

Follow me, I'm Right Behind you: Leading From a Complexity Viewpoint

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Abstract

This paper is based on the premise that businesses and their environments are complex adaptive systems (CAS), and are therefore too complex to be 'managed' by a single leader. The literature suggests that CASs are self-organising systems and that effective direction and guidance emerges from such self-organisation. Thus, the traditional view of a leader as a decision-maker, instructing and controlling the organisation is inappropriate in a complex/turbulent environment.

A qualitative, case study method was used to investigate the leadership activities in four companies, two each in a turbulent industry (computers) and in a stable industry (packaging). Depth interviews were conducted with 31 respondents. Interview transcripts were analysed using NVIVO, and then compared with field notes and documentary analyses. The objective was to identify if a self-organising leadership approach was prevalent in the more successful company in the turbulent industry, and if bureaucratic management was more prevalent in the more successful company in the stable industry. In other words, is self-organising leadership more effective in a turbulent environment?

The study has value as it is based on theories not common in the management literature. It is also of value to educators, as many management courses are still based on the assumption of the manager as all-knowing planner and controller. Furthermore, it will be of interest to practitioners who are under pressure from environmental changes, and from societies that are demanding more from their organisations.

The findings showed that both the more successful companies, and the less successful computer company, operate via considerable self-organisation principles. Company activities and performance emerge from the interactions amongst the managers, staff and customers, with little direct instructional management from the CEOs. The less successful packaging company managed via the traditional bureaucratic model. These findings and their implications are discussed, and recommendations for further research are made.

Keywords: leadership, management, complexity, turbulence, chaos, self-organisation.

1. Introduction

The mindset that has driven business and industry over the past half millennium is based on Newtonian physics, and over the past century, on Scientific Management as developed by Taylor. In business this resulted in 'command and control' management. The Newtonian/Taylorist paradigm assumes a relatively stable, simple and linear environment with long- and short-term predictability. These methods no longer work because they were designed for a different world that no longer exists - in today's environments, control, and not prediction, is important - and in a complex environment the commanded agents are "absolved...of individual responsibility" (Kelly and Allison, 1999). Unfortunately, most managers were brought up in, and trained for, an environment of certainty, whereas they now face increased complexity and uncertainty. Complexity and chaos theory, which emphasise flexibility and adaptability, are better metaphors for the evolution of today's businesses. These theories see the universe as "a web of 'living', interconnected, self-organising parts that form a constantly co-evolving...whole" (Kelly and Allison, 1999: 35). Chaos theory shows that what looks complicated may have relatively simple, but non-linear origins, while complexity theory shows that something apparently simple can have complex underlying patterns (Briggs and Peat, 1999).

2. Literature Review

2.1. Command and control

The 'control and command' style of management is based on the Newtonian/Taylorist view of the organisation being a predictable machine, and therefore, controllable. It stresses predicting and controlling the nature and direction of change (Keene, 2000), but management overestimate their ability to control. 'Command and control' is not applicable today, first, because today's world is so complex and uncertain that tight integration and control leads to ossification and a lack of flexibility to handle rapid change. Second, managers cannot command commitment from staff because today's generation is more authority averse than any in history. Third, the expectations created from the high rates of change exceed the capabilities of an individual leader (Keene, 2000). Finally, trying to measure ever-finer levels of a system, which is typical of traditional control, is pointless as everything about a system can never be known (Stacey, 1991).

2.2. Organisation as an open system

"Corporations are starting to take on the complexity of biological systems" (Gibson, 1996: 251). Therefore, instead of seeing businesses as "entities that are mechanical in their operation", they need to be understood as an "ecology of organisms." Viewing corporations as organisms is consistent with the complexity perspective. In trying to understand and deal with complex open systems, Wilkinson and Young (1998) and Briggs and Peat (1999) stress the interconnectedness of complex systems. Each part of the system affects all other parts, resulting in a sum that is greater than the sum of the parts. These interactions create non-linear feedback that leads to self-organisation emerging unpredictably from the system. Thus, the outcomes of management actions and the behaviour within the system cannot be predicted. Ritter, Wilkinson and Johnston (2004) argue that businesses form loosely coupled networks that self-organise with order emerging bottom-up. They imply that such businesses are eco-systems, and therefore difficult to manage as there is no network leader directing actions – they self-organise from the bottom-up (Wilkinson, 2006b).

