early frameworks for modelling complex systems, it would seem we have not progressed beyond the scope of the theory, other than to engage supercomputers for modelling neural networks, cellular automata and complex mathematical algorithms. This is the reason why this theoretical path is to be approached with caution. Yet, at the same time, the limits of more traditional research methods into human social systems, through such techniques as statistical analysis, and codification of data, have emerged because of the often random, nonlinear, unpredictable nature of many problems in this area. For example, the inability to establish the chain of causal connection between what is observed and what is experienced seems to be better placed in the sciences of complexity because of its fuzzy logic, impreciseness and lack of clear boundaries. Whilst many thinkers (for example, Csanyi & Kampis, 1987; Mandelbrot, 1987; Nicolis & Prigogine, 1989; Kiel, 1998; Matthews, 1999; Merry, 1997; Lee, 1997; Stacey, 1999,2000, 2002) see complex systems discourse as injecting new life into the examination of human sociocultural systems by creating new paradigms, others (Turner, 1997; McKelvey, 2001) caution against the faddish application of complex systems

theory to social systems, particularly organisations. Turner (1997) offers a sceptical view of the relevance of complexity theory in the social sciences:

> Postmodern science sometimes appears to be little more than a way of using concepts such as nonlinearity and chaos to support New Age magical thinking or the animus of political interest groups. Such strategic misinterpretations of legitimate scientific ideas are not new – evolutionary theory was used to support deterministic views of human nature and human history, relativity was used to support moral relativism, and quantum theory was used to support random or aleatory theories of creativity and innovation. (Turner in Eve, Horsfall and Lee, 1997, p. xi)

Further, Turner believes there are territorial issues associated with the ownership of complex systems, all proponents competitively vying for the claim to being the 'pure discipline', and suspicions abounding in the scientific community about how the science is applied. This has provided what Turner (1997) sees as large divisions:

> … between those who study 'deterministic chaos' and those who allow an element of the random into the picture; between those who believe it can be useful only when strictly confined to mathematical descriptions and those who hold that it marks the one-way bridge from math into physical reality; between those who see it as something that can take place within the traditional framework of space as we understand it and those who feel it demands new definitions of space itself; between those who regard the field as reconcilable with classical notions of time as a spacelike dimension and those who see it as a new piece of content within science and those who regard it as implying modifications in scientific method; between those who see it as a supplement to the mechanism of evolution and those who regard evolution itself as a special case of nonlinear emergence; and between those who see it as a confirmation of human freedom and responsibility and those who see it as another scientific reduction of the human to the mechanistic. (Turner in Eve, Horsfall and Lee, 1997, p. xii)

Nevertheless, non-linear modelling of social systems is also being increasingly pursued, particularly agent-based simulation (Gilbert and Troitzsch, 1999; Conte et al., 1997; Gilbert and Conte, 1995; Richardson, 1991). It would seem that the complexity sciences may be well-suited to address areas where there is inherent controversy, paradox and equivocality in explanations of social phenomena. As Turner (1997) observes:

> … the power of the new science may be precisely that it offers intelligible ways of obtaining deterministic systems, space out of mathematical logic, irreversible time out of reversible space, scientific method out of scientific content, living systems out of nonliving matter, and human freedom out of biocultural necessity. (p. xii)

To expand on the concepts raised in the previous chapter, it is proposed that a synthesis between the tools from complexity science and theoretical methodologies of traditional methods of sociocultural critique may have the capacity to offer innovative explanations of social phenomena because such

synthesis introduces scientific discourse, previously off-limits to the analysis of human social systems.

Importantly, the final section of this chapter advances the development of the idea of complex meaning systems. But first we need to examine an important theoretical step to a formal conceptualisation of social systems based on the science of systems theory, in particular biological systems.

4.2   Autopoiesis – comparing living systems to social systems

The concept of autopoiesis began as a tool of science, in particular of biology, but quickly spread to areas as diverse as sociology, psychotherapy, management, anthropology, and organisational behaviour. The roots of autopoietic theory began in the early 1970s when two Chilean scientists, Humberto Maturana and Francisco Varela posed the following question: 'To what extent can human social phenomenology be explained in terms of biological phenomenology?' In other words, can we describe human social behaviour by observing the behaviour of natural systems? Many thinkers through the ages, across a range of disciplines, have searched for an answer to this question. However, Maturana and Varela were probably the first to comprehensively and formally unite an organic systems view with sociocultural perspectives using contemporary scientific, theoretical parlance.[3]

Maturana and Varela (1980) contend that "autopoiesis is necessary and sufficient to characterise the organisation of living systems" (p. xviii). They claim the reverse can also be asserted: that if an entity is characterised by self-producing organisation, it is recognised as a "living system" (pp. 9-11, pp. 82-84). Autopoietic systems are systems:

> … that are defined as unities, as networks of productions of components, that recursively through their interactions, generate and realise the network that produces them and constitute, in the space in which they exist, the boundaries of the network as components that participate in the realisation of the network. (Maturana, 1981, p. 21)

Other theorists, such as Luhmann (1982, 1986, 1995), Brier (1995, 1996), Whitaker (1993, 1994, 1995), Mingers (1994), Graham and McKenna (1999) and Mariotti (2000), believe autopoiesis distinguishes a general theory of self-referential systems and offers a less abstract way of differentiating between living systems (cells, brains, organisms, etc.), cognitive systems and social systems (societies, organisations, interactions). Because of Maturana's and Varela's definition, all

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[3] Autopoiesis is not the only contemporary biologically-based approach. Out of many, one could also include Csanyi and Kampis' autogenesis, Swenson's autocatakinesis, and even Capra's rendition of the Gaia hypothesis.

these systems can be termed autopoietic, thus providing a consistent way to classify those systems. For if we can see that all living systems have certain characteristics such as self-organisation, they are consistent with autopoietic systems which are operationally closed and rely on the networks of operations that come forth to create them. Although each of these theorists sees that autopoietic theory is more about operations than the observation of systems themselves, distinguishing between different types of system or different modes of realisation of autopoiesis is given varying emphasis in their works. Nevertheless, the common thread for those writing about the concept is that autopoiesis offers a parascientific approach, merging at least three paradigms (science, in particular biology, psychology and sociology), to offer new perspectives and a new discourse to explain a range of sociocultural phenomena.

However, as Luhmann (1986) cautions:

> … this kind of approach is usable only if we are prepared to accept its anti-Aristotelian premise that social systems, and even psychic systems, are not living systems. The concept of autopoietic closure itself requires this theoretical decision, and leads to a sharp distinction between meaning and life as different kinds of autopoietic organisation; and meaning-using systems again have to be distinguished according to whether they use consciousness or communication as modes of meaning-based reproduction (para. 12).

Autopoiesis acknowledges that patterns of connection exist, but the focus is on the auto-production of the elements to sustain the system, rather than on the pattern itself. In this sense, Maturana's and Varela's proposal is that living systems are like self-producing machines. But, since no other kind of machine is capable of ending up with something different from itself, autopoietic systems are simultaneously producers and products; circular systems that work in terms of productive circularity (Luhmann, 1986). In other words, they are simultaneously autonomic and dependent systems. Both Mariotti (1998) and Luhmann (1986) see this condition as paradoxical. Although in autopoietic theory the focus is on the ability of the system to reproduce itself, essentially Maturana believes that if we are not able to understand the systemic character of living cells, it follows that we will not be able to adequately understand living organisms. This is quite an important point, as some of the more intransigent systems theorists believe that the detail of the components is secondary to the relationship between the components.

Where reductionistic thinking focuses largely on the elements of the system to understand the whole system, autopoiesis seeks to discover the relationships between the elements and patterns of auto-production or self-organisation that enable the system's survival and renewal. How the elements draw on other parts within the system and on resources from the external environment is also

key to this position; as is an understanding of the components of the system itself. But if we think about living systems, or indeed any other complex system, they adapt and evolve. Maturana and Varela (1980) overcame this through their notion of 'structural coupling' which characterises the interactions between the system and its environment; each serving a mutual purpose of self-organisation.

4.3   Social systems as autopoietic models

There are a number of statements we can make about social systems that can be used in terms of biological or autopoietic models:

1. Social systems are open systems.

2. Social systems form dissipative structures because they are situated far from thermodynamic equilibrium.

3. Social systems evolve relying on traditions, memory and history to shape future behaviour.

4. Social systems are adaptive systems, adapting themselves to the changes that take place in their environment.

5. Adaptation of social systems is actively creative.

6. Social systems are characterised by feedback loops, which can be stabilizing or unpredictable.

7. Social systems are comprised of other systems, or networks which can display nested hierarchies and system behaviour which may or may not imitate the behaviour of the social system itself.

8. Social systems are purposeful, in other words, they exist for a reason.

9. Social systems exchange information that is not easily measured; this may include such things as ideas, feelings, ethical, aesthetic, moral and cultural values.

10. The human element of social systems means they can never be totally predictable. This is because human beings can be selfish and do not necessarily act altruistically for the benefit of the whole system (recall the discussion in Chapter 2).

(adapted from Parallelada, 2002, pp. 138-140)

Another way of looking at social systems is as third-order autopoietic systems arising from structural coupling among second-order, metacellular living systems such as insects or people (Maturana and Varela, 1980, pp. 107-108). According

to Graham and McKenna (1999), theorists from a broad range of disciplines argue that human social systems – from interpersonal relationships to the global society – are observing, cognitive, self-observing, self-producing, self-describing entities, which can be described as autopoietic. For this reason, sociocultural systems can never be constant, even though some of the subsystems may have elements of permanence about them. This means that the key feature of a living system is the maintenance of its organisation; the "preservation of the relational network which defines it as a systemic unity" (Maturana, 197, p. 318). (Also cited in Graham and McKenna, 1999, p. 2.)

However, as with complexity theory, some (Mingers, 1995; Viskovatoff, 1999; Mariotti, 2000) question the extent to which autopoiesis can be applied. They are critical that social systems such as organisations, social classes and even informal groupings are termed and analysed as living systems. These critics believe that social systems emerge under more behaviourist models; that is, they respond to sociocultural conditioning, and factors based on individual and collective behaviour, innate tendencies, and dominant power relations.

Whether contemporary writers/theorists omit or downplay autopoietic theory because they are not familiar with its potential, or dismiss it because of its pseudoscientific implications, examining the interplay between a more traditional analysis and organic perspectives is a fertile area for further research, for example, research based on empirical methods. Graham and McKenna (1999) also recognise this critical link and contrast Maturana's and Varela's autopoietic theory to Lemke's (1997) notion of ecosocial systems. Lemke's work is considered seminal to contemporary perspectives about the synthesis of sociocultural systems theories and complex systems theories. His work in this area will be discussed towards the end of this chapter.

However, before the idea of evolution in autopoietic theory is introduced, it is useful to mention that the study of language offers evidence of a sociocultural phenomenon which produces 'behavioural coordination through mutual and recursive structural change' (Maturana and Varela, 1980, 1981). Put simply, humans communicate via complex language and symbolic patterns that evolve even over one generation. It is the case, however, that if we were able to converse with a person from a thousand years ago, we would find it extremely difficult to communicate, language differences aside. Physiologically, humans have not changed significantly over the last forty thousand years or more, but their languaging has. This is as much to do with adapting to a changed environment (humans – sub-system, physical environment – whole system) as it is with such things as story telling, culture and mechanisms for control of the prevailing common sense.

4.3.1 Evolution in autopoietic theory

As we learned in the previous chapter, complexity theory offers plausible explanations for many of the current challenges to neo-positivist evolutionary theoretical models. Such things as neutral selection, molecular clocks, selfish DNA, hierarchical selection, the emergence of life, the complex genome, ecological succession, and punctuated equilibrium are difficult to explain using simple evolutionary models, not least because of the discourse available to describe such phenomena. Complexity theory places organisms and concepts within a rendering of nature that is hierarchical and self-organising at multiple temporal and spatial scales. We tend to understand these broader concepts even though the detail of the theory may be obfuscated by the discourse. Physical selection ('survival of the stable') and chemical selection ('survival of the efficient') are related to natural selection by these dynamic processes in which life is created not through 'frozen accident', but by an explicable elaboration of a basic theme (although irreducibly and historically contextualised). This idea comes from Richard Dawkins' view (*The Selfish Gene*) in which everything, from a mountain, to a bubble, is seen to be a stable collection of atoms. Dawkins' (1989) explanation of stable states focuses on his idea of 'the replicator' which emerged from the primordial soup four to six billion years ago, and rearranged itself into stable configurations which form linkages to be used by its immediate surroundings. The building blocks linked up with others in more and more complex ways and copied, with 'the replicator' becoming rarer (Dawkins, 1989, p. 97). Eventually, organisms form and compete with their surrounding environment for survival, the most selfish evolving as the fittest (Dawkins, 1989, particularly Chapter 11, "Memes: the new replicators"). Dawkins' idea of gene selection holds that groups for which individual members would be willing to sacrifice themselves, would be more likely to survive than a rival group. Yet Dawkins' theory about how this occurs is more sympathetic to the view that individuals do this not for altruistic reasons, but as part of a long term survival strategy. As Dawkins (1989) puts it:

> I would put my money on one fundamental principle. This is the law that all life evolves by the differential survival of replicating entities. The gene, the DNA molecule, happens to be the replicating entity that prevails on our planet. There may be others. If there are, provided certain other conditions are met, they will almost inevitably tend to become the basis for an evolutionary process.

> But do we have to go to distant worlds to find other kinds of replicator and other, consequent, kinds of evolution? I think that a new kind of replicator

has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate that leaves the old gene panting far behind.

The new soup is the soup of human culture. We need a name for the new replicator, a noun that conveys the idea of a unit of cultural transmission, or a unit of imitation. `Mimeme' comes from a suitable Greek root, but I want a monosyllable that sounds a bit like `gene'. I hope my classicist friends will forgive me if I abbreviate mimeme to meme. If it is any consolation, it could alternatively be thought of as being related to `memory', or to the French word même. It should be pronounced to rhyme with `cream'.

Examples of memes are tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches. Just as genes propagate themselves in the gene pool by leaping from body to body via sperms or eggs, so memes propagate themselves in the meme pool by leaping from brain to brain via a process which, in the broad sense, can be called imitation. (p. 211)

There is no intention to further traverse the tremendous scope of Dawkins' theories here, but, suffice to say, similar principles can be applied to the idea of social evolution. A number of theorists (Donald Campbell, Niklas Luhmann, Illya Prigogine, Heinz von Forrester, Humberto Maturana and Francisco Varela among others) have cast social evolution in similar terms. Social evolution addresses itself to the emergence of social properties, particularly through imitation and traditions. As emergent cultural behaviours are identified and situated historically, social evolutionists attempt to relate cultural patterns into functional-ecological explanatory models. Social evolutionists, for example, ask why cultural properties have emerged, what ecological, demographic, technological, and economic factors might have set the stage for their appearance, and how disparate social properties functionally interrelate with others. They attempt to explain emergent social properties in material ways, which is similar to the methods ecologists use to describe ecosystem function and organisation, and the transitions between multiple, functionally stable ecosystem states. However, autopoietic theorists (or more correctly, those working with autopoietic theory) such as Maturana, Varela, Luhmann, Geyer and others look more closely at the effects of these relationships (for example, predatory competition), at the level of the social system itself. The focus is more on the whole, than on an interrogation of how the sum of the parts make up the whole.

The classical understanding of evolutionary theory sees a system as moving toward to a state of equilibrium, with organisms that comprise the system perfecting their capacity to adapt. The systems perspective sees evolution as

operating far from equilibrium, unfolding through a complex interplay of adaptation and creation, where any small trigger could send the system to the edge of chaos. The entire environment in the systems view is important because information is exchanged between the organism and its surroundings; the surrounding environment is also capable of adapting and evolving in response to fluctuations. In other words, the exchange of energy, matter and information with the system produces the effects of competition, cooperation and co-evolution. Therefore the focus changes from the evolution of the organism to "coevolution plus environment" (Capra, 1982, p. 287).

Taking this notion of evolution one step further, Mariotti (1994) suggests that, since a social system is determined by its structure (autopoietic), there should not exist dispensable parts (i.e. individuals), otherwise it is not a complete system. This is of course, is the very thing that attracted Luhmann to autopoietic theory: because it provided him the level of abstraction to describe social phenomena without explicitly considering the role of the individual (Viskovatoff, 1999, p. 4). Perhaps certain customs, traditions or languages may, through evolutionary processes, be abandoned, but the main product of human social systems (the need to communicate) is arguably indispensable. For example, Maturana and Varela (1980, 1981) posit through their theory that in nature there is a tendency for the interaction of increasingly complex autopoietic systems. However, this increasing complexity occurs through the coupling of simpler autopoietic unities to build up more complex organisations, in which the hierarchy principle is the rule: a system is inside another one, that is superior to it; this one is, by its turn, inside another one, that is superior to it; and so on. This can be compared to the nested hierarchical models proposed in the section on networks in the previous chapter. Also, the notion of hierarchy of complex systems as proposed by Boulding (1956) and Pondy (1976) contains elements of social systems. (Contrast this, however, to Wolfram's view that complexity is based on numerous iterations of simplicity.)

Therefore, to these social evolutionary theorists, evolution is the source of constant emergence of higher and higher levels of cybernetic control. According to Turchin (1990), evolution proceeds by metasystem transitions, in which a number of previously uncoordinated systems become controlled by a metasystem, thereby vastly expanding the effects of its free choices. The evolutionary growth of the control hierarchy is a fact of natural history, which has the status of a natural law. Like every law of nature, the law of evolution does not determine uniquely and in detail how things should develop. It only sets the boundaries between a range of possible future states.

4.3.2   Organisations as social systems

As we have outlined, Luhmann (1990) emphasises communication as the foundation of all social systems. According to Luhmann (1990), "the concept of autopoietic closure has to be understood as the recursively closed organisation of an open system" (p. 12). In some cases, social systems are open to energy but closed to information and control. Thus, according to Johannessen (1998), even if the system is:

> …closed normatively, it does not follow that it is not subject to influences from the outside world. An autopoietic system is openly cognitive, and can therefore both influence other systems and at the same time learn and adapt to the outside world. Organisational learning and innovation are thereby linked to the cognitively open loop (p. 363).

However, the idea of social systems as autopoietic systems is contentious; Luhmann (1982, 1986) and Robb (1989) believe autopoietic theory can be applied to social systems, whereas Maturana (1981), Mingers (1989) and Varela (1989) see there is only limited potential for application of the theory. Despite this difference of opinion, there are attempts to map this terrain. Johannessen (1998) provides the following analytic model for the study of organisations as social systems by means of social autopoiesis theory (p. 365). This diagram emphasises the nature of organisations as both closed and open systems, where the loop between the cognitive learning and the environment is open. It can also be seen that tension exists between the normative superstructure in the system which is partially closed, thus hindering innovation. There is no intention to analyse this diagram beyond this observation, as the debate about the extent of organisations as autopoietic systems is not the focus of this thesis.

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Figure 4.1 – Model for organisations as social systems

(Source : Johannessen, 1998, p. 365)

4.4   The role of the observer

The role of the observer is critical to the continuing discussion of autopoietic
theory and how it affects social systems. According to Whittaker (1997), when a
cognitive system makes distinctions which cleave its environment into 'object'
and 'other', it is operating as an observer. Maturana (1980) sees that there is no
objectively existing reality independent of any observer. Without the observer
there is no subjectivity, nor indeed objectivity, we "cannot experientially
distinguish between what we call perception and hallucination" (Maturana
cited in 1978 in Kenny, 1989, para. 9, approx. p. 5). The observer 'brings forth' his
own reality by making his operations of distinction, as Maturana elaborates:

> Therefore, we literally create the world in which we live by living it. If a
> distinction is not performed, the entity that this distinction would specify
> does not exist; when a distinction is performed, the created entity exists in

the domain of the distinction only, regardless of how the distinction is performed. There is no other kind of existence for such an entity. (Maturana, 1988, p. 29).

Further, according to Maturana:

> An observer is a ... living system who can make distinctions and specify that which he or she distinguishes as a unity, as an entity different from himself or herself that can be used for manipulations or descriptions in interactions with other observers. (Maturana, 1978, p. 31)

Thus, the observer is one of the key concepts in autopoietic theory, because:

> Observing is both the ultimate starting point and the most fundamental question in any attempt to understand reality and reason as phenomena of the human domain. Indeed, everything said is said by an observer to another observer that could be him - or herself. (Maturana, 1988, p. 27)

The fundamental operation in observing is that of distinction: "...the pointing to a unity by performing an operation which defines its boundaries and separates it from a background" (Maturana, 1975, p. 325). Through the recursive distinguishing of entities through action, the observer is "...able to operate as if external to (distinct from) the circumstances in which he finds himself" (Maturana, 1975, p. 315). However, as Whittaker points out, the observer is not actually standing apart from those circumstances because the entire and the only domain in which he/she operates is that of his/her closed (self-interconnected) nervous system. Thus, according to Whittaker, the notion of the observer circumscribes all inquiry and all discussion. (Recall here the notion of embodiment proposed by Lackoff and Johnson [2001] outlined in Chapter 2). The qualification of any observation with respect to the vantage point of a given observer makes autopoietic theory inherently relativistic with respect to the person and history in the position of observer. Moreover, since shared or collectively negotiated descriptions of experience (e.g., recollections [past], consensus [present], plans [future]) are qualified with respect to the interactions among given observers, autopoietic theory is inherently relativistic with respect to the interacting observers and the history of interactions among them. This effectively renders the concept of autopoiesis time and context dependent (Whittaker, 1997).

In the mechanistic scientific view of knowledge, knowing is eternal, and universal mathematical structures or laws control all movement, matter and force – including tools for observing the behaviour of living beings and formulae for 'measuring' the language and rationality of humans. For at least the last four centuries, science was believed to provide answers to the fundamental natural laws behind all matter. But it is from the reasoning that caused the Enlightenment in the first place that we see formal divisions occurring between the rationalist and empiricist perspectives.

Gregory Bateson's cybernetic theory of mind also suggests a new and creative non-mechanical understanding of the relation between the concept of motivation-intentionality and information (Brier, 1995). Bateson (1979) defined the mind as a systems phenomenon characterised by a set of criteria which systems have to satisfy for mind to occur. Any system that satisfies those criteria will be able to process information and develop the phenomena we associate with the mind – thinking, learning, memory, and so forth. In Bateson's view, mind is a necessary and inevitable consequence of a certain complexity which begins long before organisms develop a brain and a higher nervous system. Bateson's criteria for mind turn out to be closely related to those characteristics of self-organising systems. From the systems perspective, life is not a substance or force, and mind is not an entity interacting with matter. Both life and mind are manifestations of the same set of systemic properties, a set of processes that represent the dynamics of self-organisation. (Bateson,1979, pp. 93-100).

This returns our discussion to reductionism, considered earlier in this chapter. The description of the mind as a pattern of organisation, or set of dynamic relationships, is related to the description of matter in organic systems. Mind and matter no longer appear to belong to two fundamentally separate categories as Descartes proposed, but can be seen to represent different aspects of the same universal process, as in the sculpture, sculptor, and the act of sculpting. This is also related to the systems concept of the mind being characteristic not only of individual organisms but also of social and ecological systems. As Bateson emphasised, mind is immanent not only in the body but also in the ways information is exchanged with the body. There are larger manifestations of the mind of which our individual minds are only subsystems existing in a kind of collective consciousness. This perspective has very real implications for our attitudes about the world, even in our immediate surroundings. For if we see the planet (ecosystems, social systems, communities, organisations, the external environment) as not only alive, but also mindful and purposeful like ourselves, then everything we say and do is connected to everything else. This means that in the stratified order of nature, individual human minds are embedded in the larger minds of social and ecological systems and these are integrated in the planetary mental system – the mind of Gaia – which in turn must participate in some kind of universal or cosmic mind. What we are describing here of course, is the very heart of metaphysics, religion, and our understanding of God. The notion of 'mind' as a multileveled phenomenon, of which we are only partly aware in ordinary states of consciousness, is widespread in many non-Western cultures and religions.

Finally, the world in which we live is the world that we build out of our perceptions, and it is our structure that enables us to have these perceptions.

This structure it is formed from our social interaction and is unique to us; we are a unique observer. If the reality that we perceive depends on our structure, there are as many realities as perceiving people. This explains why so-called purely objective knowledge is impossible: the observer is not apart from the phenomena he or she observes. Since we are determined by the way the parts of which we are made interconnect and work together (that is, by our structure), the environment can only trigger in our organisms the alterations that are determined in the structure of these organisms.

In Maturana's view, when someone says that he or she is objective, it means that he or she has access to a privileged worldview, and that this privilege in some way enables them to exercise an authority that takes for granted the obedience of everybody else who is not objective. This is one of the bases of so-called logical reasoning. Our conditioning leads us to see the world as an object, thus we think of ourselves as separate from it. Mariotti (1997) posits further that:

> ...through the ego, we see ourselves as observers separate from the rest of our own psyche. In order to operate such an objective proposal, it is necessary to establish a boundary between the ego and the world, the same way we did between the ego and the rest of our totality. So, since we are divided the same will happen with our knowledge, which will also result divided and limited. (approx. p. 6)

As we saw earlier, Descartes' separation of mind and body requires similar though far more philosophical reasoning, but basically comes to the same conclusions, as does Bateson (1989). That is, our objectivity is nothing more than a fragmented and restricted worldview. As Mariotti (1999) observes, it is from this position that we think of ourselves as authorised to judge everybody who does not agree with us, and condemn them as 'non-objective' and 'non-intuitive'. In other words, departing from a fragmented and limited viewpoint, we think that is possible to arrive at the truth and show it to our peers – a truth that we imagine must be the same for every person.

4.5 The nexus between complex systems and social systems: Three unique perspectives – Donald Campbell, Jay Lemke and Paul Cilliers

I have chosen to further expand on the thoughts of Donald Campbell, Jay Lemke and Paul Cilliers because they provide unique insights, from different perspectives, into the nexus between complex systems and social systems. Moreover all three go one step further and also offer reflections about how the problem of meaning might be canvassed in terms of a social system. In other words, their views characterise the social construction of meaning in complex systems thinking terms.

4.5.1   Evolutionary epistemology – Donald T. Campbell

Donald Campbell's thinking takes the evolutionary model on a different tangent than some of his contemporaries using biological metaphor to explain human social systems. Problems of epistemology were discussed in previous chapters, and the notion of evolutionary epistemology introduced in this chapter to provide an example of the application of evolutionary theory to one of the products of human social systems, knowledge. To briefly recapitulate, Donald Campbell coined the term 'evolutionary epistemology' in which he generalised Popper's falsificationist philosophy of science and applied it to knowledge processes at all biological, psychological and social levels (Heylighen, 1995).

Donald Campbell applied his philosophy to the development of social systems, arguing that cultural evolution is necessary to explain the development of human society. The necessary tension between cultural and biological evolution allowed him to explain such things as the organisation and decline of archaic societies and the emergence of religious systems. He used these insights to propose the concept of evolutionary ethics, which could guide our actions without recourse to arbitrary metaphysical principles, like religion. He also applied these ideas to contemporary social phenomena, arguing for alternative types of social organisation.

Evolutionary epistemology is therefore an approach that sees knowledge as a product of the same variation and selection processes that characterise evolution of natural systems. Its cornerstone is that the original function of knowledge is to optimise the survival and reproduction of the organism that uses it. Thus, organisms with better knowledge of their environments are more adaptable and therefore more successful than organisms with less adequate knowledge, or limited capacity to use it. In this way, the classification that occurs through evolution of knowledge depends on the degree to which its carrier survives natural selection through its environment (Heylighen, 1995). Thus, evolutionary epistemology notes that the individual, ontogenetic development of knowledge is the result of variation and selection processes of 'ideas' or pieces of potential knowledge. In other words, knowledge is the product by various means (variation), and the weeding out of those hypotheses that turn out to be inadequate (selection).

As stated, evolutionary epistemology has its roots in Popper's epistemology of science which dealt with 'conjectures' and 'refutations', and noted that a fundamental criterion for every scientific theory is that it must be 'falsifiable', that is, able to undergo selection. The whole spectrum of evolutionary

knowledge processes, from genetic mutation to scientific model-building, is capable of fitting within this theory. Campbell (1974) built upon that framework, and his theories rest on three basic ideas:

1. the principle of blind-variation-and-selective-retention;

2. the concept of vicarious selector; and

3. metasystem transition.

These ideas represent an ordered framework for the process of creating knowledge. For example, the generation of new knowledge begins with a 'grab bag' of information. Campbell sees that we filter out bad information through a kind of blind trial, where we select, on the basis of limited understanding, knowledge that we wish to retain for immediate purposes or at some future time. Once the new knowledge has been retained in memory, the blind trials give way to more informed selection mechanisms, vicariously anticipating the selection by the environment. An example of this might be how we anticipate our reaction to some good news. At the level of metasystem transition, not only the knowledge may be challenged, but the process for retaining the knowledge may undergo changes itself.

Therefore new information may adjust the filters we apply to previously retained knowledge, generating higher level vicarious selectors, resulting in the development of multilevel cognitive organisation and, theoretically, more intelligence. If we turn from the individual to the society itself, this thinking could apply to the way in which, collectively, societies develop (and abandon) ideas about such things as belief, values and ethics (Heylighen 1995). Thus, it is contended that the way meaning systems are created in a society could be explained using Campbell's framework for evolutionary epistemology.

4.5.1.1 *Evolutionary epistemology in social systems*

Evolutionary epistemology takes a bilateral approach and sees knowledge emerging as a result of the cognitive mechanisms of humans and their fit with the natural and social world; knowledge being the product of the processes of trial and error learning and natural selection of ideas. Earlier chapters discussed traditional approaches to epistemology, which arose from the problem of distinguishing between knowledge and belief. Plato's view of knowledge is that there must be justification; yet, his critics lament the oversight of things such as empiricism, and observation. Evolutionary epistemology draws upon models and theories from evolution to characterise and resolve issues concerning conceptual change and the development of ideas and meaning. As Campbell (1974) explains:

In the course of evolution, there have been tremendous gains in adaptive adequacy, in stored templates modelling the useful stabilities of the environment, in memory and innate wisdom. Still more dramatic have been the great gains in mechanisms for knowing, in visual perception, learning, imitation, language and science. At no stage has there been any transfusion of knowledge from the outside, nor of mechanisms of knowing, nor of fundamental certainties. (p. 413)

Within the collective understanding of meaning-making, there is constant struggle for the power and the control of agents. The motivations for control evolve in the biological sense because only the strongest components survive. This is one of the reasons biological metaphor is popular as a comparison for human social systems. The life-cycle of agents, of phenomena, of the external influences plays out in similar way to that in the natural world. For example, in complex societies groups are incorporated into organised communities, and these into nations. Nodes of selection and self-organisation through competition can be envisaged at each of these levels. Agents interact, influence and organise the system into series of subsystems, all interconnecting through a complex web of behaviours.

However, the similarities between human social systems and biological systems collapse under the weight of such things as values, beliefs, and meaning. According to Campbell, the great majority of evolutionary biologists deny the efficacy of biological group selection of 'altruistic' traits in which individuals act for the preservation of the group at the risk of their own well being and 'inclusive fitness' (i.e., the representation of their own genes in future generations) (Campbell 1958, cited in Heylighen 1995, approx p. 10).

Essentially, this means that the effects for self-sacrificial altruistic traits will be undermined by group versus individual selection. According to Campbell and Heylighen (1996), a group that includes heroically self-sacrificing altruists may thrive better. The inclusive fitness gains from this will be shared equally by the non-altruists within the group, and seen as acceptable by those with altruist tendencies in the group. For the altruists, these gains are in part undermined by the risks they run. The non-altruists pay no such costs, and thus out-breed the self-sacrificial altruists in the within-group genetic competition. Thus the prevailing common sense emerging as a result of this competition contains those institutionalised meanings considered valid. From an axiological point of view, value of meaning can also incorporate dimensions of control for that meaning, to ensure its survival. The notion of survival of the fittest not only applies to physical systems but also to behaviour within those systems. This would include such things as values, beliefs and opinions not directly related to the physical survival of the species. The resulting mechanisms would include mutual monitoring and punishment for 'immoral' or unacceptable behaviour, exclusion

of ideals and meanings that are not part of the evolving 'successful' social system.

Further, according to Campbell and Heylighen (1995), humans probably have an innate fear of ostracism, and a tendency to find painful the signs of hostility coming from those we work or live with on a regular face-to-face basis. The fear of ostracism means that we crave inclusion and a sense of belonging to certain groups within our sociocultural system. Innate tendencies to enforce group solidarity on others (altruism) would be supported by both individual and group selection and may be identified as a prerequisite for group selection. Ultimately, this means that such things as belief, ideology and meaning compete for ascendancy in the social world in much the same way that biological organisms compete to survive in the natural world. Such competition may be capable of being explored a little deeper through the concept of metasystem transition.

'Metasystem transition' involves competition between other groupings and components of the system at the same level, but also competition between the interests of the larger encompassing social unit. We have already learned that in complex systems such as societies and organisations, the environment is more social than physical, consisting of various social practices: rituals, rules, conventions and norms. The value of these practices in conventional meaning-value systems is that they need to be acquired and accepted by the individual, before they can become meaningful. Groups, physically and metaphorically, form around a myriad of social agents where the value of these social agents is not directly connected to survival, but to the maintenance of social cohesion and communication mechanisms. Tensions are often played out to enable dominant values and beliefs to emerge, and their messages to diffuse within the social system.

According to Turchin (1977 cited in Heylighen 1995), metasystem transition (MST) theory is the study of the evolutionary origin of hierarchical or control levels. Campbell and Heylighen (1995) point out that there are alternative views which see the definition of control (including the presence of a goal or reference level, a comparator, a sensor and an effector), as simply no control at the social level. Individuals may try to influence other individuals, but there is no overarching, collective system with a unified goal, common perceptions, or goal-directed actions. Control is reinforced by the prevailing common sense, which steers the creation of new ways of thinking or models of reality. Turchin (1977, cited in Heylighen, 1995) forecasts that this integration will increase in width and in depth, through ever-closer connections between individuals:

> It is hardly likely that at present anyone would undertake to predict how far the integration of individuals will go, and what forms it will take. There is, however, no doubt that the direct exchange of information among the nervous systems of

individual people, and their physical integration will become possible. It is probable that physical integration will give rise to higher and qualitatively new forms of suprapersonal consciousness; and that will be a process that could be described as merging the souls of individual people into an Over-Soul (to use Emerson's coinage). (p. 184)

Metasystem transition theory is relevant to this discussion because it speculates about the nature of controls and how they emerge at the social level, and may account for how meaning is generated, sustained and abandoned. According to Turchin and Joslyn (1989), the metasystem transition is the quantum of evolution. Highly organized systems, including organisms and societies, are multilevel hierarchies of control resulting from metasystem transitions of various scales. Such large scale metasystem transitions may include the formation of societies, development of ideologies or beliefs or the disappearance of civilizations. All these transitions, or events, take place within an evolutionary framework of trial and error processes which characterise natural selection. Hence, under this model, variation is necessary for the evolution of sustainable meaning systems; meaning can only be understood because it has survived in the context of other meanings.

4.5.2   Jay Lemke's social semiotics and cultural dynamics

Inspired by Bakhtin's social linguistics and Halliday's functional semantics, Jay Lemke's notion of ecosocial systems joins the fields of biological metaphor, complex systems and sociocultural systems in a unified theory. Lemke (1995, 1997) sees that his idea of social semiotics is integral to our understanding of how our social world is constructed because it enables:

> … us to make meaningful actions (including utterances) by deploying these resources in recognisable, mostly habitual (and marginally creative) ways. The habitual ways in which we deploy them are identifiable as semiotic formations: the regular and repeatable, recognisably meaningful, culturally and historically specific patterns of co-deployment of semiotic resources in a community. ("Discourse, Dynamics and Social Change", 1997, p.5)

Further, according to Lemke, social actions and reactions are context and time dependent. Again there are similarities here to autopoietic theory discussed in previous sections. For Lemke (1995), social actions are socially meaningful only to those belonging to the particular time and context. Lemke divides time and context amongst syntagmatic contexts (events before and after), paradigmatic contexts (alternative events), and indexical contexts (situationally co-occurring events).

According to Lemke, the irreducible formal hierarchy of contextualisation in social meaning reflects the dynamical hierarchy of emergent levels of organisation in human social-material systems. This connection is already

implicated in the social semiotic view of meaning, and also in Maturana and Varela's view of meaning. The semiotic systems of a community are abstractions of the resources in actual use in that society: "The semiotic formations present their habitual patterns of co-deployment, and the metaredundancy relations summarise their mutual co-occurrence distributions with respect to each other" (Lemke, 1997, approx. p. 5). All these analytic forms are abstractions of types from tokens; they all depend entirely on the moment-to-moment happenings in the community. It is instances (events, acts, occurrences, performances) which are the primary mechanisms of contextualisation (Lemke, 1997, 1999).

But meaning systems and cultures change; what was not meaningful can become meaningful, and this process depends critically on a dialectic relationship between material and semiotic dynamics within a total system. Lemke (1995, 1997) sees that we need to understand the dynamics of the larger eco-physical systems in which cultures are embedded and from which the energy of their dynamics derives. Human social communities are examples of material ecosystems. Even though physics, chemistry, and eco-biology are simply cultural discourses – just as linguistics and social semiotics are - these two different orders of discourse construe two different kinds of relations among events and processes. It is the connection between those different kinds of relations that is the key to modelling cultural dynamics (Lemke, 1997, 1999). This can be compared to the earlier discussion of our connection to the material world – of mind and matter, pattern and form. The dichotomy between the two states is the source of conflict in human social systems and manifests in what society values as the prevailing common sense.

Lemke's essential ideas about complex systems are not new; they also appear variously in complex systems thinking, for example, in the works of Capra, Prigogine, Kauffmann, and many others. However, where Lemke's thinking diverges is at the point of exchange between the material processes and the semiotic processes. This effectively throws a net around this nexus, and captures patterns of connection not well traversed in the literature of complex systems. Although Lemke (1997) believes the unity of ecosocial systems is somewhat hidden from view by our failure to appreciate the pervasiveness of the material-semiotic coupling, circumstance often that impedes our understanding of material processes in our sociocultural system. This means we can collectively indict entire social groupings, cultures, and eras for failing to address biases, even though, as Lemke (1993) posits, our "own culture carries ideological biases of a dominant class whose interests favour a view of the world as indefinitely exploitable materially and infinitely flexible culturally" (approx. p. 4).

Essentially, the main arguments from Lemke's (1997) article "Material Sign Processes and the Emergent Ecosocial Organisation" can be summarised into the following key points:

1. All complex systems are context and time-dependent.

2. Complex systems can also be attributed to 'processes' such as life cycles and social systems.

3. Social systems can be compared to laws of thermodynamics in that there are inputs, outputs, dissipative structures, energy and entropy.

4. The notion of 'developmental trajectory' implies a certain sense of predictability in that complex systems of a similar type display similar life cycles (trajectories) [Lemke uses the life cycle of a butterfly to demonstrate].

5. Lemke refers to the ability of complex systems to demonstrate similar trajectories as 'epigenesis'. This means they have similar structures, processes and pathologies; their life cycle is fixed and largely predictable; in other words, patterns. Epigenesis also means similar complex systems can be compared during similar stages in their life cycle. It also means bifurcation points can be reached at the same time in different complex systems – thus affecting the total environment. [At the most extreme end, this is exemplified by the butterfly effect.]

6. All epigenetic systems belong to regulatory subsystem-supersystem hierarchies, from the molecular to the planetary, and the hierarchy also include such things as organisational 'memory' traversing the entire network of complex systems. This infers that there is a hierarchy of complex systems, or nested complex systems – each dependent upon the other in some Gaia-like fashion.

7. The notion of ecosystems demonstrate a higher-order understanding of cultural and social change. "Organisms and ecosystems are both larger-scale supersystems constituted by and acting to integrate and regulate the smaller-scale subsystems they contain" (approx. p. 10). Ecosystems do not die; rather, they evolve, adapt or cede to the supersystem of which they are part.

8. The evolution and development of a complex system is about the system itself as a collective, rather than about the individual components which make up that system. Certain bifurcation points can cause disruption in the system, and if this is repeated, the system

either adapts, behaves chaotically or dies even though there may be a semblance of 'order' in the complex system.

Lemke's notion of ecosocial dynamics and semogenesis is worth pursuing further in this discussion. An autopoietic and sociolinguistic theory of self-organising, self-describing social entities extends to viewing the effects of a discourse on a community's social environment upon its own descriptions about itself and vice versa (Lemke 1995, pp. 37-39; Maturana and Varela 1980, pp. 48-50; van Dijk 1994, p. 110; Graham and McKenna, 1999).

Further, for Lemke (1993), the notion of a 'language' is not only an abstraction *from* use, it is an abstraction from the empirical diversity of language *in* use. It evolves, develops and is characterised by all the features of a complex system. It depends on the uses to which it is put, and its 'functionality' is related to the extent of dynamic processes in the human social community. For example many languages have become extinct, as have the discourses with which they were associated. It is Lemke's conclusion that this is because of the complex interaction of the ecosocial system, which did not adapt to the changing environment and conditions. As a language evolves, its symmetries are broken, unitary forms become differentiated and multiply in meanings and uses, a completely modified language emerges. Just as an ecosystem needs diversity to survive and thrive, so too language needs, in Lemke's words, a rich mosaic, patchwork, or niche to ensure maximum capacity to adapt (Lemke, 1993, approx pp. 2-4).

Also, there are different languages, or discourses, for different groups. Lemke cites Halliday, who has identified an important pattern called semogenesis. Essentially, semogenesis is the progressive semantic differentiation and diffusion (through such things as bifurcation points, or emergence) in the language system. Lemke describes this as a cycle, where differences are seen to impact on and create further differences, leading to symmetry-breaking events and subsequently the creation of new contexts, and so on. So, in this we see the same systems thinking principles applied to organic systems, to the mind, to social systems, now being applied to language itself.

Yet one of the problems with interpreting our world of symbols and words to match the symbols is the "eternally slippery nature of language, mathematical or otherwise" (Casti, 1994, p. 6). As Casti (1994) tells us, the philosopher Wittgenstein was haunted by the problem of describing the nature of words and what they represent. Parts of Wittgenstein's representational theory has similarities to Lemke's position, in that there exists a stable or logical structure through which we understand our world, and that is language. The widely accepted view of Wittgenstein's theory is that linguistic statements are

meaningful only when they correspond to or represent actual events or objects which can then be proven true or false by observation. For things to make sense or be meaningful to the observer, the nature of what language represents and the logical structure of the real world must be at least linked. These links, of course, become the most important feature of a discourse. The relationship between the observed world and language can easily be captured by the prevailing common sense. Issues relating to power, dominant cultures, religion, truth and epistemological frameworks can influence these links to such an extent that the nature of representation becomes obfuscated in the process of interpretation. In the end Wittgenstein saw that the link between the real-world fact and the language to describe it had to be 'pointed' at, rather than spoken about. This essentially means that language can quite easily become an instrument of power and of coercion for those who understand the nature of the link between the observed world and the language used to describe it.

