UNIVERSITY OF KWAZULU-NATAL

EXPLORING THE USE OF SIMULATION AS A TOOL OF CHANGE MANAGEMENT

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A dissertation submitted in fulfilment of the requirements for the degree of Master of Commerce

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2009

DECLARATION

I, Cecile Gerwel, declare that

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ACKNOWLEDGEMENTS

I am most grateful to God for always having provided throughout my life and seen me through it all.

I am indebted to the following people for their valuable contributions and without whom this study would not have been possible.

- My supervisor, Shamim Bodhanya for the valuable and timely input, assistance and guidance.
- The Leadership Centre staff for their assistance.
- My husband, Şerban Procheş for the continued support, devotion and motivation.
- My family, especially my parents, Samuel and Yvonne Gerwel for their enduring commitment and assistance. My sister Shireen Gerwel and her husband Alf van Zyl, my brother Jerome Gerwel, and my in-laws Ştefan and Ileana Procheş for encouragement.
- MCM for funding this project.
- Ashley Naidoo and Jackie Sunde for assistance with arrangements for the fieldwork.
- All those that contributed to this study by setting time aside for the interviews and participation in the simulations.
- My fellow-students, including Assan Biruli, and friends and relatives for all the support.

ABSTRACT

The ability of an organisation to change and adapt is critical. The process of change however tends to be more challenging than expected during initial planning. Organisations frequently rush into change initiatives; these often result in unintended consequences which may subsequently lead to many change efforts being unsuccessful. There is much contention around issues of participation and communication, and current theory and models are criticised for being inadequate. The skills base of employees and managers are also often inadequate to deal with proposed changes. Problems are seldom handled effectively, thereby decreasing an organisation's ability to engage in learning. Simulations have proven beneficial in enabling participants from various backgrounds to meaningfully engage by learning from experience. The safety of the environment enables participants to explore ideas and strategies, with the aim of developing abstract thinking by observing and reflecting on experiences from the simulation. This exploratory study therefore set out to investigate how and specifically in which ways simulations can play a role in change management. Relevant literature in the areas of change management, learning, systems thinking, complexity theory and simulations were examined to establish a theoretical grounding. The empirical component of this study focused on the fisheries system in the Western Cape province of South Africa. A qualitative research approach and purposive sampling were employed. Fifteen semi-structured, face-to-face interviews were conducted. Observations and secondary data in the form of archival data, and other relevant organisational documents were also analysed. Subsequent data analysis was then used to uncover the various pertinent issues. A simulation was thereafter designed, piloted with students, and then conducted twice with some of the stakeholders in the fisheries context. This study is significant in understanding how interactive simulations contribute to change management. The main findings from this study indicate that simulation use illustrated how the various stakeholders in a system interact, and how their actions and decisions influence each other. The findings also revealed that simulations were particularly effective in a multiple-stakeholder scenario, and could show the role that mental models and stakeholder perceptions play. The findings indicated that simulations could successfully place emphasis on developing capabilities, and highlight how approaches towards communication and participation influence outcomes. General implications based on the findings were derived for change and simulation theory, as well as for the fisheries context. The simulation may be used in other areas of natural resource management, as well as general stakeholder scenarios. It may also be effective in a general organisational setting to re-examine the conventional way of approaching change.

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

BEE	Black Economic Empowerment
DEAT	Department of Environmental Affairs and Tourism
GEAR	Growth, Economic, and Redistribution Programme
ITQ	Individual Transferable Quota
MCM	Marine and Coastal Management
MLRA	Marine Living Resources Act
MPA	Marine Protected Area
NGO	Non-Governmental Organisation
RDP	Reconstruction and Development Programme
SA	South Africa
SANParks	South Africa National Parks
TAC	Total Allowable Catch
WCRL	West Coast Rock Lobster

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CHAPTER 1: INTRODUCTION

1.1 Problem statement and motivation for this research

Changes are often undertaken with the goal of increasing organisational effectiveness. Anderson and Anderson (2001) refer to processes, which essentially encompass a holistic perspective focused on content (strategy, structure, systems) and people (behaviours, emotions, minds and spirits of people). This study makes reference to change efforts or change processes, as defined by Anderson and Anderson (2001), in an attempt to provide a holistic perspective which takes various factors into account.

Planned change is very often intended to enhance organisational effectiveness; thus linking into organisational development. Van Tonder and Roodt (2008) point out that there are different terms used in the organisational development field, such as the improvement of organisational effectiveness, or better adaptation, but that the basic idea of organisational functioning and performance remains the same. The ultimate objective is to enhance the wellbeing of individuals, organisations and society (Van Tonder & Roodt 2008).

Change interventions frequently follow a traditional change management process, as indicated in the traditional change literature. Change management is defined as the modification or transformation of organisations for the purpose of maintaining or improving their effectiveness (Hayes 2002). Change management therefore arises if there is a discrepancy between enterprise, division, function or individual performance objectives and actual performance within the organisation (Erasmus, Loedolff, Mda & Nel 2006).

Organisations will often attempt systematic change as prevention or cure for identified problems. Such problem identification and consequent problem-solving is mostly the responsibility of management. The purpose of change is thus to improve certain structures, processes, or units in an organisation. Models with step-by-step approaches are often utilised but they may lead to the assumption that changes can be managed and will proceed as planned (Callan, Latemore & Paulsen 2004; Ferdig 2007; Wedge 2006; Carnall 2003). Plans are formulated by management on the intended changes, and communicated to employees (Balogun 2006; Bamford & Forrester 2003). The intended changes, plans and forecasts essentially remain the domain of management (Beeson and Davis 2000; Lichtenstein 2000; Hamilton, Mclaren & Mulhall 2007). There is then an expectation that the plans will follow through smoothly. This unfortunately rarely happens, due to a variety of problems that occur.

Many difficulties are experienced with communication and participation. The manner in which the intended changes are conveyed to employees often produces great dissatisfaction. Changes will sometimes be communicated through newsletters or electronic communication, and in some cases may arrive too late, as people may have already heard from informal sources. People may also feel that they have not been included in decision-making regarding significant processes that will ultimately affect them. In instances when they have been included, there may be a sentiment that participation efforts are not meaningful. The change literature therefore makes mention of resistance to change, which describes an opposition, mostly by employees, to change efforts (Cummings & Worley 2001; Lee & Krayer 2003). Change processes will generally result in a situation where people will feel that their emotions and opinions have been overlooked (Van Tonder 2004; Carnall 2003). Furthermore, not enough attention is directed at all stakeholders, whether internal or external, who are impacted by changes (Van Tonder 2004). An additional difficulty is that the underlying thoughts or perceptions of stakeholders, which play an important role in change, are rarely acknowledged (Montouri 2000; Balogun 2006; Wedge 2006; Senge 1994).

The role of management in change is also problematic. The implementation of change is often left to the middle management (Bamford & Forrester 2003; Balogun 2006). The problem is that those who are assigned to see through change efforts generally do not possess the necessary skills, which include being able to appreciate diverse perspectives, and not having pre-set ideas about how organisations and people change (Kanter, Stein & Jick 1992; Anderson & Anderson 2001). Even training programmes that managers are sent on often do not produce desirable outcomes, in that managers often cannot challenge set ways of how things are done, or there is too much emphasis on technical change skills (Antonacopoulou 2001; Doyle 2002). Managers will frequently experience pressure and receive criticism, sometimes from both their superiors and subordinates. In a recent survey, change management was found to be one of the greatest challenges for managers (Peacock 2008). Koch and Godden (1996) advocate for 'managing without management', and argue that management can often be a liability to the very companies that they run.

