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## **Complexity, Strategic thinking and Organisational change**

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## Complexity, strategic thinking and organisational change

### ABSTRACT

Comparative considerations of strategy from complexity paradigm and Newtonian paradigm perspectives are discussed in the light of three ideological dispositions towards the future. We term them defensive, opportunist, and goal oriented. Over the years, the strategy literature has identified a number of strategic archetypes (e.g. Miller and Freisen, 1978). What is interesting from our point of view is the patterns of reasoning that underpin them. The study of ideology has identified qualitative patterns of reasoning which underpin different types of strategic decision in both the fields of politics and strategic management. This paper considers three patterns of reasoning and considers how they relate to the complexity and Newtonian paradigms.

**Keywords:** Complexity, strategic archetypes, strategic thought patterns.

### INTRODUCTION

Within the scientific domains, complexity science has successfully challenged the traditional western scientific paradigm. It is also introducing fresh and even radical thinking into a number of non scientific domains such as economics (Arthur 1994, Arthur et al 1997, Krugman 1996, Ormerod 1999), the general social sciences, (Allen et al 2003, Cilliers 1998, Gilchrist, 2000, Merry 1995) and the management sciences (Allen 2001, Cooksey and Gates 1995, McKelvey 1999, 2001, McMillan 2002, 2003, Pascale et al 2000, Stacey 1996, Wheatley 1994). A number of writers have discussed the merits and implications of introducing such a perspective into the strategy literature (Carlisle and McMillan 2002, Macintosh and Maclean 1999, Stacey 1993, 1995). This paper contributes to this debate by building upon a comparison of the organisational implications of the Newtonian-Cartesian and complexity paradigms for strategy. (Carlisle and McMillan 2002). It identifies three ways of thinking about strategic change: goal oriented, opportunist and defensive, and relates them to these two paradigms.

Most organisations face fast moving environmental and market changes. Major change is acknowledged to be difficult to initiate and implement. In similar changed circumstances, some firms change strategy, others do not. Some which do not lose their competitive edge in the market. The picture is further complicated by the fact that not all major organisational change is reactive. Some is proactive, undertaken in the absence of obvious external threats. Why are some firms better than others when it comes to initiating and implementing changes of different types and scale? We would suggest that the qualitative patterns of reasoning which underpin the strategy process in some organisations are inherently more adaptive than others. We consider three such patterns and how they relate to the traditional and complexity paradigms. The implication is that those qualitative patterns of reasoning which are more consistent with complexity may foster better adaptive strategies in turbulent environments.

In the 1970s 'archetypes of strategy formulation' were identified by Miller and Freisen (1978). Underpinning these archetypes are qualitative patterns of strategic thought linked to predispositions towards different kinds of reactive or proactive strategy. Recently Carlisle and Baden-Fuller (Forthcoming, *Organization Studies*) have explored how ideological and pragmatic thinking interact in motivating support for change. They identify qualitative patterns of interaction. We suggest that the study of ideology in decision making can also help us to appreciate qualitative patterns in the orientations of decision makers towards the future which are predispositional rather than predictive of their strategic change preferences. We follow Manning and Carlisle (1995) in terming these orientations towards the future, ideologics. In this paper we use an appreciation of predispositional modes of thought derived from

the study of ideology to progress our own thinking on strategy in relation to the dominant Newtonian-Cartesian paradigm and the emerging Complexity paradigm.

Strategic thought and strategy research has developed to its current point in a larger socio-economic and historical context. Thus all disciplines, strategy included, are subject to a path dependent development process in which this larger context has, over time, favoured the emergence of some ways of thinking and doing things in preference to others. Understanding the contextual frameworks and societal environments of organisations is crucial to understanding why managers in given organizations tend to favour some ways of seeing things over others.