To cope with the unpredictability of complex open systems, management is changing from controlling and directing the firm's activities, to participating in, and responding to, the results emerging from the self-organisation (Wilkinson and Young, 1998). This involves continuous creativity, nudging the business system in the direction required (Stacey, 1991), and is critical to success in rapidly changing environments (Baskin, 1998a). Baskin (1998b) refers to this as 'management by letting go'.

2.3. Self organisation

All organisations are self-organizing systems (Baskin, 1998b). As the organisation develops as a loosely organised CAS, it requires a more formal structure and direction. This can come from control or self-control, but only self-control will be successful in the long-term. Briggs and Peat (1999) agree that leadership systems are ineffective in resolving complex social problems, suggesting that self-organisation produces better solutions. In the words of Bechtold (1997: 200):

"the brilliance of even the wisest executive dims in comparison to the voltage of a full organisation's wisdom lit by the intellectual and emotional energy of all its employees."

Self-organisation begins with autonomy of the individual, whose actions reinforce the actions of others, thereby increasing complexity, which encourages self-organisation (van der Erve, 1998). Thus, self-organisation is dependent on autonomy, inter-dependence and democratic principles, valuing each person as a capable and responsible participant. Self-organising behaviour emerges from local behaviour, rather than from orders from the top (Andrew, 2002). Emergence in business is facilitated by having interconnected systems, by allowing random interactions between people, by circulating information throughout the system, and by communicating with close colleagues (Andrew, 2002).

However, since emergence is unpredictable, it must be monitored in case it moves in an unacceptable direction. Self-organised changes are largely uncontrollable by management, so it is sometimes necessary to intervene, but usually it is better to stand aside and let the system self-organise. As the system gets bigger, it is often better to let it self-organise because it may be too complex to 'manage'. Self-organisation does not negate control – it should rather be distributed throughout the organisation (Cilliers, 1999).

2.4. Leadership

As organisations become bigger, they increase in complexity, but become less capable of handling complexity. When the environment's complexity exceeds individual complexity the firm ceases to be manageable by a single manager (Wilkinson and Young, 2005). The culture required to cope with bigness is suited to routine processes but is unsuited to uncertainty and complexity. As a result, control-oriented management, when applied in an uncertain environment, is inappropriate. Fitzgerald and van Eijnatten (1998) maintain that, since the future cannot be known in advance, control in complex environments has to do with 'influencing', rather than 'determining' future events. Senge (1990) and McGlone and Ramsey (1998) feel that control should be local, through self-management, rather than global, by management. This implies that managers have to accept that they do not have all the answers (Weeks, 2007). 'New leadership' should, therefore, be about facilitating an environment that enables staff to interact and release their potential (Keene, 2000).

Therefore, leaders need to be coaches, who "facilitate and enable" staff, or who "determine the direction of the organisation and...create the environment in which everyone else can operate" (Gibson, 1996: 100). This means that the bureaucratic manager does not have a role to play, as the bottom levels in the organisation are left to steer (control) the organisation in the required direction. Welsh and Wilkinson (2002) see the role of a leader as influencing relationships. Suggested leadership approaches and roles in a turbulent environment are suggested by a number of authors, three of whom are summarised in Table 1.