Another common problem experienced during the change process, is that changes that are made in a certain unit or department, will often have effects elsewhere. Furthermore, people may not have the necessary skills in line with the intended changes (Lawson & Price 2003). There is thus a need to test the changes before implementation. Even if change processes go according to plan there may be a situation in the future, when there will be a feeling that the same problems have reappeared. This is often indicative of a failure to engage in meaningful learning processes, in that people may not have engaged in the sort of learning which leads to things being done

otherwise. This essentially touches on the concept of double-loop learning, which goes further than the identification and fixing of errors (single-loop learning), by challenging current thinking with the result that behaviours can be changed (Argyris 1999). Argyris (1999) thus argues that double-loop learning is of utmost importance to organisations.

Despite a variety of studies suggesting alternatives to conventional approaches, organisations still struggle, and managers and employees alike experience anxiety. Change is actually a necessity and presents an opportunity for engagement in continuous learning and to develop the capabilities of all. Some authors have thus proposed alternative views to change, with concepts such as 'fluidity' and 'flow', which involve the notion that change occurs constantly, often through local interactions, rather than being introduced by management (Senge, Kleiner, Roberts, Ross, Roth & Smith 1999; Kanter *et al.* 1992; Kotter 2002; Badham 2006). Therefore, the way in which change efforts are approached can have significant outcomes.

A competent and focused approach to handle change is especially necessary, considering Van Tonder's (2004: 227) statement that "yesterday's models and methodologies with their constrained conceptions of change will not reveal the true character of change in organisations in the future".

Additional tools and methods are urgently required to assist with change management, in particular tools which could enhance learning processes, but produce learning of a more profound, lasting nature. This is an urgent requirement, so that individuals within organisations can develop capabilities, in order for the organisation as a collective to enhance effectiveness. There needs to be a movement in facilitating learning at a deeper, more fundamental level that ultimately results in behaviour change, due to the questioning of underlying thoughts and assumptions of organisational members (Colvin 2006; Van Tonder 2004; Balogun 2006). In addition to this, the usual change issues of participation, communication, and problem-solving have to be addressed. Several calls have been made for the use of simulations in management research (Lane 1995; Harrison, Lin, Carroll & Carley 2007). This research was therefore undertaken in an attempt to explore whether the use of a simulation could be used as a tool of change management.

1.2 Focus of the study

This study was grounded in literature on change management and learning, systems thinking, complexity theory, and simulations. Change management literature with different perspectives and with a focus on the various aspects of change, had to be consulted in order to gain an

holistic perspective. The dominant view of change management is that it is an orderly process which follows a step-by-step approach, usually commanded by the management in an organisation. McMillan (2008) points out that most management literature on change management, refers to control. Kanter *et al.* (1992: 370) thus maintains that "despite volumes of literature on planned change, legions of consultants, and the best efforts of corporate leaders, organisational change still appears to be a chaotic process".

There is thus dispute about the usefulness of the conventional approach. This study was thus undertaken to present an alternative way of addressing change processes, which was more cognisant of the complexities facing organisations. Complexities include market and environmental changes. McMillan (2008: 32) also refers to complex problems, great change and uncertainty, and also to the difficulties that today's organisations experience, in that civilizations are based on "highly developed, information rich, globally spanning, technological societies and these in turn are underpinned by human social-organising systems".

There are various factors of relevance in change processes, such as organisational culture, stakeholder involvement, communication and participation (Van Tonder 2004). It was decided that it would be more significant if the research were undertaken in an holistic manner that would take into account all the factors that impact on change endeavours. Thus, the focus was not solely on communication only or on organisational culture.

A focus on organisational learning was essential to understanding how continued learning and adaptability affect organisational effectiveness (Hayes 2002). Double-loop learning was considered critical so that people could challenge their underlying thoughts, assumptions, and beliefs, in order to generate new behaviours (Argyris 1999). The emphasis however was on striving for learning processes which may make a difference to the thoughts and perceptions of people, rather than on how they performed a task. The need for insight into systems thinking and complexity theory was considered critical (Van Tonder 2004). The reality of the inter-connectedness of the various parts of a system, as demonstrated by how changes in one area affect others, as well as how seemingly minor decisions have significant outcomes, therefore had to be better comprehended. Jackson (2000) refers to the work of Barnard, one of the early systems writers, who proposed that organisations be regarded as naturally co-operative systems. Jackson thus points to the parallels between Barnard's work and that of the common notion of organisations needing to attend to stakeholders and their concerns. The systems perspective also justifies the need to have considered the factors in change in their entirety, rather than in a piece-meal fashion.

The study into simulation literature had to be quite thorough, in order to firstly understand the basic concept of what a simulation entailed. The literature had to be carefully studied to better comprehend the immense wealth of information that was available. Considered to be of importance were the various simulation methods, the multiple features that contributed to the success of simulations, as well as the design and conducting of simulations. This was necessary in order to eventually enable the design of a simulation for change processes, and to have a realistic expectation of what conducting a simulation would entail.

The aspects that contribute to the success of simulations had to be analysed and considered in relation to the difficulties of change. Some of the distinguishing characteristics of simulations include the fact that learning can occur with a variety of people, in a safe environment, where processes of meaningful problem-solving can be engaged in (Lane 1995). People from different levels in an organisation can thus engage in collective learning through reflection on their experiences in the simulation. This was seen to be ideal taking into account the fact that traditional change management is limited in that it only allows for limited participation and problem-solving. An additional benefit of participation in a simulation was that there would be a natural opening for communication amongst all. An element of simulations that was regarded as important was that people could become more aware of their own, and of others' thought processes and perceptions, and realise how such covert underlying processes have the power to direct change. An area that corresponds to this is the 'Strategic Assumption Surfacing and Testing (SAST)' work of Mason and Mitroff, whereby the focus is on highlighting different assumptions, beliefs and worldviews regarding problem situations, for the purpose of considering opposing perspectives (Jackson 2000).

Another attractive feature of simulation use was that people could make decisions and then experience the outcomes in record time. This would then address the common problem faced in change processes, where there is no pre-testing of change before implementation (Keys, Fulmer & Stumpf 1996). The capabilities and skills of people could then be assessed, but more importantly by all.

Of significance was the fact that simulations allowed for a somewhat mutually beneficial relationship between researcher and participant, in that researchers can make observations (Feld 1997), and participants can engage in learning processes (Dentico 1999; Enciso 2001). The journey commences with an in-depth exploration by the researcher into a specific area, in this case, change management. The relevant issues are noted and a thorough understanding is gained into the field. A specific context is selected and issues are discovered by way of the empirical process. A simulation is then designed for use in the specific context, and thereafter conducted.

The outcomes of this process are multiple, in that the researcher is able to make a contribution to the field under study, to simulation theory, and to the specific context. The participants in the setting essentially have input into the theory, and may gain positively by improving their decision-making, communication, interpersonal and problem-solving skills.

Participants may be empowered to better understand their organisation, the role that they are in, how the various departments or units function, and how their decisions and actions impact on, and are impacted by other factors (Geurts, Duke & Vermeulen 2007; Barreteau, Le Page & Perez 2007). Through participation in a simulation, people may become more accountable, cohesive and ultimately more adaptable, and this can then increase the effectiveness of the organisation as a whole (Erasmus *et al.* 2006; Geurts *et al.* 2007).