Today society and working life in Western Europe and North America is dominated by the activities of an industrialised technologically driven economy created and supported by a complex range of business organisations. This situation is relatively new in the history of these nations, who for much of their history were predominantly agrarian societies. Everything changed during the 18<sup>th</sup> and 19<sup>th</sup> centuries with the spread of the Industrial Revolution. This brought huge changes to all aspects of people's lives and the emergence of organisations and the world of work as we know it today. Classical scientific assumptions have underpinned the development of western style organisations and this legacy has strongly influenced 20<sup>th</sup> and 21<sup>st</sup> century organisational thought and business frameworks (Carlisle and McMillan 2002, McMaster 1996, McMillan 2003, Pascale et al 2000, Stacey 1996, Wheatley 1994). Thus in both the academic world of strategy research and the practical worlds of consultancy and management, strategic thinking is predominantly influenced by a Newtonian-Cartesian paradigm approach. This way of thinking has become so accepted (McMaster 1996) and esteemed (Winograd and Flores 1991) that it is almost a subliminal thread throughout management thinking. But strategic thinking occurs in a dynamic landscape and by its nature adopts a perspective on the future and future possibilities. As the speed of change has accelerated it has become important to subject often unquestioned dispositions towards the future, which are evidenced in patterns of strategic choice, to even greater scrutiny and challenge. We consider three key perspectives on the future which can be evidenced in strategic thinking that accord differential significance to past, present and emerging landscapes in strategic decision making. In doing so, we hope to open new windows on the strategic thinking debate.

## **IDEOLOGIES**

Ideologies give a qualitative patterning to reasoning and decision making in which values come into play. Organisational theorists have long recognised that ideologies are sets of related ideas. Few would dispute the fact that there is substance in the idea that ideologies are organised set of beliefs about human relationships and their purpose. The interesting question, however, is: how do they provide the 'framework for action' that it has been claimed they provide in management the literature? The suggestion made here is that organised sets of beliefs are reflected in the ideologies which are predispositional of decision-makers orientations towards the future. Ideology can be studied by analysing the persuasive argumentation and imagination that generates the human motivation to achieve desirable objectives. Such studies are concerned with the logic of the ascription of human values to institutional procedures and organisational practices in a socially constructive or materially productive life. They can identify specific ideological commitments shaping attitudes of mind towards the past, present and future which determine the direction of a course of 'rational' decision making (e.g. Carlisle and Manning 1994). We use the term 'ideologies' (Manning and Carlisle 1995) to refer to these attitudes of mind in order to distinguish them from the various sets of specific interrelated commitments and values (ideologies) that shape them.

An ideology is architectonic in that it is a logically structured understanding within which ideas about human values, procedures and objectives are ordered. Such an understanding is formative of an interpretative perspective on experience. In the contexts of different organisational cultures, different ideas

and values may take priority in evaluations of experience and strategic considerations. Such differences can lead to radically disparate perspectives on achievements to date and future requirements. Why people have different ideological perspectives cannot be divorced from the styles of reasoning represented by the different ideologics deployed in considering requirements for change.

### **IDEOLOGICS: CONSERVATIVE/DEFENSIVE, OPPORTUNIST, GOAL ORIENTED.**

Different ideologics afford different conceptions / perceptions of the future. The defensive approach to strategy exists within the context of an essentially conservative ideologic. Here the future may be seen to threaten an existing valued state of affairs. In organisations, conservative ideologics lead to the kind of strategic thinking which is predisposed to adopt 'defender' strategies designed to preserve the existing identity of an organisation as a valued set of human relationships. This is the conception of the future which is evident the classic statement of the conservative disposition outlined in Bradley (1876). This places value on a settled way of life in a stable hierarchical community. It is the attitude of mind manifest in the writings of Oakeshott on the subject of the fatal flaws of rationalism and the value of tradition and conservatism (1962). It is found in the context of organisations which ascribe value to long established practices which they are committed to retain. This conservatism stresses the particular human value of any long established present institutional or organisational state of affairs. It represents the achievement of our predecessors and is a heritage we feel obliged to pass on to our successors.

Within the conservative framework of reasoning, an argument for or against a proposed course of action has a number of distinguishing features. The conservative thinker starts from the premise of the certainty of existing commitments. He then proceeds on the basis that, given that these are unquestioned, certain courses of action are precluded from serious consideration. (Bradley 1876).