Table 1: Suggested leadership approaches and roles

| Stacey (1991), | Keene (2000) | Carlisle & McMillan (2006) |
|--|---|---|
| Create the environment that enables people to learn. | Listen, communicate and participate in dialogue | Increase employee involvement in decision-making |
| | Co-operate, rather than compete | Simplify rules and procedures |
| Encourage & make time for discussion & reflection to happen through informal work groups & open-ended discussions. | Welcome surprise, rather than viewing it negatively | Keep rules and control to a minimum in complex/turbulent environments |
| | Let go of control and direction | |
| Using different forms of power, namely, from 'authority', to 'loose influence', to 'pressure', and back again. | Create a vision and harness staff creativity to make the vision a reality | Give staff the encouragement and scope to self-organise into cells/groups |
| | Get staff to accept responsibility | Encourage networking among staff |

2.5. Strategic vision

A clear understanding of the business is vital for delegating responsibility and decisions. Without it, self-organising, bottom-up development is almost impossible. Such understanding is created by 'visions', such as Baskin's (1998a: 63) "identity" or Chakravarthy's (1997) guiding philosophy. These visions are communicated through dialogue (Barnett, 1996), strategic conversation (Manning, 2001) and continuous open discussion (Chattel, 1995), approaches which encourage emergence. Such broad-based discussion should involve all staff (Senge, 1990) and not just a select few (Chattel, 1995).

'Simple rules', such as visions, ensure that individuals operate independently within the limitations imposed by the vision (in chaos terms, a strange attractor) (Wheatley, 1993: 129). Having a vision shared throughout the company enables crises or opportunities to be quickly handled as everyone knows how to react (Kelly and Allison, 1999). Regimented control is not required as employees' actions will be shaped by the attractor. However, this is difficult for management, because where the system (business) will go cannot be predicted, so managers feel the need to take control. Managing from a chaos viewpoint means trusting the strange attractor and standing back to allow self-control. Wilkinson and Young (1998) agree, believing that imposing managerial will is one of the reasons for company failures. Therefore visions should set the boundaries of action, but should not determine how, when and what actions should be taken.

2.6. Information and communications

For local control and decentralised decision-making, information should be available to staff who require it. Openness and truthfulness are essential for effective self-organisation (Baskin, 1998a). Informal communication occurs during drinks after work, around the water cooler, in the tearoom, etc. Therefore, to encourage self-organisation, companies should encourage informal gatherings: encourage the use of an Intranet, let staff use the boardroom or fund a get together. Forums, such as lunch time dialogues, identify new and unusual ideas, which formal communications don't identify (Bechtold, 1997). But they must remain informal, decentralised and unmanaged to ensure they are not seen as centrally controlled, management functions.

Local intelligence is essential to cope with a complex/turbulent environment. The executive committee is not the best place to "smell the future" (Weeks, 2007: 303), because weak environmental signals must be identified early for self-organisation to react to threats and opportunities. This can only be achieved by spreading sensemaking and early detection widely amongst staff (Costanza & Littlejohn, 2006).

2.7. Organic Management

'Organic management' is very different to 'mechanistic management'. Fradette and Michaud (1998: 116) propose five non-traditional management actions to create "self-adapting, self-renewing companies that are organised for instant action":

- Set strategic purpose: a vision that guides workers as to the company's operational domain.
- Set strategic boundaries to ensure that actions contribute to competitive advantage and success
- Enable workers to challenge boundaries that no longer have a purpose.
- Champion customer events, encouraging worker involvement and participation.
- Make, and trust employees to make, decisions in real time to achieve flexibility and rapid response.

From the above it can be seen that 'organic management' involves leaders who "are designers, teachers and stewards," rather than "bosses who call the shots" (Senge, 1990: 9). They create the conditions in which individuals are encouraged to respond spontaneously to the changing environment (Fitzgerald and van Eijnatten, 1998), thereby enabling "people to 'self-organise' and attack opportunities as they appear" (Baskin, 1998a: 2). To create the correct conditions for a firm to flourish in a turbulent environment the 'organic' manager's job is creating an environment in which workers can push the company to co-evolve with its markets (Baskin 1998a:153).

The manager's main tasks are:

- to create awareness of the turbulent market and of what must be done to co-evolve,
- to increase the flow of information to learn about and better satisfy customers' needs,
- to create trust to enable workers to cooperate better.