The use of the underpinning theory was thus carefully selected with the purpose of eventually enabling the construction of a simulation for participants in a specific context to become empowered and capable of directing future change (Chua 2005; Borodozicz 2004). This could occur through the simulation portraying key processes that may leave people more conscious of their underlying thoughts, and how they approached issues such as decision-making, communication, and problem-solving (Geurts *et al.* 2007; Barreteau *et al.* 2007; Fannon 2003; Lane 1995). This may trigger key learning that could ultimately be of significance for future change endeavours. The purpose of the simulation would then be to allow people to adapt to a new situation, try alternative ways of behaving, encourage co-operation, reflect and experiment, and facilitate learning (Peters & Vissers 2004; Keys *et al.* 1996).

1.3 Research objective and questions

The following research objective and questions were based on the problem statement and focus of the study.

The main objective of this research was to investigate how and specifically in which ways simulations play a role in change management.

The critical research questions were:

- How could interactive simulations contribute to change management?
- How and to what extent do simulations contribute to double-loop learning in the context of organisational change?

- What is the role of simulation in participation, communication, problem-solving and learning?
- What can simulations offer to the change management body of knowledge?

1.4 Methodological approach

The study commenced by examining available literature in the areas of change management, systems thinking, complexity theory and simulations. Once the theoretical framework had been established, the study then pursued empirical research.

An exploratory research design was used with the aim of gaining insight into the use of a simulation in the context of change management. This study drew on a qualitative research approach. The qualitative approach was chosen in order to discover and understand more about a little-known phenomenon (Strauss & Corbin 1998). This was to enable rich descriptions of multiple perspectives into how participants experienced a complex social setting (Glesne & Peshkin 1992; Denzin & Lincoln 1998).

Purposive sampling was used; thus a suitable research context was identified. This is consistent with the idea that participants are purposefully chosen when conducting qualitative research (Creswell 1994). The context was the fisheries system in the Western Cape province of South Africa. The context was considered appropriate in the context of change due to the introduction of the Marine Living Resources Act (No. 18, 1998) that was designed to transform the fisheries system in South Africa in line with key democratic objectives. These include the need for reform by way of principles focused on achieving more equitable access for those who were disadvantaged under the apartheid era (Hersoug, van Hoof, Evrard, Trondsen & Matthiasson 2007). There are also continuing changes that are occurring in the fisheries system (explained in Chapter 2 and illustrated by way of a systems map).

Ethnographic methods, including interviewing and observational techniques were used, which ensured triangulation. After a process of data analysis, a simulation was designed based on the major issues that emerged. The simulation was first piloted and thereafter conducted with available stakeholders.

1.5 Significance of this research

The overall purpose of this research was to gain a better understanding into simulation use for change processes. This research was thus valuable in making a meaningful contribution to the

theoretical base on change management and simulations. This study was particularly significant in that it not only highlighted issues in a specific setting, but went one step further by designing a unique simulation to address some of the issues. This study was thus critical in attempting to provide a platform to handle common difficulties faced during change processes. The findings and recommendations generated from this study may therefore be utilised by other organisations already grappling with the change process, as well as those planning a change strategy. The study is noteworthy in that the simulation that was generated is essentially a model, which effectively represents a critical research output.

1.6 Limitations of this study

A limited amount of time was only available due to the time schedule required to complete the project. The study was only conducted in the Western Cape fisheries context; responses for the other coastal provinces could therefore have been different. Finally, further research will be required to back up the findings, as this was an exploratory study.

1.7 Structure of this study

This introductory chapter provided an overview of the study, the research objective and questions, as well as the significance and limitations thereof. The rest of the chapters in this study are structured as follows.

Chapter 2 explains the context, which is the fisheries system in the Western Cape province of South Africa, in which the study was located. The background, history and current situation of the context are highlighted.

Chapters 3 and 4 describe the two major strands of literature underpinning this study. Chapter 3 focuses on literature regarding change management, learning, systems thinking and complexity theory. Chapter 4 deals with the simulation literature.

Chapter 5 outlines the methodological approach that was utilised in this study. The study design, sampling, data collection and data analysis are described, as well as a brief description of the simulation construction and runs.

Chapter 6 highlights the results of the interviews with the respondents from the Western Cape fisheries context.

Chapters 7 and 8 respectively focus on how the simulation was constructed, and the results of the simulations.

Chapter 9 presents an in-depth discussion of both the results of the interviews, and simulations, and compares that to findings in other studies. This chapter also brings together the change and simulation literature, and consequently makes a meaningful contribution to current theory.

This study concludes with Chapter 10 which reflects on the extent to which the research objective and questions were answered, and also highlights implications and limitations drawn from this study, and recommendations for future research.

CHAPTER 2: STUDY CONTEXT

2.1 Overview of the fisheries system in the Western Cape province of South Africa

The context of this study is focused on the fisheries system in the Western Cape province of South Africa. This was considered appropriate in the context of change, as important structural and functional changes have shaped the fisheries system, and changes are still occurring in this complex, multiple-stakeholder setting.

South Africa, alongside Namibia is positioned 30th according to world scale fishing production, with a contribution to GDP of just below 1% (Hersoug *et al.* 2007). The fisheries system is however very intricate with many different stakeholders, particularly in the Western Cape.

National Government plays an important role. The Department of Environmental Affairs and Tourism (DEAT), along with the Department of Water Affairs, was merged into the Department of Water and Environmental Affairs, after the national elections in April 2009. Reference is however still made to DEAT in this study. The Marine and Coastal Management (MCM) branch of DEAT has to ensure that marine living resources are conserved, managed and used sustainably for the future. MCM has to balance the needs of various stakeholders and faces the challenge of an ever-increasing demand for a limited supply of marine resources. There are also scientists that play a role by undertaking research, based on various factors, some of which include the growth, spawning and migration of species; the result of which leads to critical recommendations about the status of the marine resources.

On the demand side, South Africa has approximately 37,000 people, mostly in the Western Cape, who are engaged in the commercial fishing industry, while there are also 700,000 recreational fishers (although this includes non-marine fishers) and about 30,000 subsistence fishers (Hersoug *et al.* 2007; DEAT 2008). Figure 2.1 illustrates the stakeholders on the demand side. Recreational fishers engage in fishing as a hobby which forms an important component of their holidays, and which has implications for tourism. They are not permitted to sell their catches. Then there is a commercial sector aimed at producing profits, which employs crew members and utilises more advanced vessels. A small-scale sector exists with fishers that are referred to as traditional, artisanal, subsistence or small-scale fishers. There are also non-governmental organisations (NGOs) such as the Masifundise Development Trust (referred to hereafter as Masifundise), which represents coastal fishing communities in achieving equitable access to the marine resources. Even though these NGOs are not part of the industry, they still

play an important role by being involved in policy-making to ensure that the interests of fishing communities are adequately represented.

Figure 2.1: Small-scale, commercial and recreational stakeholders

Figure 2.2: Systems map: Fisheries system, Western Cape, SA

A systems map, which is a system dynamics tool, is provided in Figure 2.2. The components, elements, boundaries, sub-systems and system of the fisheries system are highlighted. A systems map is also used at the onset of the research journey, and is valuable in portraying the structure of the analysed system (Richardson 1999).

The components of the fisheries system as highlighted in Figure 2.2 include the small-scale fish trade, NGOs, the commercial fish trade, tourism, illegal fishing, legislation and regulation, fisheries management, weather, and the natural fish rhythms. It is evident that the commercial and small-scale fish trade have rather intricate components, with the small-scale fish trade having two distinct sub-systems: economic and social. The commercial and small-scale fish trade employ different equipment, fish in different zones, and also target different species. The commercial sector has a formalised labour component and caters for an international market as well.