However, according to Lemke (1997), human culture has already constructed the key tool needed to make such a model of itself: a linguistic system which is, semiotically its own meta-system. Any natural language may serve as its own meta-language, with its own grammar, and more importantly a theory of how its speakers make meanings with that grammar. A community deploys the vagaries of its language in discourses - social formations that define a particular way of using language to make a particular kind of meaning. Those discourses (including the discourse of cultural dynamics) may be employed to model at least some processes of the whole cultural system which includes them. Discourses are made by the social and cultural interactions of many actual, individual speakers over a period of time, interactions which simultaneously exchange processes in the human community (Lemke, 1997).

Also relevant here, and with echoes of Wittgenstein, is the capacity for 'crossing-over' between the material world and the semiotic, each capable of sparking changes in the other that lead to new patterns of connection, in an eternal cycle. For Lemke (1995, 1997), an essential part of this cycle is the existence of pre-semiotic features of events or situations: material differentiations which do not yet have cultural significance, but which can enter the semiotic system as new features. This of course contains notions that hark back to our brief discussion of metaphysics – similar to the forms that Plato describes, the metaphysics of Kant and the inexplicable in Kant's transcendental idealism, and what systems thinkers call chaos. This link between matter and substance, pattern and form was introduced in earlier chapters and will be further explored as the thesis reaches its conclusion.

4.5.3   Paul Cilliers' theory of representation

According to Cilliers (1998), a theory of representation is essentially a theory of meaning. Representation attempts to explain how the words of our language or the structures in our brain become meaningful, by trying to define the relationships between these words and the physical and cerebral structures that make up our world. Mathematics is a good example. Most mathematical formulae are made up of elements that stand for something. For example, $y = mx + c$ is used in geometry for calculating gradients. The symbols represent elements in the problem: y being the intercept on the y-axis; m, the multiplier; x the intercept on the x-axis and c the constant (and, of course, the symbols = and + are also representations). The example given is a fairly simple concept; more complex mathematics requires formulae which cover multiple pages. Though this makes representation more difficult, the computer and gradual refinement in mathematics techniques over the last decade have simplified problems that would once have taken many weeks to calculate. Given the correct formula, based on Newton's laws and substituting the right values, it is usually possible to determine the answers.

However, when we come to model or try to capture such things as natural language or human sensory capabilities or human emotions, or the behaviour of societies, it is not possible to create a simulation of higher and complex cognitive processes, even by the most advanced computers. This is because the process of representation is far from being formularised. How do we represent such things as what particular words mean? Or, more pertinently, why does the meaning of certain words mean different things to different individuals? How can this be precisely modelled? Can pattern-recognition and approximation be modelled successfully? As Cilliers (1998) rightly points out, before any of this can be even attempted, it is necessary to explain the process by which the relationships between symbols and the world are established (p. 59). Are rule-based representations and network representations capable of being analysed together? When we search for a more empirical flavour to our research, such questions are a good starting point, but the adequacy of logical calculus does not seem to fit well with understanding some of the more complex notions of human systems. Such notions form part of a long tradition of philosophical reflection on the relationships between language, the mind and the world.

Cilliers (1998) argues for a distributed representational model which has a more robust approach since no specific feature of a distributed network is tied to any specific neuron. According to Cilliers (1998), "robustness may be less important to a system that has to deal with idealised abstractions, but it is vital for a system

that has to deal with the contingencies of the real world" (p. 70). Cilliers goes on to refute critiques of distributed representational models as "often flawed, specifically because the notion of distributed representation is either ignored or misunderstood" (p. 70). Nevertheless, Cilliers (1998) sees that representational models have much in common with post-structuralism, and further, that both perspectives can inform each other. Cilliers (1998) concludes his discussion with the assertion that a strong theory of representation will always presuppose the metaphysics of presence, arguing that such a theory calls for two systems – the signs themselves and, external to them, the meaning of the signs – made present to each other through the process of representation (p. 82). In a system of distributed semiotics the sign is constituted "by the sum of its relationships to other signs" (p. 81). Cilliers (1998) further elaborates:

> The ease with which we fall for a general theory of representation can perhaps be explained by the importance of image in our culture. 'We give preference to sensing through the eyes not only for taking action, but even when we have no praxis in view' (Derrida, 1983, p. 4). When we say that an image speaks a thousand words – meaning that an image is somehow more powerful than language – we fall prey to the metaphysics of presence. We believe that an image bears its meaning on its face, that it escapes the play of referral described by distributed semiotics. A text may have to be interpreted, but an image speaks directly, or so we believe. This notion is strongly resisted by post-structural theory. (p. 82)

This loss of clear distinction between theory and praxis has ramifications not only for science but also for theory. The loss of innocence for science is not confined to scientific endeavour, but extends to a loss of clarity and objectivity in philosophy. Because the theory of meaning is essentially a theory of representation, how we interpret the world depends very much on the what and how of using the various elements of representation. More importantly, our choice of such a theory has important ethical implications, not only because of how we interpret the theory, but because of how it is representative of the complex system it describes.

4.6   Complex meaning systems – towards a model

As we have seen throughout this chapter, applying complex systems theory to social theory is not without problems of interpretation, nor of perception. Although the interest in complexity as a source of order in social systems is relatively recent (Eve, 1996; Goldspink, 2000), there is a need to develop an ontology that accepts as legitimate dynamics that emerge as a consequence of a complex interplay of different sources of order. Many social and organisational theorists suggest that complex systems already provides a sound

basis from which to theorise about sociology (Arthur 1995; Bella 1997; Gell-Mann, 1994; Gunter, 1995; Janstch, 1980; Kauffmann, 1996; Stacey, 1995; Youngblood, 1997). However, others, including Lilienfield (1978) and Graham and McKenna (1999), warn that theorising of sociocultural systems using complex systems "takes the form of sophistry that legitimises structural amorality" (p. 7).

Yet, according to Lemke (1997), the meaning systems within a culture enable meanings to be made, meaningful social activities to be enacted, and enjoin the making of certain meanings, ensuring certain connections.

Society prescribes for us ideal patterns of conformity; some we internalise, some we resist, but they all take this same form. It is meaning systems that make sense of these patterns and enable us to interact with our sociocultural system. As Lemke (1998) sees it, there is no special need to enforce widespread conformity to codified norms, only to adjust individual instances within local social tolerances. Standardisation is another way of saying the prevailing common sense; as this chapter has argued, the prevailing common sense or indeed institutionalised meaning is not something we must accept blindly as an inevitability of human social systems. The countervailing tendencies at work also involve personal meaning systems, moments of serendipity, chaos and fitness landscapes. Sometimes the predictability of human affairs is nothing other than an individual's observations or description of their reality (yours, mine or theirs). Such behaviours operate solely within the tolerances of the prevailing common sense (because they are part of reality.)

To reiterate from Chapter 3, section 3.2, complex systems have the following ten properties:

1. Large number of interconnecting components

2. Non-deterministic and non-tractable

3. Interaction-rich relationships between components

4. Interactions exhibit nonlinear behaviour

5. Distributed nature of information and representation

6. Feedback loops cause changes to the system

7. Exhibit properties of emergence and self-organisation

8. Operate under far-from-equilibrium conditions

9. Cannot exclude history (pre-programmed elements exist)

10. Each element in the system is ignorant of the behaviour of the system as a whole, and may only respond to localised information

Using these properties, we can introduce a framework within which to discuss the idea of meaning. That meaning can be interpreted, not as an individual ideational schema, but as a collective or system that can be affected by the properties outlined above is part of this overall framework. The discussion of the two paradigms of thought - mechanism and rationalism versus holism and empiricism - provides the dichotomy that is bridged by the idea of meaning. Meaning, because it is fluid and dynamic, and the position of the observer ensure that meaning self-organises around various components that are connected in mysterious and novel ways because those connections are only known to the eye of the beholder and understood as part of an individual's interpretive schema. Therefore, the components of a meaning are impossible to isolate; for example, even with something simple and representational like a red circle. But if we talk about meaning as a 'system' we can begin to grapple with its vagaries. Unlocking representational and ideational meanings within the discourse of complex systems theory (for example, the notion of punctuated equilibrium) can reveal perspectives that may be overlooked in more traditional analyses.

Applying complex systems to meaning reveals meaning itself as an open system, displaying all the properties of entropy production and emergence that characterise any other open system. We could describe the way that free mental energy gradually increases as people become used to the ideas and the meanings generated. A society does not have to work so hard when the epistemological and ontological frameworks are legitimated, and there is little or no conflict with this position. In other words, if the prevailing common sense is accepted, there is little competition because the meaning systems that comprises the prevailing common sense are already established. However, power relations that serve to sustain a meaning system can be challenged if they do not support the main ideas of the overall sociocultural system itself. Once some of the ideas of the meaning system begin to be questioned, the meaning system may decline (where the ideology is too difficult to support) or become stronger (because history shows that true believers will defend their faith in the system, often subverting the dissenting views). This is also the phase where defence of the meaning system may lead to surveillance-like activities in order to support the dominant values promoted by the system. Once the free mental energy is depleted, the meaning system comes under attack because of the interaction with other meaning systems that are better equipped to handle the changes to the prevailing common sense. As in natural systems, the symbiosis in the complex meaning system occurs when knowledge is exchanged – within the system itself, and with other systems in order to sustain the larger whole. However, as with natural systems, this irreversible self-

organisation has to be spontaneous to be successful. Spontaneity means that the system's free energy decreases while it focuses on the changes in the external environment. Fixation on such things as planning and qualities of the existing system can become a hindrance during the bifurcation when new qualities are required to emerge. The entire process, of course, is cyclical and can be represented in a preliminary way by Figure 4.2.
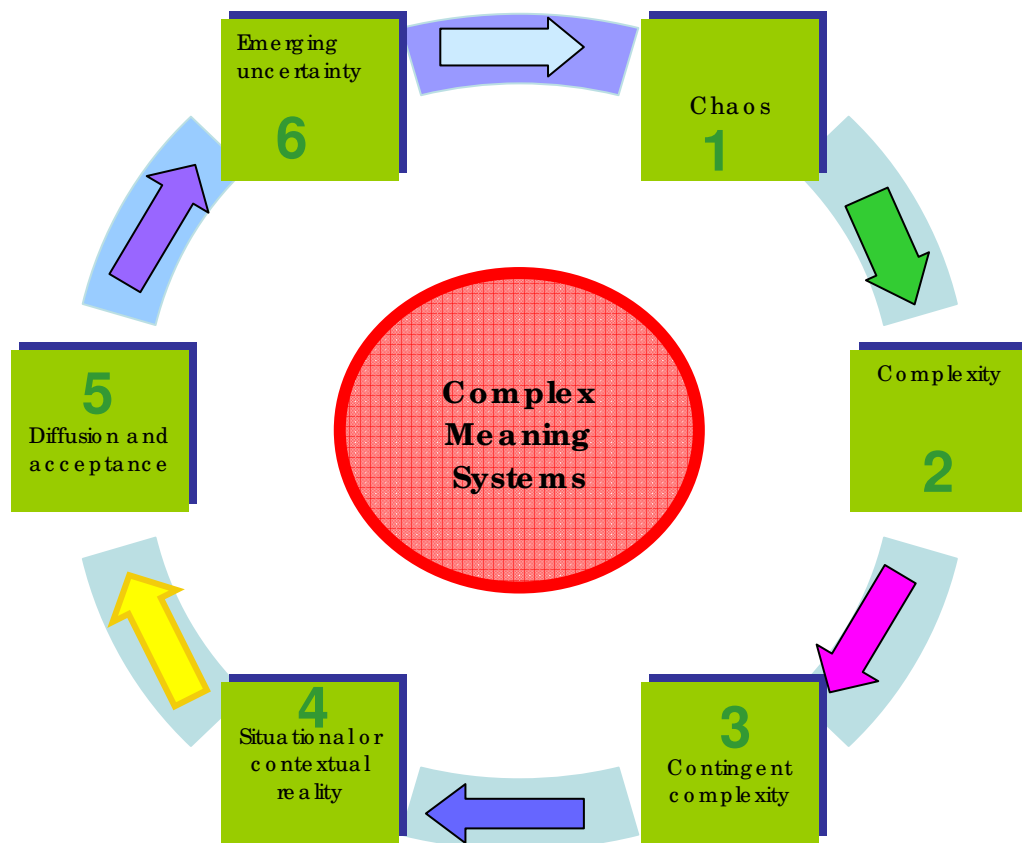
Figure 4.2: Complex meaning systems

As Figure 4.2 suggests, there are a number of phases in the development of a complex meaning system. In the first phase (Chaos), there is often a sense of order in the meaning system, but it is not easily describable because of the extreme fluctuations in what people perceive it to be. A sense of the chaotic embodies the first phase; a phase where perhaps little information is available, much less information about how this meaning system connects to others. The information that does exist is spasmodic, unreliable and invariably the meaning is obfuscated and confused. In the second phase (Complexity), information begins to gather around the system. This could take the guise of powerful personalities, basic tracts, beliefs or ideas. This can also be the stage where a

large array of information becomes available, and is revealed to have connections and links to other paradigms, in the form of similarities, differences, attraction or resistance. The third phase (Contingent Complexity) is the phase where dependencies become apparent. One of the features of complex systems, as discussed in earlier chapters, is that the whole is never the sum of the parts. Thus contingent complexity indicates that some meanings rely on others for currency and validity. In the case of, say, a political movement, the ideological platform must address the concerns of the interests they represent. The emergence of new ideas will be contingent on the acceptance by the group or groups who dominate the movement. Also, there are timescales; a sense of history and tradition is involved in contingent complexity; milestones in the life of a meaning system are often contingent on particular events that have preceded them. Therefore, memory (also in the form of data and its interrogation) and reflexivity are critical features of contingent complexity. The fourth phase (Situational or Contextual Reality) sees the complex meaning system grappling with its surroundings, trying to best fit with the prevailing common sense in which it is situated. Adjustment and self-organisation will occur in this phase, but the basic patterns of connection will remain. This is not usually the phase characterised by large shifts or changes to the system itself. Sometimes the complex meaning system will become absorbed at the fringes of the prevailing common sense, quite possibly in the form of radical or extreme movements.

Diffusion and acceptance follow (Phase 5), indicating that the complex meaning system has found its way into the mainstream – or been accepted as the prevailing common sense. It has become so entrenched in the whole system that no one seeks to question why it is there. If questions are asked, the complexity involved in understanding the system and its connections is so great, that only 'radicals' are seen to make such attempts. This is because such questioning goes against the grain of the prevailing common sense, and unbelievers are generally portrayed as 'deviants' or, worse, incarcerated for their dissenting views. In terms of a complex meaning system, this could be represented as, for example, the acceptance of things such as management fads and third world poverty, or by groups who bring attention to environmental degradation, species loss, or substandard care for the aged and persons with a disability and so on. If we discuss such things as complex meaning systems, what happens invariably reoccurs as people begin to self-organise around what they believe to be a new set of ideas representing a paradigm shift. But, once the process begins, the ideas are gradually buried or replaced by ideas which reflect the values of the dominant groups in society – or the prevailing common sense.

This can be compared to the way a biological organism adapts to its physical environment through the process of evolution. When entire societies accept beliefs and values in the midst of emerging or concerning political or economic realities, their capacity to find the connections to other meaning systems is foiled by the resonance of the patterns that they observe connecting their belief system to that of the society in which they find themselves. In other words, it is difficult for societies to get beneath the prevailing common sense of their time to adequately critique part of that reality. A few people (again, usually labelled 'deviants') understanding the original ideas and, trying to emulate them, will rebel, often predicting with clarity what will become once there is complete or partial degradation of those original ideas. However, just as small unattached systems cannot control larger ones in the biological or evolutionary sense, seldom will people be successful at stopping that degradation. Finally, there is the emerging uncertainty that has been prompted by the questioning of various sectors in the society (Phase 6). This is where the society as a whole rebels and rails against the prevailing common sense *en masse*. Such things as large public demonstrations, landslide election results, or popular ideas becoming unfashionable to such an extent that they are never mentioned except in the context of history are some of the hallmarks of this phase.

4.7   Conclusion

The major contribution that the idea of a complex meaning system brings is that it provides a structured account of the process of meaning making in a social system. A formal framework for the analysis of meaning is not dealt with adequately in either traditional, rational approaches, nor from disciplines in the new paradigm of thought. Irreversible (dissipative) self-organisation forms the basis of such an account, as does the pattern of relationships that cause a structure to exist. However, when a set of ideas leads to the self-organisation of people around those ideas and then later is abandoned, questions about what exactly in those ideas attracted people in the first place are raised by those not connected to the complex meaning system. The most important, and fundamental precept of this theorisation is that not only is there is an apparent and underlying simplicity which attracts people to certain values and beliefs, but also a 'hidden potentiality' for people to self-organise – not only through their physical environment, but also through their epistemological, ontological and axiological frameworks – into a complex society.

The rejection and abandonment of ideology occurs because of the increasing complexity of the society which erodes the essence of the original set of ideas,

causing more networked patterns to emerge and then present themselves more attractively to different groups in the society. Each of the groups has a different interpretation of these perspectives because a complex society is not homogenous; a complex society is characterised by many vested interests – the need for survival being one of the most fundamental. This is a dynamic process that can never be static because the inevitability of change through emergent phenomena is one of the key features of a complex system. In social systems, emergent phenomena manifest themselves any time when collective behaviour transcends the behaviour of its 'component' behaviour. Because it transcends individual behaviour, meaning must always be temporal. However, not only can a complex meaning system be viewed as a temporal phenomenon, but it can also traverse time scales through history. For example, we can explore the meaning systems that characterised many movements or many ideas, if we care to understand how the patterns between the ideas emerged and operated until their eventual demise, rather than simply examining the structure of the ideas themselves. Knowing that certain ideas exist or existed is simply not enough, we need to understand their connections with other ideas and how that adds to the collection of other complex meaning systems.

In conclusion, the features that a theory of complex meaning systems should account for are based on the process outlined in Figure 4.2. The properties of complex systems outlined early in this chapter will also factor in an account of a meaning system. We will use these preliminary ideas as a basis for examining management fads in Part 2 of the thesis – this 'analytical experiment', as described in Chapter 1 will serve to test and further develop the model of complex meaning systems presented here.

Chapter 5: Management Fads – Characteristics and Examples

The plethora of management texts, self-help and business how-to publications should be sufficient evidence to stand as testimony to the growing phenomenon that is management fads. But the observation that the phenomenon of management fads exists does not entirely mean this is accepted, particularly by the academic community: it should be 'tested' against other sociocultural phenomena to ascertain the extent of diffusion and what influence that may have on the sociocultural milieu. Looking for ways to describe this phenomenon and alternative ways to examine what it might mean for our sociocultural system will be the focus of the thesis from this point on. Using management fads to explicate the theorisations from Part 1 of this thesis will serve as a practical application of the synthesis – the idea of complex meaning systems. As the first chapter in the second part of this thesis, Chapter 5 will lay the groundwork for applying the theories from Part 1 to the phenomenon of management fads.

The discussion in Part 1 of the thesis looked at explanations for why dominant groups in society promote certain ideas and ignore others through epistemological, ontological and axiological frameworks. The concept of meaning systems was proposed as a framework through which the characteristics of such a thing as fads might begin to be examined. Linking these ideas to the explanation of management fads and their connection to the wider sociocultural system is the focus of this thesis, and this chapter begins the task of outlining the phenomenon that is management fads.

5.1   Introduction

There is now a solid body of literature about the succession of management fads and buzzphrases (Ogbonna and Harris, 2002; Crainer and Dearlove, 2001; Collins, 2000; Mickelthwaite and Wooldridge, 1997; Shapiro, 1995; Huczynski, 1993). Arguably, the increasing levels of mistrust and scepticism that accompany these phenomena are also evident, as Wooldridge and Mickelthwaite's comments show:

> Each year American managers and entrepreneurs shell out three-quarters of a billion dollars to remain competitive. Meanwhile, companies themselves spend $15 billion for consultants to come in and tell them what they can do to be more efficient. Trouble is, many

so-called management experts are simply peddling hot air" (Interview with Adrian Wooldridge and John Mickelthwaite, *Psychology Today*, Mar/Apr 1997, p. 23).

Carter McNamara (2006) agrees:

> There is a recent explosion of management literature, much of which asserts the strong need for change in today's business organizations. Few people, if any, disagree with this need for change. However, the unrealistic and evangelical manner in which this need is presented may be causing cynicism not lived since the Roman Empire (McNamara, 2006, para 1.)

Ogbonna and Harris (2002) assert that the recent trend for reorganisation and the inevitable 'buzzword' by-product is spawned by the "imperative of fashion rather than purely organizational necessity" (p. 48). The popularity of many of these concepts is grounded in the assumption that the adoption of the underpinning strategies will ultimately lead to improved performance. Indeed, the initial adoption of these concepts is often fuelled by studies and marketing success stories claiming direct associations between the adoption of such practices and organisational performance (Ogbonna and Harris, 2002).

But what is a 'management fad', and what is the nature of such fads? The following sections consider these questions, look at what critical tools are needed to explain them, and finally, provide some alternative perspectives about the phenomenon. By way of explanation, the notion 'testing' is to be applied in the loosest possible way. As mentioned, no empirical data, other than that provided by other studies is used in this thesis. The notion of 'testing' primarily relates to the capacity of the idea of complex meaning systems to hold for management fads.

5.2   What is a management fad?

The terms management fad, organisational fad and management fashion are often used interchangeably and are ways to describe a popular and well-marketed way of doing things within organisations. A fad is generally thought of as a craze, a temporary cultural 'blip', like the yo-yo craze of the 1950s or disco in the 1970s. Management fads are a more significant phenomenon, although they are often as temporary and compelling. Fads are generally associated with the 'new' and are common to a wide variety of genres such as clothing, hairstyles, music, pastimes and hobbies, language, and entertainment. In a populist sense, fads can also be found in literature (as in the 'romantic' period), art (impressionism, dada,

surrealism), science (mechanism, ecosystems), and even religion (Calvinism, Pentecostal movement). But generally, fads are thought of as temporal, transient and trendy. Political/social experiments and historical movements such as fascism, anarchy and monarchical dictatorships have all been popularly described as faddish at some time. Whatever the domain, fads generally begin life as either reactive movements against the mainstream or popularised trends that capture the curiosity and attention of people in the period leading up to and over their duration. However this transience does not always hold true for management fads, as some may last for extended periods of time, and may even be consumed by subsequent fads. Whatever their duration, fads, and in this case, management fads are usually typified by the launch of a new and initially popular idea or set of ideas.

Abrahamson and Fairchild (1997) have described management fads as relatively transitory collective beliefs, disseminated by management fashion setters. More recently, Carson et al. (1999) described fads as "managerial interventions which appear to be innovative, rational, and functional and are aimed at encouraging better organizational performance" (p. 23). Likewise, Miller et al (2004) see management fads as having three main characteristics: they become very popular very quickly; stay popular for only a few years; and experience a steep decline in interest, leaving little trace (p. 7). This is why there is a difference between fads in, say, an artistic sense, for example the surrealist movement, and management fads. (These differences will be explored more thoroughly in the next chapter.) Thus, the effectiveness of a fad is directly related to its capacity for retention and its ultimate rejection. In either case, the fad loses its specific identity as an intervention strategy at some point, resulting in its decline. However, as Abrahmson and Fairchild (1997) observe, the content of a fad becomes part of the overall management experiential base, which means new fads should be at equal or higher levels than preceding processes largely because they can absorb the experiences of fads that have already been encountered.

Despite the growing scepticism, some consider management fads to be widely accepted, innovative interventions designed to improve some aspect of organisational performance (Gibson & Tesone, 2001, Jackson 2001). Although Parellada (2002) agrees, he takes a more pragmatic approach and sees two paradigms involved in analysing management theories. The first he terms "good practices" which have resulted in good outcomes, and the second is based simply on the "capacity and knowledge (or lack thereof) of the managers" (p. 132). Whether or not

those management interventions based on good practice turn into fads, the industry supporting management 'faddom' is a complex one indeed. As we analyse the vast array of management interventions, the underpinning theme is that generally management writers are captivated by what interventions work in organisations and caution against interventions that are doomed to fail.

Huczyniski (1993) separates out fads from ideas and defines a management idea as a "theory, framework, model, research finding, principle, concept, saw or anecdote that is taught to managers or management students on management courses" (p. 444). Crainer and Dearlove affirm this position:

> In the cutthroat world of thought leadership-a battlefield of ideas on which consulting firms, academics, gurus, and a host of others vie for pole position-there are two universal truths: First, ideas matter and are increasingly a critical source of competitive strength. Second, the battle is such that the originators of the best ideas are often ignored, forgotten, or shouldered aside. (Crainer and Dearlove, 2001, p. 27)

Crainer and Dearlove (2001) also observe that some common-knowledge management ideas, especially those from within academia, when summarized in the *Harvard Business Review* suddenly become the next big thing: "Today's obscure model in a dry academic publication is tomorrow's snappy guru presentation" (p. 28). Consequently, it is not the thought leaders who get the credit for originality, according to Crainer and Dearlove, but the mass marketers. If the field of management is particularly prone to the mass-marketing phenomenon, the current interest must be appealing and topical. For example, management fads often draw inspiration from a broad range of "in" subjects in areas including science (complex systems theory), economics (total quality management and process flows) and psychology (for example, T-Groups, enneagrams). It is contended by this thesis that management trends often lack originality and creativity. This may be part of the reason for their rise and fall in popularity. Such fads may be destined to become unfashionable because the discourse of the idea itself is firmly rooted in a contemporary sociocultural milieu, and that changes. In other words, it is difficult to find other language to critique a fad when limited to using the language of the fad itself. Another explanation is that when changes occur in the broader sociocultural milieu, management fads may fail to keep pace with the latest trends, retaining hackneyed concepts and populist catchphrases which become 'dated' and sometimes openly ridiculed, particularly by staff and the media.

Crainer and Dearlove (2001) believe that it is an unfortunate truth that "most great ideas have already been discovered. They are just continually rediscovered, and restated in a new and compelling way" (p. 29). They provide the example of 'reengineering', a concept which is very similar to an old practice from the 1950s called 'brown papering', discovered by Frederick Taylor (1911). Harvard professor Benson Shapiro wrote about the rediscovered process in his 1992 article "Staple Yourself to an Order". It was rebadged by Jim Champy and Mike Hammer in their text *Reengineering the Corporation*.

Other examples provided by Crainer and Dearlove (2001, pp. 29-30) include:

- 'competing against time', developed by the Boston Consulting Group's George Stalk Jr., curiously similar to an old consulting product called short-interval scheduling;
- Seth Godin's 'permission marketing' seems much like the arguments behind sweepstakes;
- Geoffrey Moore, chairman of the San Mateo, California Chasm Group, restates the industry life-cycle argument with his 'tornado' and 'chaos' concepts – thus drawing heavily on the sciences of complexity; and
- Harvard professor of business administration, Michael Porter, and his very successful 'five-forces framework' which was grafted from models developed by an economist by "brilliantly translating it into the context of business strategy".

Crainer and Dearlove (2001) are not the first to comment that most management audiences appear to care little about originality, for in the end it is about marketing strategies. Huczynski (1993), Abrahamson and Fairchild (1997), Ogbonna and Harris (2002), and Collins (2000) also observe the tendency of management consultants to be concerned only with how ideas are marketed (rather than implemented) to improve their dissemination.

In fact, Crainer (1998) posits that management fads and buzzwords are now produced by an industry whose core business lies, not in the field of management, but in the fields of media and entertainment. In the last half of the twentieth century, hundreds of management fads came and went, suggesting not only that there is a life-cycle to management fashion, but also a hierarchy. And wherever there is mention of hierarchy there are nested power/control relationships that sustain, legitimate and augment the dominant discourse.

Distilling from the group of authors who write about fads, the discourse of a management fad can thus be summarised as the over-simplification of complex organisational/management issues using superficial concepts, buzzwords and/or simple linguistic techniques such as alliteration, number phrases and irony. The discourse of a fad is also contextual in that as the fad declines in popularity or is abandoned, its linkages to the contemporary business world and indeed the rest of the sociocultural system becomes tenuous. Fads at their peak are plugged well into the social milieu, tapping into current thinking, economically, socially and politically. For example, if we tried to implement some of the methods proposed by Frederick Taylor (1911) in a contemporary organisation, we would quickly realise the differences between the sociocultural system that existed a century ago and that which exists now.

5.2.1   Some management fads and interventions

Table 5.1 (section 5.2) provides a list of management ideas, trends, strategies, and interventions. Although certainly not exhaustive, the following list of management ideas, trends, strategies and interventions demonstrates the range of management interventions currently in use, and also those which may no longer be popular. Splicing together the lists of management interventions created by Pascale's (1990), Grint's (1997) and Brickley et al.'s (1997), the following identifies quite a number of recognisable organisational techniques, tools and fads that have emerged, continued and declined over the last several decades:

Decision Trees	Intrapreneuring
Managerial Grid	Corporate Culture
Satisficers/dissatisficers	One Minute Manager
Theory X and Theory Y	Rightsizing
Brainstorming	Restructuring
T-Group Training	Portfolio Management
Conglomeration	Culture
Theory Z	Leadership
Management by	Business Process
Objectives (MBO)	Reengineering (BPR)
Diversification	Outsourcing
Experience Curve	Downsizing
Strategic Business Units	Empowerment

Zero-Based Budgeting	Total Quality Management
Value Chain	Competencies
Decentralization	Lean Production
Wellness	Organisational Culture
Quality Circles	Benchmarking
Excellence	Just In Time (JIT)
Management By Walking	Activity Based Costing
Around (MBWA)	Economic Value Added
Matrix Organisation	Realignment
Kaiban	Balanced Scorecard
SWAT Analysis	Reengineering
Mentoring	Coaching
Below the Green Line	Continuous Improvement
Ennegrams	Best Practice

It is not the purpose of this thesis to interrogate the virtues (or indeed failures) of these prescriptions, nor will there be any assessment of the value of these interventions for any one or group of organisations. Empirical and other studies have already examined a range of these management prescriptions over the last decade (Huczyniski, 1993; Rigby, 1997; Crainer, 1996; Jackson, 2001; Miller et al, 2004). It is unlikely that yet another examination of how a fad is taken up in an organisation and then abandoned (even for the most complex reasons) can add to the scholarly debate in this area.

Rather, this thesis will focus on management fads as a social and organisational phenomenon, examining why fads have come to exist, in the collective sense, and offer explanations for how they have become a permanent fixture on the corporate landscape. The very nature of management fads is such that it has become impossible to imagine corporate life without them. The question of whether fads cause change or change causes fads will be addressed in the next chapter. For now, the extent of the discourse of fads is difficult to theorise because the language with which we might examine fads is embedded in the fads themselves and supported by dominant power groups such as large business interests, publishing houses and business faculties in academic institutions. How fads thrive and survive requires more creative and insightful explanations than figures that reveal their take-up and failure rates.

5.3   How fads develop – the life-cycle of fads

Huczynski (1993) identifies organisations, competition, individuals, and suppliers as causes of managers adopting fads. Gibson and Tesone (2001), Abrahmson and Fairchild (1997) and de Burgundy (1996) identify environmental, conformity, organisational and life-cycle causes as classic precursors to the adoption of fads. These factors are summarised in Table 5.1.

Table 5.1: Precursors to the adoption of fads

Precursors	Factors
Environmental	- Essentially external to the organisation - Turbulence in the organisational environment as a result of enhanced rivalry, declines in market share or positioning, or aggressive product competition - Highly competitive, unionised or regulated industries are more vulnerable to fad adoption
Conformity	- Organisations will engage in social and performance comparison to imitate the behaviour of seemingly better performing organisations (herd behaviour) - Conformity is required when organisations don't want to be left out, or behind (normative influence) - Often more to do with the desire to avoid sanctions associated with deviance from the 'norm', than bandwagon jumping
Organisational	- Legitimising of management activity and the role of management - A history of frustration resulting from failed implementation of earlier fads ('perhaps the next one will be better') - The desire for reputation and status enhancement ('first to market') - Willingness to experiment (along with a big budget) - An internal culture of risk-taking - The differential equation ('we're different and therefore innovative')

Precursors	Factors
Fad Life-cycle	• Fads are more likely to be adopted in their early phases (invention and acceptance) rather than in the latter stages (disenchantment and decline) • Dependent upon existence of other fashions and events • Influenced by the popularity of fad immediately preceding it

Drawing upon evidence provided by Gibson and Tesone's (2001) research, and contrary to Crainer and Dearlove's (2001) findings, it appears that academic literature lags behind management practice. Gibson and Tesone (2001) apply Ettorre's (2000) life-cycle theory of management fads to five well-known management fads – MBO, sensitivity training, quality circles, TQM, and self-managed teams. The results are illustrated in Table 5.2.

Table 5.2: Barbara Ettorre's fad life-cycle

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(Source: Gibson & Tesone, 2001, p. 124)

Ettorre's (2000) description of the fad life-cycle is based on a bell-shaped curve, that includes five stages, as shown in Figure 5.2. In Stage 1, the discovery stage, the fad is just beginning to come to the public's attention. Very early articles are appearing in the literature. It is during Stage 2, the wild-acceptance stage, that the fad becomes very popular. During Stage 3, digestion, critics begin to suggest that the fad is not the 'silver bullet' promised. In Stage 4, disillusionment, widespread recognition that problems exist with the fad starts to emerge, and finally in Stage 5, hard-core, only the staunch supporters remain loyal to the fad. During the disillusionment stage, the next fad has already begun to capture the attention of the

organisation, hastening the decline of the current fad. However, this does not mean that the fad fades away completely. The fad may serve as a catalyst or antecedent to some new managerial fad or practice, or it may become part of the normal way of doing things, repackaged under a different name.

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(Source: Ettorre, 1997, p.35)

Figure 5.1: Ettorre's life-cycle of a management fad

An aspect of fad life-cycles worth emphasising is despite whether they are short lived or whether they survive over several years, management fads are undeniably time and context dependent. Parts of existing fads can even be enveloped by other fads as they become part of a new 'idea'. This will of course affect the language associated with the new fad as it absorbs the original fad. The language of the new fad and how it is marketed becomes a key feature of its success or otherwise.

5.3.1   Buzzwords

The discussion now turns to the language of the discourse of management fads themselves. Defined as a slogan or fashionable piece of jargon by most dictionaries, buzzwords – in particular 'management' buzzwords – have developed a pejorative connotation. This of course leads to a dismissive attitude about anything coming from buzzwords, even the grounding theory or research: "Much of what is touted by management's 'gurus' is indeed bland and superficial, if not completely vacuous" (Collins,

2000, p. 10). Collins (2000) goes on to explain that superficiality need not be the product of buzzword mania. After all, as he correctly points out, sociology is literally 'awash with buzzwords' (p. 12), sometimes so convoluted that words from French and German are substituted because they sound better. Yet, sociology as a discipline it is not ridiculed as being silly and superficial (Collins, 2000).

Still, the fields of sociology and psychology do not seem to have experienced the ignominy of faddish interventions to the extent of management fads. There could be several reasons for this. First, sociology and psychology are seen to be better 'served' by the hard sciences and even medicine through a barrage of clinical studies. Second, it is often the case that employees see a succession of different management ideas resulting in high scepticism which soon enough earns the tag as a management fad. Third, management buzzwords are simplistic and often have an element of the unusual, for example, "who moved my cheese." (Johnson, 1998). In other words, sometimes the feature of the absurd in a buzzword may even influence the way the management fad operates.

In her 1997 article, Barbara Ettorre asked:

> How can corporate America operate without buzzwords? They will be with us always because business organizations are a ready market for them. How many acronyms or buzzwords can you recite that are in common use in your own company? These are internal short-cuts. To outsiders, they might be little understood, but to everyone in the organization, they make perfect sense. (p. 33)

Ettorre (1977) observed that in order to fit in to our workplaces we adopt and internalise the shorthand forms used by others. Acronyms and other jargon apparently make us feel more comfortable and acclimatized to our social environment. However, because they usually describe a much more complex state of affairs, buzzwords have, probably wrongly, wound up with a lightweight and negative connotation. Consequently, buzzwords are often 'thrown out' with the entire theory and the principles behind the theory.

Ettorre (1977) provides the example of Drucker's management by objective:

> It became a buzzword, took on thousands of other names ... It was about how powerful goals are as a motivator. I can give you a wheelbarrowful of research saying this. But [after the buzzword] it never came back. (p. 34)

Her conclusion: "buzzwords are ultimately too superficial, lazy [ways of] communicating. They are the fast food of management" (p. 34).

Ettorre (1977) cites Rich DeVane, vice president at CSC Index at the time (who gave us reengineering) as saying that buzzwords describe not only a fad, but also a company's 'ticket of entry' into becoming a successful enterprise. He cites quality, agility, reengineering, growth and laments that "what people find tiresome is each [consulting] firm's attempt to put a different spin on it" (p. 35).

5.3.2   Two researched examples – Miller et al 2004 and Rigby 2001

5.3.2.1   Miller et al (2004)

Miller et al (2004) have identified eight properties that distinguish between fads and what they term as 'classics': simplicity, over-promise, universality, step-down capability, zeitgeist resonance, exaggerated novelty, celebratory role models and evocative prose (p. 7). An explanation of these terms follows:

> *Simple* - A fad's ideas are easy to communicate, comprehend, and reduce to a small number of factors, dimensions, straightforward or characteristics. Clear-cut distinctions, perfect contrasts, and ideal types are proposed. Simple solutions are suggested.
> ,
> *Promising* - Fad auteurs are confidently didactic. There is no false humility or hedging. Fads promise results such as results greater control and efficiency, more motivated and productive workers, more satisfied customers, or some other valued result.
>
> *Universal* - Fads propose solutions for everyone. Imparted truths are said to apply to almost all organizations, functions, tasks, individuals, or cultures. Fads claim enormous generality and universal relevance.
>
> *Step-down capability* - Fads have the capacity to be implemented in ritualistic and superficial ways. Recommendations can be implemented quickly and easily, often without having much effect on organizational practices. Recommendations involving large expenditures of resources or substantial redistributions of power can be avoided.
>
> *In tune with zeitgeist* - Fads resonate with the major trends or business problems of the day. They respond to challenges that are broadly felt and openly discussed. These might result from deficiencies in current administrative practices, technology changes, or shifts in economic or social conditions. Solutions are in tune with prevailing values.
>
> *Novel, not radical* - Fads are novel, not radical. They question existing assumptions, criticize widespread practices, and point to fresh new

ways of doing things. However, this novelty is not so much a new discovery as a rediscovery and repackaging of older ideas, values, and approaches.

Legitimacy via gurus and star examples - Fads are supported by tales of excellent companies and the status and prestige of gurus, not by solid empirical evidence. Stories of corporate heroes and organizational successes provide role models and suggest prestigious adherents, lending an aura of legitimacy to the ideas being espoused.

Lively, entertaining - Fads are almost always presented in a way that can be described as concrete, articulate, bold, memorable and upbeat. They are filled with labels and buzzwords, lists and acronyms. Interesting anecdotes and corporate war stories abound. Descriptions are vivid and extreme, making fads fun to read about and listen to.

Miller et al (2004) used the ABI/Inform database to establish by quantum of journal and press coverage the characteristics of seven potential fads, and then used the same method on six of what they determined as 'classics' from the period 1985 – 2001 (Figure 5.2). This comparison accords with Ettorre (1997) and Huczynski (1997) who have made similar claims. In fact, Ettorre's 'life cycle of a fad' accords with Miller's findings in Figure 1 below.

This figure is not available online.
Please consult the hardcopy thesis
available from the QUT Library

Figure 5.2 – Publication counts of fads and classics

[Source: Miller et al (2004) p. 8]

After plotting their results, Miller et al (2004) went about more thoroughly interrogating the fads and the classics to determine whether they demonstrated the eight key properties they'd identified. The results of the Miller et al (2004) research is that those interventions assessed as having more of the eight key properties were classified as faddish. From their research, those interventions termed as "classics" contained less of the eight properties. To better illustrate this point, the Miller et al (2004) research data based on their assessment is reproduced in the following table:

This table is not available online. Please consult the hardcopy thesis available from the QUT Library

Table 5.3 Properties of Fads and Classics

[Source: Miller et al (2004) p. 11]

Miller et al (2004) conclude that although managers should be wary of interventions that demonstrate the eight key properties of fads, fads can also be seen in a positive light. Fads have the potential to "signal issues, problems and techniques that managers really care about and may suggest approaches of value to specific contexts and enterprises." (p. 17)

5.3.2.2 Darrell Rigby (2001)

Rigby (2001) provides a detailed treatment of the rise and fall of reengineering as a management tool. His research marks quite an

important empirical milestone in the understanding and analysis of management fads. Rigby (2001) and his associates began the research in 1993, mailing 10,000 surveys to senior executives of companies in 15 countries in North America, Europe, Asia and South America. The questionnaire focused on six main themes:

1. Company's management tool usage over the past five years.
2. Company's prior year management tool usage.
3. Expected management tool usage in the coming year.
4. Satisfaction levels with management tools used.
5. Attitudes towards management tools and general business issues.
6. Corporate demographics.

The response rate varied each year and ranged between 1.8% and 2.3%. Rigby (2001) found that in 1999, North American companies used an average of 11.4 of the 25 management tools asked about, down from 13.4 from the previous year. Globally, 70% of managers reportedly used four management tools more consistently than any others. These were strategic planning, mission and vision statements, benchmarking, and customer satisfaction measurement. It is also interesting to note the changes in management tools over the seven years the survey was conducted, summarised in Table 5.4.

Table 5.4: Most popular management tools by year and continent (US, Europe

Year and place	Management tool
1993	Mission and Vision Statements, Customer Satisfaction Measurement, TQM, Competitor Profiling, Pay-for-Performance
1999	Strategic Planning, Mission and Vision Statements, Benchmarking, Customer Satisfaction Measurement, Core Competencies
North America	Tools that deal with growth – (Growth Strategies and Merger Integration Teams), Mission and Vision Statements, Cycle Time Reduction, Supply Chain Integration
Europe	Tools dealing with market certainty – Market Disruption Analysis, Real Options Analysis, Scenario Planning, TQM

Knowledge management and processes for capturing and sharing intellectual assets turned out to be the significant 'losers' in the survey, with both low utilization (28.5%) and low satisfaction (3.22%) scores relative to the average.

Defection rates were also a key factor of the survey. These rates were determined by gauging the management tools used in the previous five years but since abandoned. Hence, the lower the defection rates, the higher the usage (Table 5.5).