The key point to make about such conservative ideologics and the defensive approaches to strategy which they favour is that they automatically preclude from serious consideration courses of action which could potentially threaten valued existing sources of distinctive competence. It may not be unheard of, but organisations rarely proactively set out to develop new products which render their existing ones obsolete, even though competitors may do so and force a reactive response in consequence. An essentially conservative ideologic is predisposed towards the adoption of incremental changes which maintain continuity between the past, present and future.

The opportunist approach derives from an entirely different perspective on the future. Defensive approaches start from the assumption that something inherently valuable must be defended or preserved. Whereas opportunists perceive the future to be open ended, offering the opportunity to shape the course of events in so far as they can be beneficially accommodated within the ongoing practices of an established organisation. Nothing, however, is regarded as sacrosanct. An opportunistic perspective on the future and its possibilities may be evidenced in the writings of Hayek (1960) and identified in forward looking companies, such as those imbued with the competitive ethic. This is often associated with business organisations in the United States. An opportunistic perspective on the future does not preclude serious consideration of any particular course of action in the manner that a conservative perspective does. Favoured approaches to change may be either incremental or radical depending upon how circumstances and opportunities are perceived.

Also, the future may be seen to offer an escape from in a crisis situation by transforming the present state of organisational affairs into an alternative and more desirable state of organisational arrangements by the realisation of a premeditated programme of organisation reality reconstruction. This is the conception/perception of the future which is offered by Spender. (1937) for industrial Britain. This is the

goal oriented perspective which is compatible with planned, rational comprehensive programmes of change. It may be seen exemplified by the strategic approach to multinational reorganisation which was popular in the 1970s. This approach was based on the idea of stages of multinational development leading in the end to the achievement of the goal of a single corporate matrix. (Stopford and Wells 1972; Naylor: 1986).

The opportunistic state of mind has been said to share features in common with arithmetic reasoning as an essentially rule following procedure. (Sidgwick 1874) It is a condition of a legitimate decision that an agreed decision making procedure is followed. The common feature of such rule following procedures is the virtue of their providing for the equal consideration of all alternatives. Opportunistic organisations are likely to be committed to impartial rule following. In matters of employment and promotional opportunity, it is a principle responsibility of the management to consider fairness strictly in relation to the worker's contribution to competitive organisational performance. Personal relationships are not important. Only a policy of equal pay for equal work can follow from this rationale to qualify as a legitimate arithmetic progression deemed to be 'progressive'.

The goal oriented form of reasoning assesses current states of affairs as unsatisfactory and prescribes an alternative which is deemed to be more satisfactory. Where the conservative argument takes the present situation to be one of value and the opportunistic one ascribes value to the decision making procedure as an impartial process, the goal oriented argument takes the objectives of the organisation to achieve a predetermined alternative state of affairs be above suspicion. Its objective is to bridge the gap between the undesired existing situation and a desired alternative by whatever means are necessary. This will often require radical, transformational even revolutionary change. If it is taken that the nature of the employee is to seek his potential self-fulfilment in the creation of the perfect working organisation then the means to achieving that ideal conceived as an objective, must take the form of the performance of certain tasks since the present situation is deemed to be unsatisfactory. Thus, union representatives orientated towards the teleological goal of worker democracy would need to establish mechanisms for worker participation in order to bridge the gap between the existing situation, in which only the possibility of such mechanisms exist, and the desired situation in which they are operable. In some organisational contexts such changes would be seen to be radical. Such a programme of worker participation has been a feature of German industrial life where the history of trade union activity has been very different to that of Britain.