The social side of the small-scale fish trade cannot be ignored, as there are various factors such as poverty, health, education, culture and traditions, and internal conflict that play a role in the system. The tourism component includes the recreational sector, and Marine Protected Areas (MPAs). Apart from MCM which has the MLRA as a core element in the legislation and regulation component, the South Africa National Parks (SANParks) also plays an important role at a local institutional level. On the resource side, is the weather component which has critical elements of daily patterns, seasons and climate change, as well as the natural fish rhythm component with elements of growth, spawning and migration. The components of the environment include globalisation, international laws from world bodies and international fisheries management, and international demand for fish, whether legal or illegal. As highlighted by Richardson (1999) a systems map (Figure 2.2) is useful in outlining the fundamental structure of a system, which in this case was the fisheries system in the Western Cape.

2.2 History of South African fisheries

South African fisheries have a history predominantly characterised by discriminatory practices. Unjust practices originate from pre-colonial times but it is the more recent apartheid era that appears to have significantly shaped the industry. A major development in the fisheries was that of the formation of a few powerful commercial fishing companies, which some claim benefited directly as a result of apartheid (Sunde & Issacs 2008).

2.3 Government policies

The role of Government intervention through policies has also influenced the fishing industry. The Reconstruction and Development Programme (RDP) launched in 1994 by the new Government of South Africa, resulted in disadvantaged fishing communities having expectations about being business-owners and having fishing rights (Isaacs, Hara & Raajær (2007). A further complication was the belief that rights would be removed from established companies (Issacs *et al.* 2007).

In 1996 however, the Growth, Employment and Redistribution Programme (GEAR) came into effect. This was a shift with a focus on neo-liberal principles intended to accelerate the inclusion of black entrepreneurs. For fishing specifically, GEAR was aimed at poverty reduction as a means of increasing prosperity and capital through outlays in fishing, as well as avoiding poverty to assist people in reaching an acceptable standard of living. The change from RDP to GEAR resulted in a situation where reform, particularly through Black Economic Empowerment (BEE) was left to companies. BEE was intended to redress existing racial and gender imbalances. As a result, many commercial fishing companies placed previously disadvantaged individuals in senior management positions, and in some cases, gave them ownership and control of assets. Such actions were however not received well by some who perceived it to be insincere attempts at change (Issacs *et al.* 2007). A further criticism was that those who benefited from BEE had been successful because they possessed the required skills, financial resources, and necessary information and knowledge mainly because of political contacts.

2.4 The Marine Living Resources Act

The main influence on the fishing industry came when the Marine Living Resources Act (MLRA) (No. 18, 1998) was introduced in 1998, with MCM under DEAT, placed in charge of the conservation, management and sustainable use of marine living resources (DEAT 2008). What is relevant for this study is that the MLRA defined three distinct categories of users: commercial, recreational and subsistence. A subsistence fisher according to the MLRA was defined as someone who regularly caught fish for personal consumption or for use by any dependents, and included the occasional local sale or barter of excess catch, but not large-scale selling of fish (DEAT 2008). The coastal fishing villages often depend entirely on marine resources for their livelihoods. The West Coast coastal towns are of interest in this study.

The MLRA was not welcomed by all and was instead viewed, mainly by the small-scale sector, to be perpetuating the cycle of discrimination. The subsistence category was considered problematic, as it was maintained that pure subsistence fishing, which entailed only the consumption of fish, was uncommon. The reality was that there was a continuum of fishers left out that did not fit into the subsistence category (DEAT 2008). Such fishers not only consumed their catches but also sold to earn an income; some also referred to themselves as artisanal or traditional fishers. The overlapping and alternating nature of these fishers presented a problem.

There are hence many debates about the difficulties surrounding terminology. There has been a tendency however, to use the term small-scale, as it is considered comprehensive enough to accommodate the fishers that harvest mainly for consumption, to those that engage in small-scale commercial activities (Sunde & Pedersen 2007). Reference is however also made to artisanal or traditional fishers. There are certain characteristics unique to this sector (small-scale / artisanal / traditional / subsistence), for example; they have traditionally depended on the resources for their livelihood, they employ low-technology fishing gear, and fish close to the shoreline and personally harvest diverse marine resources (Jaffer & Sunde 2006).

The exclusion of artisanal and small-scale fishers in the MLRA was the beginning of a lengthy battle among the many stakeholders. The battle for recognition was however complicated in that most of the marine resources were assigned to the commercial fisheries already (DEAT 2008). This had ensued during the medium-term and long-term rights allocation processes.

The medium-term fishing rights policy involved assigning rights for the period 2002-2005, with the idea that the long-term rights allocation policy would occur thereafter. The individual quota system was primarily used for the medium-term rights allocation (Sunde & Isaacs 2008). MCM then released the long-term fishing rights policy in 2005, which had allocations for 15-19 years. This was how the commercial sector obtained their rights, and it is largely this that has resulted in great conflict between the stakeholders.

South Africa largely has a rights-based management regime, essentially in the form of license regimes (Hersoug *et al.* 2007; Branch 2004). The MRLA was therefore founded on the Individual Transferable Quota (ITQs) system. Other countries that have implemented the ITQ system include Australia and New Zealand (Branch 2004). ITQs entail participants obtaining part of the Total Allowable Catch (TAC), as well as deciding when to fish, sell or lease their shares (Branch 2004). A motivation for using this system is to achieve better sustainability of resources by essentially having increased stewardship incentives (Branch 2004; Costello, Gaines & Lynham 2008). It is thus hoped that people will become more interested in protecting

marine resources. According to Costello *et al.* (2008) catch shares, which are a form of rights-based fisheries reform, could potentially avert and even reverse the global trend towards fisheries collapse.

The reality is that much of South Africa's marine resources, particularly the abalone and line fisheries, are in a poor state due to over-exploitation (Anon 2009; Sonjica 2009). This therefore presents a great challenge to fisheries management. Additional constraints include ever-increasing demands placed on marine resources, such as coastal developments, over-fishing and destructive fishing methods (Anon 2008b).

The export-driven individual transferable quota policy was however viewed by some as having been beneficial for commercial companies, but crippling for fishing communities (Sunde 2003). The medium and long-term rights policies were perceived to have created a variety of problems for fishing communities, as detailed in Jaffer and Sunde (2006), some of which are briefly mentioned below. The main problem according to many was that there were fishers who could not access the sea. It was asserted that a multitude of social problems including drug and alcohol abuse, HIV/AIDS, violence, poverty, gangsterism, and various household problems, as well as poaching, overcame the coastal fishing towns. Some fishers were able to work for rights-holders who had obtained limited commercial rights, at certain times of the year, but struggled when the fishing season was closed. Those who had rights found the quotas to be unsustainable. Individuals in communities were forced to view former crew members and some family as competitors, while others were forced to look for work elsewhere. The application process was found to be complicated. An additional compounding factor was that fishers were forced to create companies or other entities to compete with commercial companies for high-value species. Many of them lacked the experience and struggled with costs, language and business abilities, and access to funding. The system was viewed to be favouring the commercial sector, at the expense of small-scale fishers. The West Coast Rock Lobster (WCRL) in demand by the recreational, commercial, and small-scale sectors, was also a particularly contentious issue, as 20% and 80% respectively had been allocated to the near-shore commercial and off-shore commercial sectors (Jayiya 2008). The division is however attributed to the fact that roughly 20% of the resource is found in the inshore area where hoopnets are used, whereas 80% is off-shore where larger trap vessels are employed (DEAT 2008; Jayiya 2008).