Table 5.5: Management tools defection rates

Highest management tool defection rates 1999	Lowest management tool defection rates 1999
Real Options Analysis Market Disruption Analysis Scenario Planning Virtual Teams Merger Integration Teams	Strategic Planning Customer Satisfaction Measurement Growth Strategies Pay-for-Performance Mission and Vision Statements

Rigby (2001) found that over the seven years of the research, executives increased their attention to delivering financial results from 57% in 1993 to 68% by 1999. According to Rigby (2001), there was no consistent correlation between satisfaction with financial results and the number or type of tools used. Rigby (2001) observed that both successful and less-successful companies attempted to use the same number of tools.

For many tools, however, user satisfaction is significantly higher at successful companies than less-successful ones, with 24 out of 25 tools receiving higher overall satisfaction scores from successful companies. Although Rigby's (2001) survey does not address this anomaly, he offers some possible explanations as follows:

1. Managers at more successful companies are generally more satisfied with everything, including tools.

2. Circumstantial or environmental factors at successful companies enhance the effectiveness of the tool.

3. Managers at more successful companies are better managers who get more value out of their investments.

4. Successful companies are more attuned to what tool works better for them.

However, Rigby (2001) concludes that the research is equivocal, admitting "little obvious relation exists between specific tools and successful companies" (p. 17). He posits that successful implementation of tools appears to depend on a number of factors:

1. limiting the number of tools;
2. focusing on implementation;
3. ensuring each tool has strong top-down management support; and
4. choosing tools that best support the company's strategic objectives.

Finally, the most pertinent result for this thesis is that 82% of managers responding to the 1999 survey felt that tools promise much more than they deliver.

The findings of Rigby's research mirror that of quite a number of other researchers in the area. Nirenberg (1997) comes to similar conclusions, stressing the pitfalls of assuming too much about the many tools and techniques managers may consider: "There is nothing inherent in the tool that guarantees success or failure" (Nirenberg, 1997, p. 47). R. M. Gordon (1997) notes that highly paid corporate chiefs chase the latest management fad in the perhaps misguided belief their company will become world class or cutting edge. He compares the hankering for the latest fad to teenagers' gullibility and obsessive desire to be in on next big thing: because "they're young, they're inexperienced, and they're insecure" (p. 56). This 'fad surfing' has generated an extensive and impressive business lexicon which the popular media (e.g., Chipman, 1993; Gordon, 1996) keep track of through the sporadic publication of glossaries and dictionaries. However, the Internet now offers a much more comprehensive and current assessment of the latest in management fashion. The website buzzwhack.com contains many thousands of buzzwords and buzzphrases pertaining to management and organisation, even offering prizes for the most creative examples.

5.4 The characteristics of fads

Huczynski (1993), too, concludes that management ideas, and hence the ideas which spill out from the 'better' business schools and management consultancies, have the potential to become fads. He identifies six key 'families of ideas' which persist and have been reproduced over time. These groupings have common characteristics which set them apart from their less successful counterparts. Huczynski's (1993) research demonstrates

key similarities in approach, orientation and problematics which underlie the key and enduring fads of management, noting that "Virtually all of the management fads that have been developed over the last hundred years are based upon these six families of management ideas" (Huczysnski, 1993, p. 445). The six groupings are:

1. Bureaucracy
2. Scientific management
3. Classical management
4. Human relations
5. Neo-human relations
6. Guru theory

Huczynski (1993a) tells us that for an idea to catch on and develop an audience, it must be presented in a particular kind of way. He emphasises that 'successful' ideas resonate with and reflect popular beliefs and dominant ideologies. Citing Gellner (1985) – who researched success and failure between truth and fallacy in his examination of the psychoanalytic movement – Huczynski (1993b) notes that "truth is not an advantage in producing a burning belief in a theory or idea. Truth is unpatentable" (p. 73). The connections between management fads and the buzzphrases and interventions in the fields of psychology and sociology are relatively easy to detect.

Huczynski (1993a) notes that the key management fads which have served to shape western management have not been those which demonstrate a sound methodological or empirical basis, nor have the popular and persistent fads shown any real theoretical, epistemological or ontological developments over the 'out-dated' ideas which they are supposed to displace. Instead, Huczynski shows that the key and persistent management fads share a common social (and pseudo-theoretical) grounding and argues, therefore, that the key fads of management which have risen to popularity share the following:

1.   an understanding of the world of work, which is:

  - communicable and memorable;
  - individually focussed;
  - has a malleable vision of human nature; and

- legitimating of management activity and the role of management.

2.   an intellectual focus that enhances the status of management, and has:

- a unitary orientation;
- some potential for individual tailoring on the part of the manager;
- a leadership as opposed to a control focus; and
- some potential to allow managers to develop feelings of control in a world remarkable for its upheavals and dislocation.

3.   a practical appeal and application, which:

- consists of a number of steps or principles;
- claims universal applicability;
- carries with it some authority or 'proof'; and
- carries the promise of a quick turnaround or quick dividends.

In fact, we can utilize Huczynski's analysis to make predictions about the desirable attributes of a management fad. From Huczynski's work, therefore, we could envisage that for a management fad to take root and develop support, it should offer a limited number of action steps which promise to work quickly and to produce results. Likewise, it should leave room for managers to make small adjustments so that they might feel some personal stake in the idea. Similarly, the fad should display support for and orientation toward management.

We can also postulate with some degree of certainty what characteristics a 'successful' (that is, a marketable) fad should not possess. On no account must the idea be new, on no account must it challenge existing management beliefs, and on no account must it say unflattering things about the current role or conduct of its target. According to Huczynski (1997), for a management idea to secure fame, fortune and immortality for its writer, it has to meet five prerequisites. Specifically the idea must:

1. be timely – that is, it should address itself to the problems of the age.
2. be brought to the attention of its potential audience. Ideas do not promote themselves. Business school academics, management consultancies and training and publishing companies play an important role in the dissemination of the ideas
3. address organisational requirements in a way that meets the individual needs and concerns of the managers to whom it is addressed
4. possess the essential ingredients which allow potential users to perceive it as relevant to meeting their needs

5. be verbally presentable in an engaging way. Not because the majority of managers will learn about it at a public presentation session, but because video and audio-based materials will be developed from the author's presentation of the idea itself.

(Huczynski, 1997, p. 1)

More recently, Giroux (2006) in her analysis of total quality management has argued that "pragmatic ambiguity is a practical solution to the difficulties of collaborative action in situations where different points of view and conflicting interests could lead to organizational paralysis" (p.1). Giroux (2006) proposes that "pragmatic ambiguity is both the result and resource of a collective construction process occurring during the rise in popularity of a new management approach" (p. 1), which is closely related to a notion she terms *intéressement*. This adds another dimension to Huczynski's five prerequisites above, as Giroux argues that it is no accident that "concepts become more ambiguous, vaguer and more encompassing as the management fashion gains momentum, indicating the presence of a positive feedback loop between pragmatic ambiguity and popularity" (p. 1).

5.5   Who are the management fad gurus?

The final consideration in describing fads concerns the advocate of the fad – the guru. A guru is (typically) a man of wisdom and enlightenment, Collins (2001) tells us, solving the problems of the 'mere mortals' who flock to sit at his feet. Citing Jackson and Carter (1998), Collins (2001) notes:

The word 'guru' means a spiritual leader, and it derives from the Sanscrit word for venerable. 'Venerable' means worthy of worship, and its Latin origins are connected with Venus, the goddess of love: we should worship our gurus as fountains of love for us. (p. 111)

Jackson (2001) agrees, invoking a more current slant:

In contemporary mediaspeak, the title "guru" is accorded to anyone who is recognised as having developed a distinctive level of expertise in one of a number of ever-expanding spheres of human endeavour. On a daily basis we are exposed through the mass media to "fitness gurus", "literary gurus", "investment gurus", "diet gurus", "computer gurus", and "personal growth gurus"… the ambiguous nature of the term "guru" enables the journalists who chose to use it to sit on the fence and suspend judgement. (pp. 9-10)

Management fad gurus have until recently only been taken seriously by media sources such as prominent business magazines and current affairs programs (Jackson, 2001, p. 8). This could be attributed to a number of reasons. Firstly, the term 'guru' may be applied in such a way that journalists can place a derogatory or mocking spin on the subject matter being

exposed. Secondly, gurus of management, or those from any of the fields suggested by Jackson above, have enjoyed significant commercial and popular media success, thus making 'good copy'. Thirdly, gurus of anything – even the self-styled ones – promote prescriptions for change, for adapting to the uncertainties of the modern age, transforming such things as investments, profit margins, reading speed, sex lives, body shape, and even individual character traits. However, the term 'management guru' is gaining more acceptance within the academic community by virtue of a few writers (such as Abrahamson, 1996; Clark and Salaman, 1996; Huczynski, 1993; Jackson, 1996 and Collins, 2000) who see that the term has a resonance in the popular realm that warrants more serious attention. The fact that so-called management gurus often head up multi-million dollar companies is not lost on a number of commentators including Mickelthwaite and Wooldridge (1997), Ogbonna and Harris (2002) and Carter McNamara (2006).

For example, Mickelthwaite and Wooldridge (1997) observe that many use the term 'guru' to describe management's key commentators, only because they are too polite to call these people 'charlatans' in public. Collins (2001) equates modern-day management gurus to the carpet-baggers that roamed America during the post-Civil War depression, both profiting from economic dislocation (Collins, 2001, p. 5). Even Drucker is said to have observed, "I ascribe the popularity of this hideous word to its fitting more easily into a headline than its older synonym – charlatan" (cited in Clutterbuck and Crainer, 1990, p. 235).

Self-styled British guru, John Humble lists the following six essential qualities of a guru:

1. integrative power
2. an extraordinary and intuitive sense of timing
3. longevity
4. international influence
5. missionary zeal
6. an ability to listen.

(Clutterbuck and Crainer, 1990, pp. 236-237)

To this, one could add high self-image and personal appeal.

Huczynski (1993) observes that the term "guru", when applied to management, is used to denote an elite yet diverse grouping, who simultaneously commentate upon management, while acting to shape, and

reshape, the forms and practices of management. Huczysnski (1993) identifies three forms of management guru:

1. academic
2. consultant
3. hero-manager

all of which contribute to 'guru theory' summarised below.

Huczynski (1993) also observes that when gurus speak to management, they speak with the power of belief rather than with the authority of science. As Collins (2001) points out, the fact that managers always purchase the text that goes along with the guru presentation serves to confirm that gurus are as much performers as business analysts (p. 6). This suggestion is backed up by Crainer (1996), who notes, "no executive office is complete without a neatly arranged row of management bestsellers. They are as much a fixture as the family portrait and, cynics might say, as much practical use" (p. 87). Crainer (1996) cites research by the Management Training Partnership which found that:

> Three-quarters of personnel directors buy at least four management books a year. But, only one in five are actually read. Tom Peters calculates that while over five million copies of his *In Search of Excellence* have been sold, only 100,000 or so readers have read it from cover to cover. (p. 126)

As the books are replaced by newer versions, executives absorb the latest big ideas at seminars and conferences. As Crainer (1996) adds:

> There can hardly be a manager in the western world who has not been to an event promoting a particular individual's view of how they should be managing their business. There is more the consultants with their theories and formulae, the business schools with their resident experts advocating particular tools and techniques. There is no escape from the maelstrom of bright ideas. (p. 154)

It would be difficult to find an argument against the observation that the people behind the ideas, the management gurus, have spawned a highly lucrative and truly global business. The bestsellers may be purely decorative, but the management guru industry is, quite obviously, big business. The leaders in the field demand daily fees in the thousands of dollars per appearance. It is also indisputable that anyone with Harvard in their credentials, or the hint of Ivy League, can easily command in excess of $100,000 for two days work with a major company.

This is an industry of big ideas and sizeable rewards which, from humble beginnings, seems to have developed its own particular discourse. Surrounded by hype and hyperbole, the thinkers themselves are quick to

distance themselves from being labelled as gurus. Crainer (1996) provides the following perspectives in his article:

> There is a lot of obnoxious hype about being a guru to the extent that the medium can destroy the message,' warns Henry Mintzberg. Former *Harvard Business Review* editor and author of *When Giants Learn to Dance*, Rosabeth Moss Kanter, says: `I reject the term guru because it is associated with pandering to the masses, providing inspiration without substance. There is a little bit of the shaman in a guru'. (p. 98)

It has been estimated that each year more than 5,000 titles are published offering advice about some aspect of running an organisation (Burnes, 1998). According to Jackson (2001), the worldwide management consulting industry was worth a conservative USD$92 billion in 1997. Judging by the increase in the number of management and business texts on the market, coupled with the increase in consultant guru firms, it could be presumed this figure has gone well beyond the $100 billion mark by 2006. In fact, the rapidly expanding market for management literature is not lost on many commentators (see especially Micklethwaite and Wooldridge, 1997; Crainer, 1996; Huczysnski, 1993; Collins, 2001; Jackson, 1996, 2001), who observe that much of the literature, rather than coming from established, formal institutions with a history of high quality scholarly publications, are often spawned by quick-fix new-age learning centres: "Indeed it seems that scholarly works on management now represent the marginal fringes of the market for management books when compared to the mass-market appeal of a group of management commentators often termed the 'gurus' of management" (Collins, 2000, p. 19).

For some, Crainer (1996) notes, gurus are simply motivational. Detail forgotten, followers become inspired by the 'evangelical' presence. Peters is the most notable member of this inspirational band of gurus, according to Crainer. By all accounts, Peters' seminars are highly entertaining events where he strides the stage, perspiring and preaching. Peters' writing style is similarly active, punctuated with 'Wow!'s' and exhortations. Tony Robbins is another, whose fashionable entourage includes many of the rich and famous on the 'A-list'. This is the same, widely-published, motivational speaker who at one time in his career advocated firewalking and other equally shocking tactics based on neurolinguistic programming (NLP), one item in his kitbag of strategies for the contemporary manager and successful team player.

So, as Crainer (1996) asks, "What should be the role of gurus? Should they be masters of simplification and accessibility, but little else? Or, should they be pioneers of theory, leaving managers and organisations to wrestle with the practicalities?" (p.24). Perhaps gurus should be thought-provokers,

suggests Crainer, leaving academics to either prove or ridicule their prescriptions, long after they have ceased to be a popular phenomenon. As Crainer (1996) observes:

> Amid the hard sell, the quick-fixes and organisational placebos, it is true to say that there is little that's original. But, without gurus, managers would lose a rich source of inspiration, information and controversy. Without the patchy framework of theory, opinion and examples of best practice provided by the gurus, managers would be even more isolated and many would learn that, as Van Morrison observed: No guru, no teacher, no method.' (p. 33)

Collins (2000) expands upon Crainer's (1998) analogies by referring to the 'guru industry'. This he argues, includes writers and commentators "who live in the shadow (or in the reflected glory) of the 'gurus'" (p. 79). Therefore, those active in Collins' guru industry are not necessarily gurus *per se*. This means that within the guru industry there is a vast difference in the quantity and quality of authors and the range of subjects discussed. Religious metaphor is common in observations of guru behaviour and forms an important part of the discourse. Collins' (2000) framework for an analysis of the guru industry analysis involves three groupings:

1. agnostics and atheists;
2. redemptive texts; and
3. homages and hagiologies.

The criticisms Collins (2000) levels at many scholars and commentators of the guru industry condemns the contradiction, arrogance and ignorance of those writing about so-called gurus themselves. More about this will be discussed in the next chapter.

5.6   Conclusions

One of the most important questions that remains is: What legitimates a theory or idea, even for a short time? We could also add to that, why do certain management theories end up being termed fads? Whether or not management apply prescriptions to encourage stability or to ward off change, there is no doubt that the management guru industry is thriving. Irrespective of commentators either cynically pointing out – or empirically demonstrating – that management fads do more harm than good, they have become a permanent fixture on the business, corporate and now academic landscape. Jackson (2001) agrees, noting that "the rapid growth and turnover of management fashions have been supported and

actively promoted by an extensive network of global and local consultants" (p. 78). As Caulkin (1997) observes, "the economic model of consulting dovetails effortlessly in the larger management fashion production line which ties together consultancy, business schools and the business press in an eye-watering producing chain" (p. 33).

Ultimately, it is management of organisations themselves who choose to adopt a fad, or to reject one and trust their own experience or in-house management techniques. Wooldridge (1997) suggests that those who follow management fads tend to do so based on the premise that they "[tackle] their problems, distracting time and attention from the real business of management" (p. 34). For example, the fashion for delayering caused companies to get rid of middle managers whose experience and connections are often irreplaceable. The cult of empowerment encouraged banks such as Barings to hand too much power to junior 'rogues'. The fad for 'user pays' has created unprecedented layers of bureaucracy challenging efficiency and productivity. Commercialisation too has, arguably, potentially decreased efficiency, by creating more levels of bureaucratic accountability to cut through for best outcomes. This perception of over-regulation has created its own change management burden, as organisations rush to cope with rapidly increasing technological innovations by adopting faddish interventions.

To recapitulate, this chapter introduced and defined management fads, and discussed the conventional explanations of one source of fads, the management guru phenomenon. It highlighted that bias toward acceptance of fads tends to dwell on the uncertain economic climate, and the management gurus' penchant for packaging relatively simple and 'commonsensical' solutions, and their prowess at marketing them to a desperate and gullible market (Abrahamson, 1991; Alvesson, 1990; Maidique, 1983; Pierce and Newstrom, 1990). In the first sustained analysis of management gurus, Huczynski (1993) suggests that the reason management gurus are so popular with practising managers is they recognise, understand and cater to their needs and preoccupations. Huczynski, therefore, asserts that "the growth in the popularity of management gurus' books and seminars, far from being linked with the upturn in managers' confidence, in fact represents a response to widespread self-doubt among executives, even those at the top" (1993, p. 196). Moreover, Giroux (2006) has identified deliberate strategy to keep the language vague which sees a close connection between 'pragmatic ambiguity' and popularity of the fad. Further studies conducted (Micklethwaite and Wooldridge, 1997; Crainer, 1996; Collins, 2001; Jackson,

1996, 2001; Rigby, 2001; Miller et al, 2004; Giroux, 2006) since Huczynski's research corroborate these earlier findings and come to similar conclusions about the key characteristics of fads. The following chapter will present a more detailed analysis of the critique of management fads themselves.

Chapter 6: Management Fads – The Critical Literature

In this chapter, the nature of critical inquiry into the phenomenon of management fads will be discussed. The previous chapter outlined various attempts that have been made over the last decade or more to provide a robust, scholarly analysis of management fads and their relationship to management theory. Yet despite these studies, there is a dearth of literature critiquing management fads and their impact on organisations, and indeed less on the broader sociocultural system itself. Literature actually critiquing studies of management fads is almost non-existent. Perceptions about how sociocultural phenomena such as management fads are received provide important insights into the behaviour of the phenomenon itself; a point often missed in the critical literature. It is also important to reiterate that it is the phenomenon of management fads that is of interest to this thesis, not the performance of particular management fads, or organisational interventions per se.

Using the discussion from the previous chapter, this chapter will synthesise some general observations and assumptions about management fads; for example:

- *Management fads legitimate the prevailing common sense.*

- *Management guru status is a social construction.*

- *The phenomenon of fads is not necessarily confined to the field of management, but symptomatic of much wider social, cultural and political changes (Jackson, 2001, pp. 2-3).*

- *Burrell's (1989) prediction that gurus will move contemporary management theory from a premodernist phase to a postmodernist phase further demonstrates the connections between organisational behaviour and the wider social world.*

6.1   Introduction

Burnes (1998) believes it important for critical models of management fads to be based upon a theoretically rooted understanding of organisation and management, underpinned by a robust and rigorous methodology for the development of valid hypotheses and further research. Further, Burnes

argues that any coherent theoretical model of organisation and management must:

- acknowledge the existence of other, competing models;
- be capable of withstanding or incorporating criticisms made by other actors and scholars who may elect to deploy competitive models.

In his analysis of management fads, Burnes (1998) also condemns guru and faddish business texts for being poorly researched. He notes that many such works seem "to have only a scanty research base and serve merely to express their author's opinions, however one-sided" (Burnes, 1998, pp. 105-106). Jackson (1996, 2001) agrees, positing that the management guru phenomenon has received only limited attention from the academic community. What little attention it has received has been incomplete and invariably dismissive. The gurus' work is generally considered to be too philosophically impoverished, theoretically underdeveloped and empirically naked to warrant serious academic scrutiny (Burrell, 1989; Carroll, 1983; Hitt and Ireland, 1987; Thomas, 1989). In his latest work, Jackson (2001) suggests that the academic criticism of management guru works, fads and 'quick fixes' has changed from indifference to hostility (p. 3).

Whether one accepts the empiricist approach of Burns or not, a more robust framework for critical analysis of the phenomenon is required. Moreover, the body of criticism of management fads cannot be discussed *in absentia* of management theory and management ideas. What constitutes management theory, what constitutes a fad, what are the differences between the two, and how we might set up a regime for critical analysis of the phenomena of management fads themselves is the focus of this chapter.

6.2 Management theories and management fads

First, some assumptions have to be made about the nature of management theory and where fads fit within that wider discourse. This will help to clarify the terminology and to differentiate between the task of critiquing the management ideas themselves and that of conducting critical analysis to explain their popularity. As well, it will serve to limit the field of inquiry of this thesis. For example, a critique of management theory, although relevant in terms of how management fads are perceived, is only a limited facet of this inquiry. Some appreciation of the discourse of

management theory, however, will prove useful to critically evaluate management fads and the works of gurus.

6.2.1   How management fads change over time.

	Start as Theory	End as Fad
Theories	1 Wholly theoretic	2 Theories that become fads
Fads	3 Fads that become theories	4 Wholly fads

Figure 6.1: How management fads change over time

Figure 6.1 broadly represents the possible relationships between management theories and management fads as follows:

Category 1- Only some management theories fall into the first category – that is, only those which are based on a theoretical analysis of organisations. Many of the theories in this category apply to other disciplines (e.g., education, economic theory, political theory), and only a limited number directly concern the discourse of management. Theorists and commentators from this group are exemplified by a disciplined, academic and scholarly approach to management theory. Drawing heavily upon the fields of sociology, psychology, science and even philosophy, this group of texts probably are more for the discerning, even intellectual CEO. Scholars in this field theorise about organisational behaviour within sociological, psychological and philosophical paradigms, and do so with a non-commercial intent. This group is not necessarily from the ranks of contemporary theoretical disciplines. Authors (irrespective of

the era in which they wrote) who may fit into this category include Plato, Aristotle, Kant, Descartes, Hume, Marx, Pierce, Weber, Foucault, and Burrell.

Category 2 – The second category represents fads that start life as theories. This is where some of the deep theory from the first category is interpreted, and applied to organisations in a simplified form. It is also where the majority of management trends reside before they become fads, and where most of the movement occurs.

A number of authors have compared the original writings of management idea developers and their popular interpretation. According to Huczynski (1993), in some cases, original ideas are subverted to such a degree that management lecturers could be charged with misrepresentation (p. 8). Frederick Taylor's scientific management principles are a prime example of the 'pseudo-history' which underpins much contemporary management theory (Huczynski, 1993, pp 7-9). Some studies (Collins, 2002, Huczynski, 1993) reveal that many management texts misrepresent Taylor's original theory to such an extent that in some cases it barely resembles the original. Such inaccuracy could be academic laziness (Huczynski, 1993, p. 9), the simplification of a difficult intellectual argument, or purely pragmatic. More likely, texts that blatantly misrepresent original theories are written to enhance the popular (and therefore commercial) appeal of the theory being espoused, especially if simplistic, alliterative and visual improvements can be made to the original theory. One further point to note about this category is that its membership constantly changes; the lines between ideas are in a continual state of flux because of their take-up and abandonment rates. Concepts in this category include MBO (Management By Objectives), TQM (Total Quality Management), BPR (Business Process Review) and Reengineering. Authors include Champy, Taylor, Deming, Fayol, Stacey, Maslow, McGregor, Likert, and Shannon.

Category 3 – This group generally develop from the second category while it is in a state of instability. Category 3 management theories begin life specifically written to change some aspect of organisational behaviour or trend or situation. Often based on scholarly works, this group writes solely for the current business market and business/management students, and capitalises on the trends at the time. The theoretical perspectives in this group are typified by hype (as are those in the final category), and the approach is usually sound. These prescriptions are directed at organisational improvement and offer often complex strategies based on scholarly research. This is the hardest category to substantiate. Such interventions as Triple Bottom Line Reporting, Balanced Scorecard and

even Knowledge Management may appear in this category. The work of Drucker, Mintzberg, Argyris, Senge, Kanter, Semler, Stacey and Morgan is represented here.

Category 4 – This is often pejoratively termed the 'guru' industry. Texts in this category are written solely for the populist and popular management fad market. More often than not, there is limited theoretical basis, an absence of empirical research, and what theoretical basis exists is extracted from secondary sources and often misapplied. Writers from this category are almost exclusively from the 'consultant' school. The gurus from this category are often the most popular and most wealthy (at least when their fad is at the height of its popularity). This descriptive taxonomy begins the process of relating management theory and fad but ignores the broader social science context of management theory itself. 'Excellence', 6 Thinking Hats, Six Sigma, *Who Moved My Cheese* are in this group. Authors in this category include Tom Peters, Tony Robbins, Ray Iacocca, Donald Trump, Stephen Covey, Spencer Johnson, and arguably Edward de Bono.

6.2.2   The uneasy relationship between management theory and management fads

Figure 6.2 represents the relationship between management fads and the broader sociocultural theories of which they form a small subset. Management fads do not often draw upon scholarly research and academic theory. Although some utilise traditional management theory to prove connection to legitimate and scholarly research, the majority of fads do not. The relationship between management fads and fads in the shaded critical analysis intersection is the area of focus for this chapter.
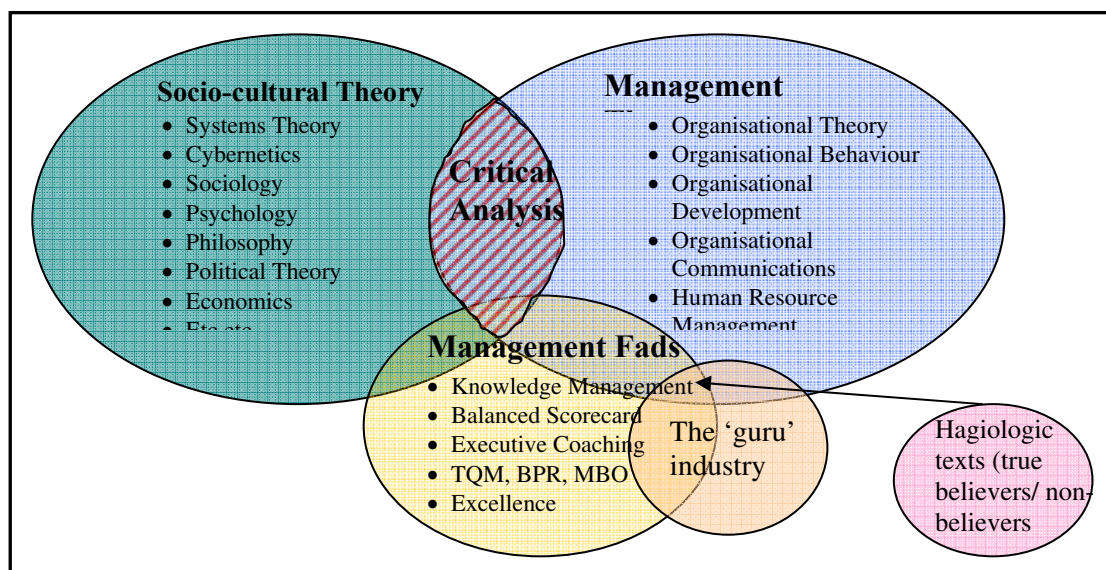
Figure 6.2: Critical inquiry of management theory and management fads

Clegg and Palmer (1996) talk about the primary conditions required of management: shared knowledge and spatio-temporal proximity. Both these conditions suit the power, surveillance and knowledge discourses necessary to ensure management continues in changing and complex environments. As Clegg and Palmer see it, management is discursive and managers operate under various discourses as they discuss, order, cajole, plead, condense, summarise, synthesise, present and report to their organisations. For the most part, management discourses capture the notion that management is, after all, a process of social control in which power is most likely to be distributed unevenly around the networks of all those with an interest in influencing that control. From the observations of those writing about management fads, fads mostly play down and sometimes grossly over-simplify actual control mechanisms, focussing instead on strategies, buzzphrases and pseudoscientific explanations for the complex relationships between individuals within their organisation, and between their organisation and the outside world. In this sense, Clegg and Palmer (1996) suggest:

> Management is less a science and more like a cookbook knowledge: it is knowledge of recipes and their application … many of the best-selling texts present management as a form of recipe knowledge … how rationality is bounded, how behaviour is ordered, how individuals are controlled and creative, depend on the recipes in use: just as in cuisine recipes are what unleash and discipline creativity, (and different approaches to recipes will stress either end of the continuum), so too in management. (p. 2)

In keeping with the recipe metaphor, we can ask: Why it is we actually need recipes and menus in the first place? Why are we so enamoured of clever chefs (and there are never enough cooks)? Why have we come to accept some recipes over others? And, why may we never even sample some cuisine simply because it is too different to our current taste? Clegg and Palmer (1996) argue that "power makes knowledge and knowledge makes power: recipes codify differing relations of ingredients, and discourses sustain the generic sensibility within which recipes locate" (p. 5). Thus, the uneasy relationship between management fads and management theory manifests in ridicule and blame on both sides. Broadly, those promoting management fads criticise the over-theorisation and lack of real-world application espoused by some management theories. On the other hand, management theorists often pour scorn on the unscholarly approach of some management gurus and their prescriptive attempts to change one aspect or another of an organisation. Examples of this disconnect are provided throughout this chapter.

6.2.3   Management education

Jack (1997) cautions that if management is to evolve into a legitimate social science, the first requirement is that practitioners must believe that it can and should; that is, managers (and academics) must agree that there really is some coherent discipline underlying the practice of management. Citing the text of Hilmer and Donaldson (1997), Jack reiterates that the actual body of knowledge constituting the study of management is woefully underdeveloped: "limited", "imperfect", and with "overall standards of reasoning that are often low" (p. 64). Even at universities with top business schools, Hilmer and Donaldson concede, "management academics tend not to be held in high regard as scholars" (pp. 85-86).

Huczynski's (1993) discussion of the difference between academic or formal types of management education and the non-academic or popular forms of management knowledge is also pertinent to this discussion. Themes in popular management are not new, but carefully crafted to rest upon – but not rely on – grounded theory. This concept, according to Thomas (1989, cited in Huczynski, 1993, pp. 38-39), revitalises traditional management ideas, by acknowledging what he terms 'domain assumptions' of popular management. Popular management, Thomas argues, rejects theoretically informed knowledge and devalues any sort of formal instruction. Within the academic domain, those writers who comment on change and suggest reform in a pessimistic way are rarely rewarded. Clegg and Palmer (1996) agree. Huczynski (1993) relates the story of Pascale and Athos (1982), "who, while well known in academic circles, never achieved the popular acclaim or visibility of Peters and Waterman" (p. 43). Huczynski (1993) posits that the reduced success of the Pascale and Athos text was largely due to the fact that managers do not relish their faults and shortcomings being pointed out in such a disparaging way.

The rapid growth and turnover of management fads and fashions have been supported and actively promoted by an extensive network of global and local consultants. As Caulkin (1997) has observed, the economic model of consulting "dovetails effortlessly in the larger management fashion production line which ties together consultancy, business schools and the business press in an eye-wateringly productive chain" (p. 33). Hence, it would seem that business schools at universities provide a measure of tacit approval for some of these fads because there is a paucity of texts and indeed course content that is openly critical of such

prescriptions, a fact not lost on commentators of the management guru industry.

6.3   Toward a framework for critical analysis

Therefore, moving toward a more analytical framework for a robust and critical evaluation of management fads requires us to move beyond simply presenting and debunking various management fads and buzzwords. It would be insufficient for this thesis to simply critique ten different management fads and evaluate their success or otherwise; such observations, while useful to understand the behaviour of a particular fad in a particular organisation, does not address the broader social phenomenon of fads. Beyond that, such studies have already been undertaken, and some of their results are incorporated in this thesis (for example, Darryl Rigby, 2001). Therefore the analysis must move beyond discussing fads themselves toward a wider, more critical analysis. Three main forms of critique are evident in the literature, namely:

- Rational/practical critique (various)
- Hagiologic critique (Collins)
- Rhetorical critique (Jackson)

The four categories identified in section 6.1.1 will be examined to contextualise critique of management fads. This will not explain or interpret individual management fads *per se*, but rather will outline the *criticism* levelled at fads themselves. There is no intention to single out and critique particular fads. Those discussed are selected simply for the purposes of illustration.

6.3.1   Rational/practical critique

Jackson (2001) suggests that the guru phenomenon is not something necessarily confined to the field of management, but is symptomatic of much wider social, cultural and political changes (pp. 2-3). Therefore, using a broader sociocultural lens is a more illustrative way to analyse this genre of critique. So long as the critique directly mentions management theory and more importantly management fads or guru theory, it has a place in this genre. Irrespective of whether it draws its theoretical basis from the disciplines of sociology, psychology, education, or science, the critique of management fads and fashions within this grouping is important because it is an indicator of the growing awareness of the phenomenon. Although the

number of texts directly critiquing management fads is increasing slowly, journal articles are probably the most reliable source of critique available for the phenomenon of management fads. Such publication offers a scholarly and often non-commercial account to both explain the phenomenon and offer recommendations for alternative courses of action. Collins (2000) does warn that no account of the guru industry, however, could be exhaustive or encyclopaedic: "The search for the 'ultimate guide' to the 'gurus', therefore is an illusion, a fool's errand" (p. 80).

As noted by a growing body of management guru theory commentators (Collins, 1998, 2000; Micklethwaite and Wooldridge, 1997; Huczynski, 1993, 1997; Jackson, 2001, Miller et al 2004), it is becoming increasingly difficult for scholarly management texts to compete with the mass-market appeal of array of guru management books. Despite this abundance, the books penned by management gurus exhibit distinct similarities (Waters, cited in Collins, 2000, p. 47). Many of the texts offer similar accounts of management, economics and universal problems that beset contemporary organisations. According to Huczynski (1993), many guru works define organisations as unitary structures within complex business environments and offer remarkably similar prescriptions for change. Crainer (1998) has suggested that much of this convergence may be due to the growing tendency for guru works to be 'ghost-written'.

Jackson (2001) observes that the critical offensive is reasonably well documented and tends to focus on three main concerns:

1. the intellectually impoverished quality of the gurus' thinking;
2. the gap between the promise and the practice when the ideas are translated into practice; and
3. the inconsistent manner in which organisations apply the same prescriptions.

Collins (2000) claims that much of the critique of guru works is limited and incomplete, because it does not build from a properly coherent and theoretically grounded model of managing and organising (Collins, 2000, p. 23). Commentators on the succession of management fads, such as Huczynski (1993, 1996), Crainer (2000, 1996), Jackson (2001), Burnes (1998), Gibson & Tesone (2001) and Miller et al (2004), commence their arguments with historical accounts of the rise and fall of the various management and organisational theories that make up what are widely acknowledged as guru works. Jack (1997) is keen to point out that "debunking management fads has become almost as trendy as promulgating them, albeit less lucrative. And as in any genre of management literature, the intelligent

debunking efforts are vastly outnumbered by the clumsy and the dumb"
(p. 85).

Huczynski (1993) and others (Jackson, 2001; Collins, 1996, 2000;
Abrahamson, 1996) identify the early 1980s as the watershed for the
emergence of guru works and faddish management trends. Specifically,
the year 1982 is often earmarked as the birth date of the modern
management guru phenomenon (Collins, 2000, p. 23). This is when the
Peters and Waterman publication *In Search of Excellence* first hit the
bookshelves. Clark and Salaman (1998) report that (up to 1997) this book
had sold more than 5 million copies world-wide. This particular text has
been subject to a barrage of criticism, ranging from its curious label as a
"skunk work" (Crainer, 1998, p. 67), to Maidique's (1983) claim that *In
Search of Excellence* is a "potpourri of loosely interconnected, and often
redundant, vignettes in search of a framework" (p. 156).

The guru management best seller lists are often criticised for being
common, and even vulgar (Huczynski, 1993, p. 39). Many business
magazines and newspapers regularly carry articles about the best-selling
business books and often refer to the management gurus as the 'prophets
of profit'. This pejorative attitude to guru works underscores the
phenomenon of management fads themselves in that it occupies the anti-
organisation paradigm as described by such theorists as Burrell and
Morgan (1994). Burrell (1989), in particular, has attacked management
theory in general for its "crude pragmatism" and philosophical vacuity (p.
307). It is guru management books, Burrell suggests, that fit this category
because most popular management theorists tend to think with their beliefs
rather than about their beliefs. For Burrell, they offer only a basic
pragmatism that is essentially premodernist. Burrell (1989) predicts that gurus
will move contemporary management theory from a premodernist phase
to a postmodernist phase because "consultants like Rosabeth Kantner and
Tom Peters have recognised the new zeitgeist and its emphasis on
appearance, image and superficiality" (p. 310).

Expanding on the notion of the popularisation of guru management ideas,
Huczynski (1993) is a good place to begin for categorisation purposes
because he identifies three types of management guru authors:

1. academic gurus
2. consultant gurus
3. hero-manager gurus

Huczynski (1993) provides the following table (Table 6.1) in support of this description. Contributions of those guru authors since the publication of Huczynski's text are also added (italicised).

Table 6.1: Academics, consultants and hero-managers

Academics	Consultants	Hero-managers
Mintzberg	de Bono	Geneen
Drucker	Naisbitt	McCormack
Kotler	Ohmae	Kay
Porter	Pinchot	Kiam
Bennis	Peters	Avis
Blanchard	Waterman	Calzon
Ouchi	Goldratt	Harvey-Jones
Levitt	Crosby	Morita
Kanter		Trump
Stacey		Iacocca
		Sculley
		Welsh
		Gates
		Branson

(Source: adapted from Huczynski, 1993, pp. 43-46)

Regardless of whether they are academics, consultants or hero-managers, all purport to improve some form of behaviour, performance or relationship - the bottom line, of course, being profit. Huczynski (1993) differentiates between the acceptance and promotion of gurus around the world and explains why American management gurus enjoy enormous success relative to their Asian or European counterparts. He posits that audience acceptance of entertainment as a form of communication is more culturally acceptable in the US than in Europe or, indeed, Asia:

> Whereas the American gurus offer a *content message* ('use this leadership style, motivate people this way') the British gurus focus on how managers can learn from their experience or use their brains more creatively. Thus they offer a *learning process message*. (Huczynski, 1993, p. 45)

Advancing the notion of themes, Huczynski (1993) devotes an entire chapter of his text to recurring themes in popular management texts. He identifies the following as the three most popular recurrent themes:

1. Understanding the work world – elements of the idea which make it easy for managers to get to grips with it.

2. Status enhancement – managers' need to maintain and enhance their own self-esteem and gain the esteem of others.
3. Practical application – ease of implementation.

Along with these three themes, Huczysnski (1993) identifies key elements for the success of the themes as outlined in Table 6.2.

Table 6.2: Elements for the success of fads

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available from the QUT Library

(Source: Huczynski, 1993, p. 36)

Huczynski (1993) uses this framework to analyse and critique management fads. His insights about how management theory relies on these key elements offer detailed research and opinion in the study of management fads. Whether or not Huczynski underestimated the cascade effect of guru success stories in the intervening decade since the publication of his text, his tripartite division of guru theory texts is not adequate to critique the thousands published each year. For example, Huczynski's model omits the hagiologic texts Collins (2000) identifies in his recent articles and latest text. For example, publications such as Mickelthwaite and Woodridge's (1997) *The Witch Doctors,* and Crainer's (1998) *The Tom Peters Phenomenon* do not find a place within any of the three categories proposed by Huczynski, yet they represent an important critique of contemporary management theory and, more relevantly, fads.

Collins (2000) echoes the concerns of Huczynski (1997), Abrahmson and Fairchild (1997) and Burns (1998), warning that "even at their best, 'guru' models of organisation often exhibit a poverty of thought which, all too often, leads managers and consultants to embark on spurious courses of action" (p. 27). His claim is that all too often the discourse of management and guru management prescriptions, in particular:

- fails to develop a theoretical model of work and organisation
- fails to unpack theoretical constructs and ideas
- has a tendency to treat particular theoretical accounts of organisation, as if these represent the definitive account.

(Collins, 2000, p. 27)

On this final point, Gold (1998) agrees. He argues that gurus present their representations of the world *as if* these were clearly, and concretely, reality. Gold (1998) believes that often guru forms of analysis assume stable and unified organisations where conceptualisations of human interaction suppress opposition at the social level, while denying the virtues of abstraction at the conceptual level. Gold (1998) laments that the limited perception of management gurus does not affect their success and marketability. As Gold observes, the failure of gurus to acknowledge the problematic and ambiguous nature of such a thing as 'effectiveness' leads managers not to reject guru advice, but to seek more support from them. Further, Gold (1998) argues that instead of rejecting the advice of gurus and their programmed packages, managers accept the ready-made science of management as valid, and turn the blame for failure inwards. Thus, as Collins (2000) points out, managers tend to seek out more innovative forms of action from the gurus when confronted with what they seem to regard as *their personal* failure to achieve generally acceptable and operationally useful measures of such things as "effectiveness" (p. 29). Because guru prescriptions offer 'one-size-fits-all' strategies, they cannot lose when their recommendations are applied in ways that specifically target particular organisational problems. The justification for failure will simply be to cite poor implementation.

Unlike Huczynski's method of identifying management idea (key elements of guru success and sub-groups of guru theorists), Burnes (1998) chooses to base his critique of management fads around the theme of 'organisational effectiveness'. He points out that organisations are comprised of competing interests and diverse and divergent stakeholders. This leads him to ask: "Can one approach to effectiveness meet the desires of all these groups in either the short or long term?" (Burnes, 1998, p. 18). On the theme of organisational effectiveness, Burnes' (1998) criticism is that management fads "… all, in one way or another, argue that by following their particular recipe, organisations will improve their performance (i.e. achieve their desired outcomes)" (p. 34). As Huczynski (1993) points out, the popular management ideas are those which can convey the illusion of a predictable and certain world to the manager (p. 181). But since there is no universally accepted definition of organisational effectiveness, Burnes' question about whose desires are being met is a valid one.

According to Gold (1998), "meanings of organizational effectiveness can be understood as a feature of an unfolding story that can be set within wider narratives that allow us to make sense of the world" (p. 12). This view of organisational life draws from the work of social constructionist writers who posit that language is central to the way we describe and explain our world but also constitutes our experience of that world and our practices in it. Gold (1998) sees the social constructionist position as having a number of key elements which can help explore the notion of organisational effectiveness:

1. Definitions and meanings of effectiveness that are widely accepted rely on the presence of linguistic categories which allow sense to be made in a particular time and place. In other words, organisational effectiveness is critically affected by the contexts of culture, history and social milieu.