An ideological argument, as the term 'logic' implies, systematically deploys a set of related ideas in a fashion which is prescribed by the form of its logic. It conveys the force of its conclusion in the form of a categorical imperative to act. It is rarely the failure of an ideologic alone that results in a failure to persuade the sceptical. The force of the ideological argumentation involved is partly determined by the value it ascribes to a course of action. Thus it is the preferred values themselves that are authoritative. Their authority derives from what Trigg (1974) calls a belief "in them" which involves a commitment to uphold them. Whether or not an ideological argument attains its objective depends partly upon its form, and partly on what it has, rightly or wrongly, assumed about the beliefs of the persons to whom it is addressed. In ascribing value to a course of action that is deemed to be appropriate to existing work circumstances, an ideological argument assumes that it is one which is appropriate to its agent as a person who can recognise the authority of the values deployed. In the context of organisations an ideological argument presupposes that the person or persons to whom it is addressed hold the particular beliefs that the ideological argument has assumed to be characteristic of their attitude to their work experience.

## **PARADIGMS COMPARED**

Carlisle and McMillan (2002) considered the main tenets of the complexity science world view and the Newtonian–Cartesian world view and ,with particular reference to Capra (1996), offer a comparative

perspective of a number of key stereotypical approaches to strategy thinking and strategy development. See Figure 1. It is not the intention of this paper to discuss all these features but rather to focus on those patterns of thinking which resonate with or illuminate aspects of conservative/defensive, opportunistic and goal oriented perspectives on the future. It does so in order to arrive at a better understanding of some of the dominant modes of logic which underpin strategy and strategic thought processes.

<b>Newtonian–Cartesian Paradigm</b>	<b>Complexity Science Paradigm</b>
<i>Essentially mechanistic</i>	<i>Essentially dynamic / self organising</i>
Linear	Non linear
Controllable	Uncontrollable
Centralised	Networked
Hierarchical	Non hierarchical
Limited connectivity	Highly connected
Uniformity	Diversity
Cause and Effect	Effect and Effect
Predictable	Unpredictable
Reductionist	Holistic
Objective explanation	Subjective & Objective explanation
Entity focussed	Process focused
Correlation	Patterning
Highly preclusive	Highly inclusive
Evolutionary	Revolutionary & 'New' Evolutionary

Figure 1. Comparing paradigms (Adapted from Carlisle and McMillan 2002)

Newtonian-Cartesian logic calls for linear thinking patterns and linear cause and effect models of progression. To think about strategy in such a way requires a belief that the future is inherently predictable and that the context in which this progression is taking place is such that it may go forward as planned, undisturbed by significant perturbations in the environment in which it is to proceed. This thus assumes limited connectivity to other environments and other events. Durcan et al (1993) point out that this way of thinking results in incremental approaches to change within an existing organisational mindset in order to achieve a 'deliberate strategy' (Mintzberg 1989). Further, as time is viewed as linear and sequential many theories show organisational change as a series of rational, sequential steps which take place during a specified time period. The overall process is seen as a one taking an organisation from an unhealthy state to a healthy one. There is an assumption too that the direction the change takes is clear and that by using the right skills the required destination will be reached (Durcan et al 1993). This view of change rests on the assumption that the future is predictable and that with enough information about itself and its environment an organisation can make predictable and effective plans. Incremental change is possible in a relatively stable environment (Durcan et al 1993) but this is not the world in which organisations currently find themselves.

A complexity paradigm perspective calls for non linear approaches and the recognition that linear approaches are inherently over simplistic. To draw a conceptual map of the world in linear terms is to construct a machine model of the world that is essentially artificial and does not mirror the realities of a complex, complicated and multifaceted world (Carlisle and McMillan 2002). It is a view which ignores the interconnectivity, inter-relatedness and interdependence of the real world with all its nested living systems. One perturbation or disturbance in one part of the system will reverberate across connections leading to a wide range of responses that ripple out in different directions and at different rates over

different time spans. This is not a reality that is encapsulated within linear frameworks. In other words, it is not possible to argue that  $a + b$  will always lead to  $c$ .