2.5 Culmination

The dissatisfaction with the above-mentioned issues eventually resulted in a case lodged with the Equality Court in 2007 (Fishers Net 2006; Jaffer & Sunde 2006). It was maintained that the

constitutional and human rights of the fishers had been violated as a direct result of not having being accommodated in the MLRA. It was contested that the traditions and culture of fishers were threatened, and that they were hence forced into other occupations. An infringement on the basic rights to food, healthcare, housing, education and the rights of children to basic nutrition was cited. There was thus a fight for the same allocation of fishing rights or for equitable access to the resource. There are some debates around the validity of some of these issues, such as how sustainable it is to be entirely dependent on the sea, considering the drops in catch rates over the years, and also difficulties around the problems associated with high-value species compared to low-value species. It is however not in the scope of this study to engage in any of these debates.

A significant turnabout came when an Equality Court agreement was eventually reached in 2007, which stated that a new fishing subsistence policy would have to be formulated. In addition, the Department also had to grant an interim fishing arrangement or interim relief to 1,000 fishers (DEAT 2007). This ruling was a major victory to some but a cause of concern for others. The greatest problem was that the MLRA had to be revised to accommodate the small-scale fishers because the definition of the subsistence category was not adequate (DEAT 2008). This would therefore have implications for the commercial and recreational sectors.

The commercial sector in particular was distressed about the repercussions of the removal of quota on their business operations, and maintained that credit was taken out on the basis of the quotas that were assigned to them. The recreational sector was also concerned due to the fact that some of their quota was reduced to accommodate the interim relief. The interim relief, which has seen changes year on year, included an allocation to the identified fishers of about four rock lobsters and 30 linefish (Snoek, Yellowtail, Capebream and Silverfish) per person, per day (DEAT 2007). MCM thus received tremendous pressure from the various stakeholders. This situation is the focal point, particularly as headway is being made towards work on the new subsistence policy. This study context is especially relevant as the introduction of the MLRA was essentially a form of change management.

The 4th interim relief is being entered into in 2009. Work still continues by a National Task Team, to formulate the policy to have a situation where fishers' interests are met, but without endangering the resources. Suggestions by the small-scale fishers and NGOs include the need for flexible policy and empowerment through co-management. Co-management refers to the empowerment of local stakeholders, encompassing fishers, both males and females from fishing communities to be involved in decision-making, development, implementation and evaluation of policies and plans (Pedersen, Sunde & Jaffer 2008). There have been attempts at draft policies which were not accepted on grounds of being unsustainable; there are thus many sticky

issues and stakeholder concerns that need to be worked through. DEAT is however resolved to forge ahead to finalise the rights allocations to the small-scale sector (DEAT 2008).

2.6 Concluding remarks

The landscape of the fisheries system in the Western Cape has been significantly altered by a variety of occurrences, as has been discussed, and is summarised below in Figure 2.3.

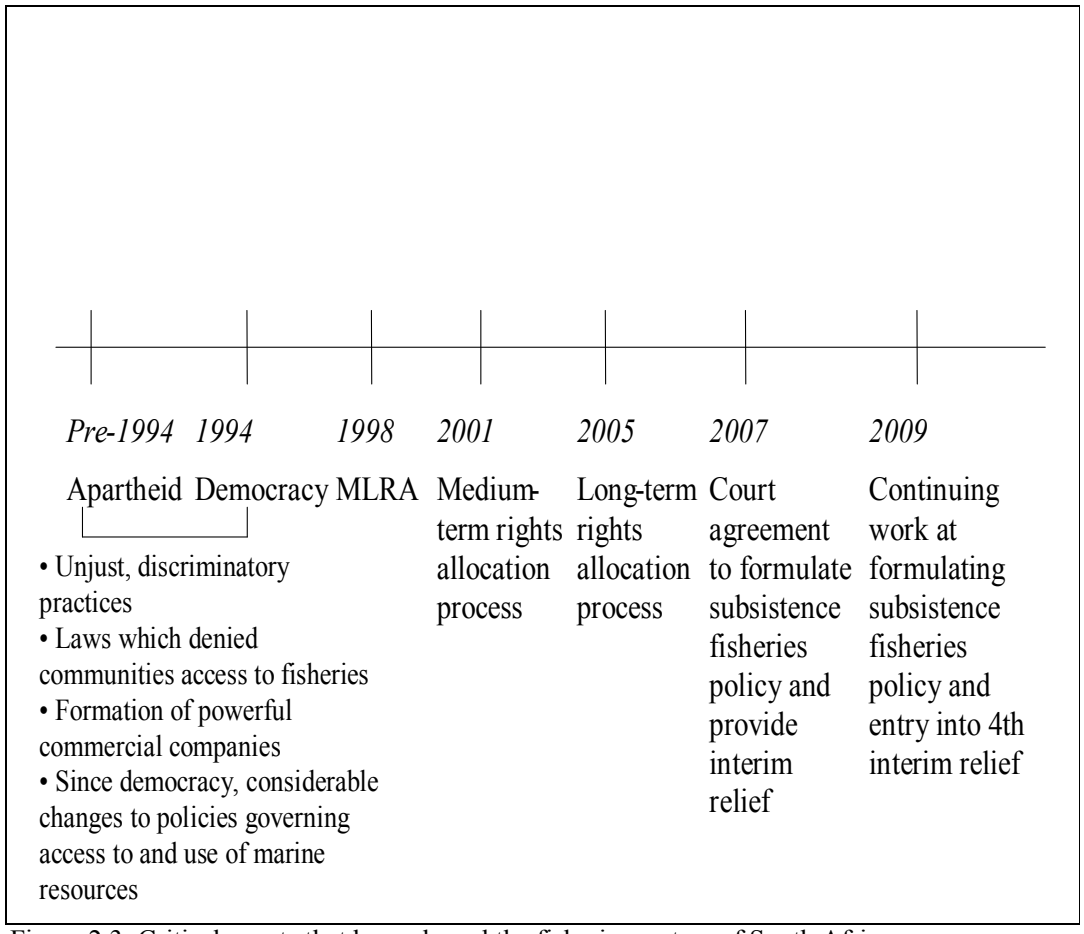

Figure 2.3: Critical events that have shaped the fisheries system of South Africa

The presence of diverse stakeholders, each with their own demands and concerns, has also added to the complexity of the fisheries system. A diagrammatic representation of the stakeholders and their concerns is provided in Figure 2.4.

Figure 2.4: Diagrammatic representation of stakeholders and their concerns: Fisheries system, Western Cape, SA

Figure 2.4 is inspired by the concept of a rich picture, which originates from Peter Checkland's Soft Systems Methodology. Rich pictures represent structures, processes, relationships and issues (Checkland 1999). A rich picture is a systems tool used at the onset of the research process, to outline not only those who are involved in a messy situation, but also to highlight the problems, concerns and disagreements (Monk & Howard 1998).

Figure 2.4 thus draws attention to the stakeholders in the fisheries system and their concerns. This diagram was constructed after rigorous engagement with the secondary data, which allowed for a better understanding into the stakeholders and their respective concerns. The diagram was therefore not constructed by the actual stakeholders, or even in consultation with them. MCM is more or less placed centrally, with the scientists also playing a critical role in resource allocation. Government policies also have an influence. MCM has a difficult task of on the one hand balancing the needs of the various stakeholders and providing sustainable allocations, while also receiving direction from the Government. On the demand side, one can see the recreational fishers, commercial fisheries, and the fishing communities, which are represented by the NGOs. The fishing communities had many clashes with the other stakeholders over a variety of issues, and desired justice for the perceived wrongs. The way forward according to them and the NGOs representing them, is to have a definition that accommodates their realities and to essentially be more active in policy formulation and decision-making. The recreational sector argues that fishing is a way of life, and that it makes a contribution to tourism. The commercial sector mainly has financial concerns of staying in business and being competitive.