2. Meanings of effectiveness are formed and emerge from interchanges within relationships. Social constructionists emphasise relationships as the unit of social life where language is used to create local meanings within as an ongoing narrative. We tell stories to make ourselves intelligible to others providing coherence to events and a direction for the future. These local meanings provide versions of reality, a "local ontology" (Gergen, 1994).

3. There is not just one story played over and over. In any situation, we are able to draw on meanings developed in past relational contexts. We have learned therefore to draw upon different "interpretative repertoires" (Potter and Wetherill, cited in Gold) to pursue different ends that we might value. (Adapted from Gold, 1998.)

Collins' (2000) interpretation of Burnes' discussion is that management fads tend to develop programmatic approaches to key management problems – what Burnes terms 'recipes for organisational success'. Thus, according to Burnes (1998), when we speak of the desires of an organisation being met, we are actually speaking of the desires only of particular groups.

Ogbonna and Harris (2002) suggest that organisational culture is a similarly problematic concept. Through the 1980s it was hailed as having the potential to transform our understanding of organisations. Defined as either something an organization 'has' or 'is' (Smircich, 1983), it is remarkable that theorists have largely accepted organisational culture without the usual resistance and scepticism (Alvesson, 1990). The number of major academic

journals that have devoted special issues to organisational culture in the last two decades testifies to this acceptance. It is probably the case that linking culture to the performance of an organisation is the single most important reason for the widespread popularity of culture prescriptions by management gurus.

Finally, as many of the commentators in this chapter (almost unanimously) point out, what management prescriptions promise and what they deliver on are often two different things. A number of critics focus on this aspect. Pascale's (1990) indictment of the 'search for excellence', as set out by Peters and Waterman, notes that five years after the publication of *In Search of Excellence*, two-thirds of the 43 companies on top of the corporate ladder had slipped down the ladder, expired, or were in serious difficulty.

A number of consultant-sponsored studies have revealed a serious disparity in the rhetoric promised and the reality delivered. In 1992, a survey conducted by Arthur D. Little found that of the 500 American companies surveyed, only one-third believed popular management prescriptions such as TQM offered any significant impacts for their bottom line (Furlong, cited in Jackson, 2001, p. 18). The same source revealed similar results for a British-led study. In their 1995 survey of 787 company managers around the world, Bain and Company found that, while 72 percent of managers believed that companies who use the right tools are more likely to succeed, 70 percent said that the tools promise more than they deliver (Mickelthwaite and Wooldridge, 1997, p. 76).

Thus, the evaluation by journalists and academic theorists of the contribution of management gurus and their interventions has spawned very negative connotations. Some of the expressions used to describe them have been collected by those such as Jackson (2001) and include: 'intellectual wallpaper', 'business pornography', 'shameless narcissism', 'behavioural fast food' and 'commonsensical in the extreme' (p. 16). Jackson (2001, p. 16) also sees that the main criticisms of guru works fall into three categories:

1. the intellectually impoverished quality of the gurus' thinking
2. the gap between the rhetoric and the reality
3. the poor manner in which organisations have used these ideas.

Pascale (1990) warns of the era of the 'quick fix', lamenting that one of the unintended consequences of the mass marketing of management prescriptions is that the superficiality sees it as professionally legitimate to

"accept and utilise ideas without an in-depth grasp of their underlying foundation, and without the commitment necessary to sustain them" (pp. 19-20). Kilman (1994) has likened the search for the organisational quickfix to the quest for the Holy Grail. Although it may be felt that at the level of appearance these criticisms are well-founded, there is a dearth of empirical evidence to demonstrate this prevalent observation (Jackson, 2001, p. 18). Empirical evidence is, of course, by no means conclusive, but what is available points towards the view that management fads fail to live up to expectations.

6.3.2 Hagiologic criticism

Crainer (1998) accuses the gurus of management of belonging more to the entertainment industry than to the business world, a view related to Huczynski's (1993) discussion of the ready acceptance of management gurus in the US. Collins (2000) describes the guru industry as comprising a group of writers and commentators who live in the shadow (or reflected glory) of the gurus: "In this sense the term guru industry refers to the (diverse) grouping of writers and commentators who have grown up around the 'gurus', and whose market presence is, in some sense, dependent upon the 'gurus'" (p. 79). Thus, according to Collins (2000), those active in the guru industry are not necessarily gurus themselves, but exist symbiotically with the gurus, and carefully craft works (hagiographies) which comment on or distil the ideas of the more successful gurus. This activity is typical of what Collins terms hagiology. Further, many of the hagiologic contributions to the guru industry adopt a highly deferential approach. Therefore, hagiologic criticism comes from within the guru industry itself; the analysis from within this critique is often both non reflective and non reflexive.

Collins (2000) tells us that his notion of hagiologic critique comes from his reading of both Pattison (cited in Collins, 2000) and Clark and Salaman (1996). Both these texts use the religious metaphor in their discussion of the 'management guru as organisational witch doctor'. According to Collins (2000), Pattison's argument is that the management guru, like the religious prophet, conjures up a dualistic, polarized world. This polarized world is one in which there is good versus evil, light versus darkness, and heaven versus hell. For the management allegory, this represents the polarization between conspicuous successes and conspicuous flops (Pattison, cited in Collins, 2000, p. 81). To qualify as a guru work, the prescription must offer easy-to-

grasp principles for salvation. Collins (2000) recounts Pattison's analysis of Tom Peters' *Thriving on Chaos*, summarised as follows:

- The 'promised land' is under threat. Fierce competitors from foreign shores threaten the 'good life' enjoyed by Americans.
- This foreign challenge has arisen because those in charge of American industry have failed to realise that the 'old order' is passing away. This old order was build upon rationalist planning. However, the emergent, 'new order', resists rationalism. The future, therefore, can no longer be mapped, planned for, or guessed at by extrapolating from the past, because the new order is 'chaotic'.
- Salvation is at hand. Those who would protect the 'promised land', rising up to meet foreign invaders need to embrace the 'new order'. To embrace the 'new order' individuals must 'convert' from rationalism with all the zeal that can be mustered, in order to meet the challenges which 'chaos' brings.
- Do not delay! Tomorrow it may be too late to change. 'Convert' now!
- Great rewards await those with the 'faith', and who keep the 'faith'. Those who 'convert' to 'chaos' shall be able to reap and manipulate the terrible forces of 'chaos'.
- Once time in the wilderness is served, and the scales fall from all eyes, simple solutions are at hand. The flash of a divinely inspired wand to feed the masses, heal the sick and repair past transgressions; the following of ten simple rules etched in stone; the parting of disparate dichotomies (e.g., the sea of corporate and commercial realities) can occur for those willing to convert.
- Those who fail to 'convert' will surely die (or else be publicly accused of being passé, unsuccessful, yesterday's heroes).
(Adapted from Collins, 2000, p. 81.)

This allegorical account provides the basis for understanding Collins' (2000) notion of hagiologic criticism, and presents a useful framework for critiquing guru texts. The continuum in Figure 6.3 represents Collins' (2000) view of critical perspectives *within* the guru industry. On the far right, homages and hagiologies offer evangelical reverence to those already part of the guru industry. The far left, according to Collins (2000), represents the true unbelievers – especially those from the academic fringes – those who would roundly condemn the guru works if indeed they bothered to write about them. For the most part, theorists from the far left category concern themselves with philosophical commentary on more elevated subjects like

world peace, the sociocultural effects of crime and punishment, and what it means to be just. However, we will consider Collins' (2000) thesis in terms of a useful interpretation of the genre of guru works. Since Collins' (2000) latest work represents an important analysis of critique of the guru industry, it is believed worthwhile to spend time briefly discussing each of his three categories.

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Source: Collins (2000, p. 82)

Figure 6.3: Collins' critical perspectives within the guru industry

Homages and hagiologies

Collins (2000) disparagingly exploits Kennedy's (1996) book *Guide to the Management Gurus* and Crainer's (1998) text *The Ultimate Business Library: 50 Books That Made Management* to demonstrate the hagiographic nature of works which provide a potted version of 'effective techniques for the time-stretched, busy manager'. On closer inspection, Kennedy's (1996) text reveals a collection of short synopses of 43 management gurus she believes "all have one thing in common: they build on each other's ideas and on their own" (p. xiv). Kennedy's apologetics extend further as she forgives them (the gurus) as "it is only what historians and philosophers have done down the ages" (p. xiv). Drucker she describes as "that monumental quarry of management wisdom and original thought" (p. xv). Kennedy's (1996) recipe for guru-dom is remarkably simple: "timing; originality; forcefulness; a gift for self-promotion and perhaps above all else, the ability to encapsulate memorably what others immediately recognize as true – these are the marks of the modern management guru" (p. xviii).

Collins' (2000) lengthy discussion of both texts roundly condemns them for bearing simplistic similarities to traditional religious martyrologies. He criticizes the selection methodology and notes that later editions of Kennedy's text brazenly omit many gurus that were included in earlier versions. Collins' (2000) final accusation is rather damning as he concludes:

> Kennedy's aim is to improve the practice of management by making the (saintly) wit and wisdom of the 'gurus' more generally accessible. Yet while many of us might accept this desire to educate and to inform, as laudatory and would wish to commend Kennedy, I find that I cannot offer praise

since, on close inspection her text appears flawed and marred by over-simplification. (p. 83)

Although a discussion of Collins' indictments against both Crainer and Kennedy is not necessary for the purposes of this argument, a brief outline is relevant as it serves to capture the essence of Collins' theory of hagiology. Collins' (2000) critique of Crainer is similar as he concludes:

> It seems clear, therefore, that Crainer's devotion to his 'gurus', and the ideology they represent, actually limits his ability to understand management, and the role which 'gurus' play in shaping the thinking and practices of management... Kennedy ... is happy to sit at the feet of the 'gurus' while Crainer protests, initially, before taking his place in the worshipful congregation. Indeed, one might speculate that, rather than critique the 'gurus' in any meaningful way, Crainer would much prefer to step out of their shadows. After all he is, according to his dustjacket, the "world's leading commentator on business 'gurus'", so it can only be a short hop to 'guru' status! (p. 92)

This means that texts defined, in Collins' terms, as homages directly benefit and profit from the guru industry, even though they might offer some oblique criticism of it.

Redemptive texts

Collins (2000) identifies redemptive texts as those which demonstrate a clear managerial orientation, yet represent celebrations of management. He classes writers such as Hilmer and Donaldson (1996) and Micklethwaite and Wooldridge (1997) as belonging in the redemptive guru work category, since their works are not simple homages. These texts, according to Collins, are characterised by a sense of frustration and dissatisfaction with gurus and their simplistic analyses of management theory. Hilmer and Donaldson (1996) openly admit to anger, because of what they see "happening to the practice of and writing on management, namely, the substitution of dogma – platitudes, homilies and fads – for careful, sustained professional management" (pp. ix-x).

As we have seen, Micklethwaite and Wooldridge's (1997) criticism of guru prescriptions offer a number of acerbic observations:

- Guru models are "constitutionally incapable of self-criticism" (p. 15).
- Guru accounts lack a clarity of thought and a clarity of expression, often relying on acronyms to simplify concepts.
- Guru accounts present a common sense view as if these represent new and astounding discoveries or new trajectories for organising people and resources.

- Guru ideas are faddish, internally inconsistent and contradictory.
- Guru ideas and the templates for action which they promote often produce disappointing results.

Hilmer and Donaldson (1996) lament that the guru phenomenon over-simplifies and distorts the very real problems of management. Although they never use the term management guru, Hilmer and Donaldson tell us they wrote their book to better explain the real challenges of management. As part of their analysis about the art of management, their text warns about the dangers of fads, that "rather than offer a pathway to success, prevailing fads have the potential to lead managers down false trails…" (Hilmer and Donaldson, 1996, p. xii). Further, they also believe that instead of applauding quick fixes and standardised methods, management should be based on hard, clear thinking. Their text, however, was written more to celebrate management than to condemn fads. This, in Collins' eyes, represents a denunciation of fads through the redemption of management as a craft.

Collins (2000) also identifies Shapiro's (1998), *Fad Surfing in the Boardroom* as a redemptive text. Collins' (2000) criticism is that even though Shapiro offers "deliverance to galvanize managers with the courage to, 'just say no' to fads" (p. 71), she offers no real insights about how to detect fads, nor definitions about what might be a fad and what might be part of a good management idea. Collins (2000) also raises suspicions about the motives for such a text, speculating that it is difficult for a consultant to deliver management from fads as they make a living from propagating them (p. 98). Yet the hype and the dust jackets often tell us something different, for example, with claims of many thousands already sold.

For the purposes of understanding Collins' (2000) hypothesis, it is worth noting his further criticisms of Shaprio's (1998) work, summarised as follows:

- It does not 'unpack' the nature of ready-made management solutions as put forward by gurus. In fact it does little to convey insight, because its 'grammar' and style are almost identical to that of the gurus themselves.

- Although Shapiro (1998) suggests fads are bad for business, she operates with a model of management and organisation which is identical to that employed by gurus:

  > Her work is managerialist. It is a unitary (Fox 1985) approach to modelling organizations. As such it takes the organisation (and its supposed needs) as the unit of analysis, and so invokes a

'grammatical account' of management, which presents a top-down, closed-system, asocial and acontextual view of the workplace. (Collins, 2000, p. 99)

- In common with the other 'redeemers' of management, Shapiro misrepresents the nature of management, and so fails to construct the 'critical-practical' account of management and managing which is necessary in order to make sense of the gurus.

Thus, according to Collins (2000), most redemptive texts do not offer adequate explanations for why managers should be attracted to fads, and why managers might be prepared to implement the changes suggested by these fads. Both Shapiro's and Hilmer and Donaldson's texts, according to Collins (2000), are built upon the subtext argument that managers are dim, yet opportunistic, even though they decry the opposite. Though Mickelthwaite and Wooldridge's (1996) lambasting of gurus offers a little more rigour to the explanation, according to Collins (2000), its implication is that management is an immature discipline, and therefore easy prey for charlatan consultants. Texts from this grouping include:

The Witchdoctors (Mickelthwaite and Wooldridge, 1996)
Fad Surfing in the Boardroom (Shapiro, 1995)
Dangerous Company (O'Shea and Madigan, 1997)
Management Redeemed (Hilmer and Donaldson, 1996)
Consulting Demons (Pinault, 2000)
The Book that is Sweeping America (Butman, 1997)
The Dilbert suite (Scott Adams)

Agnostics and atheists

Collins' (2000) final category is problematic. While Collins' framework offers a useful diagnostic for classifying and understanding the work of gurus and the industry to which they belong, it groups Burrell and Morgan's (1979) paradigmatic grid text, together with Foucault's (1991) work on discipline and Gramsci's (1976) work on capitalist ideology, under an 'atheist' banner. Collins nominates Huczynski's work as typifying the agnostic genre of critique, and belonging in the rational/practical critique. It may be, as Jackson (2001) notes, that:

… academics are beginning to recognise that the conventional wisdom that held that significant new management knowledge was created exclusively within academe and then disseminated to the larger public through management gurus and consultants is no longer an accurate reflection of reality and may need to be turned on its head. (p. 4).

Even though Collins (2000) admits these texts are not concerned with management *per se*, he believes they offer a challenge in that they deconstruct the discourse of management, while not using the 'grammar' of management itself.

Some problems with Collins' hypothesis

There are a number of problems with Collins' (2000) category of hagiologic criticism. First, Collins' less than two page account of this genre is extremely limited in comparison to the critique he offers of other categories on the phenomena of management fads. This does not sufficiently explore underlying discourses and domains of knowledge for a better explanation as to *why* contemporary management is mesmerized by guru protestations. In fact, it is writers bold enough to honestly critique guru works that offer the only hope for a truly objective approach to the understanding of the phenomena of management fads. Commenting from within the guru industry itself, and indeed from the sidelines of contemporary management theory, is certainly not sufficient to critique the phenomena of management fads.

Second, although Collins' (2000) hagiologic category is useful to critique the guru works from within the guru industry, it should be limited to just that. Hagiologic texts are those which directly benefit from discussing and critiquing guru works. Even though many condemn and rebuke the guru works, they directly benefit from the name-dropping which accompanies such a critique. This is why there are some structural problems with Collins (2000) final category – atheists and agnostics. That hagiologic texts benefit from the industry they are critiquing should be the focus. Instead, Collins amalgamates those that critique in an hagiologic (subjectivist) manner with those who would critique the management guru phenomenon in a more objective manner. Such a critique deserves its own category, and is worthy of greater attention. Therefore it is posited that there are conceptual and contextual difficulties in examining theorists from sociocultural disciplines and management theorists using the same criteria, as Collins does. The following diagrams (Figure 6.4) illustrate both perspectives. The first represents Collins' hypothesis, and the second, that of this thesis.

1

Hagiologic Criticism

'Agnostics and Atheists'

Redemptive Texts

Homages and Hagiologies

2

'Agnostics and Athiests'

Hagiologic Criticism

Redemptive texts

Homages and Hagiologies

Reflexive/ Reflective Critique	**Structural Critique/ Discourse Analysis**	**Redemptive Texts**	**Hagiologies**	**Homages**

Wholly theoretical academic

→

Wholly practical 'guru' works
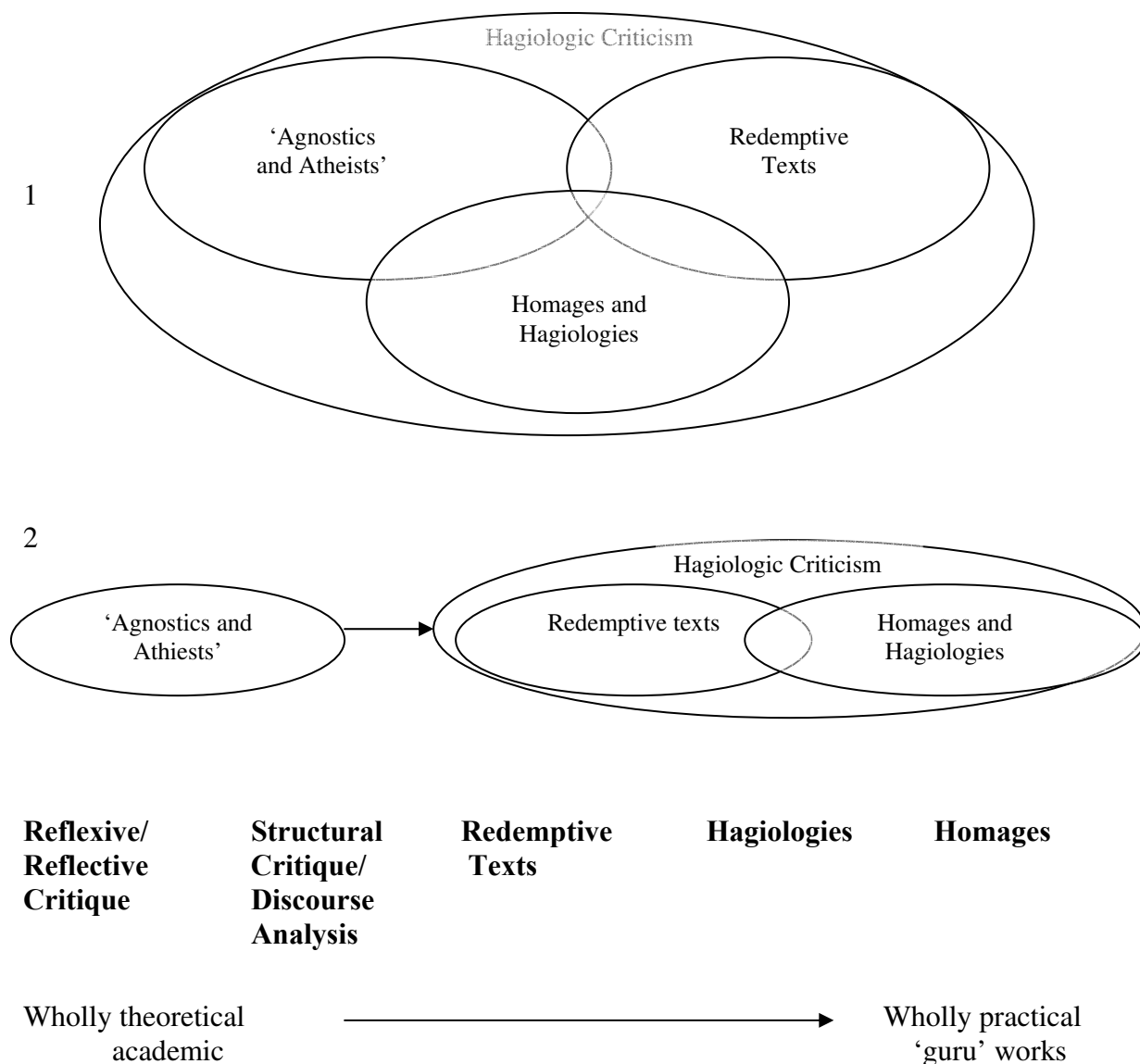
Figure 6.4: Hagiologic criticism

6.3.3   Rhetorical critique

In Jackson's (2001) own words, he uses the fantasy theme analysis method of rhetorical criticism because:

> … it is an established method that provides both a descriptive and an explanatory framework for critically examining the main elements of the management fashion-setting process – i.e. gurus, consultants, managers, program, context, etc. – within an integrated rhetorical frame. Fantasy theme analysis is a dramatistically based method of rhetorical criticism rooted in Ernest Bormann's Symbolic Convergence Theory… (p. 5)

Jackson (2001) also draws upon Clark and Salaman's (1998) "marketing strategy" argument to explain that the power and impact of gurus is a "performance". Clark and Salaman (1996) propose that the guru's performance should be viewed as the functional equivalent of that of the witch doctor in tribal societies. Clark and Salaman use an interesting juxtaposition to compare the performances of gurus with that of witch doctors. They suggest that the knowledge that gurus and witch doctors use shares properties with magical knowledge – it is developed in order to control the critical uncertainties of the world through the manipulation of temporal phenomena. Moreover, Jackson builds on the important work of researchers such as Abrahamson and Clark and Salaman to increase awareness of rhetoric in the discipline of management and organisational research.

Most significantly, Jackson applies Bormann's symbolic convergence theory to provide an explanatory framework for the analysis of group and mass communication processes within the organisational realm. Using Bormann's idea of 'rhetorical visions', Jackson constructs a framework for the analysis of the management guru phenomenon. He defines a rhetorical vision as one which emerges from "fantasy themes", which are the means through which interpretation is accomplished in communication. As Jackson explains:

> … a fantasy theme is manifested in the form of a word, a phrase or a statement that interprets events in the past, envisions events in the future, or depicts current events that are removed in time and/or space from the actual activities of the group. (p. 48)

Jackson submits three well-known management fads (reengineering, effectiveness and learning organisation) to a case study approach in his attempt to rhetorically analyse the phenomenon. Jackson (2001) believes that the fantasy theme analysis is an effective method for analysing management gurus and management fashions for the following reasons:

- The technique is rooted in a powerful explanatory metaphor – the theatre, which has already been used to good effect to illuminate and explicate the performance aspects of the management guru-manager relationship.

- This method is embedded in a general and dynamic theoretical framework (i.e. symbolic convergence theory) which illuminates the linkages between small group and mass-mediated communication processes that are critical in the creation, dissemination and take-up of management fashions.

- The technique has shown itself to be well attuned to both the aesthetic and technical qualities of rhetoric that are critical to understanding the management guru and fashion phenomenon.

- The method combines the capacity for generalisation with a finely-tuned sensitivity to the unique experiences and insights of the critic.

- Fantasy theme analysis has a proven track record of providing theoretical insights into communication phenomena in diverse empirical settings that are analogous to the domain of management fashions.

- The method can take into account all of the components associated with management fashions without privileging any one component over another.

- Its preoccupation with the persuasive properties of language or rhetoric means that the dramatastic method of rhetorical criticism is ideally suited to an analysis of actors who derive their authority charismatically.

(adapted from Jackson, 2001, p. 47 and 68)

6.4   Effects of the growing critique of management fads

It is difficult to make sense of the seeming paradox of the continued expansion and success of management gurus and management fashions in the face of substantial and sustained waves of criticism. As Caulkin (1997) observes, "of all the paradoxes of the modern business world, perhaps the most remarkable and least satisfactorily explained is the management consultant" (p. 32). Jackson believes Burgoyne and Reynolds have come closest to advancing a satisfactory explanation:

> It is a problem-based area of activity, rather than a solution-based one. Some activities, such as AIDS research and treatment, exist because there is a problem. Others, perhaps like the mobile phone and fax machine industries and markets, exist because there is a solution. There is much to be said for the argument that management learning is a problem-generated (rather than a solution-generated) area of activity. This makes sense not only of the coexistence of growth and criticism in the field, but also of the great variety of approaches and methods used in management education and development. (Burgoyne and Reynolds, cited in Jackson, 2001, p. 21)

Collins (1996) advises that by adopting a more critical, theoretical and contextual approach, students of management could pose important questions which would help them to make sense of issues of real

importance. Managers and students of management may find the insight to ask questions of some real practical significance. For example, they might ask:

- How might the intelligence within the organisation be best utilised?
- Just what is the basis for credible and successful management?
- What are the connections of the organisation to the wider sociocultural community?
- Who are the clients, and how best can the organisation meet their needs?
- What relationship do shareholders and employee unions have with management of the organisation?

When they can pose questions such as these, managers and students of management will truly be prepared to deal with practical management issues, since they should be better placed to question current fashions and to evaluate guru ideas, and hence be able to protect themselves from consultants and gurus. 'Practical' matters are often thinly disguised theoretical issues, and it would be quite wrong to argue that practical and theoretical matters be considered as separate spheres. Management thinking requires some degree of reshaping to allow for the development of a richer and more theoretical approach. We can, if we choose, develop real insights into management which would help us to develop sustainable and truly practical approaches to important problems and issues.

Whatever recipe for management is used, generally people will derive whatever formally framed insight they have into the nature of modern organisation life from reading popular accounts of management (Clegg and Palmer, 1996, p. 6). Clegg and Palmer further believe that many more people will derive their understanding of management from these than will ever be likely to see the inside of a business school or study the formal knowledge of a management curriculum. Such stories come largely from fictionalised accounts of the successful gurus American business world. Clegg and Palmer (1996) posit that much of the popular management knowledge derived from these sources is a reflection and a reinforcement of American individualist values that "lionize heroic, male, and 'tough decision making as entrepreneurship' … top management experience sells" (pp. 6-7).

Finally, it is worth mentioning Rigby's (1993) observation that management fads overstate their potential effectiveness, provoking his concerns that they do actually cause harm to organisations. Rigby's (1993) critique identifies five major objections to management fads:

1. they create unrealistic expectations that inevitably lead to disappointment and the lowering of morale;
2. fads create dangerous shortages of some strategic elements and toxic overdoses of others;
3. they can be internally divisive;
4. because fads tend to be programmatic and imposed externally and from the top-down, they have an in-built tendency to rob employees of their own initiative; and
5. fads undermine the basic tenet of strategy – by copying what other organisations are doing, organisations lose a basic source of distinction and, therefore, weaken their competitive advantage within their marketplace.

It has already been stated that the critical literature concerning management fads is overwhelmingly negative. However, there are a few positives that some commentators have found. Maidique (1983), although critical of the Peters and Waterman text *In Search of Excellence*, also points out that academics could learn from such texts because they are in many ways in touch with business realities, priorities and the market place. Moreover, he argues that texts of the *One Minute Manager*-variety should not be ignored by academia, but rather synthesised into a revitalised thrust. Also, Newstrom and Pierce (1989) see that management gurus create enthusiasm and excitement for new ideas and ways of managing organisations. As Jackson (2001) points out, academics should be interested in the role that gurus play as 'catalysts' in the further development of sound management practices and philosophies. Also, care should be taken not to create the reverse situation: to over-theorise and complexify the simple.

Camerer and Knez (1996), in their critique of TQM, also see some broader benefits of management fads in that they potentially solve "coordination problems, moving a firm stuck at a marginally profitable equilibrium to a better equilibrium" (p. 108). Mickelthwaite and Wooldridge (1996) also take the approach that things could be worse, pointing out that management theory itself is a relatively young discipline and "rather than fretting about management theory's excesses, we should be grateful that its adolescence has not been more harmful" (p. 369). Although there are relatively few critical texts – in comparison to the abundance of management fads and quick fixes themselves - the anti-guru best-seller list is growing, as Jackson (2001) points out. Starting with Mickelthwaite and Wooldridge's backlash in 1997, the growing popularity of Scott Adam's satirical cartoon "Dilbert", launched in 1989, and the spawning of websites

such as buzzwhack.com, the body of critique of management fads is emerging as a legitimate discourse, albeit one that is not strictly applied in the sense that they are fads themselves. Nevertheless, they squarely fit into Collins' (2000) definition of hagiologic texts because they directly benefit from discussing and critiquing guru works.

6.5 Conclusion

As Clegg and Palmer (1996) point out, "... management theory, as a body of knowledge, is ... a political discourse *par excellence*" (p. 3). They go on to say that "... management is less a science and more like cookbook knowledge: it is knowledge of recipes and their application ... many of the best-selling texts present management as a form of recipe knowledge" (p. 4). This means that management fads must cater to and address the complexities surrounding such things as relationships between individuals, the synthesis between individuals and the organisation, relationships between different organisations, relationship to the marketplace, relationships to clients, and customers relationship to the wider economic, political and social community and so on. Management fads reduce the capacity for discretion, because the prescriptions generally offer strategies for action based on successes in other organisations. The pervasiveness of bureaucratic management had, until recently, provided the model for organisations to exact control, manage and measure their people, processes and profits. Since the growth of management fads, beginning with the Peters and Waterman (1982) text *In Search of Excellence*, bureaucratic management has been soundly criticized for being controlling, supporting the dominant cultures of organisations, and even for violating basic human rights. This "discourse of excellence has replaced the planning focus of the 1979-88 and the equal opportunity focus of the 1970-8 period. State regulation has moved from *laissez-faire*, through planning, to greater surveillance using evaluative and financial techniques" (Clegg and Palmer, 1996, p. 10). Bureaucracy is represented as a flawed means because it is deemed to be inimical to individual self-realisation, personal responsibility and other enterprising virtues (du Gay, 1996, p. 23). It is posited that this criticism of bureaucratic forms was the breeding ground for many management fads keen to usurp the hold of formal management styles criticized for their exclusionism, repression and marginalization. Thus, the emergence of the enterprise, the entrepreneur and the excellent company is captured by many management fads keen to capitalize on the

bandwagon for organisational reform. Criticism of those faddish prescriptions is thus seen as a type of 'community service'.

Clegg's (1990) postmodern organisation is marked by a new paradigm in which organisations seek value through the strength of their ties to and networks with other organisatios. The part that management fads play in this symbiotic relationship is that the old paradigm, characterized by a bureaucratic structure, is overturned by new approaches to learning, leadership, communications, competencies, people and knowledge itself. This means that management fads are able to exploit the "incipient feminization" (Clegg & Palmer, 1996, p. 204) of the new paradigm of management in organisations and challenge the assumption that such things as vicious circles, organisational discipline, hierarchies, disempowered employees, and distorted communication channels are part of the management landscape. There are management fads that address each of these aspects, either singly or as a collective. Although it is the phenomenon of management fads that is the focus of this thesis, it is important to canvass some potential vulnerabilities where fads seek to operate.

Hence, from discussions in this chapter and the previous chapter, some general observations and assumptions can be made about management fads:

- Management fads legitimate the prevailing common sense.

- Management guru status is a social construction.

- The phenomenon of fads is not necessarily confined to the field of management, but symptomatic of much wider social, cultural and political changes (Jackson, 2001, pp. 2-3).

- Burrell's (1989) prediction that gurus will move contemporary management theory from a premodernist phase to a postmodernist phase further demonstrates the connections between organisational behaviour and the wider social world.

These four points will be picked up as the discussion continues to the next part of the thesis. The final two chapters will synthesise the threads of epistemological, ontological and axiological frameworks raised in the first part of the thesis with a systems perspective introduced in Chapter 3. The conclusion (Chapters 8) will apply the insights from the first two parts of the thesis and will reflect upon the phenomenon of management fads within the context of complex meaning systems.

Chapter 7: Applying Complex Systems Thinking to Explain the Phenomenon of Management Fads

I have described what a fad is, how some fads differ from others, how they emerge and are abandoned. A discussion about the critical analysis of fads also appeared in the previous chapter. This chapter will attempt to explain management fads as 'complex meaning systems'. In this way, the theory development in Part 1 of the thesis is put to the test. In the final chapter I will evaluate the results of this analytical experiment, critique the application of complex systems concepts to fads, and make some generalisations about applying it to other sociocultural phenomena.

7.1   Introduction

This chapter expands on the six-phase model first raised in Chapter 1 and applies it to management fads, discussing the following phases in terms of the behaviour of fads; Phase 1 – Chaos, Phase 2 – Complexity, Phase 3 – Contingent complexity, Phase 4 – Situational or contextual complexity, Phase 5 – Diffusion and acceptance, Phase 6 – Emerging uncertainty.

7.2   Key elements of complex systems and meaning systems exemplified in management fads

7.2.1   Characterising management fads as complex systems

To reiterate the summary provided in Chapter 3 (section 3.2), complex systems are characterised by the following:

1. Large number of interconnecting components.
2. Components are non-deterministic and non-tractable.
3. Interaction-rich relationships between components.
4. Interactions exhibit nonlinear behaviour.
5. Interactions mostly exhibit short range information, but can precipitate long-range influence (sensitivity to initial conditions).
6. Feedback loops cause changes to the system.
7. Exhibit properties of emergence and self-organisation because the system also interacts with its environment.
8. Operate under far-from-equilibrium conditions.
9. Cannot exclude history (pre-programmed elements exist).

10. Each element in the system is ignorant of the behaviour of the system as a whole, and may only respond to localised information.

I will take each of the above points in turn and elaborate how management fads can be described broadly in terms of a complex system.

Large number of interconnecting components

Management fads fit the idea of a complex meaning system because of the large number of nested, interconnecting components. The world of management 'faddom' operates on many levels, all of which interconnect, and where selective forces self-organise across them to maintain the semblance or patterns of stability. For example, we can interrogate the phenomenon of management fads at the level of:

- fads themselves (plethora of current popular fads, enormous volume of texts);
- the organisation (carriers, local policies and strategies, type of organisation);
- business or economic influence (fiscal policies, globalisation, trade deficits, corporate governance);
- social construction (social acceptance by dominant groups, integration of common features of fads – language games and so on – including the lack of an agreed definition);
- meaning or belief (assumptions, attitudes and values of individuals); and
- the prevailing common sense.

When we think of management fads and what they are comprised of, these levels can be useful for unpacking specific agents within them.

Components are non-deterministic and non-tractable

If we were asked to describe a deterministic system, we would describe something we understand, that is familiar to us. We could also predict, with a relative degree of accuracy, the behaviour of the system based on our prior experience of it. In this causal model, the system produces reactions and effects which in turn become the cause of reactions. Deterministic or causal models are often used for simple, predictable systems, like a pendulum, or the behaviour of two gases in a vacuum. Deterministic systems and components are predictable and do not draw upon, nor are they influenced by the external environment. The components that comprise management fads (organisations, people employed by an organisation, growth strategies, management, industrial

relations, laws, politics, business ethics, fiscal policies, globalisation, and so on) are anything but deterministic: they are not predictable, nor are they impervious to the environment in which they operate.

Often used to describe complex mathematical frameworks, non-tractable features of systems mean they (or components within them) are not easily controlled, shaped or predicted. Non-tractable refers to problems that cannot be solved analytically (which is why there is a subtle difference to non-deterministic); however, the term is usually confined to mathematics. The difficulty of analysing some of the components of management fads (both within the component, and its relationship to other components) is largely dependent upon the sociocultural milieu, which is in a constant state of instability. Therefore when components are described as non-deterministic and non-tractable, the system to which they belong must be complex and unpredictable.

Interaction-rich relationships between components

Complex systems are characterised as such because of the dynamic relationships between the components. In the case of management fads, interactions between the consultant gurus, their intervention and the organisation could be one way of conceptualising a dynamic relationship. Another way would be relationships between fads themselves. For example, some fads emerge from conditions made possible by the implementation of previous fads. This can be the result of either the success, or failure of the fad. Yet another could be the relationships between fads and broader socioeconomic structures, for example publishing houses and the world-wide consultancy empires spawned by some fads (for example, Myers-Briggs Type Indicators (MBTI) and Neurolinguistic Programming (NLP) strategies applied in faddish ways). The relationship between fads and business schools at universities has also been noted in the previous chapter (Huczynsiki, 1993; Collins, 1998).

All components of complex meaning systems have the capacity to interact with each other. The difficulty in discerning the relationship between management fads and legitimate management theory is an example of this. Change management catalysts are also manifested in various fads, and played out in the ways that organisations adopt or adapt particular fads to their circumstances. It is clear, however, that patterns of interconnection do exist between components. For example some of the 'strange attractors' are consistent in the implementation of certain fads. Such attractors are almost always linked to the changing, turbulent external environment of organisations, for example, technology-driven change, or globalisation influences. Some

relationships remain stable; for example, the relationship between management fad gurus and their publishers is reasonably clear – as long as the fad remains successful. So too, the popularity of certain fads to certain organisations.

Interactions exhibit nonlinear behaviour

One of the by-products of dynamic relationships is what we might characterise as nonlinear behaviour. Theories explaining nonlinear behaviour are more fully explained in Appendix A. However for the purposes of this analysis, nonlinear behaviour of a management fad can be described as the unexpected results of an intervention. For example, when management fads promise better ways to deal with the changing business or economic environment, and deliver something unpredicted (more cynicism, increased staff turnover or flagging profits) because of an unexpected influence (another incoming fad), such results can be characterised as nonlinear. Because of the interaction-rich relationships between all components, the cause-effect relationship between what a fad promises and what it delivers is clearly not linear. This is because many fads promise simple linear solutions to address complex organisational change management issues.

Interactions mostly exhibit short range information, but can precipitate long-range influence (sensitivity to initial conditions)

The unpredictability of the behaviour of management fads begins with seemingly insignificant initial conditions which may turn out to have critical effects on the entire organisation. In terms of management fads as a phenomenon, such things as bad publicity by a particular promoter also affects the uptake of a particular fad. Generally, the management fad influences the success of the organisation only for the time the fad is applied, because the tools used to evaluate the fad are derived from the fad itself. If the results are negative, the fad will be abandoned; if successful, the fad will be retained, at least for a time, or even modified. The next fad will generally build on the successes or failures of earlier fads, including its gurus or promoters. Successive fads may even try to subvert previously successful concepts and terminology in an attempt to become even more successful. In addition, fads only address issues that are currently present, or at least predicted in the short-term. Because fads are promoted to address external turbulence and changing organisational environments in the moment, according to all those who have written about longitudinal research of fads, it is unlikely they are capable of addressing long-term problems that continue to beset many organisations (Huczynski, 1997; Rigby, 1998; Jackson, 2001; Collins, 2001; Miller et al, 2004).

Feedback loops cause changes to the system

Feedback loops can be seen as the structure underlying dynamic behaviour. They are responsible for counterintuitive behaviour and policy resistance, for example, changing recruitment practices in organisations. The more successful fads are able to lock into these feedback loops, capitalising on the trends present in the wider sociocultural system, particularly economic trends or shifting political alliances. Similarly, management fads also influence the system they are part of through interventions that are taken up, promoted, and recommended by successful organisations. For example, successful gurus are envied and copied by those who are less successful. But generally, because the external environment rarely remains constant in any of these areas, faddish interventions, by definition of feedback, will only work for the time that the situation they purport to address is in stasis. This is one explanation for why management fads operate in a fitness landscape; if the fitness of the organisation decreases, the fad will be blamed, thus generating the need to replace it with another (hopefully) more successful one.

Exhibit properties of emergence and self-organisation because the system also interacts with its environment

Since organisations are inexorably linked to the broader sociocultural system, they can never be in a state of equilibrium. Immediately after fad adoption, when periods of stability are at their highest in the organisation, the fad is most stable. When external conditions change, the interventions implemented by the fad are also required to adapt to the changing external environment, taking on new and more dynamic relationships than existed before the fad was introduced. Emergence, which is "the appearance of unpredictable or incalculable behaviour from the interaction of simple components" (Lissack, 1999, p. 27), is a feature of fad implementation, because often it is unknown at the time of the fad's implementation whether it will be successful or not. The number of fads currently enjoying success will also be as a result of self-organisation around particular themes, ultimately connected to the broader sociocultural system. Certain strategies of a fad will, for at least a time, enjoy success because components of the fad will self-organise around the most critical areas. For example, strategies within Business Process Reengineering (BPR) will address workflow patterns because that is the initial focus of that particular intervention.

Have a history and memory (pre-programmed elements exist)

Successful management fads are adept at co-opting accepted features of previous fads that also achieved a measure of success. The types of interventions suggested by fads are generally familiar to organisations, and their employees. Whether or not fads are seen as useful or a scourge, they have become an accepted part of the business landscape. This means that management in organisations will be generally accepting of fads that incorporate the traditions and operating environment of the organisation. One of the features of the more successful management fads is that they are capable of promoting familiar and easily-understood concepts that resonate with the organisation's aims and objectives. Because successful management fads have an ability to incorporate these pre-programmed features, and include what could be described as memory in the intervention, they are, at least in the first instance, readily embraced by organisations and some of their staff. Longer-serving employees, however, often display increasing levels of cynicism (Gibson & Tesone, 2001), or even resistance, because new fads are often repackaged, or at least build upon the successes of preceding ones.

Each element in the system is ignorant of the behaviour of the system as a whole, only responding to localised information

This is not contrary to the previous property, as it is usually the case that management fads operate on one component of the organisation at a time (e.g., communication channels, financial management, restructuring). Even such interventions as restructures or large-scale redundancies may not address the underlying causes; such actions represent a reaction, rather than a solution. The inability of fads to integrate information about other parts of the organisation can make the behaviour of the whole system unpredictable, if not chaotic. This is generally why they are popularly described as fads in the first instance, because of the perception that they act in isolation of the needs of the organisation. The success of the fad, then, depends upon information from the organisation that is fed into it. Although other remote factors can influence the success of the fad, often there is no perceivable connection between these events. The fad can represent the linking agent between these influences.

The explication of these ten systems theory factors in terms of management fads represents a compilation of the views of other primary researchers of management fads (Huczynski, 1997; Rigby, 1998; Collins, 2000; Gibson & Tesone, 2001; Jackson, 2001; Miller et al, 2004).

7.2.2   Characterising management fads as meaning systems

The above discussion indicates that fads are a phenomenon suitable to an analysis in complex systems terms. Taking this one step further, we can analyse management fads as meaning systems. It will be recalled that the term meaning system can be read in two ways in this thesis. Firstly, the term is a generic way to describe a range of sociocultural phenomena operating as interpretive frameworks, (for example, superstitions, cultural codes, religions or theoretical systems). Secondly, the term itself is a theoretical construct and, deriving from systems theory, has specific formal conceptual components.