Thus, the manager becomes a "facilitator of organisational learning...fostering...continuous experimentation" (Chattell, 1995: 150). This approach moves beyond reaction, leveraging relationships to create a new environment and thereby creating maximum innovativeness and unexpected opportunities.

'Chaos' type activities are also necessary for control in turbulent environments. Fitzgerald and van Eijnatten (1998: 269) suggest that the most effective method of controlling in a turbulent environment is to "let go," allowing the system to self-control. The main management task is stewardship, which involves the creation of conditions in which individuals are encouraged to spontaneously respond to the changing environment. Those close to the action are more sensitive to the environmental forces. In order to increase 'local control', companies delegate decision-making to the lower levels close to the action.

In summary, it can be concluded that leadership in a complex/turbulent environment should be organic, with the leader concentrating on creating an internal environment conducive to co-evolution and self-organisation. Decision-making should be decentralised, learning and experimentation should be facilitated and change encouraged. The leader must provide the information to support this approach and must encourage informal communications and information gathering. This leadership approach can be termed self-organising leadership.

3. Method

The objective was to investigate a self-organising leadership approach and its applicability to success in a turbulent industry. In other words, is self-organising leadership more effective in a turbulent environment? To answer these questions four propositions were developed:

P1: a more successful company in a complex/turbulent industry uses self-organising leadership.

P2: in a complex/turbulent industry, a less successful company uses traditional management.

P3: a more successful company in a simple/stable industry uses traditional management.

P4: in a simple/stable environment, a less successful company uses self-organising leadership.

Due to the paucity of complexity oriented research in this field, a qualitative exploratory approach, namely the case study, was chosen. Two companies each in a simple/stable industry and a complex/turbulent industry were selected using maximal variation sampling. The sample was selected through a two-stage process:

- First the most complex/turbulent and simple/stable industries were selected via a questionnaire posted to experts - industry analysts and management consultants. The results highlighted information technology (IT) as most complex/turbulent, and packaging as most simple/stable.
- Within each industry, more successful and less successful companies were chosen, using a Delphi process with panels of industry experts - consultants, journalists and buyers. They were asked to subjectively or qualitatively consider "success" in terms of the companies' performance over the previous three to five years, with more successful firms being those that have achieved consistent growth in sales, profits and assets, that have increased market share, or that have adapted well to their changing environment, while less successful firms were those that performed poorly on these factors. The experts nominated ITA as more successful and ITB as less successful in the IT industry, and PA as more successful and PB as less successful in the packaging industry. Table 2 provides a profile of the four companies.

Table 2: Profile of sample companies

| Company | Characteristics |
|---------|--|
| ITA | Large company listed on stock exchange, Johannesburg based, operates nationally, regionally and internationally. Emphasis is on hardware and software. |
| ITB | Medium to large company listed on stock exchange, Durban based, operates nationally, regionally and to a limited extent, internationally. Emphasis is on software. |
| PA | Medium sized subsidiary of a packaging group based in Durban, but trading nationally – focussing on flexible packaging, especially for the food and beverage industry. |
| PB | Long established, family business, Durban based but trading nationally – focussing on a wide range of packaging applications, especially pharmaceutical. |

Using an interview guide, data was collected from 31 directors, managers and staff via depth interviews, which were audiotape recorded. Notes were taken and company documents analysed (e.g. annual reports, brochures, web pages, advertisements, minutes, manuals). To obtain the companies' co-operation anonymity was necessary.

Analysis was via thematic coding, using NVIVO software, to deconstruct and reconstruct the transcripts, categorising findings according to the two perspectives being studied (stable/turbulent and more/less successful). Manual content analysis summarised and reduced the field notes and documents to generalisations for comparison with the research propositions. These analyses were then used to compare the two companies in each industry against each other and against the proposals, and to compare the companies similar in success to each other and against the proposals.