Difficulties with fisheries are experienced at a global level as well. A recent study considered the world's fisheries management and found that even though countries advocate for international initiatives to improve fisheries management, that there is a disparity between endorsement and implementation (Mora, Myers, Coll, Libralato, Pitcher, Sumaila, Zeller, Watson, Gaston & Worm 2009). Mora *et al.* (2009) argue that policy-making is of the utmost importance to sustainability, along with participation, transparency, and the translation of scientific recommendations into policy. The study draws attention to how some developed countries have experienced collapses in some stock, due to demands on policy-making to allow for more catches, irrespective of the scientific recommendations. The study notes that policy-making in developing nations is often impacted by corruption (Mora *et al.* 2009). Conflicts between states and subsistence fishers have been observed in other parts of the world (McGoodwin 2001). Challenges in policy and governance regarding small-scale fisheries are comparable in many parts of the world, particularly around resource use, community impact and policy issues, despite differences in vessels, fishing methods and management approaches (FAO

2008-2010). Wilson (2006) thus points to the need for human activity in the world's oceans to be handled differently, in line with the acknowledgement of the ocean fisheries as complex adaptive systems.

As pointed out in this chapter, many difficulties were experienced in the transformation efforts in the Western Cape fisheries system. Hersoug *et al.* (2007) refer to transformation in the South African fisheries context, as the introduction of the MLRA as a way of bringing about reform to address the legacy of the apartheid era. There was no clear definition of transformation in the MLRA, but the underlying concepts included equity and redistribution; however as noted by Isaacs *et al*. (2007) transformation goals would not necessarily be compatible with goals of sustainable resource management. This study when making reference to transformation in the fisheries context will refer to the MLRA. There were complications around problem-solving attempts, as well as general resistance to change by different people, at different times. It was essentially a situation where there were plans which were conceptualised but which could not be implemented properly. As has been noted, there were difficulties with communication and participation involving all the stakeholders in the fisheries system. These and other factors that play a role in change processes will be better understood in the literature review in the following chapter.

CHAPTER 3: CHANGE MANAGEMENT AND ORGANISATIONAL LEARNING

3.1 Change management and organisational development

3.1.1 Conventional approaches

Change management initiatives are often employed both within organisations and in inter-organisational settings involving an organisation and other stakeholders. The history of a country can play a role in change efforts; however it is not in the scope of this study to summarise at length historical influences.

There are different forms of change but there are also a variety of definitions that exist. Kanter *et al.* (1992) make mention of the difficulties of words and phrases that arise in change management literature. Senge *et al.* (1999) also touch on the problems surrounding the terminology and details of what precisely change entails. A brief overview of a few core phrases is presented, but it is not the intention of this study to elaborate on definitions, as this is not central to the purpose.

Some authors make reference to small or incremental changes, as opposed to large-scale or transformational change. Anderson and Anderson (2001: 39) distinguish between developmental change, transitional change and transformational change. Developmental change refers to the modification of current operations, which is regarded as satisfactory. Transitional change involves introducing new, clearly defined practices above current ones. Transformational change however entails environmental and marketplace changes that are so considerable, as to necessitate a deep change in the mental models of people, in order for them to comprehend the new state with which they must replace current operations (Anderson & Anderson 2001).

Anderson and Anderson (2001) go further by defining elements of transformation strategies: content, people and processes. *Content* refers to the things in the organisation that require change, e.g. strategy, structure, systems, processes, technology. The *people* component focuses on the behaviours, emotions, minds and spirits of the individuals who are responsible for the design, implementation, or even those who provide support or who are affected by change. *Process* encompasses the planning, design and implementation of the *content* and *people*

components. These are essentially actions that will produce both external (content) and internal (people) changes (Anderson & Anderson 2001: 5-6).

Senge *et al.* (1999) point to diverse and often conflicting meanings to change, but they do maintain however that change essentially has both internal and external components. They note some interpretations of transformation as involving wide-spread change efforts. They, however, disagree because transformation could also refer to a singular episode of change.

Anderson and Anderson's (2001) definition of 'change processes' suffices for this study as it encompasses various aspects around people and content, which will be expanded on in this study. Reference is also made to change efforts, which will adopt the same definition as change processes.

Section 3.1 will provide a brief overview of the approaches employed in such situations. Change management can be viewed as the adaptation or transformation of organisations to maintain or enhance effectiveness (Hayes 2002). Harrington (2006: 49) further defines organisational change management as "a comprehensive set of structured procedures for the decision-making, planning, execution and evaluation phases of the change process". This essentially entails a planned, step-by-step approach aimed at attaining a desired future state, as indicated below in Figure 3.1. This figure correlates to Lewin's three stage model of change, which involves unfreezing, moving and refreezing (Kanter *et al.* 1992; McMillan 2008).

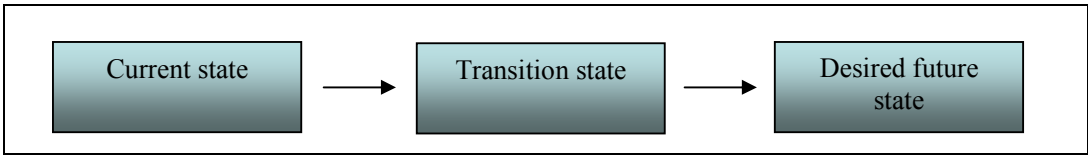

Figure 3.1: Organisational change as transition state
(Cummings & Worley 2001: 118)

Planned change is usually undertaken to enhance organisational effectiveness, and thus links into organisational development. Organisational development is seen as a method of bringing about a planned change in order for an organisation to increase its effectiveness (Cummings & Worley 2001). Van Tonder and Roodt (2008: 55) assert that organisational development "is mainly a planned process, thereby implying that it is not impulsively initiated or launched, but it is also not always meticulously planned to the last detail". Table 3.1 highlights the main characteristics and focal areas surrounding the field. There is both an emphasis on the role that management plays, but also on involving various people from different levels in the organisation. As pointed out by Van Tonder and Roodt (2008) organisational development is

multifaceted in that various levels (individuals, work teams, organisational levels, and different organisational subsystem levels) are involved, each with their own specific objectives. Attempts are made at improving and enhancing performance, and at ways to better utilise human potential. The systems perspective is highlighted, as well as a scientific approach.

Characteristics	**Focal areas**
Leading change	Change is planned by managers to achieve goals
Collaborative approach	Involves collaborative approach and involvement
Performance orientation	Emphasis on ways to improve and enhance performance
Humanistic orientation	Emphasis upon increased opportunity and use of human potential
Systems approach	Relationship among elements and excellence
Scientific method	Scientific approaches supplement practical experience

Table 3.1: Major characteristics of the field of organisational development
(Harvey & Brown 2001: 5)

Planned change and organisational development however, despite all the well-intended approaches, generally do not achieve much success. The reasons will become more apparent in the following section.