Distilling the main themes from the earlier discussion, I propose there are ten characteristics of meaning systems, as follows:

1. representational;
2. non-universal;
3. subjective;
4. always dependant on an observer perspective;
5. characterised by rule-based symbol (language) system;
6. characterised by processes for legitimation of knowledge;
7. distinguished by truth and belief elements;
8. critical to support and sustain the values of the wider sociocultural system;
9. hierarchical since certain meaning systems can dominate, or at least influence, others; and
10. networked to other meaning systems.

Using these ten characteristics of meaning systems, the features of management fads that correspond to these characteristics are identified as follows:

Representational

All things, including systems, contain information, but just how this is interpreted or represented must be linked to notions of meaning, value and belief. As Cilliers (1998) asks: "How does the brain represent the world? What is the relationship between linguistic components and the objects they describe?" (p. 11). Cilliers' (1998) treatment of representational models through neural networks observes that in order to compute any value of the 'network', every connection must be ascribed a certain 'strength' or 'weight'. According to Cilliers this assists with representation because relationships cannot be defined in determinate terms when dealing with complex systems like language or the brain. Therefore,

representational models of management fads necessarily involve interpretation and meaning, but these models will not represent the same experience for each organisation, bringing it back to the position of the observer. Meaning is not something conferred by a one-to-one correspondence to the external thing and a symbol (or language) that represents it. Rather, meaning is conferred by the complex interaction of relationships between the structural components of the system itself. Thus, when we talk of representation, there are complex systems that overlay complex meaning systems in a web of intricate interconnecting patterns that may defy attempts to model them. Nonetheless, various theorists have attempted to model complex systems, with the result that such models, whilst acknowledged to be representational, do not actually correspond to the complex system they purport to model. Thus, attempts to model organisations by fads fail to take these complexities into account.

Non-universal

Meaning systems are an interpretive framework for those applying the model – and the subject of the model can find different applications. Therefore, they are non-universal. Different interpretations by organisations mean that some fads will be accepted and implemented differently. No two organisations can experience the same fad in the same way. This is because such things as attitudes, organisational culture, beliefs and values that brand a particular organisation will make the application of the intervention a different experience for both the organisation (structurally) and the employees of the organisation. The non-universal nature of meaning systems means that the variation in implementation of fads can only mean loss of stability and perennial, constant change on the upside, and conversely chaos and dysfunction where a fad is inappropriately or wrongly applied.

Subjective

In the mechanistic scientific view of knowledge, laws control all movement and understanding of structure, matter and force, including those determining the behaviour of living beings and the language and rationality of humans. 'Subjective' implies that all this knowledge is, in the Humerean sense, from the position of the observer (discussed below). A meaning systems perspective of management fads would see them as purely subjective. This is because the interpretive framework surrounding meaning systems is not easily measured, nor objectively observed. Of course, the postmodern view sees subjectivity as socially constructed and ultimately influenced by power relations, which also accords with the phenomenon of fads. Also, as Cilliers (1998) points out, the post-structural notion of deconstruction of the rigid borders between science

and theory means true objectivity is no longer possible and theory spills over into all levels of scientific activity (p. 87). Although meaning systems are subjective, what makes them so is our experience of them.

Depends on an observer perspective

This follows from and is consistent with the previous element, in that the position of the observer is critical in an understanding of a particular meaning system. "Observing is both the ultimate starting point and the most fundamental question in any attempt to understand reality and reason as phenomena of the human domain" (Maturana, 1988, p. 27). Quite obviously, in terms of a meaning systems approach, individuals within organisations may react differently to the same management fad, causing the organisation to react in nonlinear, non-specific ways. Therefore, the application of a universal approach to addressing organisational issues, since such issues involve interpretation, and/or the position of the observer, is therefore, not feasible. Moreover, "the observer is the source of all realities and existences and can bring forth many different legitimate domains of reality through the operational coherences of his praxis of living" (Kenny, 1985, approx. p. 12). For example, there are differences in the perspectives and the perception of the fad from the consultant guru, employee and middle management. Hence, the interplay between the fad as a complex meaning system and its relationship with the broader sociocultural system and its myriad of meaning systems is of bewildering complexity. Using complex meaning systems thinking to unpack and even model the behaviour of a fad will require the capacity to bring together elements that would not usually be associated in an analysis.

Rule-based symbol (language) system

Management fads depend on a range of linguistic rules in order for them to be successfully promoted. These rules were discussed in previous chapters (alliterative number lists, complex concepts reduced to simple catchphrases, buzzwords, memorable and easily repeated slogans, etc.). This of course is related to the discussion of representation, which attempts to explain how the words of our language or the structures in our brain become meaningful. As Cilliers (1998) points out, "post-structuralists deny the transparency of language" (p.15). This means that Derrida's idea of the 'metaphysics of presence' can be engaged in such analysis because there is no one-to-one correspondence between a word and its meaning. The technique of 'deconstruction' offers another way of understanding representationalist frameworks such as management fads, but there are limitations to this framework as it is arguable

whether the elements of the framework are truly representational (to all players) in the first place.

Legitimation of knowledge

For meaning systems to exist there must be collective agreement about what they comprise. This agreement or consensus then must refer back to the power relations and social construction of the concepts involved. For example, certain knowledge is required in order for the management fad to be understood, and ultimately be successful. Knowledge of such things as the business environment, industrial relations, traditional work practices of an organisation, how the intervention will work with current organisational arrangements, and so on, is required to ensure the fad can be adopted and diffused among other like organisations. How certain interventions work their way through the organisation to legitimate dominant groups (for example, middle management), or disenfranchise other groups (disadvantaged groups, unskilled workers, etc.) is also pertinent to this discussion. When consultant gurus attempt to introduce another management idea to an organisation, it becomes very difficult to blend the ideas of the previous fad, and incorporate the intervention of the new one. Thus, some very fine-tuned skills are required to begin the process of legitimating the knowledge.

If we see management fads as a meaning system, there are certain things that we just 'know' will affect how successful the fad becomes. This may mean management insisting on the use of certain language promoted by the fad in every day application, to assure the fad diffuses throughout the organisation. It may also mean posters and other marketing material are used to promote the fad, serving as constant reminders that fad adoption is not optional and change is imminent. This means that some groups will use this kind of knowledge to their advantage, and others will not be afforded the same opportunity. In other words, use of language as an instrument of power has the ability to improve the position of those who apply it successfully, but detrimentally affect those who are either not capable or are denied access to the same opportunities. For example, such interventions as the balanced scorecard will afford middle managers multiple opportunities to engage the language of 'triple bottom line reporting', but administrative staff, by virtue of their functional tasks, are left out of the loop, simply because the language is difficult to understand and often obfuscates the real issues. The reporting requirements for triple bottom line accountability are significant, lengthy and usually based on a formularised approach. Should such an intervention be introduced, only those with knowledge of how to prepare a submission will be seen as 'effective'; those

without the knowledge or those from whom knowledge is sought to create the main report would generally be seen as less important.

Elements of truth and belief required to support

Management fads as a meaning system require all participants to exercise some discretion about their personal value system. Most often, management fads are values-driven, and demand that their stakeholders adopt some truth claim; some even require the status of 'true believer' (an example is the case of consultant guru Tony Robbins who challenges his followers to walk on hot coals). This can link into the values of the organisation itself, promoting its services and products as the fad reaches its diffusion peak. If the employee's belief system does not accord with the values of the management fad, there will be disturbances, and if this persists collectively on a large-scale, failure or chaos will ensue until the fad is abandoned. It is not difficult to conceive of an attitudinal survey to confirm this. One of the key signs that a management fad does not have widespread accord with the meaning systems of employees is increasing and/or high levels of cynicism. Alternatively, when the fad is successful, the values espoused by the fad will be consistent (at least for a time) with that of the organisational culture.

Values of the wider system supported and sustained

The previous element also operates in reverse. In other words, the broader sociocultural system is legitimated by the values espoused in the management fad. Management fads will not flaunt the rules of the sociocultural system that makes them successful in the first instance. Ultimately the success of the fad and its guru consultants will depend on how accepting the wider society is of its techniques. Although marketing strategies actively promote fads, when bad publicity starts the chance of success is not optimised. Fads also must support the current economic and political milieu. For example, those management fad gurus who regularly appear on lucrative US and European corporate talk circuits sometimes witness some of their buzzphrases or techniques applied to other fields of endeavour. A couple of examples are worth mentioning. First, the use of the word 'learning', derived from Peter Senge's *Learning Organisation*. It seems from participant observation that the word 'learning' has diffused to include quite a number of strategies dealing with communication and/or interpersonal issues, to the extent that the word learning has slipped into common vernacular in some organisations – 'learning circles', 'learning groups', 'learning teams', 'leadership and learning centre', 'learning strategies' and the like. This of course gives the word 'learning' special kudos. Another example is the acceptance of some techniques from other disciplines (especially from medicine or

psychology) as part of management interventions in organisations. Neuro linguistic programming (NLP) techniques, for example, with their high focus on personal growth (using such 'activities' as hypnosis, walking on hot coals and military-style orienteering), has diffused into organisations, often repackaged as programs or strategies for improvement of such things as self-esteem, interpersonal relations, better external client-customer relationships, and so on. Such techniques, of course, whilst promoted as something that improves the organisation's values through staff enrichment programs, do not carry warnings about the risks associated with their application by amateur armchair psychologists, who, arguably, can potentially use confidential information in ways not necessarily intended by the creators of the intervention. Generally, the fad will be supportive of and even promote the values of the broader sociocultural system to ensure its legitimacy and currency.

Power-relations cause certain meaning systems to dominate others

The management fad legitimates the power relationship between the organisation and its environment, particularly over its employees. The relationships between certain components in the meaning system are more robust and resilient than others, resulting in power shifts and bifurcation points as the system (management fad) struggles for equilibrium. Sometimes management fads disrupt the equilibrium, deliberately shifting the balance of power in an organisation. Even within the fad itself, there could be other meaning systems competing for control of the agenda for its implementation in an organisation. For example, resistance to certain interventions could occur if the organisational culture is undermined or belittled in some way. Therefore, the more successful management fads capitalise on and lock into the most dominant meaning systems present in the organisation. The relationship between meaning systems and the power they wield is a complex one, and most likely only capable of being analysed by painstaking discourse analysis or such things as modelling its impacts through distributed networks. Power relations between components of the meaning system often manifest in conflict, for example, between organisational culture and a new structure or supply chain adjustment.

Networked to other meaning systems

The management fad requires connection to the organisational framework and cannot exist in a vacuum. Although the management fad could represent one kind of meaning system (discursive, values, power, etc.), it is invariably connected to other meaning systems for those involved in its implementation. Fads are simply one way of presenting an idea or strategy, or group of

strategies, for improvement to an organisation. The intricate patterns of connection that exist in organisations would indicate that no single method is capable of addressing future uncertainties; no one approach could be considered universally appealing. How the fad might be connected to other complex meaning systems within society and also how they might have evolved is also an important part of analysing the success or otherwise of the fad. Arguably, the networks are certainly capable of being mapped, and in some cases, even modelled (Barabasi, 2003; Watts, 2003).

7.3   Management fads as a network

The thinking behind the science of networks is relevant to the analysis of management fads in that it offers a neatly-packaged methodology for critique. In essence, the science of networks sees each of us as part of large clusters, a worldwide social net for which there are no exceptions. For example, although we do not know everyone on the planet, according to the popular theory, we can be linked through others, or through something we are connected with, to just about everyone else, that is, through the 'six degrees of separation'. At the individual level, according to Barabási (2003), the 'six-degrees of separation' linking a woman from a hill tribe in the Congo to the President of the United States, can in the technological age be reduced to four. The reason for the reduction from six to four involves the concepts of 'hubs' and 'connectors'. In any system, interlinkages between nodes can be robust, accounting for the attraction to 'hubs': "Sprinkled among every walk of life … are a handful of people with a truly extraordinary knack of making friends and acquaintances; they are connectors" (Barabási, 2003, p. 55). Connectors, Barabási (2003) sees, provide an important social function as they are responsible for trend-setting, fad diffusing, relationship building and so on. On the scientific side, the modelling that accompanies this theory dispels the view that social networks are random (Barabási, 2003, pp. 55-57).

The earlier discussion of Goldman (1999) can also be recalled who posits that instead of individual 'knowers' (as with the Cartesian tradition), there is a group entity, or sociocultural 'clusters'). The following graphic (Figure 5.6) represents the interactions between proteins in yeast. Barabási (2003) uses this to demonstrate the notion of clusters, nodes and hubs in other applications. In this diagram, the red nodes are essential proteins, their survival critical for the network, orange are important, but not essential, green and yellow nodes are of lesser importance.

This provides a useful visual map of how interactions might work between people, where certain individuals are more connected than others, because of their large number of interactions. In this graphic, it can also be observed that hubs can also be vulnerable. Because hubs are connected to many other nodes, they have the potential to be infected by corrupted nodes. Once a hub has been infected, it will pass the virus to numerous other sites, eventually compromising other hubs, which will then spread the virus throughout the entire system. This can be compared to the spread of management fads throughout the corporate world.

This figure is not available online.
Please consult the hardcopy thesis available from the QUT Library

Figure 7.1: Networks, clusters, hubs, nodes and viruses
(Barabasi, 2003, p. 59)

Barabási (2003) and Watts (2003) each devote one full chapter to the study of viruses and fads. Why might this be relevant in the study of management fads? The spread of management fads can be compared to the spread of viruses. If we overlay the networking theories of Watts (2003) and Barabási (2003), certain hubs, nodes and connectors serve to speed up the proliferation of the fad or virus and likewise certain people or events (for example, the collapse of Enron) may also limit the spread of a fad. Their discussions are consistent with Ettorre's (1997) findings which proposes a bell-curve for the adoption and abandonment of fads. Although Barabási (2003) uses slightly different terminology, the ideas of these writers are similar when it comes to concepts such as 'thresholds' in the spread of a fad. The threshold model does not ascribe to randomness, rather it proposes that diffusion of innovations is anything but arbitrary: "Recognizing that passing a critical threshold is the prerequisite for the spread of fads and viruses was probably the most important conceptual advance in understanding spreading and diffusion" (Barabasi, 2003, p. 131). Barabási's (2003) research shows that where hubs predominantly feature in a complex system, innovation and fads spread across heterogeneous networks.

In terms of management fads, this means that the success attributable to some of the fads discussed is certainly not random, nor are fads blindly accepted as claimed by some theorists. As discussed, some management fads are adopted by organisations simply because of their success (recall Rigby, 1997 and Collins, 2000), or because the guru consultant is famous (Mickelthwaite and Wooldridge, 1997; Crainer, 1998). Of course, other theorists adopt a more rational approach for the uptake of fads. For example, Rigby (1997), Collins (2002) and Huczynski (1993, 1997) see that the uptake of management fads is driven by certain characteristics of fads offering interventions for improvement that, for example, may be simply and quickly communicated to organisations. This accords with the networked approach, accounting for the predominance of acronyms, number lists, generic claims using single concepts like 'leadership', 'excellence', 'innovation', and so on. Such words act as hubs and connectors for many interventions, supporting the perception that engaging strategies with such words in the title can almost guarantee some measure of 'success', at least until the next hub begins to attract attention.

Although the texts and findings of Barabási (2003) and Watts (2003) are similar, Watts (2003) proposes a more mathematical approach to demonstrate his network hypotheses, engaging empirical studies, cellular automata modelling methodologies, and sociological tools such as

percolation thresholds. Watts (2003) uses the notion of 'percolation clusters' in a way similar to Barabási's (2003) use of hubs and connectors. This also means that because the hubs and connectors are the most attractive to nodes, they are also the most susceptible to potential weakness:

> Ironically, the vulnerability of scale-free networks to attack is due to exactly the same property as their apparent robustness: in a scale-free network, the most connected nodes are so much more critical to overall functionality than their counterparts in a uniform network. The overall message, therefore, is an ambiguous one: the robustness of a network is highly dependent on the specific nature of the failures, with random and targeted failures offering diametrically opposite conclusions. (Watts, 2003, pp. 191-192)

This built-in weakness of large systems has consequences for management fads if we choose to analyse them in this way. The more popular interventions are more apt to fail, simply because their saturation in the market statistically increases the capacity for them to be misapplied.

7.4 Synthesising the paradigms: Complex meaning systems and management fads

Now that the features of management fads have been discussed as both complex systems and meaning systems, it is opportune to theoretically unite these concepts into what I have termed "complex meaning systems". As we have seen in the preceding descriptions, management fads perform in regular, predictable ways (at least for a time), but conversely exhibit behaviour in which regularity and predictability is lost. They are also capable of changing over time and, since they are unstable, move further and further away from their starting conditions. In other words, they behave and perform much like any other complex sociocultural phenomena. Looking at management fads in terms of a complex meaning system, however, means we can introduce criticism of fads into the analysis. For example Collins (2000) sees that much of the critique of management fads is limited and incomplete, because it does not build from a properly coherent and theoretically grounded model of managing and organising (p. 23), and Burrell (1989) accuses some more well known gurus (Rosabeth Kantner and Tom Peters) of "…emphasising appearance, image and superficiality" (p. 310). These criticisms, because they add to the understanding of fads as a complex meaning systems, cannot be ignored simply because they are not part of a particular fad's discourse. One of the key ideas behind complex systems theory is that the patterns that connect can be overt and observed, the relationships being at least as important as the elements of the system itself. That fads are often labelled as superficial (Huczynski, 1997; Rigby,

1998; Jackson, 2001; Collins, 2001; Miller et al, 2004) is part of the discourse of fads themselves.

Earlier chapters discussed the notion of perception and what types of structures govern perceptions. Because such structures are formed from our social interaction, they are unique to our own perspective. This means there are as many meaning systems as there are people. If the meaning system we might call management fads is analysed under this model, there will be multiple versions of how the management fad affects individuals and the organisation itself. This explains why some theorists and philosophers (for example, Karl Popper's notion of objective knowledge), see that so-called purely objective knowledge is impossible: the observer is not apart from the phenomena he or she observes, and universals are problematic. Of course, many fads trade on this technique, plugging the intervention into value and meaning systems common to the broader sociocultural system (for example, the need to belong, to be included, to be successful, to be ethical, and so on). The consultant gurus promoting management fads do so by making the fad as representative of the broader values of the community as possible, so that any variations in the position of the observers are reduced. An example of this would be the use of 'triple bottom line' accountability by public sector organisations. Strategies that pursue environmental, social and economic objectives can rarely be argued with in the public arena. Where such an intervention borders on being a fad is in the amount of justification required, which in the case of 'triple bottom line' accountability, is significant.

However, since there is "… no unified field of complexity theory, but rather a number of different fields with intriguing points of resemblance, overlap or complementarity", the application of complex systems is characterised by a multifaceted approach (Rosenhead, 1998, p. 2). As I have already outlined, explaining the phenomenon of management fads in terms of complex systems behaviour means that a range of external and interrelated patterns of connection is introduced into the analysis including their critical analysis. Complexity emerges as a result of patterns of dynamic interaction between the elements or components; this now must include such things as values, belief, and meaning. Given the characteristics of complex systems outlined earlier in this thesis, if we broadly think of a meaning system as a collection of ideas, values, beliefs and attitudes from the point of view of the observer, then the interplay and connectivity between these aspects behaves as a complex system.

Applying the idea of complex meaning systems to management fads requires an understanding, not only of how the outward appearances of management

fads are interpreted, but also how the values and beliefs impact on actants (members of an organisation) and how the carriers (management gurus, promoters) interact and provide patterns that we may follow. Thinking about the management fad as part of a process, rather than simply a phenomenon that exists, sees them not only the result of a series of successful, or lucrative, organisational interventions, but as their own complex meaning systems, connected to the myriad of other social phenomena that make up our prevailing common sense. In other words, seeing fads as part of a process, rather than describing what they're made of, provides ontological insights into their development, structure and how they function. This reflects the relationship between substance and matter; pattern and form. Essentially, we are applying the discourse of complex systems thinking to an ideological/meaning schema in much the same way as applying it to a physical/biological system.

Using the idea of complex meaning systems and the process outlined in the figure below (Figure 7.1), I will theoretically map out the relationship between form and substance for the phenomenon we call management fads. In order to achieve this, I will discuss each of the phases in turn, ensuring the observations made at the end of the previous chapter are addressed:

- Management fads legitimate the prevailing common sense.

- Management guru status is a social construction.

- The phenomenon of fads is not necessarily confined to the field of management, but is symptomatic of much wider social, cultural and political changes (Jackson, 2001, pp. 2-3).

- Burrell's (1989) prediction that the gurus will move contemporary management theory from a premodernist phase to a postmodernist phase further demonstrates the connections between organisational behaviour and the wider social world.

The discussion will also turn towards how management fads can be described as a complex meaning system. To further this discussion, the figure that describes the complex meaning system framework, introduced in Chapter 4, is reproduced here.
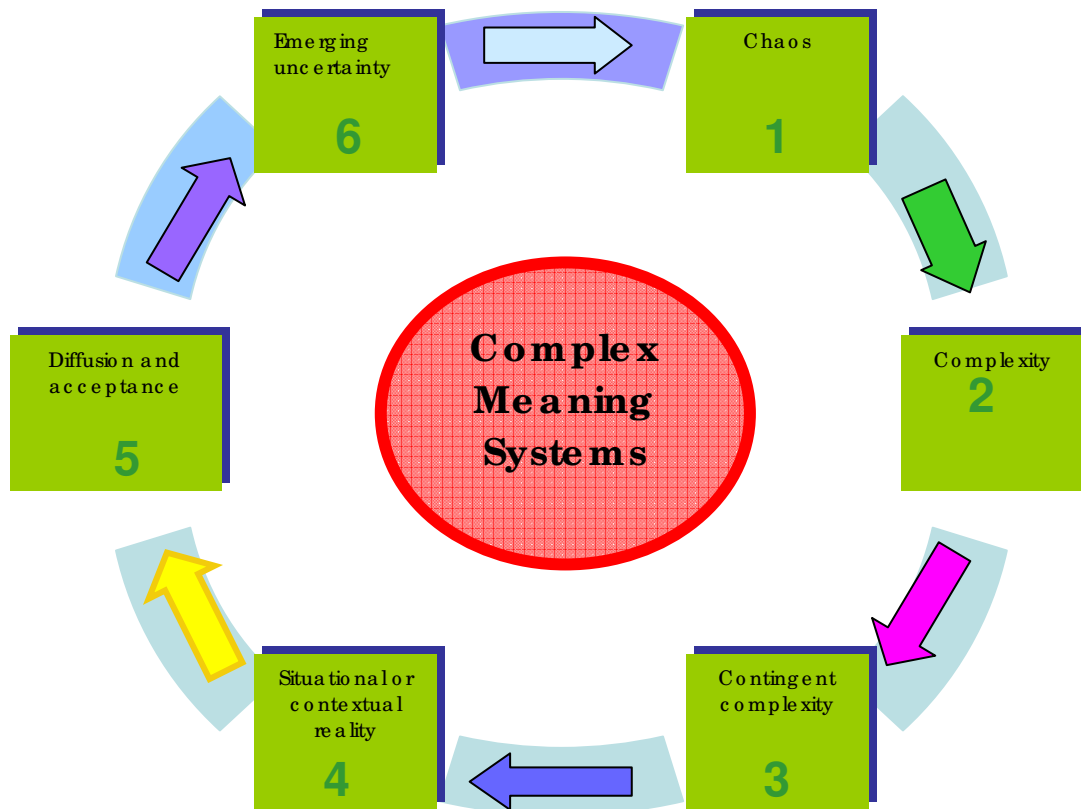
Figure 7.2: The six-phase model of complex meaning systems

Phase 1 – Chaos

The first phase usually marks the birth of the fad and is often characterised by turbulence and uncertainty in the external social, economic and political environment. There is much information, but little coordination of knowledge and understanding of its long term impact. If organisations are linked into how the meaning systems of the prevailing common sense operate, their management will be aware of the needs of the organisation rather than jumping on the first fad bandwagon that comes along. The key theme in this phase is unpredictability, which can sometimes appear as chaos. However, just because systems are described as chaotic, it does not mean a lack of order. It simply means that order is hidden, and maybe obfuscated because of extreme fluctuations in perceptions about the external environment. Just as absence of information can be chaotic, so too can an excess of information be damaging to an organisation searching for an intervention.

As we have learned from those researching in the area, the success of management fads depends on their rate of uptake and the way they are

perceived by the business community (Huczynski, 1997; Rigby, 1998; Jackson, 2001; Collins, 2001; Miller et al, 2004). Thus, successful management fads must offer not only success through change, but also stability in the face of change. Taking the idea of stability in complex systems a little further, there are essentially three key 'zones' that management fads exploit. First, most interventions will be able to relate to current best practice, refinement of what currently works (even if it seems 'old fashioned') and they must, of course, exploit the organisational network. Exploiting the organisational network means, for instance, that fads must plug into accepted business practice of the corporate world. They must take account of such things as profit margins, industrial relations, corporate tax laws, globalised economies, and market share. (For example, businesses must adhere to corporate, tax and industrial laws. This means management fads must advocate and promote an acceptable zone of stability.

Second, depending on how revolutionary the idea, management fads must also advocate a zone of instability, or offer something new and even exciting to their audience. Disruption in this zone has the potential to cause severe instability – and even chaos – if an intervention is implemented incorrectly or incompetently. However, mostly what counts as instability is simply a new take on an old idea. Some management fads, such as TQM, advocate only a marginal zone of instability, while others – balanced scorecard, knowledge management and Business Process Reengineering are examples – expend significant energy in order for them to be considered implemented in an organisation. They are large-scale organisational interventions which can affect such things as organisational culture. Thus, entropy becomes a feature of implementation of such fads, both informational entropy (characterised by diversity or variety), and physical entropy (characterised by disorder and chaos) can be present during the phases of the fad, particularly in Phase 1 – Chaos.

Finally, there is the zone between stability and instability, sometimes referred to as the 'edge of chaos'. This is where bounded stability and instability face off – where the unpredictability of specific behaviour within a predictable general structure of behaviour becomes virtually impossible to separate, much less define. Before we had complex systems to help map this territory, the type of behaviour that characterises management fads (as a collective) was put down to either randomness (where the relationships between inexplicable variation probabilities are not explored), or 'the prevailing common sense' (the netherworld of laws and codes governing the behaviour of social phenomena).
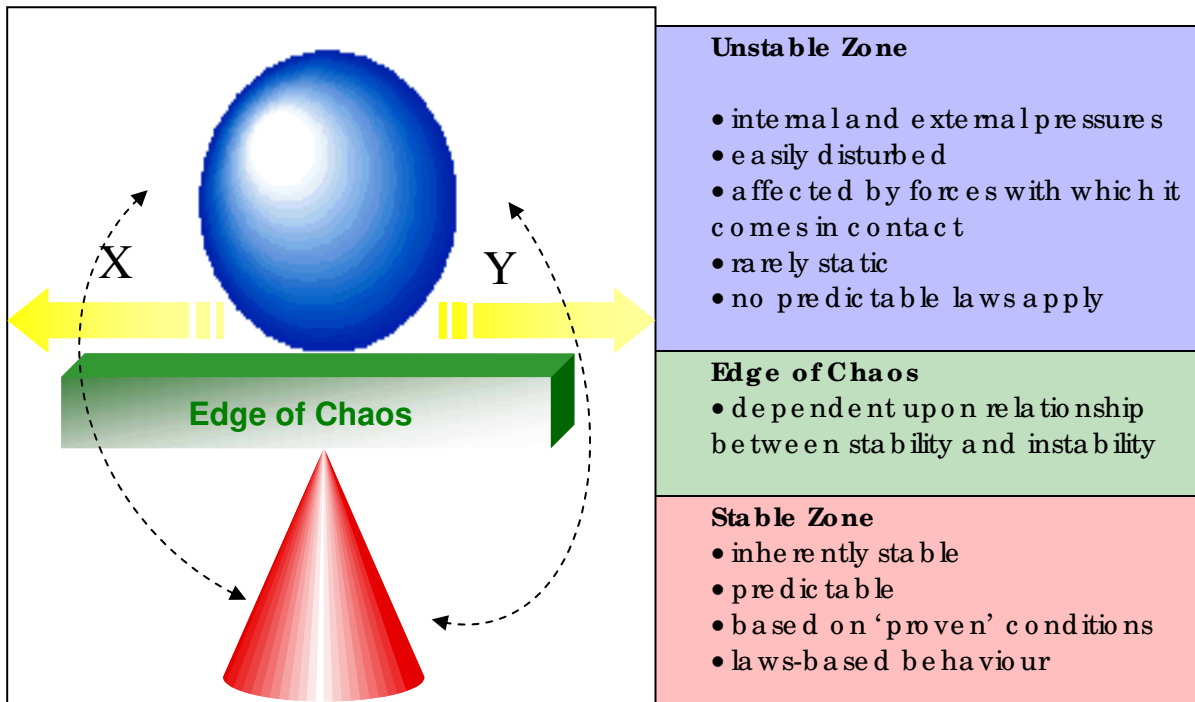
	Unstable Zone • internal and external pressures • easily disturbed • affected by forces with which it comes in contact • rarely static • no predictable laws apply
	Edge of Chaos • dependent upon relationship between stability and instability
	Stable Zone • inherently stable • predictable • based on 'proven' conditions • laws-based behaviour

Figure 7.3: Bounded stability captured in the moment

Figure 7.2 depicts the relationship between stable and unstable states captured in the moment of bounded stability, or equilibrium. When we examine this moment from the perspective of the stable zone, any variations present become apparent when we calculate the size of the base. The more stable the base, the more stable the structure over time. If the base starts to decay or disappear, the stability of the whole system will be jeopardised. The zone of instability, represented by the sphere, is capable of being influenced by three dimensions. This diagram represents the situation where the forces X and Y are equal. X and Y come from the competing set of ideas, values and knowledge faced by an organisation. The capacity of the stable state to influence these forces (dashed lines) will determine whether there is turbulence and the edge of chaos is in a constant state of fluctuation - for example, the decision to privatise or not to privatise, whether empowerment is more beneficial than giving up control, or the political influences brought to bear on a public sector organisation. This stable state can equally refer to a small part of the organisation, or even one decision that might affect the entire organisation. If we take the example of values and decision-making from this perspective, this means that for every decision to be made, there is a diametrically-opposed alternative (and the range of 'possibles' in between). Although the arrows represent only two dimensions of influence, the third dimension is manifested in the mass of the sphere itself. The sphere is used because there is a moment in time at which the unstable zone can be captured. The larger and more unpredictable the sphere, the more influence factors operating within the edge

of chaos have. The more the forces are balanced, the more stable the entire structure, and the more predictable it becomes over time. This also means that as the mass of the sphere (unstable zone) reduces, the base of the pyramid (stable zone) may increase, causing only minor disruptions to the edge of chaos.

Broadly, systems behaviour is divided into two zones separated by the edge of chaos. Generally, the stable zone supports and houses the predictable behaviour of the system. However, the unstable zone is the one which ultimately determines the behaviour of the system, because it is constantly shifting and moving in response to a myriad of factors. If there is minimal disturbance, the stable zone will prevail; however, if there is significant disturbance (multiple forces), the edge of chaos will be reached and the system will collapse. If the conditions of the stable zone influence the unstable zone (feedback loops clarify relationships), the edge of chaos may never be reached, or if it is, may only be attained momentarily. Stable behaviour is usually only momentary in complex systems; the diagram (Figure 7.2) represents the phase transition – where stability and instability have reached a point of equilibrium. If we look at complex systems from this perspective, the notion of randomness tends to evaporate in the midst of all the possible outcomes. In this model, elements from the edge of chaos can migrate to either the stable zone or the unstable zone. Once we are aware of this relationship, being able to determine the nature and strength of the elements involved in these three states sees that we may no longer view what actually happens as some kind of random action among possible outcomes.

Cause and effect is no longer linear because there are infinite variations in the values and the presence of causal factors. Viewing the behaviour of complex systems under this model, the notion of randomness is reduced, because the probabilities of interconnection of relationships between components in the system are exposed and can be potentially mapped. The seemingly formless random behaviours are complex and irregular, but they are no longer inexplicable. There are patterns of connection, and when these patterns are mapped, their trajectories exhibit predictable behaviours within a range of conceivable probabilities. The pattern of trajectories, termed 'strange attractors' is exhibited in the behaviour of all complex systems. Strange attractors are different from stable attractors where the system reacts in a more predictable way if disturbed.
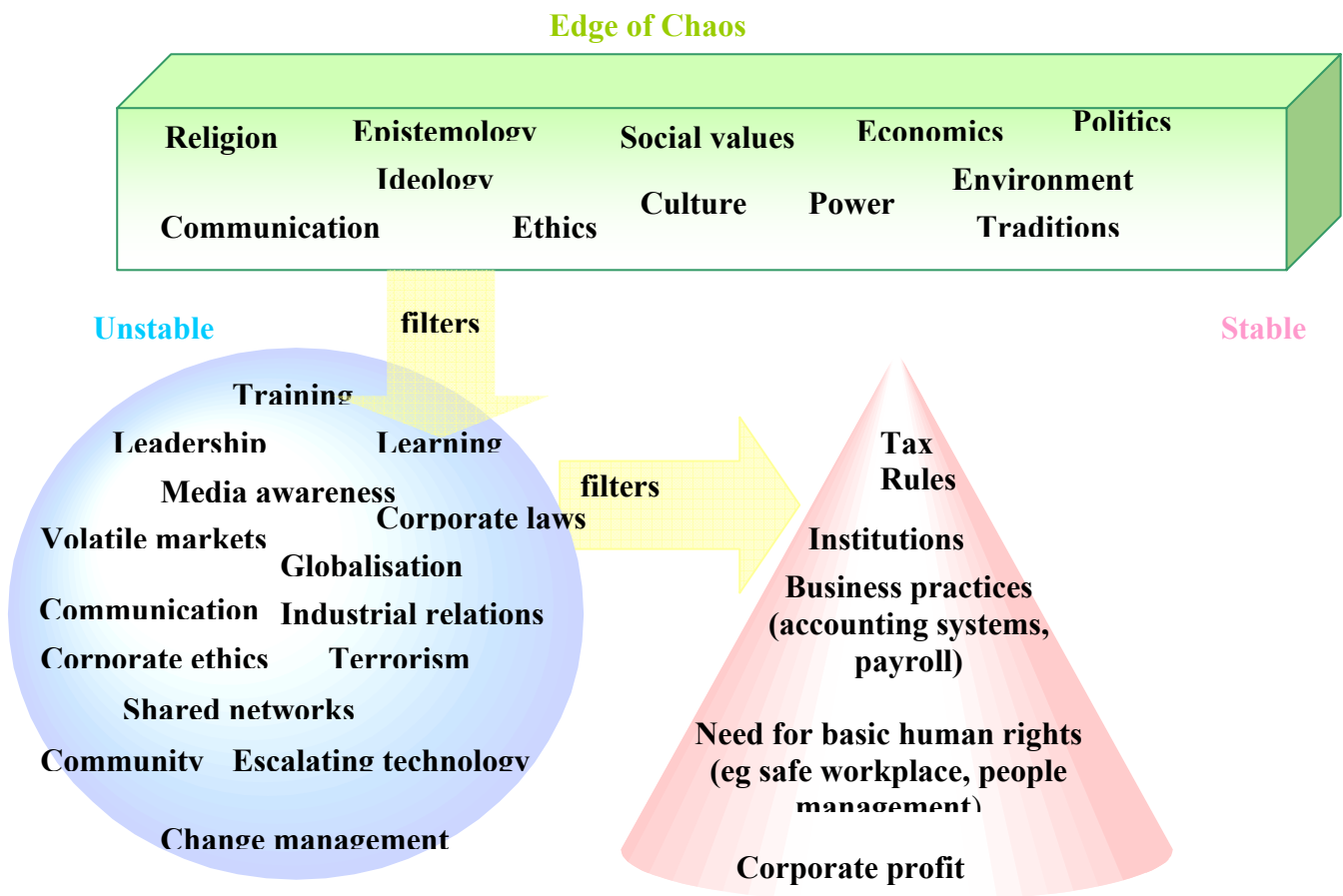
Religion	**Epistemology**	**Social values**	**Economics**	**Politics**
	Ideology			**Environment**
		Culture	**Power**	
Communication	**Ethics**			**Traditions**

Unstable   **filters**   **Stable**

Training
Leadership   **Learning**
Media awareness   **filters**
Corporate laws
Volatile markets
Globalisation
Communication   Industrial relations
Corporate ethics   Terrorism
Shared networks
Community   Escalating technology

Change management

Tax
Rules

Institutions

Business practices
(accounting systems,
payroll)

Need for basic human rights
(eg safe workplace, people
management)

Corporate profit

Figure 7.4: Relationship between stable and unstable states

Taking the example of a stable state in Figure 7.2 a step further, we can see in Figure 7.3 that the stable zone and the unstable zone compete for control of the edge of chaos, where elements from the edge of chaos can merge into either the stable and unstable zones. The stable zone contains common elements of the corporate world that all organisations would be exposed to: such things as corporate laws, profit, traditional business practices, industrial relations, business education. The unstable zone relates to such things as change management, new learning opportunities, business ethics, volatile markets, knowledge sharing, globalisation, changing technology, shared networks, and community engagement. Essentially, the stable zone is one that is relatively fixed, and applies to most organisations; changes in this zone are incremental, and generally planned. The stable zone has emerged over time as a result of the edge of chaos and the zone of instability competing for dominance. The elements in the stable zone have been accepted, legitimised, and routinised as usual and lawful corporate or business practice – the prevailing common sense of the business world.

By contrast, elements that might make up the unstable zone are volatile, turbulent and messy; organisations that do not embrace the essential ideas

emerging from the interaction of both zones risk being positioned back at the edge of chaos. Elements in the unstable zone are not necessarily common to all organisations, and are not in the same quantum. For example, all organisations must abide by tax laws, but not all organisations may fully commit to knowledge sharing. Many fads, for example, downplay the types of elements that emerge from the edge of chaos, and focus on the elements in the unstable states. This affects the life-cycle of the fad, and although such factors will not loom large in the life of the organisation, they contribute such things as corporate values, an important requirement for success and relevance of the organisation. In addition, factors that emerge from the edge of chaos can also be seen as strange attractors.

Scientific theory behind strange attractors sees their structures as dynamical, where the value of variables is forever changing. Yet, their form is static, as represented in the Lorenz Attractor and the Mandelbrot set of attractors[4]. Essentially this means there is a dimension of predictability for strange attractors (at least in statistical terms), particularly in relation to their representation within the pattern of relationships. Using the idea of strange attractors could provide a graphical representation of the behaviour of management fads, that is, if we care to apply methods found in the various streams of complexity mathematics. However, what would this tell us? It would not necessarily inform us about how a sociocultural phenomenon like management fads locks into the prevailing common sense of the rest of the sociocultural system. It would not tell us about the ideational schema, the power relations, the evolution of ideas that have caused particular suites of management fads to exist in the first place, and, most importantly, we would be none the wiser about how the management fad behaves as a complex meaning system. To reiterate, it is not the intention of this thesis to provide some formularised approach to the understanding of and prediction about particular management fads and how they can be differentiated from legitimate management theory. Rather, the purpose is to explain management fads in terms of complex meaning systems, and test whether the same theorisation can be applied to other sociocultural phenomena.

Primary research into the uptake and abandonment of management fads (see especially Ettorre, 2000; Huczynski, 1997; Rigby, 1999; Jackson, 2002; and Collins, 2001), shows that the reason management fashions (even legitimate management theories) turn into fads concerns the relationship between the

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[4] Refer to the websites of Chris Lucas (http://www.calresco.org) and Francis Heylighen (http://pespmc1.vub.ac.be/REFERPCP.html. and /**/INDEXASC.html) for full glossary of systems theory terms and complex systems modelling tools.

rate of uptake versus the rate of abandonment[5]. Quite obviously, organisations do not implement an intervention they know is going to fail. It is proposed that to avoid this, an understanding of the relationship between stable states and unstable states in the organisation should form part of the implementation strategy itself, particularly in relation to evaluation tools. The reasons organisations take on a particular intervention should be assessed in terms of how interventions might affect stable areas of the organisation. Being able to accurately map the relationships between what the fad promises to elements of stability will assist the fad's longevity in an organisation.

Phase 2 – Complexity

In Phase 2 of the process it is recognised that information surrounding the fad becomes connected to the wider sociocultural system. It can also be noted from Figure 7.3 that components at the edge of chaos are also meaning systems rather than functional constructs. The difference between complex meaning systems and functional constructs lies in the dimension of complexity and links with broader sociocultural system values. Meaning systems, as discussed in Chapter 4, embody multivariate perspectives and cannot be defined using simple or linear logic. Essentially, meaning systems are complex systems of understandings, with their underlying premise based on such things as epistemology, power, relations and values, from the position of the observer. Hence, there are as many variations or interpretation of these themes, or complex meaning systems, as there are people. Since there is no such thing as value-free perspectives of society, the value-driven ideologies and interpretations that derive from complex meaning systems allow various structures to infiltrate and dominate contemporary society and the structures that support it. Management fads are a manifestation of a complex meaning system that contains a vast array of components, none of which necessarily conform to any genre, but all of which seek and promise equilibrium through their interventions, promising patterns of connection to both stable and unstable states. The success of the fad at the level of the organisation and society, of course, will depend ultimately on the robustness of the filters and the resilience of the organisation to cope with the unpredicted outcomes (strange attractors, bifurcation points) that result from implementing the intervention promoted by the fad.

If we examine how we might graphically represent management fads as a complex meaning system, we would first start with what makes a fad a fad. If we

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[5] Recall the graph provided by Barbara Ettorre in Chapter 6. If there are high uptake rates and high abandonment rates, the intervention constitutes a management fad.

recall the relationship between stable and unstable states and the edge of chaos, the following diagram (Figure 7.4) demonstrates a possible explanation for the emergence of management fads.
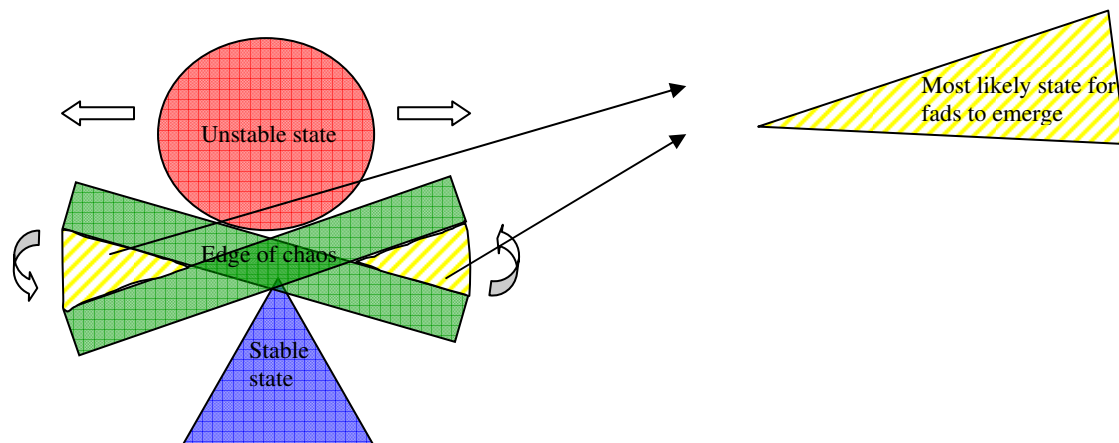

Figure 7.5: Most likely state for fads to emerge

I have argued that the environment in which management fads flourish is one where organisations seek to manage the turbulent external and internal environments, invariably responding to changing meaning, beliefs and values in the broader sociocultural system. Much of the change is also in response to issues emerging from the unstable state as they seek to filter into more stable states. To understand the relationship or patterns between actants and carriers of a management fad we have to interrogate the underlying or dominant belief system that has attracted the organisation's management in the first place. This level of interrogation is missing from accounts about the emergence, existence, and decline of fads. Management fads typically simplify and reduce complex issues, especially those involving beliefs or values, in order to focus attention on their intervention - for example, Steven Covey's "7 habits" series (1990, 1992, 1995, 1998, 2003). Thus, this phase is characterised by patterns and networks of relationships capable of being observed between stable and unstable states and at the edge of chaos.