4. Findings

4.1. Complex/turbulent environment

The findings are summarised in Table 2, together with interview extracts as supporting evidence. Both companies have a vision that indicates the nature of their companies. These visions are different, with ITA's reflecting an aggressive leader, whereas ITB's reflects a paternalistic, people-supporting, follower. ITA's management style is open and democratic, involving bottom-up planning and self-control. Long-term decisions are centralised but day-to-day decisions are decentralised. Staff and

management relationships are informal, with open communications and few formal policies and procedures. Proposition 1 is therefore supported: the more successful company uses self-organising leadership.

ITB, despite a different vision, uses similar leadership activities. They too have an open management style, use self-control, have informal relationships and communication, mostly decentralised decision-making and few policies and procedures. The one difference is that their planning is more formal. Therefore Proposition 2 cannot be supported as ITB do not use bureaucratic management.

Table 2: Findings summary for complex/turbulent environment

| <i>Issue</i> | <i>Firm</i> | <i>Summary</i> | <i>Evidence</i> |
|----------------------------------|-------------|---|---|
| <i>Vision</i> | ITA | Leaders, aggressive, innovation, entrepreneurial | "shareholder or results driven", "make your target", "desire to shake up the market", "foster innovation and entrepreneurial thinking" |
| | ITB | Commitment to staff, trend followers. | "...respect and providing opportunities staff", "innovation through people...enthusiasm, participation, responsibility", "do not like risk associated with being a market leader" |
| <i>Management style</i> | ITA | Open, democratic, independent and entrepreneurial | "...get the guys at the coalface to try and come up with innovations", "I am not the dictatorial 'you will' type boss" |
| | ITB | Open, democratic, | "... everyone can take routine decisions", "they are mature, they are rich in knowledge." |
| <i>Control</i> | ITA | Self-control, autonomy, know what is required. | "... we rely on self-control, we don't go around checking up". <i>But</i> : "...intolerance of failure", "merit progress". |
| | ITB | Self-control, autonomy, | "...nobody checked on you", "try not to control people... encourage independence". <i>But surprises not liked</i> – be "in control", "...anyone can see what they have achieved" |
| <i>Relationships</i> | ITA | Informal, positive | "everybody is co-operative", "work well together", "things could not happen if different sections did not work together" |
| | ITB | Informal, positive, flat structure | "everybody gets treated the same and we ... respect every individual", "no hierarchy and no titles" |
| <i>Communication</i> | ITA | Informal, open and transparent | "corridor talk", "discussions at lunch time", "employee involvement, sharing of information", "not to be frightened of shouting from the coalface" |
| | ITB | Informal, open and transparent | "discussions over coffee", "sessions for all staff... financial forecasts, sales targets and report all the costs, the salaries" |
| <i>Planning</i> | ITA | Emerges from environment | "the way it [planning] evolves is not cast in concrete" |
| | ITB | Careful, long-term planning | "planning is thought out ... sometimes very cautious" |
| <i>Decision-making</i> | ITA | Both centralised & decentralised | "is a macro strategy...given to us from an executive", but at lower levels "make up your mind, ...go for it, but just take the responsibility for it as well" |
| | ITB | Decentralised, but group oriented | "I can't make that decision on my own", "they would get together... caucus and make a decision" |
| <i>Policies & procedures</i> | ITA | Few, some basic principles | "staff know what to do and just get on with it", but "strict policies and procedures related to financial control" |
| | ITB | Few, some basic principles | Lack of "rules", "people know what to do because of (company's) basic principles" |

4.2. Simple/stable environment

The findings for this environment are summarised in Table 3, together with interview extracts as supporting evidence. The two companies have different visions. PA is a dynamic leader, whereas PB stresses quality and its family history. PA has an open and transparent management style with clear, but informal, planning, and self-control. Relationships are open, transparent and inclusive, with informal communication. Decision-making is decentralised and democratic and there are no formal policies and procedures. Thus, they use self-organising leadership, which is contrary to what was anticipated. Therefore Proposition 3 cannot be supported.