3.1.2 A critical appraisal of change theories, models and organisational development

Some criticism is directed at change literature, which could create unrealistic assumptions about change processes for managers. Attention is also drawn to new leaders that are expected to lead change efforts, often only based on learning that occurred a few months back in the classroom (Anderson & Anderson 2001). Kanter *et al.* (1992: 370) argue that "despite volumes of literature on planned change, legions of consultants, and the best efforts of corporate leaders, organisational change still appears to be a chaotic process". Part of the problem lies in the thinking and perspectives of the writers (McMillan 2008).

Many change initiatives fail, regardless of the wide-spread literature on change management (Elving 2005). Change literature appears to be of little use to managers, as was found by Bamford and Forrester (2003) due to oversimplifying the change process and being incapable of capturing the rate of change. Furthermore, studies on change tend to concentrate on single aspects rather than heterogenous descriptions (Gravenhorst, Werkman & Boonstra 2003). Examples of such studies are ones that will focus, for example solely on aspects of communication in change, or on organisational culture.

A few studies with those at the top involved in change efforts in organisations, reveals some of the deficiencies in the literature. CEOs interviewed by Callan *et al.* (2004) challenged the assumption that the planned, linear approach to change often resulted in managers feeling generally positive about achieving success, by arguing that people often had their own ways of perceiving things. Managers interviewed by Andrews, Cameron and Harris (2008) valued theories that allowed them to grasp and contextualise their specific change scenarios and which had applicability to their own situations. It was important to them that if a specific approach failed, that there was a range of theories, concepts and models that could be utilised. Managers also valued theory which viewed change in a non-linear way, thereby acknowledging the non-rational components (Andrews *et al.* 2008).

Some authors thus make mention of the importance of acknowledging complexity. The assumption of a well-managed change process and the consequent use of linear models are applicable in a reasonably static environment (Ferdig 2007). This could therefore be a reason why much of the planned approaches to change do not work out. Wedge (2006: 10) argues against the idea that "all successful change is led". This is an important point, as much literature stresses the critical role that management plays in change processes. Many change efforts, especially those with the latest models or approaches fail because most organisations were built with the focal point being on stability (Worley & Lawler 2006). These models create a false impression of the change process being orderly and following through with the activities or stages, which do not work in the real world (Carnall 2003). Callan *et al.* (2004) do not necessarily disregard the traditional change models but do stress the inherent complexity of directing change, and planning for uncertainty. They, however, still emphasise the role of management.

Some have therefore come to be rather critical of the field of organisational development. McKendall (1993) examined the tyranny of change by critically examining the organisational development field. She firstly points to the power that management has by the very nature of planned organisational change, which entails conformity and compliance, and views the emergence of uncertainty in the change process as a means of controlling employees. She argues that submission to management is a consequence of the reliance experienced by management due to the uncertainty (McKendall 1993).

The role of management in change therefore receives much criticism. McKendall (1993) states that the majority of planned change initiatives are just a means for management to drive their own goals and needs. She questions as to how precisely change can be owned when it is being commanded and implemented by others. The question then is whether organisational

development is actually accomplishing what it is setting out to do. McKendall (1993: 102) concludes that organisational development "is not a universally positive experience" and that the field is swarming with deception, and that those in the area find themselves in a state of self delusion by propagating methods of participation. Such criticism thus raises a valid point that much of the literature tends to overlook or underplay where those who are not in management fit in. McMillan (2008) contends that many writers and managers are driven by antiquated philosophies, with the result that much management literature prescribes control during change processes. McMillan (2008) further argues that there are indications that management and management literature view organisations as machines. This description correlates to Morgan's (1997) machine metaphor.

The field of organisational development has, as a result of the problems outlined above, come under criticism. Research by Worley and Feyerherm (2003) with experts in the field indicate that the field of organisational development should be less faddish; something which has affected its reputation. This refers to the on-going introduction of new methods to the field, which leads some authors to question the usefulness of such methods. Even those who are in organisations have come to be rather uncertain about such constant introductions. The problem also lies with managers who often find appeal with theories, assuming they will quickly fix things, but inevitably end up ignoring fundamental problems (Harvey & Brown 2001).

Reference is made by Jackson (2000) to fad writers, in stating that they often do not have an overall vision, which is in opposition to the emphasis on the whole as proposed by systems thinking. Another area of concern is that fad writers generally do not interrogate the fundamental theories connected to recommendations that they make (Jackson 2000).

It is necessary to take a closer look at what precisely organisational development was supposed to have achieved. French, Bell and Zawzcki (2005) point out that organisational development consists of a short and long-term view by helping organisations manage their processes, structures and culture better. Long-term and system-wide utilisation of behavioural science methods must be employed in order to influence organisational effectiveness. Different contemporary applications from the behavioural sciences such as "group dynamics, action research, and sociotechnical systems" are used in organisational development (Van Tonder & Roodt 2008: 57). It is therefore a continuing process because organisations change and do not remain static (Harvey & Brown 2001). The neglect by organisations in acknowledging inherent complexities may be part of the reason why organisational development efforts fail or are less successful than hoped for.

Organisational development should allow organisations to anticipate and adjust to future shocks by changing beliefs, attitudes, values and structures (Harvey & Brown 2001). Organisational development should also result in improvements for both the organisation, as well as for individuals (French *et al.* 2005). The question then is whether everybody in the organisation truly does become more adaptable. Worley and Feyerherm's (2003) research highlights the need for applicable change methods, and the ability to balance interventions on all levels of individual, group and large systems. Reference was also made to organisational development practitioners needing to comprehend large systems and be completely honest with their clients. An over-reliance on consultant practitioners by client organisations can thus also create a lack of accountability. Concerns around consultants, as noted by Flood (1995) could include pressure to satisfy management, failure in offering genuine advice, non-committal to the ideas that they suggest, the presentation of pre-made packages, or simply getting involved in jobs for which they are not adequately skilled.

The importance of learning processes are therefore of utmost importance. Organisational development should encompass learning and must culminate in a transferred capability from the practitioner to the client to manage future change (Worley & Feyerherm 2003).

New models of change and organisation are thus required, and the field needs to prove that it is not just about change management and the development of effectiveness, but rather that the field can enable the capacity of a system to change in the future (Worley & Feyerherm 2003). This study is thus an attempt at answering such calls for relevant research into change and organisations.

3.1.3 Alternative approaches to conventional change management approaches

There is a body of literature, briefly mentioned below, which does offer valuable input into alternative approaches to the way in which change management is conventionally handled.

Kanter (1983) cautions against the 'how to models', as there is no assurance that plans will unfold as intended, and advocates for the involvement of those below, along with the need for change to structures and roles of management at various levels. As indicated by McMillan (2008) more contemporary perspectives on change challenge the traditional approaches, by essentially viewing opportunities for learning by seeing change as normal and as continuously arising. Kanter *et al.* (1992) in their book on the challenge of organisational change, mention the limitations of participation by management during attempts at creating change, and thus

interrogate the likelihood of change being created. Change, as seen by McMillan (2008) is therefore not concerned with heading for a specific business destination.

Kanter *et al.* (1992) emphasise the improbability of any group or person in leading change. Attention is also drawn to the confines of Lewin's three step model, in that managers may produce linear action plans. Another criticism is that change process models can often be too general or may only concentrate on the partial picture (Anderson & Anderson 2001). Kanter *et al.* (1992) contend that organisations are always in motion and therefore cannot move between states of being frozen and refrozen, as proposed by Lewin. This is also echoed by McMillan (2008) in stating that the conventional models portrays organisations, or parts thereof as static, which with the right planning can be moved to another state. Attention is drawn to the concept of change continuously occurring, and perhaps not necessarily as a result of a request from those at the top (Kanter *et al.* 1992). Anderson and Anderson (2001: 138) therefore argue that "results, structures, events, and forms are simply snapshots of a continually evolving process".