One way to think of a non linear, non equilibrium-biased framework is to consider a pond that has a stone thrown into the centre. It is possible to observe the ripples spreading out and to view this intervention as the primary cause of change in the water surface. But there are a host of other dramatic and less readily observable interventions taking place. The activities of water insects disturbing the surface tension, wind movement, gases moving up from disturbances in the pond sediments, amphibian activity, fish feeding and so on. Further, over time perturbations may become amplified leading to significantly unexpected outcomes (McMillan 2003). The longer the time scale the more difficult it is to predict the outcomes of any given intervention or activity. The Newtonian approach relies on notions of a predictable world to support linearity and notions of cause and effect. A complexity paradigm perspective argues that the living world is inherently unpredictable and therefore such interpretations are unhelpful and even misleading.

The Newtonian–Cartesian perspective on evolution viewed it as a gradual incremental process and this has had a major influence on the thinking on strategic change, with the strategic change literature drawing both implicitly and explicitly on this interpretation of evolution (McMillan 2003). Recent evolutionary research, however, has shown that long periods of species development were 'punctuated' with sudden massive increases in the number and range of species on earth and also massive extinctions. Thus life on earth developed both incrementally and also with huge and unexpected leaps. This has important implications for strategic thinking and contrasts sharply with most conventional approaches. Huge transforming changes are not abnormalities but go hand in hand with smaller changes as part of the pattern of life forms development. The punctuated equilibrium model of organisational change (Romanelli and Tushman 1994) resonates well with this latest research on evolution. Incremental change can, over time, bring about significant strategic change, but environmental and market changes, not all of which are predictable, can impose a requirement for revolutionary change.

The punctuated equilibrium paradigm (Tushman and Romanelli 1985, Gersick 1991) suggests that organisations tend to develop through periods of incremental change punctuated by major changes initiated by a recognition that they have strategically drifted out of alignment with their market environments. This notion of alignment resonates with notions of organisational fit. The concept of 'fit' whereby change is introduced to ensure that an organisation matches or fits well with its external environment and that its internal processes match too, is, as Durcan et al (1993:6) write, 'a semi-concealed Darwinian concept of gradual evolution and survival of the fittest'. Some organisations equate notions of fitness with strength and a high degree of competitiveness. Modern evolutionary biology reminds us that fitness is about the ability to adapt. Kauffman (1996) argues that all organisms and organisations are structures that have evolved and co-evolved on fitness landscapes. The notion of fitness or adaptive landscapes are used by biologists to consider how different species survive. High peaks on this landscape represent optimum places to be, lower peaks less so and the valleys are places where a species can become trapped or stuck. The landscape, however, is always changing as each species moves and evolves across it. How a species survives depends very much on how it explores and moves across this landscape. If it is too timid it could get caught in the foothills or if it is too bold it may get trapped on a peak. Successful species strike a balance somewhere between the two and flow along the ridges towards new regions of fitness. This is the complexity view of evolution and organisational fitness and survival.

Darwinian notions of survival of the fittest and natural selection stressed the fierce struggle in the battle for survival in a hostile world. Pascale et al (2000) see this struggle reflected in the corporate landscapes of recent decades. They report on whole sectors declining or disappearing. But it is possible to survive by adopting the strategy taken by General Electric's Jack Welch: 'Amplify survival threats and foster



disequilibrium to evoke fresh ideas and innovative responses'. (Pascale et al 2000: 28). This recognises the dynamics of the business landscape and the constant need to experiment, learn and adapt. It is a vision of a world that is dynamically non linear. Pascale et al (2000) also point out that species do not evolve of their own accord but because of some major change in their environment. Strategy scholars noted long ago that when performance declines (Boeker 1989) or when serious organisational problems are perceived (Dutton and Duncan 1987) strategies often change. Further, this struggle between species for survival does not always involve fierce competition as species frequently co-operate and collaborate, co-evolving and co-existing.

'Tacit co-operation occurs more often in nature than many realise. The mistaken view that nature is brutish and fiercely competitive is vastly overstated (i.e. "survival of the fittest"). The phrase, erroneously attributed to Darwin was, in fact, coined by the sociologist Herbert Spencer to "explain" the social stratification and excess of Capitalism in the late nineteenth century.'