PB has a bureaucratic management style, with little self-control – managers are 'policemen'. Relationships and communications are formal with little openness. Decision-making is centralised with top management, and where staff are required to take decisions, these are determined by written

policies and procedures. PB clearly uses bureaucratic management, and therefore, Proposition 4 cannot be supported.

Table 3: Findings summary for simple/stable environment

| <i>Issue</i> | <i>Firm</i> | <i>Summary</i> | <i>Evidence</i> |
|----------------------------------|-------------|---|--|
| <i>Vision</i> | PA | Leaders, innovative, dynamic, unique | "don't just do more of the same", "renowned for innovation" |
| | PB | Family business, history, quality, making money | "history and ancestry of the company", "chasing turnover", |
| <i>Management style</i> | PA | Open and transparent | "very open way about things", "company trusts people, and if you have a view on something you can speak ", "no written job descriptions" |
| | PB | Authoritarian, bureaucratic and family oriented style | "very regimental", "weren't allowed to think for themselves", "speak to [MD] because nobody else will make that decision", "tight...formal job descriptions" |
| <i>Control</i> | PA | Self-discipline and control | "no policing, it is self policing", "no one controls what I do" |
| | PB | Little autonomy or self-control | "there should be checking", staff are "managed, either through managers or through policy manuals and systems" |
| <i>Relationships</i> | PA | Open, transparent, inclusive | "if the person sweeping the floor wants to know about the budget for the month we tell them" |
| | PB | Formality, with little openness, autocratic | "make sure that people...do what they are told", "cutthroat relations" |
| <i>Communication</i> | PA | Lots of informal communication | "have tea in the canteen ... discuss a whole lot of stuff ...", "no pigeonholes... step into other peoples territories" |
| | PB | Formal - informal discouraged | "not really encouraged because of...downtime", "eliminate informal instructions", "people don't know what is going on" |
| <i>Planning</i> | PA | Strategies focussed, but not written. Projects carefully planned. | "opportunities are seen along the way...make those decisions...there and then", "...off the cuff but not in a reckless way", "not a random decision...done homework" |
| | PB | Budgeting and production planning, no strategy planning | "move...was forced on us by the market shrinking", "we see something...we follow it...blunder along", "reacted too prematurely without sufficient planning" |
| <i>Decision-making</i> | PA | Democratic, lower levels take decisions relevant to their areas | "want guys who can think for themselves", "operator would make that decision", "staff deciding on shift changes...whether to rehire a...worker" |
| | PB | Rests mostly with managers or 'experts' | "top management ... you must come to them for a decision", "I (MD) want to make the right decision so therefore I want to know everything" |
| <i>Policies & procedures</i> | PA | Efficiency policies, but informal and verbal | "there are no rules. There is no formal procedure" |
| | PB | Formal system, with manuals including job descriptions | "no system for bypassing the procedure", "everything is ... in the policy manual with detailed work instructions", "procedures for compliance with policy" |

5. Discussion

In the complex/turbulent environment, both companies applied a self-organising leadership approach, as expected of a more successful company (ITA), but not as expected of a less successful company (ITB). The similarity in leadership approaches could indicate that the relationship between environment and leadership has no impact on success. Other possibilities are that ITA's success is due to better implementation of the leadership approaches, or that ITB applied self-organising leadership in an environment they do not truly see as complex/turbulent - this contradiction could cause weaknesses in other operational areas, and therefore reduced success. Furthermore, self-organising leadership may be in conflict with ITB's paternalistic and people-oriented philosophy, leading to lip-service being paid to self-organising management, with staff relying on direction and control from above.