Phase 3 – Contingent complexity

Contingent complexity is founded on the notion that some components in a complex system depend on others in critical ways and that the survival of the entire system relies on the strength of these subnetworks. If we return to meaning, it might be that certain beliefs or values do not have sufficient context unless they are coupled with other ideas. In terms of fads, we cannot separate the fad from the broader sociocultural system because it becomes embedded

in the social phenomena we understand collectively as organisational behaviour. Since one of the earlier phases in the development of a fad is the idea that it must be connected somehow to the improvement of organisations, contingent complexity provides an opportunity for the organisation to map out these relationships and perhaps understand how the fad may be interpreted by the networks related to the organisation. This is particularly relevant for such things as networks and subnetworks of meaning. How the fad evolved is also part of its pathology; its sources are responsible for the ongoing perception of the fad.

Thus, contingent complexity is where we begin to understand how and where the interconnectedness within a meaning system manifests, and that some meanings depend on others and cannot exist without some *a priori* perception. Because we are nothing other than the sum total of our experiences and our ideas, we can only imagine how others experience the world. The map of our experience and how we make sense of the world is like a map of a poorly chartered territory. We use this map to navigate the events and situations encountered in the world, just like a traveller exploring new frontiers. The map of our experience creates meaning for us to help us make sense of the world, and prepare for things that we may not have previously experienced. We can also compare this to how an organisation might implement a fad from past experience of other fads. We are constantly using this map to compare and test experiences and then use those experiences to modify our map. Thus, the map of our experiences contains systems of meaning that are very obvious and take a place at the forefront of our lives and drive everything we do (for example, the need to survive). But, it can also contain elements that are not easily explained, yet we are aware they exist (for example, the force of gravity). How some of these *a posteriori* experiences depend on *a priori* knowledge is the logic behind the idea of contingent complexity. It is the relationship between these two concepts that can be enhanced by ideas from complex systems theory.

In terms of complex meaning systems, many meanings are hard-wired into us through the prevailing common sense. They just exist, but like the force of gravity, we are at a loss to explain why, even if we draw on quantum mechanics. Some of these meanings are absorbed into the concept of *a priori* knowledge, because, even though we may not have experienced particular events, we form opinions and make judgements about them. The way these meanings relate to other meanings can sometimes form a dependency relationship. In other words, certain meanings simply cannot exist without some referential

relationship that connects them back to the broader sociocultural system. Relating this back to the organisational setting; questioning how fads are connected to the wider sociocultural system helps us make sense of what is being proposed by the fad and therefore judge its potential success or otherwise. Because we may have already experienced the failure (or success) of management fads in the past, this *a posteriori* knowledge is part of the suite of contingent information we use to evaluate any experience of a new fad (as opposed to *a priori* knowledge which is gained from rational thinking without necessarily experiencing it). Even if the fad has not been implemented, but we have heard about some of its apparent qualities (through buzzwords or strategies that sound similar to ones experienced), pre-judgements will occur. This is an inevitable aspect of the way humans' experiences relate to their perceptions of those experiences. Figure 7.5 offers a representation of how this might work.
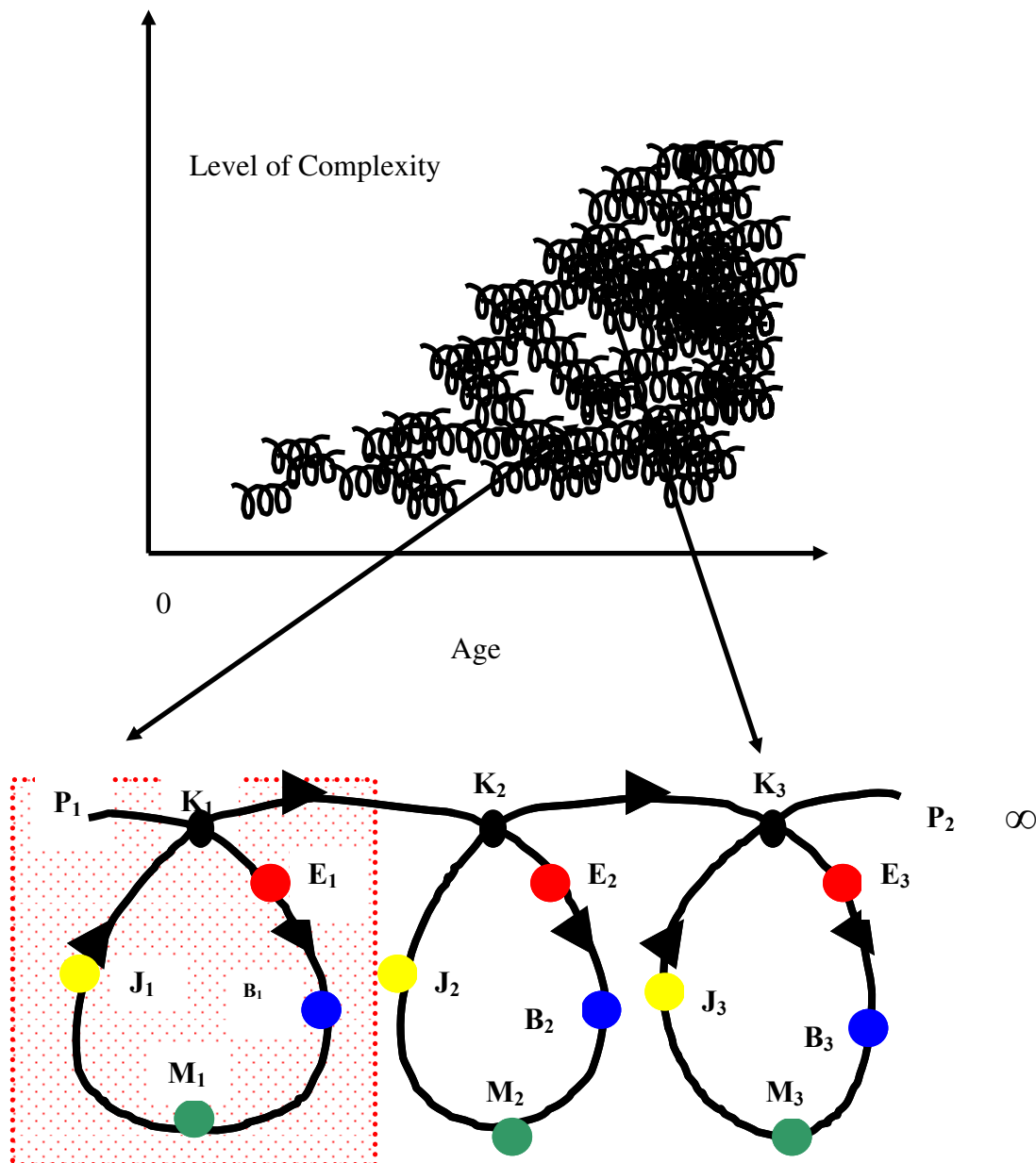
Where: P = Perception, K = Knowledge, E = Experience, B = Behaviour, M = Meaning, J = Judgement

Figure 7.6: Complex meaning systems as a process

Complex meaning systems can also be represented as a cyclical process as the stages of meaning and understanding move through the phases of perception, knowledge, experience, behaviour, meaning and judgement before they are connected to other meaning systems. We usually come to a situation with a preconceived perception (P_1), upon which we are presented with a set of knowledge (K_1), which is then interpreted according to our own experience of it (E_1). We then embark on a set of behaviours (B_1) according to our knowledge and experience and form judgements (J_1) about the issue as we are presented with more knowledge (K_2), and so on. By the end of the cycle we have a new perception (P_2) to use for the next, similar situation. Each of these minicycles

adds to our knowledge, causes us to shape our values and make sense of the world around us. Just like any complex system, there can be a myriad of factors that influence any of the phases, and some of the phases may be short, or even missed. For example, sometimes we might go straight from perceptions to judgement without experience influencing our behaviours. In this instance, we might ignore our experiences and lean toward the biases of our perceptions based on *a priori* experience, or even rely upon the popular views promoted by the prevailing common sense. The key point to be made here is that the process of meaning-making is certainly not linear. When we are presented with new knowledge, it does not necessarily follow that it will form a meaning system or part of a meaning system. More importantly, what meaning we do elicit is from within the position of our own world view. Hence, the position of the observer means that the graphical representation above will be different for each person.

The simple graph in Figure 7.5 above shows that we start life with a small number of meaning systems, building upon them until there are connections to all meaning systems as we (sometimes struggle to) make the links and networks to others to make sense of our world. Meaning systems do not disappear or become extinct. The shaded area of the diagram represents part of a meaning system, which could be an idea. Ideas are iterative and are tested by the cycle above. They are built upon as we grow and our experiences, combined with the knowledge we gather over time, form into systems of meaning.

Applying the idea of contingent complexity to management fads sees them forming part of the prevailing common sense, irrespective of whether we agree with their prescriptions. They have permeated the corporate world, providing billions of dollars in revenue to the firms that market them, the consultants who promote them and the organisations that have become dependant upon them. The nature of 'change' and uncertainty in the world of business has generated the need for the management fad. Because change is an inevitable part of the business landscape, so too are management fads. In the case of management fads as a sociocultural phenomena, it is likely (according to the observations of those with primary research data in the area – Rigby, 1998; Jackson, 2000; Huczynski, 1993, 1997; Collins, 2001; Miller et al, 2004) that most organisations adopt new management fads when their fortunes are not as favourable as they should be. This means that the introduction of 'new' strategies for dealing with customers, or changing reporting requirements, or new communication procedures has been experienced in some form or another by most employees.

How management fads are perceived generally within the sociocultural system is based on the idea of contingent complexity. The collective sets of meaning systems serve to either make the management fad successful, or result in low adoption rates. This is largely because people (staff or management or consumers or clients) will get behind change that resonates with their experience and connects favourably to their meaning systems. So in the end it returns to the individual as a source of power - their meaning systems contingent on that of the prevailing common sense.

Phase 4 – Situational or contextual complexity

Situational or contextual reality concerns how the fad situates itself within the prevailing common sense. This fourth phase is where we might observe factors in the development of the fad self-organise and adjust to the external environment to ensure acceptance. This may also relate to how the fad behaves, or even how the fad is represented in the media. Contextual reality means that the fad is *prima facie* accepted by the prevailing common sense, but only to the extent that the dominant meaning systems within it are not challenged by the fad. For example, fads that advocate growth in times of tight fiscal government policy may not be successful in public sector organisations. Also, this is usually not the phase where large shifts occur in the continuing development of the fad. This phase is more significant to the success of the fad than any other, for this is where the meaning system which represents the fad fuses with the meaning systems within the prevailing common sense. It could even be that the notion of survival of the fittest is most relevant in this phase.

Donald Campbell's (1987) notion of 'evolutionary epistemology' sees knowledge as a product of the variation and selection processes characterizing evolution. It is based on the premise that the original function of knowledge is to make survival and reproduction of the organism that uses it more likely. Thus, organisms with better knowledge of their environment will be preferred to organisms with less adequate knowledge. We can also apply this thinking to the emergence and proliferation of management fads. The emergence of a particular management fad or a particular genre of management fads is the result of variation and selection processes in the broader sociocultural system.

After Campbell, the typical pattern of emergence of a fad is the generation of a range of interventions by various means (variation), and the weeding out of those interventions that turn out to be inadequate (selection). For example, as noted in Chapter 3, Donald Campbell rests his theory on three basic premises:

1. the principle of blind-variation-and-selective-retention;

2. the concept of a vicarious selector; and

3. the organization of vicarious selectors as a "nested" hierarchy.

Applying this thinking to management fads, it can be assumed that organisations do obey laws that cannot be reduced to the attributes of individual persons, even though we find human organisations 'fuzzier' than clear-cut systems such as atoms, molecules, cells, multicellular organisms, or ant nests (cf. Campbell, 1958, 1990). For example, where is the line drawn between when an employee is an employee and when he or she is simply a citizen? How much of the private life of an employee should become part of the organisation? An example of this is the 'green line' intervention which draws out the personal feelings of staff in the hope it will contribute to a more 'sharing' and cohesive workforce. Above the green line relates to organisational issues, below the green line relates to personal attitudes (Queensland Office of Public Service Merit and Equity - OPSME, 2004).

The boundary issues relating to principles influencing variation and selection models make meaning difficult to capture. Management fads as a meaning system make it virtually impossible to delimit and capture them as a system. The first issue to address must then relate to the control of the meaning agenda. What features of the management fad exercise control over the organisation and over the processes and procedures it wishes to influence? If the management fad exercises control on behalf of the fad itself, its evolutionary epistemology is not serving the whole system (which could be thought of as the organisation itself). In other words, if it only generates a series of buzzphrases that do not impact on how the organisation interacts with its internal or external environment, the fad will have little impact. If the reverse occurs - that is, the discourse of the fad becomes embedded in the processes and practices in the organisation - the fad will be successful and thus serve to benefit those promoting it (guru consultants and/or the management of the organisation.) Thus, management fads as a sociocultural phenomenon are ultimately self-serving; their epistemological themes, including the way the knowledge is selected and transferred, arguably serve to benefit those who promote the fad.

Management fads that evolve through a kind of variation and selection can be characterised as trying to maximise and optimise their fitness in the organisation and ultimately in the business world. (Fitness in this sense is a complex function of the system and its environment, an index of the likelihood that the system would persist and replicate.) In other words, those strategies/interventions selected are judged to have the highest potential for fitness. The work of Peter Allen (1998) can be used to enlarge these ideas.

As Allen (2001) points out:

> … a successful and sustainable evolutionary system will clearly be one in which there is freedom and encouragement for the exploratory search process in behaviour space. Sustainability, in other words, results from the existence of a capacity to explore and change (p. 160).

In Allen's model, management fads represent a structural attractor in which the sustainability of the complex meaning system depends on an understanding of what successful products are and how they are obtained (p.161). Successful products are those that make a connection with some aspect of the meaning system and demonstrate higher performance. The fact that some management fads are not successful, or worse, have bad publicity, means that organisations will be wary of implementing fads based on similar methodology. Successful (or otherwise) management fads emerge because they are able to adapt their interventions to the corporate landscape at the time. This will be facilitated if the meaning system of the management fad resonates with the meaning systems of staff, clients and customers of the organisation to present a new and creative reality. The behaviour of fads generally sees them searching out and testing different designs and discovering interventions or techniques that capture the synergetic attributes of organisational behaviour that might be capable of being exploited (Allen, 2001, p. 163). In this sense, management fads can almost be seen as behaving like a virus, which of course exploits weaknesses in the host's ability to adapt to radical change. An evolutionary system is one that can create "successive systems" (Ashby cited in Allen, 2001, p. 176), and, now that uncertainty is much more a part of our understanding of such things as organisational behaviour, management fads have capitalised on the nature of this uncertain, turbulent environment. The successive systems have become numerous and often emerge in an *ad hoc* way, exploiting the weaknesses present in the complex meaning system. This has led Allen (2001) to propose his law of excess diversity:

> For a system to survive as a coherent entity over the medium and long term, it must have a number of internal states greater than those considered requisite to deal with the outside world. (p.176)

Following Allen's law, we can say that management fads exploit not only what we know, but also the uncertainty about what we do not know. If these connections are tenuous, the links will fail and the fad will wane in popularity and ultimately be abandoned. This also means that if organisations are going to be able to respond to a turbulent environment, where uncertainty and change are part of the landscape, there must be greater 'diversity' than strictly necessary for their current level of function. This suggests that management fads are so much a part of the tapestry of complex meaning systems, that the change they purport to address, is in fact responsible for the uncertainty in the first place. One of the features of complex meaning systems is their capacity to

be both the agent of change and the change itself; much like the process and product of self-organisation. Thus, it is proposed that it is not possible for management fads to be extricated from the uncertainty they claim to address. As Falconer (2002) sees:

> … [change] plays with spatial, temporal, participatory, operational, organisational, technological, and any other sort of boundaries that people generally like to try to impose on it, violating them, adjusting them, making people unsure of their existence or their parameters. Viewing change as a complex system allows us to call into question this conventional notion of 'bounding' as regards change. (p. 123)

Lemke (1997) points out that:

> … we construct variables which are relevant for our human purposes according to the cultural meaning formations in relation to which certain forms of patterning or order are salient for us. An analysis of the emergence of order in a complex system must always include the observers and their cultural criteria of meaningful patternedness as part of the system to be accounted for…

Lemke's (1995, 1997) notion of 'hierarchical levels' accounts for self-organisation, emergence and what he calls 'downward causation'. As opposed to downward causation which looks at the relationship between components in a complex system, Lemke (1997) sees 'upward causation' as the controlling external influences on individuals – such things as the family, religion, culture, society, community and so on. These influences cannot be controlled; yet, reductionist thinking, inherited from the Cartesian mechanism, would break down the components so they can be perceived as unrelated and capable of being controlled. Lemke (1997) argues that the role of language and meaning is related to spatial and temporal time-scales which influence social processes and the dominant discourses with which they come in contact. The idea of meaning systems is based on this tradition but stresses the importance of the observer and the intangibility of prediction. It is this notion of contextual reality that the successful fad best exploits.

Phase 5 – Diffusion and acceptance

Phase 5 is where the fad finds its way into the dominant meaning systems and forms seamless bonds to other meaning systems. In other words, it becomes an unquestioned part of the prevailing common sense. In this phase, the development of the fad or its emergence is often overlooked, because the fad is now accepted and diffused throughout the corporate world. The status of the guru promoter is also assured in this phase, because little questioning of motives is active at this time. By this time, the fad has also adopted the features of the dominant meaning systems with which it is connected. Whether these features

concern values, ethics, or beliefs, the behaviour of the fad in this phase will very much conform to mainstream organisational behaviour and will be seamless in terms of the prevailing common sense.

Such things as the success of the management guru promoting the intervention, corporate business needs, change for change's sake, fashionable management practices (for example, the notion of coercive externalities) and so on, almost ensure that there will be one of the distribution thresholds outlined by Watts (2003, p. 227), and supported by Ettorre's life cycle of a fad. This averages out the cascades of information, and demonstrates that at some point there is saturation of the idea or fad thus entrenching the meaning system in the prevailing common sense) before it wanes and transforms into another idea or becomes abandoned. The simple diagram below (Figure 7.6) demonstrates Watts' (2003) notion of probability distribution of thresholds over the population.
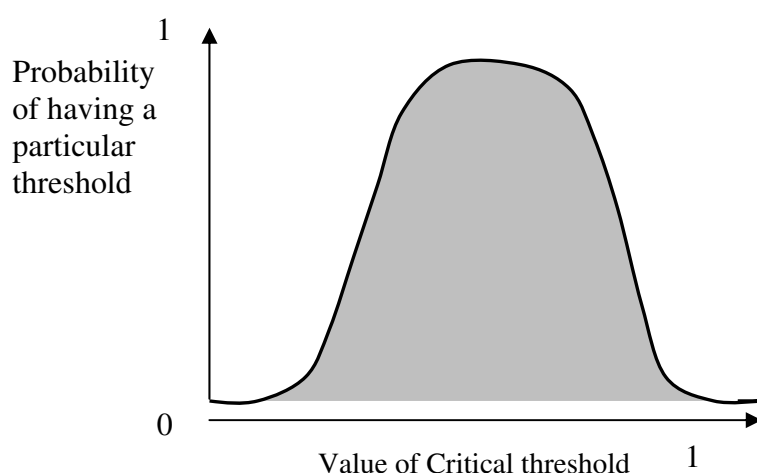

Figure 7.7: Watt's notion of probability distribution of thresholds

If we consider the prevailing common sense is the collective acceptable knowledge in a sociocultural system, we can start to determine how it happens that such knowledge becomes acceptable. Whether a linguistic or social construct, the prevailing common sense is based on shared meanings: a shared knowledge plateau, the principles of which share common understandings through a significant range of epistemological themes. Thus, management fads have come to represent themselves in all phases of the complex meaning system that characterises them. It is impossible to separate management fads from the prevailing common sense because of the complex networks they have created with other meaning systems within it. They present at all phases, particularly in the world of business: chaos, complexity, contingent complexity, situational complexity, diffusion and acceptance, and emerging uncertainty.

They have learned to adapt themselves to all phases, behaving like a virus, attaching themselves to the most robust hubs until "threshold infectiousness" is reached (Watts, 2003, p. 177). As Watts (2003) points out, the value for "threshold infectiousness" represents the infectiousness required for one-half of the population to become infected. In terms of a disease epidemic, Watts (2003) representation of this infectiousness is given in Figure 7.7.

This figure is not available online.
Please consult the hardcopy thesis available from the QUT Library

Figure 7.8: Threshhold of Infectiousness

(Source: Watts, 2003, p.95)

In terms of epidemics, however, the level of randomness in the network increases the chances for the disease path to take 'shortcuts' and circumvent the usual rules of the virus or pathogen. For example, if a virus is normally airborne - only transmitted by direct contact and indirect contact with airborne droplets - then one would expect the virus to spread along two-dimensional geographical lines. However, as Watts points out, with modern transportation methods and increased mobility of the population, the virus uses these 'shortcuts' and seeks out new and sometimes random paths to reach its threshold of infectiousness. On reflection, translating this to the realm of management fads sees certain factors acting as 'shortcuts' for promoting the success of the fad. The factors mentioned in previous chapters are those which correspond to the success of the fad:

- the fame and fortune of the management guru promoting the fad;

- business management schools setting the texts involved as essential reading;

- business magazines running promotional material about the success of the fad;

- the ease for which the fad can be implemented (for example, alliterative number lists, buzzwords and so on); and

- whether the fad builds on previous fads, capitalising on their more successful features.

Explaining management fads in terms of the science of networks, as above, provides a useful and simple tool to model some of the components of various organisational interventions. Yet it still only looks at *observable* features of the phenomenon of the management fad. For example, one of the key features of the success of a management fad will be the diffusion and acceptance of the language surrounding the fad itself. As Cilliers (1998) points out: "There is no place outside of language from where meaning can be generated. Where there is meaning, there is already language" (p. 43). Management fads cannot disassociate themselves from the language in which they operate. The notion that language games are very much part of the management fad phenomenon is mentioned by a number of authors writing about management fads (for example, Huczynski 1997; Collins, 1998; Mickelthwaite and Wooldridge, 1998). If we recall the properties of complex systems, the way that language and meaning interact is part of the system of meaning.

Since complex systems see patterns and relationships between components as important as the components themselves, what connects the components (e.g. through language and meaning) is integral to understanding how the components comprise the system in the first place. The role that language plays in this dynamic is integral to the survival of the system, as it maintains fluidity and fitness. Therefore, language is also integral to how well management fads can adapt to the level of surrounding complexity and diffuse themselves within in an organisation. The nature of many management fads is that they continually reduce the boundaries, simplifying the concepts and obfuscating the complexities of the organisational and social forces around them. Simple, easy to remember or alliterative catchphrases ('below the green line', 'who moved my cheese?' [Johnson, 1998]), buzzwords (reengineering, quality, knowledge management, balanced scorecard, learning and complexity management), number lists (seven habits of highly successful people, six thinking hats, hierarchy of needs), and catchy acronyms (SWOT analysis, TQM, Seven S Framework, MBO) pepper the management fad literature. Thus, the language of management fads becomes consistent with the intent of management fads: to simply capture the essence of the goals and objectives of the organisation and at the same time superficially address the changing or turbulent external

environment. Management fads reduce the complexity of issues used to deal with uncertainty, and engage language as the vehicle.

As a sociocultural phenomenon, management fads embody relationships with the fabric of society. The language they use, the concepts they engage in, are very much part of contemporary society. Marketing, advertising ploys and gimmickry feature strongly in the management interventions we could class as fads. Such features rely heavily on the use of "the distinctive, the common or the unique", as observed by Huczynski (1997, p. 25). Management fads have a particular 'spin' and provide simplistic treatment of complex issues that separates them from legitimate management theory. This spin relies on demystifying the most complex elements of organisational behaviour, reducing them to basic observations, using such techniques as humour (Scott Adams – cubicle behaviour according to Dilbert), concepts such as sensationalism (Tom Peters, particularly "chaos" and "excellence"), appeal to reason (Edward DeBono, lateral thinking and parallel thinking), cause and effect (Kaplan and Norton, 1997 – 'balanced scorecard'), or even complexity itself (Lissack, 1997; McMaster, 1999; Wheatley, 1996; Merry, 1995; Stacey, 1998, 2002, 2003).

In other words, management fads exploit this notion through obfuscating the meanings of words, changing or mixing the context with which buzzwords, in particular, may be associated. Playing down critical issues by simplifying or even trivialising them means that the associations that people make about how important such issues are, is either broken or diminished. All this assists diffusion.

I will provide two brief examples: Steven Covey and Tom Peters, two of the world's most successful management gurus. Covey's (1989) *Seven Habits of Highly Effective People* is a multi-million best seller, a self-help prescription that promises readers the means to achieving their full potential. In order to build the 'character' that Covey promotes, it requires the reader to get beyond the various linguistic anomalies in Covey's message. For example, as Mickelthwaite and Wooldridge (1997) point out:

> Coveyism is actually quite a tough discipline: people have to take responsibility for their actions. Unfortunately, this rigour does not extend to the book's style. The first six words of *The Seven Habits* are: 'To my colleagues, empowered and empowering'. Worse is to come. The first of Covey's seven habits is 'be proactive'; the sixth is 'synergise' … He is forever referring to things like 'emotional bank accounts' and 'deposits of unconditional love'. This is disturbing territory. How can you respect a man who restates Aesop's fable about the goose that laid the golden egg as 'the P/Pc Balance' for production/production capability? Can you really take seriously a man who claims, straight-faced, to have identified 'the universal value system of all mankind'? (p. 164)

'Coveyism' comes with its own self-promotion industry, including websites, live-in conferences and a multi-million dollar consultancy empire. The language engaged by management gurus like Covey simplifies and uses clever techniques to deflect attention from the euphemisms that characterise his management interventions and easy-to-recall personal development mantras. For example, through creating phrases that juxtapose conflicting contexts and ideas – 'emotional bank accounts' and 'deposits of unconditional love', Covey arguably turns human values into commodities. This legitimises the prevailing common sense, or the sets of meaning systems which support the business world, with its emphasis on securing a return, commodifying human emotions and ensuring everything, including love, has a price. This challenges such things as Chomsky's (1965) notion of 'transformational grammar' where phrases or sentences conform not only to grammatical rules peculiar to its particular language, but also to 'deep structures'. Thus, a universal grammar, based on complex rules and underlying all languages, corresponds to an innate capacity of the human brain. Covey's terms defy Chomsky's theory. Yet this cognitive dissonance is what makes them so memorable. Although it is not the task of this thesis to take this analysis any further, there is no question that Covey's terms simplify and trivialise the symbolic representations of the language, flouting language conventions, and at the same time locking his language into the prevailing common sense.

In another example, Tom Peters' (1987) *Thriving on Chaos* opens with:

> There are no excellent companies. The old saw "If it ain't broke, don't fix it" needs revision. I propose: "If it ain't broke, you just haven't looked hard enough. Fix it anyway". (p. 3)

A number of subsequent quotes support the earlier observations, as he continues:

> There are two ways to respond to the end of the era of sustainable excellence. One is frenzy: buy and sell businesses in the brave hope of staying out in front of the growth industry curve…The second strategy is paradoxical – meeting uncertainty by emphasizing a set of new basics: world-class quality and service, enhanced responsiveness through greatly increased flexibility, and continuous, short-cycle innovation and improvement aimed at creating new markets for both new and apparently mature products and services. (pp. 3-4)

Finally, Peters' introduction culminates in the intent of this particular text:

> If the word "excellence" is to be applicable in the future, it requires wholesale redefinition. Perhaps: "Excellent firms don't believe in excellence – only in constant improvement and constant change." That is, excellent firms of tomorrow will cherish impermanence – and thrive on chaos. (p. 4)

Empirical research undertaken by Rigby (1997), Huczynski (1993, 1997), Collins (2001) and to a lesser degree Miller et al (2004), suggests that statements of this

sort may resonate with the company director and middle management. Certainly, the number of books that Peters has sold may also mean that his message about excellence has become so widespread, it is the prevailing common sense. However, it is understandable that employees may feel concerned that their working life will be one beset by constant change and even chaos. The disconnect between firms staying abreast of constant change and the majority of employees seeking stability is one that Peters does not address. Yet his prescription couches the changing external environment in terms that would have managers believe they can be in control. The element of control, in fact, together with the each-way bets on all aspects of organisational behaviour, makes for a very persuasive, if not irrefutable, argument from Peters. From the CEO to the shipments clerk, no one can refute that excellence is a desired state. Combining the meanings and terms of excellence, chaos and management enables Peters to paint a picture of an organisation that can be in control and even manage a turbulent landscape. Others have pointed out that "… 'management' as a euphemism for 'control' is simply a nonstarter in the business world of today, a Dilbertian relic of scientific management and workhouses" (Falconer, 2002, p. 118). It is impossible to get beyond the language that Peters (and others like him, for example Tony Robbins) uses to create a veneer of control over the external business environment and even personal lives. This is especially true for his use of organic metaphors, excessive number lists barking out instructions, and real-world examples in support of his claims.

We can use Cilliers (1998) to penetrate the dynamics here. Cilliers (1998) uses poststructuralism and theories of language proposed by Sassure and Derrida to develop a line of inquiry for what he has termed 'connectionist networks'. Post-structural inquiry is based on a system or pattern of relationships and an understanding about how the differences in meaning become internalised. After Sassure, Cilliers (1998) draws attention to the notion that the system of language transcends the choices of individuals because they have to operate within the system of language they inherited, and thus their understanding of the language is fixed. This also means that, to a large extent, the system we call language can guarantee its integrity through such things as traditions, memory or, in Sassure's words, the mutability and immutability of the sign (cited in Cilliers, 1998, p. 39). However, Cilliers does point out the contradiction in Sassure's theory of the sign. If the sign had a natural or essential meaning for all time, it would remain exactly the same. "Change can only be traced in terms of the difference that is produced between a previous and a new set of relationships, and this is the result of an evolutionary process" (Cilliers, 1998, p. 40). Derrida's critique of Sassure is based on his notion of *différance* between the sign and its

meaning. In other words, meaning is never simply present and we are constantly interpreting signs both spoken and written. But Cilliers (1998) refutes Derrida's idea that language is a totally open system, because some meanings are to an extent fixed for all time, and therefore are predictable. Building on the ideas from both Sassure and Derrida, Cillers (1998) sees that his notion of connectionist networks linking post-structural language theory with complex systems offers much more in terms of the relationships between meanings and signs, and furthermore believes they are capable of being modelled and simulated, in a general sense (Cilliers, 1998, 2002).

Applying Cilliers' (1998) ideas to management fads, we can observe that most seek to transform a complex construct into a simple representation of it. The post-structural notion that words cannot have a meaning by themselves, and that meaning is determined by the dynamic relationships between the components in the language system would seem to decry such things as buzzwords. Buzzwords are important sounding words or phrases created to impress the layperson, and litter the discourse of management fads and guru consultancies. Some examples include: 'administrivia', 'back-sourcing', 'betamaxed', 'blamestorming', 'boundary riding', 'codify', 'collaborative filtering', 'core competencies', 'critical mass', 'deep-domain expertise', 'downsize', 'embrace the chaos', 'empowerment', 'excellence', 'exit strategy', 'future-proof', 'glass ceiling', 'human capital', 'leadership', 'learning opportunity', 'low-hanging fruit', 'just-in-time', 'knowledge management', 'operationalize' (or anything ending in ize to create a verb), 'path persistence', 'people development', 'pocket of resistance', 'realignment', 'revenue maximization', 'rightsizing', 'silver bullet', 'strategic alliance', 'suite of options', 'tacit knowledge', 'task saturated', 'transitioning', 'transparency', 'undertooled', 'upskilling', 'user-centric', 'value added', 'watercooler effect', 'webify', and 'window of opportunity'. These have lead to such buzzphrases as 'repurposeable, leading edge thoughtware that delivers results-driven value', 'a future-proof asset that seamlessly empowers your mission critical enterprise communications' and 'a value-added, leverageable global knowledge repository'.[6]

The treatment of language, in particular the use and overuse of buzzwords and buzzphrases, exemplify Cilliers' (1998) view that there are problems with the notion of representation, particularly in the corporate world. The ease with which such words and phrases can be made to represent problems or even solutions in dealing with complex organisational behaviour is one of the

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[6] Buzzwords and buzzphrases sourced from interoffice memoranda, newspapers, and websites, in particular, buzzwhack.com and Deloitte website – http://www.dc.com/insights/bullfighter/

hallmarks of management fads. The language forms a relationship between the prevailing common sense, the observed world and an individual's interpretation of it through shortcuts, and even violations of meaning, mimicking Lemke's (1997) and Leyesdorff's (2006) idea of traversals. When we come to exactly what it is that Cilliers' (1998) connectionist networks mean for management fads, we can engage his conception of neural networks to 'weight' the strength of the bonds between certain components, and identify relationships between the patterns themselves: "... connectionism does not rely on a strong theory of representation ..." (Cilliers, 1998, p. 59). Management fads that violate these relationships by forcing connections between the observed and the experienced, create a disconnect which can resonate just as strongly in actants as true representation. The discourse of management fads disturbs the process whereby the two levels of description – the symbol and its meaning – are related. The relationship becomes one which grates, but circumvents the long-winded or formal descriptions present in true representation. Buzzwords and buzzphrases in some sense popularly epitomise the rebelliousness that has figured in deep philosophical debates throughout the centuries, carried through to modern marketing techniques which rely on exploiting meanings to capture their audience. The 'linguistic dissonance' created by the discourse of management fads makes it difficult to define the precise meaning of the terms – precisely the effect sought. The relationship between meaning and language in management fads thus becomes unstable. Its patterns exhibit the behaviours of Lemke's traversals; in that they are ephemeral, transient, and variable. This instability is also born of contemporary business practices, political or economic drivers and, to a lesser degree, pop culture and subversive styles.

The simplification of meaning using buzzwords and phrases to unite contrasting or disparate concepts in a way that captivates is the most critical feature of language use in management fads. Cilliers' (1998) notions of connectionist networks and distributed representation capture the complexities of language usage including working with concepts or clusters of concepts at the sub-conceptual level. This can also be reconciled with the idea of management fads as complex meaning systems hypothesised in this thesis. The phenomenon becomes one of self-organisation of meaning in which the structure of language, signs and images is neither a passive reflection of the external world, nor the result of active pre-programmed internal factors, but is instead, a complex interconnection between the current state of the system, the environment and the history of the system (Cilliers, 1998, p. 89).

This brings us to one of the key points Lemke makes about his notion of traversals: they enlarge the repertoire of 'possibles'. They create local and

ephemeral possibilities of meaningful connection or catenation among otherwise radically distinguished and separated genres and domains of activity. Local and ephemeral (on some timescale), traversal repertoires can potentially become regularized, standardized, repeated, and disseminated over larger scales and for longer times. This is an observable quality of management fads. Lemke's traversals are characterised by an holistic aesthetic judgment rather than by objective conformity to codified criteria that specify analytical components. According to Lemke (1997), we judge genre-conformity by looking at the separate parts and their criterial features. There is no special sense of the whole; no emergent quality of the whole is taken to be more than the sum of the parts. Genre-conformity is an eminently linear and summative strategy, a true product of reductionism. Traversal judgments, on the other hand, are eminently holistic, or at least they operate 'in the large', with the meaningfulness and quality of the longer-scale portions of the traversal more important than the smaller-scale ones. Traversals are emergent all the way down. They are characteristic of the age of complex (including biological and ecosocial) systems understanding (Lemke, 2000).

Many management fads have the potential to offer organisations a measure of social control and widespread standardisation and conformity. As organisations expand and adapt, they find that each effort to enforce standardization conflicts with the messiness of the complex systems in which they operate. Each effort to enforce conformity requires that more and more aspects of life must in turn also be controlled. The idea of constant refinement through management fads is a common one. This is why many organisations go through states of stability and instability, reacting to the local conditions of the external environment. Often, management fads act as traversals by allowing organisations to shift uneasily between the relaxed control over people once a new fad is implemented, to the times where fads are on the wane and something new is required for more control over the organisation. Lemke (2000) uses this analogy with society as it shifts between modernism and a kind of apocalyptic postmodern state, and he emphasises that meaning making during the times when the two states need traversals to unite them is critical to discourse analysis. If management fads, as traversals, bridge the gap between various states in an organisation, it is clear that insufficient credence is paid to their impacts.

Phase 6 – Emerging uncertainty

The sixth phase is characterised by emerging uncertainty. This uncertainty may be manifested at the level of the fad or within the prevailing common sense

itself. Sometimes uncertainty can also occur when questions start to be asked about how the fad might be evaluated. Such questioning might cause organisations that have adopted the fad to look into other interventions. The social, financial or cultural milieu might also be apt to change as part of the cyclical process that characterise meaning systems, and thus the management fad may seem inadequate in the face of these changes. Management fads, as we have learned, are by definition relatively inflexible, and do not take account of the complex meaning systems around them. Instead, management fads are cast in such a way that they conform to the prevailing common sense, adopting the values, ethics and beliefs of the society. As Watts (2003) sees:

> When solving complex problems in ambiguous environments, individuals compensate for their limited knowledge of the interdependencies between their various tasks and for their uncertainty about the future by exchanging information – knowledge, advice, expertise, and resources – with other problem solvers within the same organisation. (p. 273)

Emerging uncertainty also means that – potentially – the interlinkages between the components in a system are changing or even breaking down. This could concern the changing nature of components, communication between components, the addition of new components, or the entire patterns of connection networking the system with other systems. For example, in organisations, emerging uncertainty caused by changes to the external and internal environment means that the problem solving capabilities may also be affected because current ways of dealing with issues (perhaps through a fad) may no longer be applicable. Changes in the external environment, as Watts (2003) points out, mean the transmission of information within the system itself will encounter problems. Information networks, hierarchies of information (for example, the status of some information) and the control of information during this phase are perhaps at their most vulnerable. In terms of thinking about fads during Phase 6, it could be that the stresses on some aspect of the fad, for example, the structures put in place to handle information in an organisation, become unstable. This instability, where some aspects of the information exchange become redundant, and some overwhelming, would mean that organisations must adapt, or at least recognise the warning signs when uncertainty becomes symptomatic of, and the precursor to, a paradigm shift.

Meanings generated during this time are also burdened by misinformation, outdated information or perhaps information deliberately intended to subvert the current system in the hope of creating something new. This could be particularly relevant in the case of management fads. Once a fad has become diffused in an organisation, the information exchange between certain components of the fad becomes congested, with the result that people short

circuit either the processes prescribed by the fad or the people important for its ongoing success. For example, such short cuts in information exchange serve to create new links in an already overloaded system, resulting in increasing uncertainty because the strategies put in place are ill-equipped to cope with the changes generated. The point at which emerging uncertainty turns into chaos represents one of the bifurcation points in the life of the system. (Recall here the diagram 7.3 – Stable and Unstable States at the Edge of Chaos.) The fact of the emerging uncertain environment also means that there are not just one or two features changing. Emerging uncertainty as it moves toward chaos also means that many factors are developing that serve to render the system so unstable as to generate new meanings and perhaps new networks or relationships between older nodes of the system. This is the point at which the fad becomes officially unworkable, trawling for something new to cope with the uncertainty generated is most likely and where concepts and elements from the stable state migrate to the unstable state because the edge of chaos is not managed. Current structures and hierarchies during this time are also vulnerable, including management, processes and staffing levels. While potential new fads are being canvassed at this time (at least behind the scenes), the resulting uncertainty and inevitable chaos will dictate the rapidity of the abandonment of the current fad and the adoption of a new one.

7.5   Conclusion

I have used the idea of complex meaning systems to characterise management fads in terms of meaning, language and perception to provide an alternative explanation for the phenomenon. Deconstructing the phenomenon of management fads could be pursued via discourse analysis, or an empirical study about their behaviour. However, a theorisation about how we might engage in associating and connecting management fads to dominant meaning systems provides a cogent argument for their emergence, context for their existence and their capacity to thrive before ultimately declining.

I have drawn upon the works of theorists such as Jay Lemke and Paul Cilliers who have made significant contributions to the understanding of complex systems, language and meaning. Their theories provided a foundation to understand the phenomenon of management fads, theorising the phenomenon through a complex systems lens, particularly in relation to language and meaning. Lemke's traversals and Cilliers' connectionist networks provide a basis to begin the theorisation of fads, and I have expanded upon those theories to advance the idea of a complex meaning system.

Chapter 8: Reflections on analysing management fads as complex meaning systems

In this chapter, the conclusion, I will evaluate the results of this analytical experiment, critique the application of complex systems concepts to fads, and discuss how we might apply it to other sociocultural phenomena. Also I have briefly outlined how this might contribute to further research in this area. This chapter will also reflect on the implications of the thesis for the world of practice of managers.

As discussed in previous chapters, a complex systems approach does not adequately address the notion of epistemological, ontological and axiological values present in social behaviour. Blending such themes into a complex systems analysis makes it infinitely more 'complex'. In addition, the inability of complex systems to sufficiently deal with these features of social systems generated the theorisation of 'complex meaning systems'. Thus, this chapter synthesises the ideas and themes from both perspectives, and for completeness offers some value judgements about them. The chapter therefore outlines its contribution the epistemology (and to some degree) the ontology of management knowledge.

As I have outlined in preceding chapters, some writers have used empirical research to examine the uptake and abandonment rates of various fads (Rigby, 2001; Ettorre, 1997; Miller, 2004), others have even applied a broad discourse analysis of particular fads (Huczynski, 1997; Jackson, 2002; and Collins, 2001). Still others (Barabási, 2003; Watts, 2003) have used the new science of networks to model the diffusion of fads. Together, these approaches do offer some explanations for the behaviour of a variety of fashions and fads – for example, how fads emerge, and how they affect organisations – but a complete explanation of management fads as a social phenomenon is not forthcoming from these accounts, unless they are taken together. This final chapter will reflect on the efficacy of the various concepts explored in this thesis to explain the idea of complex meaning systems and apply them to the understanding and experience of management fads.