(Pascale et al 2000: 121)

Stacey (1996a: 16) too points out that evolution is not simply a competitive process 'driven purely by random mutation applied to independently functioning selfish genes' but is driven too by collaboration and spontaneous self organisation. This Stacey observes, is a very different view of evolution to that traditionally taken whereby the focus is primarily on the competitive aspects.

Connectedness plays a key role in evolution. If living systems are to be disturbed and challenged into creating huge numbers of new life forms (and also into precipitating massive extinctions) then they have to be highly connected (Lewin 1993). This links modern interpretations of evolution to the non linear world view and notions of transformative change.

### **MAPPING IDEOLOGICAL APPROACHES ONTO TWO DIFFERENT PARADIGMS**

There is a distinctive Newtonian-Cartesian flavour to some of the dominant underpinning modes of logic and reasoning which can be identified in the decision-making literature as it relates to both managerial and political decision-making. The conservative perspective takes a focus on the past in relation to the future and sees it very much in a linear mode. Change is viewed as a linear progression from a highly valued past to a necessary future. This assumes some element of continuity and presumes that the future may be attained via some kind of logical, incremental progression. This is a view at odds with the complexity perspective. Conservative decision-makers are predisposed to favour logical incrementalism as an approach to change and may be late to recognise the need for more radical approaches.

The opportunistic/rule following mode of thought is less linear in its view of the future. It considers that the future is essentially open-ended and that a range of choices or courses of action are possible, each of which is to be impartially evaluated in accordance with some rule-following procedure. It is important to note that rule following procedures are not regarded as immutable. They are subject to change along with everything else. If rules and procedures come to be seen overtime as sacrosanct, the opportunistic will degenerate into a bureaucracy and revert to conservative/defensive modes of thought in which procedures come to be seen as things to preserve. However, the opportunistic mindset does not see the future as tightly prescribed or predetermined. Courses of action are not precluded by a desire to preserve elements from the past and neither are they pre-planned with a view to attaining a predetermined future. The opportunistic/rule following approach to change is adaptive. It may champion both incremental and radical change as circumstances are perceived to dictate, and this relates well to the fitness landscape perspective on evolution and change in living systems.

The goal oriented approach is geared towards the achievement of some predetermined vision of how things 'should' be. It strives to achieve a vision of the future which is very different to that of its current reality. The perspective is invariably favourably disposed towards radical or revolutionary change, as nothing short of revolutionary change is likely to fulfil the achievement of its goal. This mode of reasoning might be considered to map well on to the revolutionary aspects of the complexity paradigm. However, it retains a linear cause and effect perspective on the achievement of change which links it firmly to the predominant paradigm.

	PAST	Goal Oriented	Conservative /defensive	Opportunistic/ rule following
<b>Newtonian-Cartesian Perspective</b>				
Linear		X	X	
Limited connectivity		X	X	
Cause and effect		X	X	
Predictable		X	X	
'Evolutionary' or Revolutionary			X	
	PRESENT			X
Non linear				X
Highly connected				X
Effect and effect				X
Unpredictable				X
'Evolutionary' and Revolutionary				X
<b>Complexity Perspective</b>	FUTURE			

Figure 2. Mapping ideologies onto the Newtonian-Cartesian paradigm and the Complexity Paradigm.

## CONCLUSION

Only one of the three modes of reasoning identified in this paper is consistent with the type of strategic thought required from a complexity perspective, namely the opportunistic/rule following approach. This is the mindset from which the future is perceived as open-ended and inherently unpredictable. From such a perspective the task is to be open to future possibilities and opportunities as they arise. It has been suggested that complexity requires a paradigm shift in strategic thinking. In so far as strategic thinking has in the past been premised upon conservative/defensive reasoning and/or goal oriented reasoning geared towards predetermined radical change, this is probably true. However, we suggest that at least some innovative organisations, able to be adaptive in capitalising upon innovation opportunities in their environments, may require less of a paradigmatic shift in strategic thought patterns than others. By identifying the patterns of reasoning underpinning strategic archetypes, we may be better able to identify and when required adopt those which are best suited to the complex requirements of strategic decision making in a turbulent world.

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