In the simple/stable environment, the findings were the reverse of what was anticipated, i.e. PA behaved like a less successful company, while PB behaved like a more successful company. This could be because the South African packaging industry may be complex/turbulent and so require self-organising leadership. Alternatively, self-organising leadership may be superior in any environment,

thus explaining PA's superior performance. A further possible explanation could be that self-organising leadership is 'fashionable.' Many of the leadership issues have been discussed in the management literature, and PA may have adopted them, regardless of their environment. PB, on the other hand, is inward-looking and has retained what worked in the past - bureaucratic management. In summary, the environment does not necessarily determine the leadership approach in a simple/stable environment and, therefore, may not be influential in determining success.

These conclusions imply that self-organising leadership is superior, regardless of environment. This is implied by the fact that the two successful companies (ITA and PA) both applied the approach. ITB tried, unsuccessfully, to implement it, partly due to conflict between some leadership issues and their philosophy/vision. PB, on the other hand, did not implement it, remaining wedded to bureaucratic management. Of course, if the entire South African environment is complex/turbulent, then Proposals 1 and 3 would be supported, as those companies that adopted self-organising leadership were more successful and those that did not were less successful. However, if this is true, then this study says nothing about the leadership style needed in a simple/stable environment.

6. Implications for leaders

Since the findings seem to indicate that self-organising leadership leads to greater success, and may be more superior in complex/turbulent environments, the key issue for managers is to accept that actions cannot be centrally directed and controlled. A different way of managing is needed - a clear vision of what the company is and wishes to become, openly and continuously communicated with staff. Decision-making should be decentralised to the level most knowledgeable about the decision situation, and managers must 'let go', trusting and allowing staff to self-control their activities in line with the company vision or philosophy. Staff should be free to 'sense' their immediate environment, and through open and transparent communications, develop applicable responses to the identified threats and opportunities. In the words of Wilkinson and Young (2005: 386), managers and staff are "equal partners in the construction of robust, flexible behaviours." In other words, leadership actions should be determined by what the led are doing or want to do, and thus *'follow me, I'm right behind you!'*

This approach may be a step too far for many managers. However, the leader still retains ultimate responsibility and therefore has the right to suggest changes, or in an extreme situation, to veto actions. Although staff and leader should be "equal partners", the leader may have wider knowledge about the firm and the business environment. However, in terms of self-organising leadership, such wider knowledge should be disseminated throughout the firm, thereby minimising the need for authoritarian action.

7. Limitations

Due to this being an exploratory study, the findings may not be representative of all companies in the selected industries, nor in other, similar, environments. However, the objective was merely to investigate leadership in the applicable environments, and not to generalise to other industries or environments. The research has provided some understanding of the role of self-organising leadership in a complex/turbulent environment. However, if extrapolation to other industries is attempted it should be done cautiously.

8. Recommendations

Although the complexity perspective helps to understand leadership in complex/turbulent environments, there is still much to be learnt. Further research using complexity theory may improve understanding of relationships between leadership and the environment, specifically:

- Research in other environments (e.g. different industries or different countries) could test whether these findings are generalisable to other South African firms, and in other countries.
- An in depth, possibly mixed method, study of one industry could more clearly differentiate the leadership behaviour of more successful from less successful companies. Such a study could attempt to identify the frequency and prevalence of self-organising leadership activities in a larger range of companies.
- Measurement of environmental complexity/turbulence could resolve whether all South African industries are complex/turbulent. Such measurements would be predominantly subjective and

could, amongst others, involve a continuum of complexity from simple to complex (including number of external variables impacting on the organisation, whether organisational interactions are routine or non-routine and whether they are interconnected or remote) and a turbulence continuum from static to dynamic (e.g degree to which events are novel or familiar and the frequency of discontinuous changes) (Brooks and Weatherston, 1997).

- Research in a country without extreme complexity/turbulence may better identify the leadership activities in simple/stable environments.

It is accepted that the recommended research projects will be very difficult to conduct owing to measurement problems, confidentiality issues, uncertainty as to what specifically to observe and measure and the problem of confounding and intervening variables. Nevertheless, the likelihood that a complexity theory approach is able to unlock greater knowledge about leadership and its influence on success makes taking on these challenges very important and worthwhile.

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