One of the features of the 'prevailing common sense' is that social phenomena can be seen to be controlled and to conform to certain rules of behaviour. The

prevailing common sense provides categories for such things as behaviour, psychoses, personalities, cultures, ages, gender, and deviants to capture and surveil the essentially subjective nature of the social construction of reality (Berger and Luckmann, 1966). This compartmentalisation enables us to make sense of our world, establish meaning systems around the phenomena described, and helps us to understand what it means to be human. One of the important features of the prevailing common sense is that such classifications are time and context dependent; meaning, reality and truth provide temporal patterns of connection for the material and nonmaterial world that exists around it. Attempts by great (and not so great) thinkers to provide an account of the enigma of the prevailing common sense have been documented for thousands of years, packaged variously in areas bounded by philosophy, sociology and of course religion. Some of these accounts have been provided in this thesis because they are relevant to how a theorisation about meaning systems can be contexualised.

All human systems have a phenomenological aspect, and we can argue that the boundaries between ontologies are socially constructed. In fact, it could be argued that this is a form of emergence in human sense making. We find it difficult, if not impossible, to be objective because we facilitate and indeed construct emerging boundaries from our own experiences and/or the experiences of others. Since meaning must always involve context and cannot exist independently of other meanings, our capacity to retain mental images of material objects and events is a fundamental characteristic of collective social behaviour. Because we can hold mental images and experiences, and construct our own meaning systems around them, we are able to choose between alternatives; our own perceptions, values and behaviour are based on this ability. Collectively, social behaviour consists of classifying these meaning systems so there is general consensus about social rules and norms – the prevailing common sense. Of course, we attempt more precise and formal classification of things that are complex through laws and regulations, establishing institutions and conventions. Meaning systems that draw on social behaviours are collectively debated and interpreted, some becoming entrenched as traditions and norms, others becoming redundant or radical because of emerging factors either in the material (matter and substance) or nonmaterial (form and pattern of organisation) world. In the material world, emergence is a process feature of dissipative structures (matter) and involves multiple feedback loops (form). Translating this to the realm of meaning sees it as the product of the interplay between complex patterns of social behaviour (form), the physical environment (matter) and autopoietic processes involving conscious experience, conceptual thought and metaphysical concepts.

This brief discussion reveals how some of the thinking behind the idea of complex meaning systems evolved. It is not enough to simply examine the current physical environment when analysing social phenomena. For example, this would equate to simply exploring one element of an organisation, say supply chains, and then making claims about how the future might influence the organisation based on that analysis alone. Thinking about organisations as involving such concepts as networked complex systems of material and nonmaterial patterns, rules, values, beliefs, cultural relationships and processes means that any interventions must take into account a whole range of factors, or else build in redundancy. Complex meaning systems have the potential to provide such a framework for analysis for a range of social phenomena because they necessarily include a multitude of factors from both the material and nonmaterial realms. Moreover, describing complex meaning systems as a process means the approach can never be condemned as reductionist, one of the most common indictments of some complex systems analyses.

Applying such theory to a particular social phenomenon like management fads means that we can ensure a dimension of flexibility is built into the analysis because meaning systems are also 'constructed' from the position of the observer. This potentially creates a binary function for the framework. On the one hand, flexibility means multiple scales and inextricably connected components could come together as part of an analysis and offer unexpected or surprising findings. However, on the other hand, such a myriad of factors may render the analysis unwieldy because of the sheer volume and complexity of elements from material and nonmaterial dimensions. Intrinsic binary functions such as constructive or destructive creativity, right or wrong, good or bad, and so on become a feature of sense making. The penchant to simplify, categorize and seek to refine (through processes of socialization and enculturation) the world around them is an intrinsic part of what it means to be human – creating individualised complex meaning systems to make sense of our world. This also means that every complex meaning system is viewed differently, depending upon the perspective of the observer, and the timescale involved. Thus, the realisation that human agency is an integral part of meaning-making at various levels is one of the key elements of the idea of complex meaning systems. As Lemke (1997) points out, social theories about discourse should point the way to a dynamic, critical, unitary social theory. He affirms that most theories of discourse, important though they are, are mainly linguistic and psychological, paying scant attention to the prevailing common sense (Lemke, 1995, p. 21).

Part 1 of this thesis concluded that many sociocultural phenomena can be viewed as systems of interpretation and constructions of reality. Management

fads are also systems of meaning and interpretation and, in order to survive, must find ways to stabilise their environments to adapt to the changing and emerging world around them. A central concern of sociocultural theories (including some management theories) is that of understanding how people construct meaning and reality, and exploring how that enacted reality provides a context for action. The notion that our prevailing common sense is legitimated by "ascribing cognitive validity to objectivated meanings" is one that traverses an enormous range of literature (Berger and Luckmann, 1976, p. 111). Further, just as the prevailing common sense carries with it historical context, so too does Berger and Luckmann's idea of legitimation. Looking at management fads from this perspective should be no different from examining other sociocultural phenomena through rationalist models, such as behaviourism or cognitivism. It is also relevant that the scope of Berger and Luckmann's (1976) fourth level legitimation phase (incipient, theoretical and explicit being the first three) looks at whole-system concepts, the universe, or "matrix of all socially objectivated and subjectively real meanings, the entire historic society and the entire biography of the individual are seen as events taking place within this universe" (Berger and Luckmann, 1976, p. 114).

At the level of the individual, however, we need to be concerned about how these objectivated and subjectivated realities come together to construct the prevailing common sense. In other words, why do we believe what we do? How do individual meaning systems collectively 'decide' by consensus the prevailing common sense? Meaning making is thus a socially-constructed enterprise. How does all this translate into exactly what we do? Finally, how might organisations react to the latest management fads, taking from them the most salient components and blending them with elements from the prevailing common sense to assist in managing change? Again, Berger and Luckmann (1976, p. 13) provide insights:

> … the sociology of knowledge must first of all concern itself with what people "know" as "reality" in their everyday, non- or pre-theoretical lives. In other words, common-sense "knowledge" rather than "ideas" must be the central focus for the sociology of knowledge. It is precisely this "knowledge" that constitutes the fabric of meanings without which no society could exist.

The prevailing common sense is not a state, but a dynamic process where there are just as many factors which may be excluded from discussion as there are factors included in models for explanation. What is omitted can be just as significant as what is included in the discussion. For example, in contemporary western society, faith or belief is considered less worthwhile than knowledge, and is not as valued as it is in other sociocultural systems. What sets knowledge apart from belief, and is there a difference? What types of knowledge are

valued by the prevailing common sense? Questioning the sources of information reveals a need for clarification of the defining conditions of knowledge (Moser et al., 1998, p. 2). This epistemological reality must begin at first principles and ask what knowledge is valued by its sociocultural system, and how might we go about this analysis. We have already discussed that knowledge and meaning systems serve to sustain and promote the prevailing common sense in ways that legitimise and naturalize the dominant groups in society. So too we have discussed the connection between management fads and, for example, the need to address uncertainty in organisations. This very important feature of all management fads deals with the need of humans for certainty, control, predictability and routine (through managed intervention). Thus, management fads fill an important need for organisations in the defence against a shifting and dynamic external environment. But why is it that they have come to form part of the prevailing common sense to such an extent that they are now an indispensable part of the corporate world? These are the types of questions not addressed in, for example, the new science of networks. The science of networks treats such phenomena as an end state, rather than a dynamic process. Moreover, modelling networks only provides a snapshot of the issue in question and is context and time-dependent.

This thesis is an attempt to apply complex systems to the problem of meaning. The value of analytical engagement, rather than an empirical approach, is that secondary sources have already traversed much of the territory concerning complex systems approaches, as has critical literature about management fads. The void that exists in theoretical analysis concerns the realm between complex material systems (the physical environment), complex nonmaterial systems (epistemological, ontological and axiological themes) and the processes of autopoietic feedback. The dimension of meaning systems is that realm.

However, as we turn to complex systems as a tool for analysis, we do find that some concepts underpinning the theory are not that well suited to examining social phenomena for a number of reasons:

1. Complex systems theory, although it offers alternative explanations about a whole range of things, including social phenomena, also has limitations. This is primarily because the mathematics and modelling used in such analyses become as complex as the system itself. This has caused some theorists (Cilliers, 1998; Stacey et al, 2000; Richardson, 2005) to question the value of such models and simulations, since we may not be any wiser about the behaviour of the phenomenon even with astounding levels of information about its composition and so forth.

2. Complexity is essentially a philosophical subject and, arguably, not open to reduction. It points the way toward areas of investigation by other disciplines. But as soon as the attempt is made to formalise the subject and its components, it is negated through timescales or contexts which are forever dynamical. Thus, material (and non-material) entities are infinitely investigable – both in the direction of the atomic and sub-atomic and in the other direction equally (Lemke, 1997).

3. In addition, complexity defies definition beyond 'that which is not capable of mensuration'; once one can put numbers on it the subject is merely complicated (even if hyper-complicated). This is the case with empirical approaches where measurement is relied upon.

4. Complexity must and does always involve the position of the observer, as Maturana and Varela pointed out more than 40 years ago: "anything said is said by an observer" and no observer can utter a single sentence of description without it being in theory and in practice "mixed with our own thoughts and worldviews" (Maturana and Varela, 1980, pp. 8-10). We may say that our perspectives are objective, but it is through individual meaning systems that the true self is morally and ethically established. In other words, observations about anything cannot be made without reference to the self. Therefore, subjectivity cannot be avoided. Subjectivity naturally involves a social construction of reality (Berger & Luckmann, 1976).

As previously stated, a complex systems approach, or for that matter, a network approach, does not adequately address the notion of epistemological, ontological and axiological values present in social behaviour. Blending such themes into a complex systems analysis makes it infinitely more 'complex'. The inability of complex systems to sufficiently deal with these features of social systems prompted the theorisation of 'complex meaning systems'. The idea of complex meaning systems incorporates and embraces the position of the observer, thereby accepting a level of subjectivity and such notions as belief and values. Meanings about why rather than what become the focus of the analysis; the pattern and form prevailing over matter and substance. The idea of meaning systems thus offers a way of describing and fusing diverse perspectives that have become so institutionalised that even the language with which to interrogate has become obfuscated, and in some cases unrecognisable.

Thus, a complex adaptive system, while an abstraction, is also a real pattern. Complex systems theory sees the patterns of connection between such abstractions unlike any other contemporary theory. Even the science of networks does not address the notion of patterns of connection to the same

degree as complex systems theory. In the case of management fads, we could engage certain individual symbolic universes (Berger and Luckmann, 1976) to make sense of what we experience. These symbolic universes or universes of inquiry serve to draw upon what we know, what we see as real, and to decode how we experience it. Universes of inquiry as meaning systems are complex systems. But rather than physical systems, as in living systems, they are 'swirling pools' of thought, action, intent, knowledge, and experience. Thus, they can also be thought of as a complex adaptive system, with all the features of such systems. The idea of complex meaning systems is generated from the nexus between complex systems and symbolic universes. Therefore the way we see and experience management fads is so deeply entrenched in our understanding of the symbolic representation and abstraction of signs, that it is impossible to separate what counts as the entity (management fads) from the experience of it. In other words, like the laws of gravity we can not conceive of a business landscape without management fads. A complex systems view of this phenomenon does offer an alternative perspective: we can be made aware of the connections to other important elements; we can establish patterns that may assist in our understanding by reflecting and drawing upon these relationships. We will also be cognisant of what we understand and experience as only relevant at the time - in the same way that the behaviour of a small world network can only be captured and modelled in the moment. But these may be the major limitations of this approach. The inherent complexity may indeed be too unmanageable for real-world application.

Hypothesising the idea of complex meaning systems is just the beginning. Methodologies based on the approach would require significant further research. The research thus far is intended only to theorise an approach, a way forward, that offers some explanation about the nexus between complex material systems, nonmaterial systems and the processes that unite them in terms of meaning. Nevertheless, further research would require engagement of small world networks, perhaps modelling or use of such things as neural networks, and strategic modelling for future states. Although I have not used an empirical approach for this thesis, further research would necessitate this direction. Real-world application of the complex meaning systems approach would require tools for evaluation, tools for analysis and tools for prediction.

The model of complex meaning systems proposed in this thesis is conceptual, in that many elements comprise each of the phases upon many levels. If we were to apply this in a practical sense, the model could be used as an outline, a framework to incorporate strategies to move from one phase to the next. So, the diagram presented in earlier chapters (Figure 8.1) could be adapted to

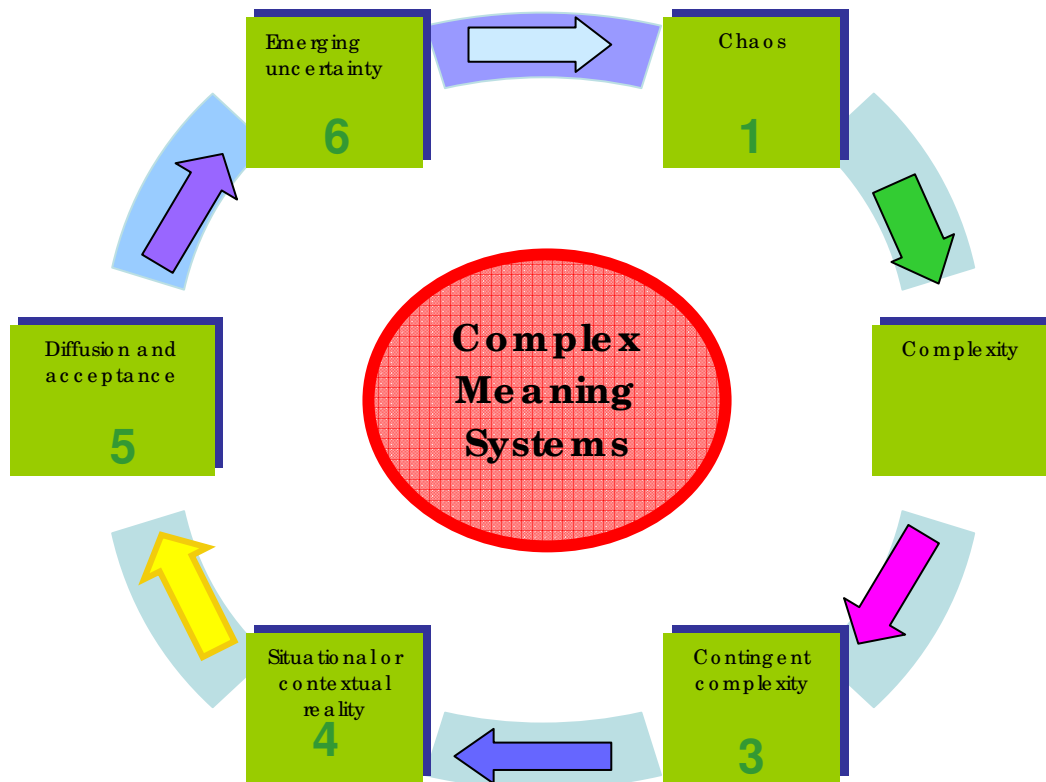more accurately represent how meaning systems are connected and operate in a dynamic way (Figure 8.2):

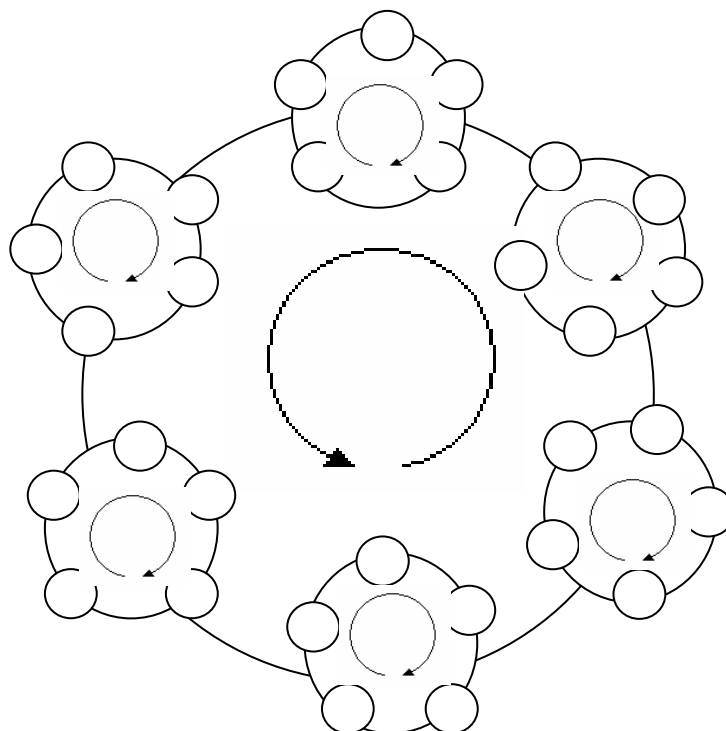**Figure 8.1 – Complex Meaning Systems**

Figure 8.2 – Complex Meaning Systems – Another Layer

In this way, clusters of information assemble around the various phases of the development of a meaning system. The smaller nodes could represent strategies; equally, they could represent ideas that are consistent with other meaning systems at the same phase. Because it is purely representational, linkages between each of the nodes within the system is assumed.

To sum up, applying complex meaning systems to a social phenomenon like management fads is like applying complex systems to the behaviour of children, or the economy, or history or religion, or cultural traditions. Although complex systems theory is increasingly being applied in the social sciences, the findings or theorems are not made any simpler by the discourse. One of the major drivers of complexity theory has been the widespread availability of artificial intelligence methods, such as neural networks and genetic algorithms. These techniques have enabled researchers to simulate worlds with multiple intelligent and idiosyncratic agents. Agents are idiosyncratic because they learn from their own localized experiences. Each agent thus evolves, exists and expires as a unique individual entity, potentially affecting the entire network of localised and remote factors. Complex systems theorists get excited when this diversity creates aggregate behaviour that cannot be explained when agents are treated as homogenous entities. This provides another, as yet untapped dimension to explore: the patterns (meaning) that connect the components (knowledge and ideas) themselves.

The complexity paradigm is inherently difficult for humans to grasp. Thinking about complex systems is much like thinking about six dimensional space: no matter hard we try, we simply do not have the right cognitive machinery to imagine such things. We are bounded by the limitations of our brains to creatively employ the relatively simple models we can imagine as rough metaphors and analogies for the inherently ungraspable complexity that surrounds us. This of course is the territory that complexity theory writers attempt to grapple with as they promote their prescriptions for managing uncertainty and embracing chaos. Our native thinking style defaults to 'billiard-ball' causality and simple, linear, reductionist explanations. Newton's clockwork universe is comforting and comfortable: it makes intuitive sense; it doesn't make our brains hurt trying to think about it. Yet we are constructed of 'patterns'. We are patterns, we enact patterns, we think in terms of patterns and we thrive on patterns. And we correlate patterns with patterns to determine second and further order patterns within patterns. Patterns mean connection not linear reduction. One of the issues we are unavoidably faced with is: which tier of patterns can we use as a frame of reference? This thesis has proposed the idea

that complex meaning systems offer such a model for analysis. A key reason for this is that the idea of meaning offers connectedness to many other elements of our 'humanness'; for a concept to be meaningful depends on our experience, and the relationship to the ideas and knowledge of our sociocultural system. Although there is a long tradition that has sought to establish a scientific grounding for the social sciences that would make it every bit as quantitative and deterministic as the natural sciences, instead meaning systems factor in the position of the observer as part of the analysis.

Contemporary thinking has inherited this tradition and sees that despite the capacity for much to be universal in the behaviour of social systems, some things remain inexplicable and unpredictable. Some of these social phenomena appear at first to be unconnected – such as stock market crashes, property booms, globalisation trends, water quality and the explosion of management fads – because universality does not often care for the detail. This is where the idea of complex meaning systems offers some relief from both the over rationalising of social theories and the complicated modelling of complex systems. The position of the observer as seen through epistemological, ontological and axiological lenses must colour the perspectives of everything we understand and believe about our world and our experience of it. Complex meaning systems also emphasise the importance of such things as networks and connectivity. Do the networks around us merely provide resources or do they affect our thinking in a deeper way? To what extent, and in what sense, can we endorse the social construction of reality (Berger and Luckmann, 1976)? For example, where do informal groups, cliques, fads, rumours, organisational myths, riots, social movements, and new paradigms come from, and why do they tend to appear suddenly? Understanding the behaviour of such social phenomena benefits from an approach that is not overly deterministic. Management fads as a social phenomenon can be theorised both through traditional social theories, and also understood as a complex meaning system.

Finally, the question remains whether complexity theory and the idea of complex meaning systems is in the end just a sophisticated form of reductionism. Complexity theory starts from the assumption that much of the observed complexity in the world can be explained by relatively simple interactions among components of the system of interest. There is a reluctance to embrace radical holism, that is, to maintain that the whole can only be understood in its totality and that all interactions are important. No doubt the confirmatory agenda of complexity theory will continue to expand. As knowledge of complexity increases, so will the opportunities to use that knowledge to predict or control systems rather than simply seeking to understand their behaviour.

Ironically, it was the added complexity of social systems that spurred the development of post-positivist methods, such as second-order cybernetics and soft systems methodology, in systems theory. The science of networks too, offers significant potential in the area of social systems mapping. However, this theory does not deal very well with the question of meaning, in particular ontological realities, because of its empirical focus.

Thus, whilst complexity theory maintains a strongly positivistic stance, there is some evidence that a constructivist awareness may be just starting to emerge. One of the strengths of agent-based modelling is its ability to model heterogeneous behaviour among agents. It is conceivable that a model could be developed to allow agents to have different perceptions of an underlying ontological reality. These differences in perception would lead to divergent learning experiences and an inevitable variation in preferences and actions among agents. Agent based methods may thus go some way towards operationalising the constructivist worldview. The idea of complex meaning systems fits with this worldview however, and potentially represents another, broader, perspective of the phenomenon of management fads. Applying the idea in real terms, though, would require the phases outlined in previous chapters to be identified. This could take the form of an analysis presented either at the time of uptake of a management intervention or at the time of its review. The main strength of this approach, of course, is the ability to see the big picture issues, the patterns of connectedness, and issues that may not be as prominent in the eyes of some, and even unpopular.

I am conscious that this account of attempts to apply ideas from complexity theory to management practice has been broadly critical – critical of claims for the authoritative status of what would be better presented as stimulating metaphors. This is especially so since complex systems theory is a critical theoretical discipline in this thesis. The combination of elitism, sectarianism and evangelism in the complex systems community and the expectation about what to expect of management interventions does place the application of the systems message in a rather precarious position. Is such application itself a management fad? Does it offer some insights that other approaches do not? These types of question could have been left implicit, but in light of the dependence on complex systems in other parts of this thesis, it is important to come to a position and articulate whether the idea of complex meaning systems as they apply to management fads has been successful and whether it might prove the way forward to analyse other social phenomena.

The lessons from complexity theory are not just about clever discourse, although it is used by many in this way. There are important insights offered by a complex

systems application in comparison to other theories because it offers, for example, more practical ways of thinking about future states. Although accurate prediction is impossible (despite what some complex systems theorists caution against), forecasting future potentialities is very much part of a systems approach – for example Stuart Kauffman's (1993, 1995) idea of 'fitness landscapes'. (However, the Kantian 'possibilities of experience' represents a similar notion.) Rejection of wholesale reductionism is another lesson; however, again this should not be taken literally. There are some very important micro-level matters that should be investigated, and not looking at components in a system is just as dangerous as an over-reliance. The language of complex systems offers innovation and creativity, but caution should be exercised in taking these concepts literally. The behaviour of social systems, meaning systems, or indeed management fads cannot really perform like a gas or a living organism. Therefore, the lessons from complex systems should be taken at the metaphoric level rather than the literal one. The reward for engaging complex meaning systems is that the prevailing common sense forms the basis for ontological, epistemological and axiological frameworks that embody this experience, providing context-rich connectivity, and opening the field of endeavour to a wealth of untapped wisdom.

The idea of complex meaning systems does offer a dynamic approach to interrogating the phenomenon of management fads. By approaching the phenomenon of fads as a dynamical six-phase process, it is possible to gain a better understanding of the emergence, growth and decline phases, even for particular fads. However, where the model might become unwieldy is in its translation to organisations as a tool. Presenting a tool for management to address management fad issues is an intellectual paradox and if the underpinning arguments are not elucidated in ways that draw upon the collective wisdom of the organisation, then it could run the risk of being criticised for the very thing it critiques. Therefore, any practical application of complex meaning systems must foreshadow that the idea is not to be presented as a management tool, but as a technique or way of thinking that interprets or rather re-interprets current ways of doing business in an organisation using the collective wisdom of the organisation.

I have *applied* the idea of complex meaning systems only to management fads. Applying the idea to other meaning systems would engage the same methodology, and again view the issue or social phenomena as a dynamic process, working through the phases of chaos, complexity, contingent complexity, situational or contextual reality, diffusion and acceptance, and emerging uncertainty. If developed as a tool to present for organisations, a

thorough process mapping exercise would be required, outlining, for example, a series of questions to be answered and tasks to be completed for an analysis of each phase. These tasks would focus on relational issues, networks of information, and qualitative assessments rather than endless checklists of data to be measured and calculated. Perhaps one of the most enduring features of the idea of complex meaning systems is that it offers a way to achieve networked, connected thinking and can be designed to target all levels of an organisation. There is no dispute that managing organisations has become a very complex operation in the last twenty years; uncertainty has become increasingly unpleasant for society, as the differences between knowledge, reality and truth become ever more blurred. Being able to view an organisation through networks of meaning, rather than networks of functional linear tasks, does provide another layer of sophistication for an organisation to incorporate past achievements as well as failures and more truthfully reflect on where they wish the future to take them. The idea of complex meaning systems does not offer a prescription for predictability or stability or certainty, and this alone may mean that its real-world applicability becomes obfuscated as it competes for credibility against management fads that do make such claims. In the end it may be that complex meaning systems cannot be successfully applied as a management or social analysis tool. Rather its strengths may lie in expanding the epistemological, ontological and axiological terrain surrounding the phenomena so that a more expansive and integrative analysis is possible as the organisation or issue or situation prepares to meet an uncertain future.

The ability to critically evaluate management ideas is one of the most important skills of the contemporary manager. Blindly accepting the claims of management consultants without first understanding how they will affect an organisation is a common mistake of many managers if the research into take-up and abandonment rates of management fads, not to mention the increasing number of change management consultants, is anything to go by. "Critical thinking is reasonable reflective thinking that is focused on deciding what to believe or do" (Ennis, 1987, p. 10). Contemporary managers also need the skills to formulate their own hypothesis, come up with alternative ways of viewing problems, questions, possible solutions and plans for investigating innovative or more creative solutions. Helping managers be more critical by introducing more reflective processes in their decision making can be assisted by following the 6-phase model of complex meaning systems. For example, it is posited that any idea whether it be an intervention or a practical policy solution can be 'tested' against the model because it has the potential to organise the issues, building in such things as variation, adaptation, emergence, networks

and redundancy. As with teaching critical thinking skills, guiding managers towards better decision-making frameworks is something not easily grasped, we know, for example, all people think, and all managers manage. The essence of thinking like a manager is learning how to be critical and engaging frameworks to better understanding how meanings can be interpreted.

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Appendix A – Complex Systems Theory – Foundational Theory

APPENDIX A

Systems Inquiry: Basic Concepts and Foundational Research

1.0   Introduction

The contemporary and more scientific version of systems theory emerged about sixty years ago after Ludwig von Bertalanffy published *General Systems Theory* in 1968. Systems theory is based on the idea that nothing exists without reference to something else. It is this referential and reflexive nature of connectedness, relationship and linkage that is essential to understanding general systems theory. Once that general premise is accepted, the diverse nature of the organising principles behind the theory can be further explored. This exploration can pursue themes from a myriad of disciplines from mathematics, biology, quantum physics, chemistry, economics and even philosophy.

However scholars who apply systems theory are keen to point out that many terms from the suite of systems theories are not interchangeable. Also, that concepts from systems thinking have their own discipline, their own mathematics and discourse and their own very different application methodologies, for example 'complex systems' and 'complex adaptive systems' mean different things to those involved in their modelling. To provide a comprehensive analysis of these concepts is the subject of another thesis. To avoid drawing criticism for blending these concepts and providing a most superficial treatment of these theories requires a defence. The decades of research into agent based modelling of complex systems by those such as Stuart Kauffman and Stephen Wolfram cannot be compared to applying their findings to other fields of endeavour. Thus, the justification is made that this is not a scientific paper, therefore could never do justice to the extraordinary depth of research involved in these disciplines. This appendix is simply provided as a further reference point for systems thinking concepts raised throughout the thesis. Thus it draws upon secondary research in these areas and applies the themes loosely and interpretively.

The concepts to be outlined in this appendix include (but are not limited to): systems theory, complex systems theory, chaos theory, catastrophe theory, networks, pattern, equilibrium, entropy, linear and nonlinear, bifurcation, autopoiesis, fractals, neural networks, cellular automata, complexity mathematics, simulation, system dynamics, self-organisation, Gaia

Hypothesis, observer and others of peripheral value. In Part I, I have provided more discussion of the terms relevant to this thesis. Part II contains many terms related to complex systems theories and are included simply because they are contextual and/or referred to by others. Part III contains further references for online research.

1.1   Systems Theory

Sometimes it is easier to conceive of a systems approach to something, by thinking about what it is not. The theoretical opposite of understanding something in terms of systems is to analyse it by reducing it down to the most basic elements of its composition. This is called reductionism and its rise to prominence in both science and the humanities, largely through philosophy, is attributed to René Descartes. Rather than reducing an entity (e.g. the human body) to the properties of its parts or elements (organs and cells), systems theory focuses on the arrangement of and relations between the parts which connect them into a whole (life). The whole system is also open to, and interacts with its environments acquiring qualitatively new properties through emergence, resulting in its continual evolution. Another basic tenet of systems theory is the way that the components of a system interact with each other is as important as the components themselves. For example, dissecting an ant will never allow us to understand what goes on in an ant colony. There are of course many examples such as this.

A system can be simple or it can be complex, which is the key reason complexity theory mathematicians and scientists object to their discipline being reduced to systems alone. A system can be defined as an entity which maintains its existence through the mutual interaction of its parts.

The emphasis is on "mutual interaction," in that something is occurring between the parts, over time, which maintains the system.
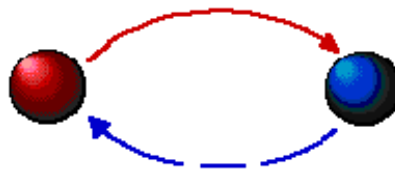
This definition of a system implies something beyond cause and effect, because it also involves feedback. Rather than simply A affects B, there is an implication that B also affects A, and this in turn may (over time) cause both to morph into something other than A or B. This is called emergence, but there are also emergent properties resulting from the exchange. Examples

of systems are particle, atom, molecule, cell, organ, person, community, state, nation, world, solar system, galaxy, and universe, in what is also referred to as a hierarchy of complexity. Some believe that there is only one system, "The Universe," and all other systems are really just sub-systems of this larger system. Often referred to as the Gaia Hypothesis, this will be discussed further in 1.7 below. The major issue involving any analysis of a system is where to draw boundaries, which depends on the position of the observer.

The definition of "system" is also one of the great philosophical issues to address. There are dozens of definitions reflecting a wide range of philosophical perspectives from a system being a set of objects together with relationships between the objects to being defined in terms of the perceptions and distinctions drawn by the observer. Heylighen (2000) defines system theory as "the transdisciplinary study of the abstract organization of phenomena, independent of their substance, type, or spatial or temporal scale of existence. It investigates both the principles common to all complex entities, and the (usually mathematical) models which can be used to describe them."

The notion of organising relations is critical in systems theory because one of the original scientific concepts is the idea that all matter is formed out of the same building blocks. The idea that every physical entity is made of atoms and particles, although not new, recognises it must be laws that govern the physical form rather than what comprises it. The universality of constituents complements the universality of mechanical laws (classical or quantum) that govern their motion.

Systems theory or as it is sometimes referred to general systems theory, itself comprises many components. The concepts from systems theory are applied to fields from biology, engineering, computing, ecology, management, psychotherapy, communication, economics and sociology. It maybe useful at this point to compare the differences in a systems theory methodology from other analytic approaches to research. Heylighen (2000) provides the following comparison of both perspectives.

Analytic Approach	Systemic Approach
• isolates, then concentrates on the elements	• unifies and concentrates on the interaction between elements
• studies the nature of interaction	• studies the effects of interactions

Analytic Approach	Systemic Approach
• emphasizes the precision of details	• emphasizes global perception
• modifies one variable at a time	• modifies groups of variables simultaneously
• remains independent of duration of time; the phenomena considered are reversible.	• integrates duration of time and irreversibility
• validates facts by means of experimental proof within the body of a theory	• validates facts through comparison of the behavior of the model with reality
• uses precise and detailed models that are less useful in actual operation (example: econometric models)	• uses models that are insufficiently rigorous to be used as bases of knowledge but are useful in decision and action
• has an efficient approach when interactions are linear and weak	• has an efficient approach when interactions are nonlinear and strong
• leads to discipline-oriented (juxtadisciplinary) education	• leads to multidisciplinary education
• leads to action programmed in detail	• leads to action through objectives
• possesses knowledge of details poorly defined goals	• possesses knowledge of goals, fuzzy details

Models of systems and their simulation will be discussed in 1.XX below, but various attempts have been made to map this terrain and represent it visually. Marshall Clemens on the NESCI website provides a number of graphics to illustrate his ideas:

Systems ....and their....... Representation
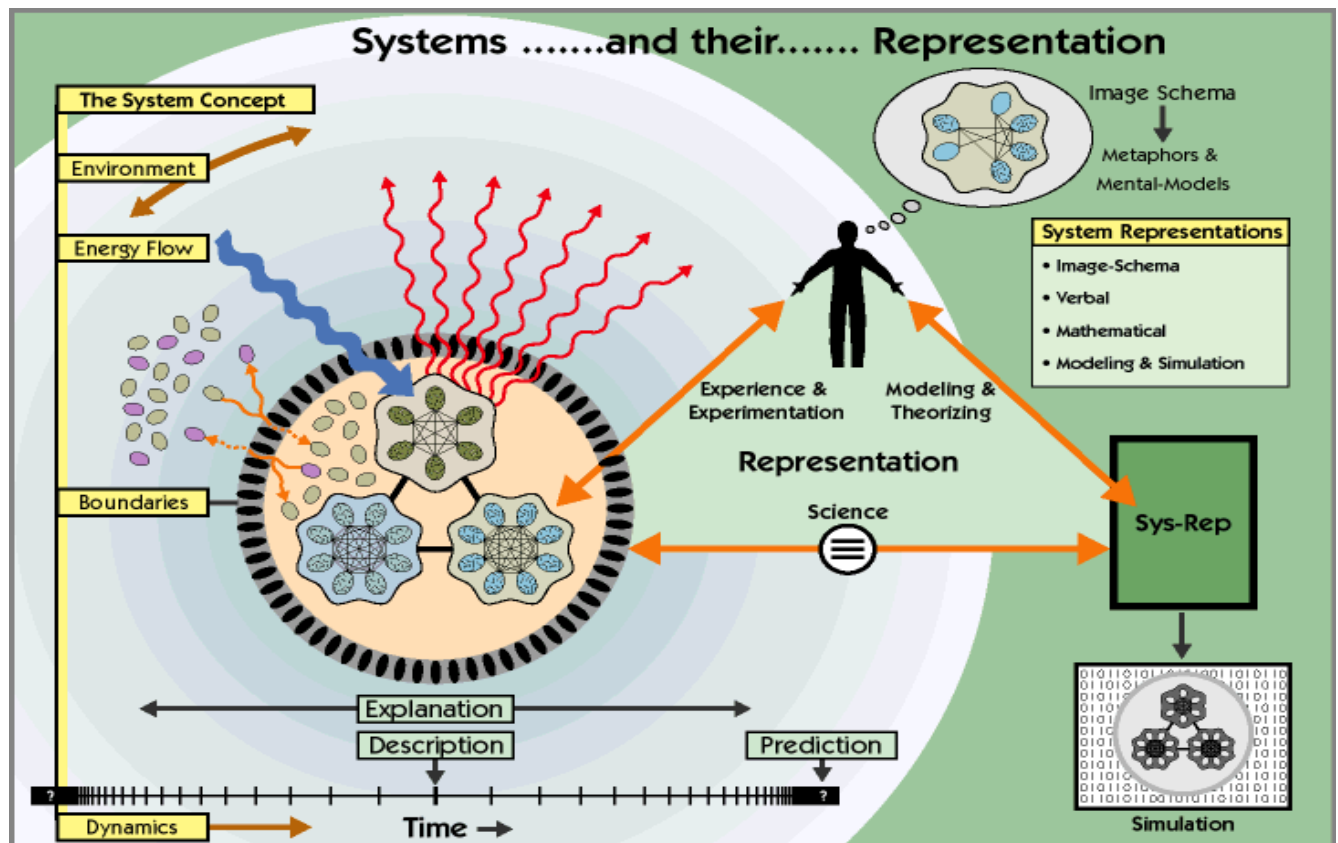
1.2   Complex Systems Theory

Many phenomena can be considered to be complex systems, and their study (complexity science) is highly interdisciplinary. Writers who apply and theorise about complex systems theory most always start with some kind of protracted definition of what is complex, what is complicated, what is simple and why this matters. The Oxford Dictionary defines something as "complex" if it is "made of (usually several) closely connected parts". Here we find the basic duality between parts which are at the same time distinct and connected. I have aggregated some of the more concise and relevant definitions as follows:

1. Complexity theory – or to be more precise, the science of complexity – is the study of emergent order in what are otherwise very disorderly systems."
   (McElroy, 2004, p. 3)

2. "Complex systems theory is ... a collection of ideas that have in common the notion that within dynamic patterns there may be underlying simplicity that can, in part, be discovered through the use of large quantities of computer power and through analytic, logical and conceptual developments."
   (Lissack, 2000, p. 112)

3. "There is no commonly accepted definition of complexity, but there are characteristics of the phenomenon on which most complexity theorists... agree:

    a. complexly structured, non-additive behaviour emerges out of interactive networks, that is, interactive actors unite in an ordered state of sorts, and the behaviour of the resulting whole is more than the sum of the individual behaviours...(where) networks of particles or people, with complex chains of interaction, allow large systems to correlate, or self-order...

    b. complex systems exhibit nonlinear behaviour, or behaviour that is unpredictability related to input...

    c. complex behaviour is on the border between predictability and nonpredictability – hence complex dynamics are sometimes referred to as edge-f-chaos behaviour. Complex systems are somewhat more stable and less active than are the dynamics of chaotic systems, such as weather patterns, stock markets or seasonal fluctuations in the size of insect populations. Complex dynamics cannot be analysed in the same manner as one would analyse the predictable motion of a pendulum... (thus) complex systems possess characteristics of both stable and chaotic systems...

    d. complex systems are robust, or fit. They resist perturbation or invasion by other systems. Complex systems are characterised by a variety of coupling patterns..."

   (Marion, R. & Bacon, J., 2000, pp. 75-76)

4. "Complexity theory can be conceptualised as a collection of new anti-mechanistic metaphors stressing process and *emergence*; it can also be conceptualised as the modelling via (mathematical) computational experiments of how events self-organise."

   (Letiche, 2000, p. 1)

5. "A system is complex if we can describe it in a variety of different ways, each of which corresponds to a distinct subsystem. Complexity then ceases to be an intrinsic property of a system, but it is rather a function of the number of ways in which we can interact with the system and the number of separate descriptions required to describe these interactions. Therefore, a system is simple to the extent that a single description suffices to account for our interactions with the system; it is complex to the extent that this fails to be true."

   (Rosen, R. (1978), cited in Mikulecky, D., 1995, p. 4)

6. "A system is complex to the extent that we have more than one distinct way of interacting with it."

   (Mikulecky, D., 1995, p. 7)

7. A complex system is a system for which it is difficult, if not impossible to restrict its description to a limited number of parameters or characterising variables without losing its essential global functional properties.

(Bernard Pavard & Julie Dugdale, GRIC-IRIT, Toulouse, France.)http://www.irit.fr/COSI/training/complexity-tutorial/complexity-tutorial.htm)

8. "A complex system is any system which involves a number of elements, arranged in structure(s) which can exist on many scales. These go through processes of change that are not describable by a single rule nor are reducible to only one level of explanation, these levels often include features whose emergence cannot be predicted from their current specifications. Complex systems theory also includes the study of the interactions of the many parts of the system."

    (http://www.calresco.org/intro.htm#def)

9. "An extremely difficult "I know it when I see it" concept to define, largely because it requires a quantification of what is more of a qualitative measure. Intuitively, complexity is usually greatest in systems whose components are arranged in some intricate difficult-to-understand pattern or, in the case of a dynamical system, when the outcome of some process is difficult to predict from its initial state. In its lowest precisely when a system is either highly regular, with many redundant and/or repeating patterns or when a system is completely disordered. While over 30 measures of complexity have been proposed in the research literature, they all fall into two general classes: (1) Static Complexity -which addresses the question of how an object or system is put together (i.e. only purely structural informational aspects of an object), and is independent of the processes by which information is encoded and decoded; (2) Dynamic Complexity - which addresses the question of how much dynamical or computational effort is required to describe the information content of an object or state of a system. Note that while a system's static complexity certainly influences its dynamical complexity, the two measures are not equivalent. A system may be structurally rather simple (i.e. have a low static complexity), but have a complex dynamical behaviour.

    (Ilachinski, 1996, pp. 188-189)

10. "To understand the behaviour of a complex system we must understand not only the behaviour of the parts but also how they act together to form the behaviour of the whole. It is because we cannot describe the whole without describing each part, and because each part must be described in relation to other parts, that complex systems are difficult to understand. Paul Cilliers' provides the following general characteristics of complex systems:

    a. Complex systems consist of a large number of elements that in themselves can be simple.

    b. The elements interact dynamically by exchanging energy or information. These interactions are rich. Even if specific elements only interact with a few others, the effects of these interactions are propagated throughout the system. The interactions are nonlinear.

    c. There are many direct and indirect feedback loops.

d. Complex systems are open systems – they exchange energy or information with their environment – and operate at conditions far from equilibrium.

e. Complex systems have memory, not located at a specific place, but distributed throughout the system. Any complex system thus has a history, and the history is of cardinal importance to the behaviour of the system.

f. The behaviour of the system is determined by the nature of the interactions, not by what is contained within the components. Since the interactions are rich, dynamic, fed back, and, above, all nonlinear, the behaviour of the system as a whole cannot be predicted from an inspection of its components. The notion of 'emergence' is used to describe this aspect. The presence of emergent properties does not provide an argument against causality, only against deterministic forms of prediction.

g. Complex systems are adaptive. They can (re)organise their internal structure without the intervention of an external agent. Certain systems may display some of these characteristics more prominently than others. These characteristics are not offered as a 'definition' of complexity, but rather as a general, low-level, qualitative 'description'."

(Cilliers, 2000, pp. 23-24)

11. "Complex systems theory is a new and rapidly developing field. Much remains to be done. The ideas and principles that have already been proposed must be studied in a multitude of actual examples. And new principles must be sought.

Complex systems theory cuts across the boundaries between conventional scientific disciplines. It makes use of ideas, methods and examples from many disparate fields. And its results should be widely applicable to a great variety of scientific and engineering problems.

Complex systems theory is now gaining momentum, and is beginning to develop into a scientific discipline in its own right. I suspect that the sociology of this process is crucial to the future vitality and success of the field. Several previous initiatives in the direction of complex systems theory made in the past have failed to develop their potential for largely sociological reasons. One example is cybernetics, in which the detailed mathematical results of control theory came to dominate the field, obscuring the original more general goals. One of the disappointments in complex systems theory so far is that the approaches and content of most of the papers that appear reflect rather closely the training and background of their authors. Only time will ultimately tell the fate of complex systems theory. But as of now the future looks bright. " (Stephen Wolfram, 1988, approx. p.187)

Examples of Complex Systems

- Governments
- Families
- The human body—physiological perspective
- A person—psychosocial perspective
- The brain
- The ecosystem of the world
- Subworld ecosystems: desert, rain forest, ocean
- Weather
- A corporation
- A computer

Examples of Simple Systems

- An oscillator
- A pendulum
- A spinning wheel
- An orbiting planet

Central properties of complex systems

After beginning to describe complex systems, a second step is to identify commonalities. Some of the key characteristics of complex systems are:

1. Large number of interconnecting components.
2. Components are non-deterministic and non-tractable.
3. Interaction-rich relationships between components.
4. Interactions exhibit nonlinear behaviour.
5. Distributed nature of information and representation.
6. Feedback loops cause changes to the system.
7. Exhibit properties of emergence and self-organisation.
8. Operate under far-from-equilibrium conditions.
9. Cannot exclude history (pre-programmed elements exist).

10. Each element in the system is ignorant of the behaviour of the system as a whole, and may only respond to localised information.

Complex systems theory - applications for social research

Michaels (1995, pp 17-21) cites seven fundamentals of complex systems theory that are particularly relevant to social system research and generally at odds with traditional approaches to social interventions.

1. Simple systems demonstrate complex behaviours – Systems evolve from simplicity to greater complexity in response to increased complexity in the environment. Human social systems, as extensions of biological systems evolve along a path of complexity as they are required to process greater amounts of information. There are three levels of behaviour that determine the system's ability to adapt to its environment:

   Level 1: Equilibrium – Systems at equilibrium are controlled by negative feedback loops that dampen the recognition of changes in reality, restraining the organisation's ability to adapt.

   Level 2: Near Equilibrium – Positive feedback loops are causing attempts at change but the negative feedback loops are still restraining the system. Organisation can operate near equilibrium so long as there is little change in the areas described above for the equilibrium organisation. Near equilibrium organisations dampen the impact of change inherently instead of consciously. According to Stacey (1996) an equilibrium structure requires no effort to retain its structure and great effort to change it, whereas a dissipative structure[1] requires great effort to retain its structure and relatively little to change it.

   Level 3: The Edge of Chaos – In organisations operating at far-from-equilibrium conditions, the ultimate "resolution" of chaos is creation of a dissipative structure that occurs in an unpredictable and discrete fashion.

   Far-from equilibrium conditions occur when equilibrium constraints are lessened, removed, or interrupted; boundaries are traversed; the system is challenged in a manner with which previous operational mechanisms, processes, and configurations cannot cope (Goldstein, 1995). In fact, any time a system is in vital responsive contact with other systems or the environment, it can be said to be in a far-from-equilibrium condition. The control parameters (or equilibrium constraints) are: (1) the level and rates of flow of energy or information and (2) the levels of connectivity of agents in the system (Stacey, 1996).

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[1] A *dissipative structure* is a paradox central to Prigogene's vision. It imports energy from (or information) from the environment and produces entropy (waste, randomised energy) which it dissipates into the surrounding environment. Dissipative structures are systems capable of maintaining their identity only by remaining continually open to the flux and flow of their environment. But they also have a structure that takes the form of irregular patterns, capable of renewal through self-organisation as they continue to import energy (or information). Thus, a dissipative structure is a contradiction in terms, it is not just a result, but a system or process that produces order out of disorder.

2.   Complex systems are dynamical and non-linear – they're controlled by inherent structures while producing apparently random and unpredictable outputs. A dynamic system is one in which there is a direct predictable relationship between the inputs into a system and its outputs. A dynamical system is a system for which changes in outcomes appear to bear no relationship to the changes in the system inputs. A system is non-linear when actions generate non-proportional outcomes, in other words when the system is more than the sum of its parts (Prigogene, 1984).

3.   Attractors represent the potential system behaviours in a complex system. There are three types of attractors in complex systems, point attractors, period or limit cycle attractors, and strange attractors. These are described in more detail below:

   -    Point attractors appear for systems that stop changing and reach equilibrium like free-swinging pendulums or vertical growth in a human body. Eventually a pendulum stops swinging and comes to rest at the bottom of its swing. While neither the eventual height of a person nor the time required to reach full height is known in advance, we know eventually growth stops and the "system" reaches equilibrium.

   -    Period or limit cycle attractors develop in systems that repeat their patterns of behaviour over time. The predator-prey relationship in an undisturbed eco-niche represents a limit cycle. The repeated ebb and flow in both predator and prey with synchronous leading and lagging characteristics in their populations is a limit cycle attractor. Limit cycle attractors are characteristics of near equilibrium systems. Both point and limit cycle attractors have single trajectories.

   -    Strange or chaotic attractors represent an infinite number of potential states or trajectories of a system. The future state and location of the trajectory of the system operating under a strange attractor is impossible to predict. No two points are ever the same, nor do the trajectories ever cross. A minute difference in the starting point will result in major differences in the system's overall trajectory as a result of the amplifying feedback loops embedded in the system.

4.   The strange attractor defines the system's potentialities. It forms the boundaries outside of which the system's trajectory will not go. It does not work like a magnet, pulling the system toward some state. Real system "control" is in the hands of its attractors. Attempts to control the behaviour of the system in a way that takes it outside of its attractor regime will build up stress and eventually lead to catastrophes (Guastello, 1995).

5.   Complex systems build on positive feedback. All social systems are part of larger systems, yet are made up of many subsystems, each containing many feedback loops, both positive and negative. Feedback in this context refers tot he output of the system looped back into the system as an input. Feedback is either positive or negative. Negative or damping feedback tends to hold a system within pre-specified boundaries. A thermostatically controlled furnace is an example of a negative feedback loop. Systems have negative feedback loops that maintain the equilibrium of the system. Positive or amplifying feedback loops tend to amplify change in the system's behaviour by building on themselves, much like compounding interest in a bank account. Systems need positive feedback to change. Amplifying feedback iterated many times in a system can become large enough to become dominant over negative balancing loops and cause huge changes in both the behaviour of the system. It is possible for them to fundamentally change the system.

6. Complex systems exhibit sensitive dependence to initial conditions. The presence of amplifying feedback loops can cause "butterfly effects" eg., small changes in starting conditions, iterated many times, causing spiralling effects that have huge impacts on system outcomes. This sensitivity forces a reexamination of causality, which now must be considered multi-level and multi-determinate.

1.3   Complex Adaptive Systems

For those working in the field, there is a difference between complex systems theory and complex adaptive systems. Complex adaptive systems are defined as "macroscopic collections of simple (and typically nonlinearly) interacting units that are endowed with the ability to evolve and adapt to a changing environment." (Bar Yam, 2000, p. 5) These can be illustrated by the following diagram.
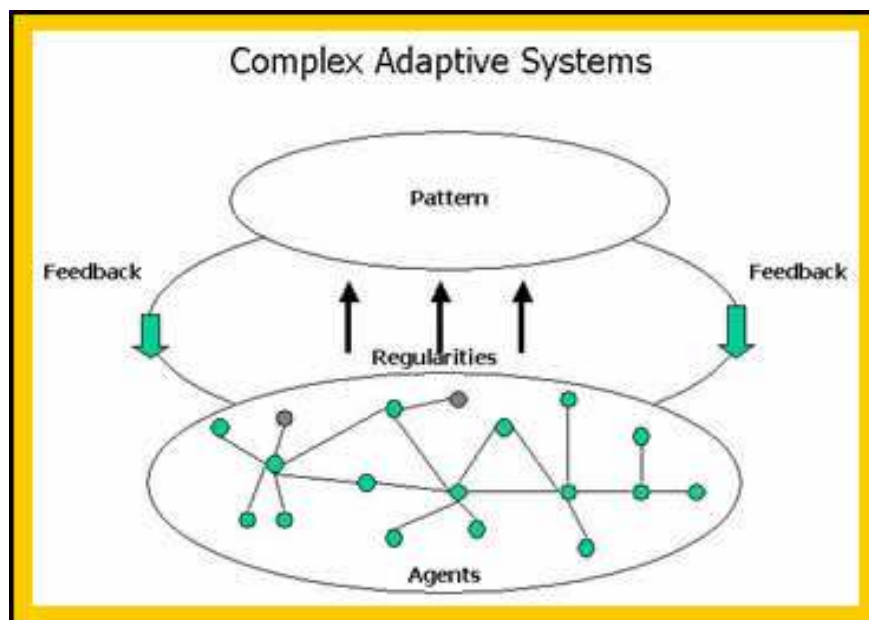
The agents in the system are all the components of that system. For example, the air and water molecules in a weather system, and flora and fauna in an ecosystem. Agents interact and connect with each other in unpredictable and unplanned ways. But from this mass of interactions regularities emerge and start to form a pattern which feeds back to the system and informs the interactions of the agents. For example in an ecosystem if famine starts to deplete one species this results in a greater or lesser food supply for others in the system which affects their behaviour and their numbers. A period of flux occurs in all the populations in the system until a new balance is established. Complex adaptive systems have many properties and the most important are:

1. Emergence
2. Co-evolution
3. Sub optimal
4. Requisite Variety

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5. Connectivity
6. Simple Rules
7. Iteration
8. Self Organising
9. Edge of Chaos
10. Nested Systems
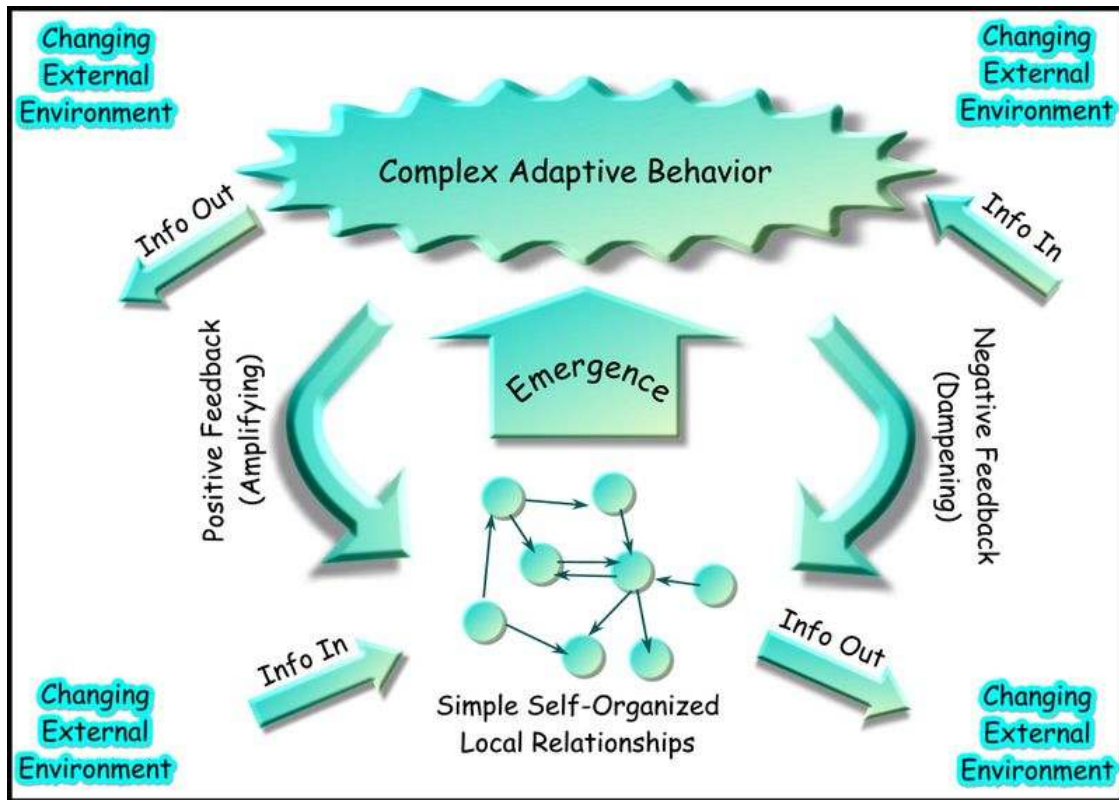
1.4   Self-Organisation

Self-organisation refers to the spontaneous emergence of order in complex systems provided it has the right composition and certain conditions are met (Goldstein, 1988). Self-organization is a process where the organization (constraint, redundancy) of a system spontaneously increases, i.e. without this increase being controlled by the environment or an encompassing or otherwise external system. It has also been defined as a process of evolution where the effect on the environment is minimal. Self organisation can also be understood on the basis of the same variation and natural selection processes as other, environmentally driven processes of evolution. Self-organisation is normally triggered by internal variation processes, which are usually called "fluctuations" or "noise".

Thus, self-organisation can be defined as:

1. The evolution of a system into an organized form in the absence of external pressures.

2. A move from a large region of state space to a persistent smaller one, under the control of the system itself. This smaller region of state space is called an attractor.

3. The introduction of correlations (pattern) over time or space for previously independent variables operating under local rules.

Typical features include (in rough order of generality):

- Absence of external control (autonomy)
- Dynamic operation (time evolution)
- Fluctuations (noise/searches through options)
- Symmetry breaking (loss of freedom/heterogeneity)
- Global order (emergence from local interactions)
- Dissipation (energy usage/far-from-equilibrium)
- Instability (self-reinforcing choices/nonlinearity)
- Multiple equilibria (many possible attractors)
- Criticality (threshold effects/phase changes)
- Redundancy (insensitivity to damage)
- Self-maintenance (repair/reproduction metabolisms)
- Adaptation (functionality/tracking of external variations)
- Complexity (multiple concurrent values or objectives)
- Hierarchies (multiple nested self-organized levels)

"The essence of self-organization is that system structure often appears without explicit pressure or involvement from outside the system. In other words, the constraints on form (i.e. organization) of interest to us are internal to the system, resulting from the interactions among the components and usually independent of the physical nature of those components. The organization can evolve in either time or space, maintain a stable form or show transient phenomena. General resource flows within self-organized systems are expected (dissipation), although not critical to the concept itself." (http://www.calresco.org/sos/calressw.htm)

"The field of self-organization seeks general rules about the growth and evolution of systemic structure, the forms it might take, and finally methods that predict the future organization that will result from changes made to the underlying components. The results are expected to be applicable to all other systems exhibiting similar network characteristics."   (http://www.calresco.org/sos/calressw.htm)

The prerequisites for self-organisation in a complex system are (Prigogine, 1984; Kauffman, 1995; Goldstein, 1995):

- Self-organisation requires two pre-requisite factors to occur, non-linearity and far-from-equilibrium conditions.
- A requisite amount of redundancy and reliability2 - resistance to change.
- The presence of noise – fluctuations or perturbations.
- System containment – semi-permeable boundaries – firm enough to contain the process of self-organisation, yet permeable enough to allow vital exchange with the environment.
- Systemic correlation or coherence – this element refers to the nature of boundaries and coupling within the system.

Glenday Eoyang (1997) offers a much simpler conceptualisation of self-organisation. Only three prerequisites are required; difference, feedback, and system containment. She portrays this simple but powerful explanation using a 2x2 matrix as shown below:

High
Differentiation

Active Feedback	Self-organisation	Reinforcement & Actualisation
No Feedback	Unresolved Conflict	Organisational Rest

A system can only self-organise when there is sufficient difference across boundaries in the system and active feedback across those boundaries. In fact, those differences create the

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2 Reliability here refers to resistance to change. If the system has no resistance to change, it cannot cope the disorganising effect of noise.

boundaries. Those boundaries must be semi-permeable to allow feedback across the boundaries to occur. Without difference, there is no propensity to change. Without feedback, there is no transfer of information or knowledge, resulting in unresolved conflict where there is difference or stasis.

Can things self-organize ?

(From Heylighen, 2004, http://pespmc1.vub.ac.be/Papers/EOLSS-Self-Organiz.pdf)

"Yes, any system that takes a form that is not imposed from outside (by walls, machines or forces) can be said to self-organize. The term is usually employed however in a more restricted sense by excluding physical laws (reductionist explanations), and suggesting that the properties that emerge are not explicable from a purely reductionist viewpoint. Examples include magnetism, crystallization, lasers, Bernard cells, Belouzov-Zhabotinsky and Brusselator reactions, cellular autocatalysis, organism structures, bird & fish flocking, immune system, brain, ecosystems, economies etc. (Heylighen, http://pespmc1.vub.ac.be/Papers/EOLSS-Self-Organiz.pdf)

Further, according to Heylighen:

"The increase in organization can be measured more objective as a decrease of statistical entropy. This is again equivalent to an increase in redundancy, information or constraint: after the self-organization process there is less ambiguity about which state the system is in.

A self-organizing system which also decreases its thermodynamical entropy must necessarily (because of the second law of thermodynamics) export ("dissipate") such entropy to its surroundings, as noted by von Foerster and Prigogine. Prigogine called systems which continuously export entropy in order to maintain their organization dissipative structures.

Self-organization is usually associated with more complex, non-linear phenomena, rather than with the relatively simple processes of structure maintenance of diffusion. All the intricacies (limit cycles, chaos, sensitivity to initial conditions, dissipative structuration) associated with non-linearity can simply be understood through the interplay of positive and negative feedback cycles: some variations tend to reinforce themselves, others tend to reduce themselves. Both types of feedback fuel natural selection: positive feedback because it increases the number of configurations (up to the point where resources become insufficient), negative feedback because it stabilizes configurations. Either of them provides the configuration with a selective advantage over competing configurations. The interaction between them (variations can be reinforced in some directions while being reduced in others) may create intricate and unpredictable patterns (chaos), which can develop very quickly until they reach a stable configuration (attractor). "

(http://pespmc1.vub.ac.be/Papers/EOLSS-Self-Organiz.pdf)

Emergence refers to the appearance of higher-level properties and behaviours of a system that while obviously originating from the collective dynamics of that system's components - are neither to be found in nor are directly deducable from the lower-level properties of that system. Emergent properties are properties of the "whole" that are not possessed by any of the individual parts making up that whole. Individual line of computer code, for example, cannot calculate a spreadsheet; an air molecule is not a tornado; and a neuron is not conscious. Emergent behaviours are typically novel and unanticipated.

(http://www.irit.fr/COSI/glossary/fulllist.php?letter=E)

"The appearance of a property or feature not previously observed as a functional characteristic of the system. Generally, higher level properties are regarded as emergent. An automobile is an emergent property of its interconnected parts. That property disappears if the parts are disassembled and just placed in a heap. There are three aspects involved here.

First is the idea of 'supervenience', this means that the emergent properties will no longer exist if the lower level is removed (i.e. no 'mystically' disjoint properties are involved). Secondly the new properties are not aggregates, i.e. they are not just the predictable results of summing part properties (for example when the mass of a whole is just the mass of all the parts added together). Thirdly there should be causality - thus emergent properties are not epiphenomenal (either illusions or descriptive simplifications only).

This means that the higher level properties should have causal effects on the lower level ones - called 'downward causation', e.g. an amoeba can move, causing all its constituent molecules to change their environmental positions (none of which however are themselves capable of such autonomous trajectories). This implies also that the emergent properties 'canalize' (restrict) the freedom of the parts (by changing the 'fitness landscape', i.e. by imposing boundary conditions or constraints). "

(http://www.calresco.org/sos/calressw.htm)

This important discussion of emergence from Yaneer Bar Yam (2001):

It is impossible to understand complex systems without recognizing that simple atoms must somehow, in large numbers, give rise to complex collective behaviours. How and when this occurs is the simplest and yet the most profound problem that the study of complex systems faces. The problem can be approached first by developing an understanding of the term "emergence." For many, the concept of emergent behaviour means that the behaviour is not captured by the behaviour of the parts. This is a serious misunderstanding. It arises because the collective behaviour is not readily understood from the behaviour of the parts. The collective behaviour is, however, contained in the behaviour of the parts if they are studied in the context in which they are found. To explain this, we discuss examples of emergent properties that illustrate the difference between local emergence—where collective behaviour appears in a small part of the system— and global emergence—where collective behaviour pertains to the system as a whole. It is the latter which is particularly relevant to the study of complex systems.

We can speak about emergence when we consider a collection of elements and the properties of the collective behaviour of these elements. In conventional physics, the main arena for the study of such properties is thermodynamics and statistical mechanics. The easiest thermodynamic system to think about is a gas of particles. Two emergent properties

of a gas are its pressure and temperature. The reason they are emergent is that they do not naturally arise out of the description of an individual particle .We generally describe a particle by specifying its position and velocity. Pressure and temperature become relevant only when we have many particles together. While these are emergent properties, the way they are emergent is very limited .We call them local emergent properties. The pressure and temperature is a local property of the gas.

We can take a very small sample of the gas away from the rest and still define and measure the (same) pressure and temperature. Such properties, called intensive in physics, are local emergent properties. Other examples from physics of locally emergent behaviour are collective modes of excitation such as sound waves, or light propagation in a medium. Phase transitions (e.g. solid to liquid) also represent a collective dynamics that is visible on a macroscopic scale, but can be seen in a microscopic sample as well .

Another example of a local emergent property is the formation of water from atoms of hydrogen and oxygen. The properties of water are not apparent in the properties of gasses of oxygen or hydrogen. Neither does an isolated water molecule reveal most properties of water. However, a microscopic amount of water is sufficient. In the study of complex systems we are particularly interested in global emergent properties. Such properties depend on the entire system. The mathematical treatment of global emergent properties requires some effort. This is one re a s on that emergence is not well appreciated or understood. We will discuss global emergence by summarizing the results of a classic mathematical treatment, and then discuss it in a more general manner that can be readily appreciated and is useful for semi-quantitative analyses.

The classic analysis of global emergent behaviour is that of an associative memory in a simple model of neural networks known as the Hopfield or attractor network. The analogy to a neural network is useful in order to be concrete and relate this model to known concepts. However, this is more generally a model of any system formed from simple elements whose states are correlated. Without such correlations, emergent behaviour is impossible. Yet if all elements are correlated in a simple way, then local emergent behaviour is the outcome. Thus a model must be sufficiently rich in order to capture the phenomenon of global emergent behaviour. One of the important qualities of the attractor network is that it displays global emergence in a particularly elegant manner. The following few paragraphs summarize the operation of the attractor network as an associative memory. The Hopfield network has simple binary elements that are either ON or OFF. The binary elements are an abstraction of the firing or quiescent state of neurons. The elements interact with each other to create correlations in the firing patterns. The interactions represent the role of synapses in a neural network. The network can work as a memory. Given a set o f preselected patterns, it is possible to set the interactions so that these patterns are self-consistent states of the network—the network is stable when it is in these firing patterns. Even if we change some of the neurons, the original pattern will be recovered. This is an associative memory.

Assume for the moment that the pattern of firing represents a sentence, such as "To be or not to be, that is the question. "We can recover the complete sentence by presenting only part of it to the network "To be or not to be, that" might be enough. We could use any part to retrieve the whole, such as, "to be, that is the question." This kind of memory is to be contrasted with a computer memory, which works by assigning an address to each storage location. To access the information stored in a particular location we need to know the address. In the neural network memory, we specify part of what is located there, rather than the analogous address: Hamlet, by William Shakespeare, act 3, scene 1, line 64.

More central to our discussion, however, is that in a computer memory a particular bit of information is stored in a particular switch. By contrast, the network does not have its memory in a neuron. Instead the memory is in the synapses. In the model, there are synapses between each neuron and every other neuron. If we remove a small part of the network and look at its properties, then the number of synapses that a neuron is left with in this small part is only a small fraction of the number of synapses it started with. If there are

more than a few patterns stored, then when we cut out the small part of the network it loses the ability to remember any of the patterns, even the part which would be represented by the neurons contained in this part.

This kind of behaviour characterizes emergent properties. We see that emergent properties cannot be studied by physically taking a system apart and looking at the parts (reductionism). They can, however, be studied by looking at each of the parts in the context of the system as a whole. This is the nature o f emergence and an indication of how it can be studied and understood.

The above discussion reflects the analysis of a relatively simple mathematical model of emergent behaviour. We can, however, provide a more qualitative discussion that serves as a guide for thinking about diverse complex systems. This discussion focuses on the properties of a system when part of it is removed. Our discussion of local emergent properties suggested that taking a small part out of a large system would cause little change in the properties of the small part, or the properties of the large part. On the other hand, when a system has a global emergent property, the behaviour of the small part is different in isolation than when it is part of the larger system.

If we think about the system as a whole, rather than the small part of the system, we can identify the system that has a global emergent property as being formed out of interdependent parts. The term "interdependent" is used here instead of the terms "interconnected" or "interwoven" used in the dictionary definition of "complex" quoted in Section 0.1, because neither of the latter terms pertain directly to the influence one part has on another, which is essential to the properties of a dynamic system. "Interdependent" is also distinct from "interacting," because even strong interactions do not necessarily imply interdependence of behaviour. This is clear from the macroscopic properties of simple solids.

Thus, we can characterize complex systems through the effect of removal of part of the system. There are two natural possibilities. The first is that properties of the part are affected, but the rest is not affected. The second is that properties of the rest are affected by the removal of a part. It is the latter that is most appealing as a model of a truly complex system. Such a system has a collective behaviour that is dependent on the behaviour of all of its parts. This concept becomes more precise when we connect it to a quantitative measure of complexity."

1.6   *Chaos Theory*

Like systems theory, the discovery of chaos in nonlinear dynamics has made an overwhelming impact on many disciplines, including mathematics, mechanics, computer science, biology, ecology, astronomy, engineering, economics, art and of course philosophy. A system is chaotic if its trajectory through state space is sensitively dependent on the initial conditions, that is, if unobservably small causes can produce large effects.

Heylighen provides this discussion on his website: "To explain the origin of chaos theory, we must go back to the concept of linearity. Linearity means basically that effects are proportional to causes. If you hit a ball twice as hard, it will fly away twice as quickly. Another way of expressing this is additivity: the total effect is the sum of the effects of the individual causes. For example, if you are pushing a car that ran out of fuel, and want it to move twice as fast, you might either push twice as hard, or find someone else to help you push. The effect would be the same. In the example of the car, the system is not perfectly linear: when you push twice as hard, the car will not move exactly twice as fast, but only approximately. You would not make a big mistake, though, if you would assume that the

effect is proportional to your effort. Many practical situations are like that: they are not exactly linear, but you can approximate them quite well with a linear function. Linear equations are solved easily, but non-linear ones are in general very hard or impossible to solve. Therefore, until the beginning of this century most non-linear problems in classical mechanics were approximated by linear ones. However, cases started to accumulate where linear functions were clearly not good approximations.

One of the most famous is the three-body problem. Newton's theory of gravitation provides a simple solution to the problem of two mutually attracting bodies, for example the sun and one of its planets. However, as soon as a third body comes into play, for example another planet, the problem becomes mathematically unsolvable. In practice, astronomers work with approximations, where the attraction to the most important body, in this case the sun, is taken as the basis, while the effect of a third body is brought in as a perturbation. Predictions based on this approximation are in practice very reliable. The reason this works is because the gravitation exerted by the planets is tiny compared to the gravitation exerted by the sun. However, nobody can prove that they are absolutely reliable. It is very well possible that the solar system is unstable, and that the gravitational attractions between the different planets may lead one of the planets to suddenly escape into outer space.

We cannot predict whether such catastrophic effects will occur because they depend on undetectable changes in the initial conditions. In the two body problem, if one of the conditions is changed a little, the effect will not be very different. For example, if the moon would be brought a little closer to the Earth, its trajectory would remain basically the same. This is no longer true in the three-body problem. A tiny change in one of the variables, for example the speed of the planet Venus, might result in a totally different outcome, for example the planet Mars crashing into the sun. This is called "sensitive dependence on initial conditions". The effects are extremely sensitive to changes in the conditions that cause them. This is the essence of non-linearity: effects are no longer proportional to causes. Small causes may have large effects. In a way, "sensitive dependence" is nothing more than the rediscovery by scientists of the old wisdom which is captured by the phrase "for want of a horseshoe the kingdom was lost". Processes which are very sensitive to small fluctuations are called chaotic. This is because their trajectories are in general very irregular, so that they give the impression of being random, even though they are driven by deterministic forces.

The meteorologist Lorenz has invented yet another expression, the "butterfly effect". While studying the equations that determine the weather, he noticed that their outcomes are strongly dependent on the initial conditions. The weather is a chaotic system. The tiniest fluctuations in air pressure in one part of the globe may have the most spectacular effects in another part. Thus, a butterfly flapping its wings somewhere in Chicago may cause a tornado in Tokyo. This explains why scientists find it so difficult to predict the weather. To predict future situations, they need to know the present situation in its finest details. But obviously they will never be able to know all the details: they cannot monitor every butterfly flapping its wings! The fewer details they know, the less accurate their long term predictions. That is why reliable weather predictions seldom extend more than a few days in the future.

Such chaotic processes basically work as amplifiers: they turn small causes into large effects. That means that small, unobservable fluctuations will affect the outcome of the process. Although the process is deterministic in principle, equal causes having equal effects, it is

unpredictable in practice. Indeed, causes that seem equal to the best of our knowledge can still have unobservable differences and therefore lead to very different effects. (http://pespmc1.vub.ac.be/CHAOS.html)

(See also Chaos in the Glossary in Part II)

1.7 Gaia Hypothesis

"Here is a brief introduction to Gaia theory, as developed by Lovelock, Margulis and others.

In the early 1960's, James Lovelock was invited by NASA to participate in the scientific research for evidence of life on Mars. His job was to design instruments, capable of detecting the presence of life, which could be sent on a spacecraft to Mars. This wasn't straightforward, since it was hard to know what to test for: any life forms on Mars may be radically different from those on Earth.

This led him to think about what constitutes life, and how it can be detected. He decided that the most general characteristic of life was that it takes in energy and matter and discards waste products. He also reasoned that organisms would use the planet's atmosphere as a medium for this cyclic exchange, just as we breathe in oxygen and expel carbon dioxide. He speculated that life would therefore leave a detectable chemical signature on the Martian atmosphere. Maybe it could be detected from Earth, so it wouldn't even be necessary to send a spaceship.

To test his idea, he and a colleague, Dian Hitchcock, began to analyse the chemical makeup of Mars, and compare it with that of the Earth. The results showed a strong contrast. The atmosphere of Mars, like Venus, was about 95% carbon dioxide, with some oxygen and no methane. The Earth was 77% nitrogen, 21% oxygen, and a relatively large amount of methane. Mars was chemically dead; all the reactions that were going to take place had already done so. The Earth, however, was far from chemical equilibrium. For example, methane and oxygen will react with each other very easily, and yet they are both present in the atmosphere. Lovelock concluded that for this to be the case the gases must be in constant circulation, and that the pump driving this circulation was life.

Lovelock began to look back at the history of life's interaction with the atmosphere. He noted that about three billion years ago, bacteria and photosynthetic algae started to remove carbon dioxide from the atmosphere, producing oxygen as a waste product. Over enormous time periods, this process changed the chemical content of the atmosphere - to the point where organisms began to suffer from oxygen poisoning! The situation was only relieved with the advent of organisms powered by aerobic consumption.

It was life processes, the cumulative actions of countless organisms, that were controlling the atmosphere. And viewed from outer space, the mass effect of these processes was that the Earth itself appeared as a living entity - especially in comparison with its dead neighbours. Lovelock had a sudden realisation that the Earth could best be described as a kind of super-organism:

"For me, the personal revelation of Gaia came quite suddenly - like a flash of enlightenment. I was in a small room on the top floor of a building at the Jet Propulsion Laboratory in Pasadena, California. It was the autumn of 1965 ... and I was talking with a colleague, Dian Hitchcock, about a paper we were preparing ... It was at that moment that I glimpsed Gaia. An awesome thought came to me. The Earth's atmosphere was an extraordinary and unstable mixture of gases, yet I knew that it was constant in composition over quite long periods of time. Could it be that life on Earth not only made the atmosphere, but also regulated it - keeping it at a constant composition, and at a level favourable for organisms?" (1991)

On a stroll with his novelist neighbour William Golding, Lovelock described his idea, and asked advice for a name. Golding suggested Gaia, after the Greek Earth Goddess. The Gaia Hypothesis was born.

In 1979, Lovelock wrote the book "Gaia: A New Look at Life on Earth", which developed his ideas. He stated that:

"... the physical and chemical condition of the surface of the Earth, of the atmosphere, and of the oceans has been and is actively made fit and comfortable by the presence of life itself. This is in contrast to the conventional wisdom which held that life adapted to the planetary conditions as it and they evolved their separate ways."

Key to Lovelock's idea was his observation that the planet is self-regulating. He knew, for example, that the heat of the sun has increased by 25% since life began on Earth, yet the temperature has remained more or less constant. However he didn't know precisely what mechanisms were behind the regulation. It was when he began to collaborate with the American microbiologist Lynn Margulis that the full theory began to take shape. Margulis was studying the processes by which living organisms produce and remove gases from the atmosphere. In particular she was examining the role of microbes which live in the Earth's soil. Working together, they managed to uncover a number of feedback loops which could act as regulatory influences.

An example is the carbon dioxide cycle. Volcanoes constantly produce massive quantities of carbon dioxide. Since carbon dioxide is a greenhouse gas, it tends to warm the planet. If left unchecked, it would make the Earth too warm to support life. While plants and animals take in and expel carbon dioxide through life processes such as photosynthesis, respiration and decay, these processes remain in balance and don't affect the net amount of the gas. Therefore there must be another mechanism.

One process by which carbon dioxide is removed from the atmosphere is rock weathering, where rainwater and carbon dioxide combine with rocks to form carbonates. Lovelock, Margulis and others discovered that the process is greatly accelerated by the presence of soil bacteria. The carbonates are washed away into the ocean, where microscopic algae use them to make tiny shells. When the algae die, their shells sink to the bottom of the ocean, forming limestone sediments. Limestone is so heavy that it gradually sinks underneath the Earth's mantle, where it melts. Eventually some of the carbon dioxide contained in the limestone will be fed back into the atmosphere through another volcano.

Since the soil bacteria are more active in high temperatures, the removal of carbon dioxide is accelerated when the planet is hot. This has the effect of cooling the planet. Therefore the whole massive cycle forms a feedback loop. Lovelock and Margulis identified a number of other feedback loops which operate in a similar way. An interesting feature of these loops is that, like the carbon dioxide cycle, they often combine living and non-living components.

The importance of biological processes on the planet was pointed out by the Russian scientist Vernadsky, who as early as 1929 said:

"Life appears as a great, permanent and continuous infringer on the chemical 'dead-hardness' of our planet's surface ... Life therefore is not an external and accidental development on the terrestrial surface. Rather, it is intimately related to the constitution of the Earth's crust, forms part of its mechanism, and performs in this mechanism functions of paramount importance, without which it would not be able to exist." (1929)

Vernadsky showed, for example, that living organisms are the primary transformer of solar energy to chemical energy, and stressed the importance of biotransport systems. An example of a biotransport system is birds which feed on marine life, hence transferring an enormous amount of

matter from the oceans back to the land. In order to understand how the planet works, one has to take into account the effect of life - exactly what Lovelock and Margulis say.

The Gaia Hypothesis immediately created a lot of interest. The idea that the Earth was alive had been expressed several times before, but it gained special resonance in the early 60's because of the space flights which allowed the Earth to be viewed for the first time as a complete entity from outer space. In a way these photographs were to the Gaia idea what computers were to chaos theory; they allowed one to see what was going on, and therefore brought the subject alive to a great many people.

The intellectual climate was also becoming amenable. A lot of work was being done at that time on self-organising systems. Ilya Prirogine had been studying systems far from thermal or chemical equilibrium which nevertheless showed a high degree of order, for example the Belousov-Zhabotinskii reaction which produces amazing periodic oscillations. He realised that there was a close association between self-organisation at states far from equilibrium, and the nonlinearity of the system. This tied in well with Lovelock's observation that the Earth is chemically far from equilibrium, and the nonlinearity of the feedback loops such as the carbon dioxide cycle.

Meanwhile the Chilean neuroscientists Maturana and Varela were developing their autopoietic (literally self-making) definition of life. There is no single definition of life that is accepted by all fields, however one of the most successful has been their definition, which states that living beings produce, by their own rules, the components, including their own boundary, that specify it and realise it as a concrete unit in space and time (Maturana and Varela 1987). What is important in this definition is not so much the material structure of life as the process, organisation and set of relations between the components. Life is a network which constantly makes itself. The simplest autopoietic system is the living cell. For something to be alive by this definition, there is no requirement that it grow or reproduce or pass on DNA. Since, as Vernadsky observed, 99.9% of the different molecules on Earth have been created in the life process of Earth, the Earth would seem to qualify as a self-making organism.

While the Gaia Hypothesis attracted a lot of interest, it also received a great deal of criticism. Lovelock had attached great weight to the idea that the Earth seemed to regulate itself. Some took this to imply that the Earth was behaving with a sense of purpose, that it was a teleological being.

Teleology, from the Greek word telos (purpose), asserts that there is an element of purpose or design behind the workings of nature. It is part of a very old debate between mechanists who believe that nature essentially behaves like a machine, and vitalists who believe there is a non-causal life force. Critics thought Lovelock was saying that the planet had a life force which was actively controlling the climate and so on. However this wasn't Lovelock's intention. He stated that 'Neither Lynn Margulis nor I have ever proposed that planetary self-regulation is purposeful ... Yet we have met persistent, almost dogmatic, criticism that our hypothesis is teleological.' (1991)

Another loudly voiced objection was that Gaia had evolved without any recourse to natural selection - an impossibility, according to the Darwinists. If the Earth is alive, where is its Selfish Gene, and who will it pass it onto?

As a response to these criticisms, Lovelock, together with Andrew Watson, developed the Daisyworld model - an imaginary planet, which maintains conditions for its survival simply by following its own natural processes. This simple model has since become an integral part of the debate about the Gaia Hypothesis.

The Daisyworld planet contains only two species of life: light daisies and dark daisies. Light daisies tend to reflect light, which has a cooling effect, while dark ones absorb radiation, and therefore warm the planet. Growth of the daisies depends on the present population, the natural death rate, the available space and the temperature (the equations that Lovelock used to model them were based on the dynamics of real daisy growth). The planet revolves around a sun, from which it

absorbs energy at a rate which depends on the sun's luminosity and the albedo of the planet. It also radiates heat out to the universe, at a rate determined by the Stefan-Boltzmann Law.

Interestingly, when the model is run with the sun's luminosity gradually increasing, the population of the light and dark daisies adjust themselves naturally so as to keep the temperature constant at the optimal level for daisy growth. Daisyworld is an example of a self-regulating system. Feedback loops between the daisies and the planet temperature, contained in the equations relating growth rate to albedo, somehow conspire to maintain the conditions suitable for life.

Daisyworld is only a kind of thought experiment, but demonstrates the principle of self-regulation very convincingly. It's a viable ecosystem which regulates its temperature, without any recourse to selection or teleology.

One of the main ideas to come out of the Daisyworld model is that the species in an ecosystem can be concerned with nothing more than their own survival, yet as a consequence of their actions they help not only themselves but the whole system. We could say that the self-regulation is an emergent property of the system. There isn't any need for the white and black daisies to get together and agree quotas for each other's populations, and fix growth rates and argue over how much land should be left uncovered. They just do their own thing and the planet takes care of itself. All that is needed is that the daisies give positive and negative feedback to the temperature, and they are happiest at a particular temperature, so they tend to keep the planet around that temperature. They make the planet suit them. Daisyworld addresses the dichotomy that exists between the reductionist approach, which attempts to understand systems by breaking them down to their smallest components, and the holistic approach which views systems as complete entities that must be understood in their entirety.

A consequence of the Daisyworld model is that it has opened people's eyes to similar systems. An example is the salinity of the oceans, as described by Hinkle [see Bunyard, 1996]. Living organisms maintain a salinity which is roughly equal to that of the oceans. Previously it was thought that this was because natural selection tended to assist those organisms which were in balance with their surroundings. The question remained, why has the ocean managed to maintain a constant level of salinity? The ocean's present salinity is around 3.4%. If it were to go much above 4%, then basic cell functions such as the maintenance of membrane potential would fail. There would be mass extinctions of life in the oceans. And yet there is no evidence of such extinctions in the last 500 million years. This is quite strange, because salt is constantly being deposited in the oceans through the weathering of rocks, yet its concentration is only 10% of saturation levels. Furthermore, there has been a multitude of cataclysmic events such as meteorite impacts, periods of glaciation and so on which one might expect to abruptly alter salinity. Indeed, attempts to model the salinity regulation using chemistry or physics have failed. So what is regulating the oceans?

From Daisyworld we might predict that the answer is the organisms that live in the oceans. In fact, bacteria play a particularly important role in the running of the oceans (as in most life processes). Although they constitute only 10-40% of the ocean biomass, their high surface area to volume ratio means that they make up 70-90% of the biologically active surface area. And they all pump salt. Looking at the problem from the point of view of Gaia Theory breaks down the barriers between what we have traditionally seen as living and non-living systems.

Daisyworld and the Gaia Hypothesis are controversial because they touch on the definition of what constitutes life. If we think that life is about the selfish gene, competition, and survival of the fittest, then it is hard to see where the Earth fits in. However, it isn't necessary to think that the Earth is alive in order to appreciate that it is a highly complex system. And, if we say it is alive, why is that so threatening? No one doubts that plants are alive, but they don't do anything nearly as complicated as the Earth does.

Gaia theory has already had a huge impact on science, and has changed the way we view our place in the world. By making us more aware of the damage we are doing to the eco-system, it may also

help us to survive. One of the lessons of Daisyworld is that, due to the effect known as hysteresis, damage once done is very difficult to undo. Our experiment with global warming cannot be halted when we are uncomfortable with the effects; by then it may be too late. And once a species is extinct, it cannot be restored. We are just one part of a larger system, and are reliant on that system for our continued existence. We harm it at our peril.

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