Koch and Godden (1996) propose that management quite often is the problem, resulting in more harm than good. It is suggested that management roles, traditions, thinking, and mental habits be cast aside, as there is an over-abundance of hierarchy and unacceptable means of control (Koch & Godden 1996).

Senge *et al.* (1999) provide a useful perspective to achieving and maintaining systemic change in the long-run. Senge *et al.* (1999) argue that organisations essentially revolve around the thoughts and interactions of people, and that a movement in thinking and action, as well as a consciousness of change arising at the local level is key to sustaining change.

There have thus been alternative perspectives on change within the change management literature itself. Anderson and Anderson (2001) argue for a move towards change leadership, as opposed to change management, and Kanter *et al.* (1992) mention that managing change has less to do with determining the way forward than it has to do with managing changes that are being produced by others. Some phrases have also come to be associated with these alternative approaches. Calls have been made for a fluid, social and facilitative approach to change, considering that there is flux and change (Badham 2006). The notion of organisations as "fluid entities with many 'personalities'" is thus presented by Kanter *et al.* (1992: 10). Reference is also made to the flow of change (Kotter 2002; McMillan 2008).

The section that follows focuses on the importance of incorporating systems thinking and complexity theory throughout the change process.

3.2 Systems thinking and complexity theory

Van Tonder (2004) draws on the importance of considering system dynamics as a relevant perspective in the study of organisations and organisational change, and Styhre (2002) recommends the use of complexity theory as a useful way of viewing organisational change in non-mechanistic systems.

According to Ng (2004) systems thinking allows people to understand complexity, and basically involves comprehending the interrelationships between the various parts of a system. Systems thinking is essentially centred on the ability of people to work together (Malloch 2001). The focus should rather be on patterns over time and feedback loops, as linear cause-and-effect relationships are not adequate in grasping a complex system (Reed 2006). There is thus an understanding of the connections between the parts and most importantly, that there can be many legitimate perspectives on a problem (Chapman 2005). Jackson (1995) explains that a systems approach towards problem solving involves the analysis of problems in a holistic manner, which avoids a reductionist perspective that involves reducing, comprehending and changing problems of the parts. It is thus important to realise that a holistic perspective emphasises that the parts are understood in their entirety and that there are consequently many valid perspectives. Reed (2006) therefore appeals for leaders to see the parts and the whole.

Reed (2006: 13) notes that "simple cause and effect relationships are insufficient to understand or explain a complex social system" and instead advocates for viewing patterns over time and feedback loops. Unintended consequences can arise when changes to one part affect other parts, often in unpredictable ways (Reed 2006). An example of such an unintended consequence is demonstrated by Carnall (1991) cited in Hamlin, Keep and Ash (2001) reporting that some reasons for change implementation strategies failing include issues arising during implementation that were not anticipated as well as the capabilities of workers not being adequate. Chapman (2005) further argues that unintended consequences can occur when complex organisations are handled as if they were mechanistic. This is echoed by Reed (2006) in pointing to the shortcomings of handling complex systems as though they were simple machines. Attention is drawn to the importance of the relationships between the parts, and how emergent properties occur as a result of how the parts are organised (Jackson 2000).

It is also critical to realise that changes made in certain parts of an organisation often do not have effects only there. Montouri (2000) draws on systems thinking as being critical in recognising that changes made to a department or unit will most likely have consequences

elsewhere. Reed (2006) points to the limitations of planning, in understanding that it is not possible to make predictions or forecasts, when considering a systems perspective.

The complexity perspective essentially interrogates the traditional change models, which emphasise linearity and direction, by rather perceiving change as created from the interaction of various interconnected causes and effects (Styhre 2002). Furthermore, small inputs or variations can produce significant or variant outcomes, and these processes cannot be entirely controlled or planned (Beeson & Davis 2000). Seemingly 'minor' changes can thus have significant outcomes, which can be difficult to undo, and 'major' changes can have negligible effects.

Some authors therefore dispute the effectiveness of traditional change approaches. Van Tonder (2004) concurs with a lesson from complexity theory that an action may have effects on the organisation, and views this as a way of engaging change from a dynamic perspective. Styhre (2002) points to how the frenzy of transient states and interconnectedness of various doings, challenges organisational change as being a uni-dimensional sequence of activities.

Beeson and Davis (2000) draw attention to the fact that change comes about through the complex interaction between people. The systems perspective remains critical in attempting to grasp complex patterns of relations, through the holism of understanding structure and actions in the entire system (Beeson & Davis 2000). According to these authors, emergence appears when change activities generate new behaviour. Emergence essentially involves new properties that arise, as a result of interactions between the parts (Jackson 2000).

The conventional role of management in change is consequently challenged. A complexity perspective implies that change becomes something that everyone in the organisation, not just management, lives with and manages (Beeson & Davis 2000). Ashmos, Duchon and McDaniel (2000) highlight that managing in complex and adaptive organisations clashes with conventional management theory. There is no dispute that the task of management often is to deal with the difficulties that arise in organisations, but the manner in which it is approached can produce different outcomes. Situations require an approach where managers work with difficulties instead of attempting to place order; conflict can be dealt with by sense-making, ambiguity by having persons collaborate and interpret information, and embracing disorder by seeing the opportunities for growth (Ashmos *et al.* 2000). Control in the system as opposed to management, enhances an organisation's capability to solve intricate difficulties effectively (Lichtenstein 2000).

Organisational change can be viewed as "a continuous and vision-governed adaptation to external conditions and emerging conditions" (Styhre 2002: 343). Change is thus seen as occurring spontaneously, rather than being a planned process with management contribution (Hamilton *et al.* 2007).

Another critical element in the change process is that of organisational learning, which is examined below.

3.3 Organisational learning

The change process can be viewed as a learning experience, as emphasised by Carnall (2003) in stating that learning and transformation are part of the same process. Organisational learning and subsequent change are critical to an organisation's longevity (Montouri 2000). This has been observed in practice by Arie de Geus of Royal Dutch/Shell and Jack Welch of General Electric, both of whom were of the opinion that learning is key to competitive advantage (Senge *et al.* 1999).

Hayes (2002) defines organisational learning as the development of the collective ability to perform more effectively by allowing members to diagnose the situation of the organisation as well as assess their past behaviours, and then merge this understanding to adapt the rules that steer decision-making and action.

This relates to the concepts of single and double-loop learning in systems theory illustrated below in Figure 3.2. Argyris (1999: 68) defines single-loop learning as involving the identification and fixing of errors resulting in members adapting their current mental models to do things better. Double-loop learning on the other hand is a deeper process, which leads to current thinking being challenged. This then generates a novel understanding, which sees a change in the behaviour of members, which ultimately ends up in things being done otherwise or new things being tried. This sort of deeper learning that results in a paradigm shift is critical to those involved in change processes. Argyris (1999) views double-loop learning as being crucial in organisations and applicable for use in complex issues.

Hayes (2002) argues that organisations need the ability to not only learn from their experience but also to utilise this learning in order to develop effective strategies. There have been calls for relevant research into organisational learning experiences. Bokeno (2003) appeals to those studying organisational learning to not provide yet another theoretical description of power and politics, but rather to enter companies in search of ways to break down defensive management

habits and test other forms of systemic change. Senge (2006) argues for insight into the occurrence of organisational learning, and then utilising it to make thinking and acting at all levels a possibility.

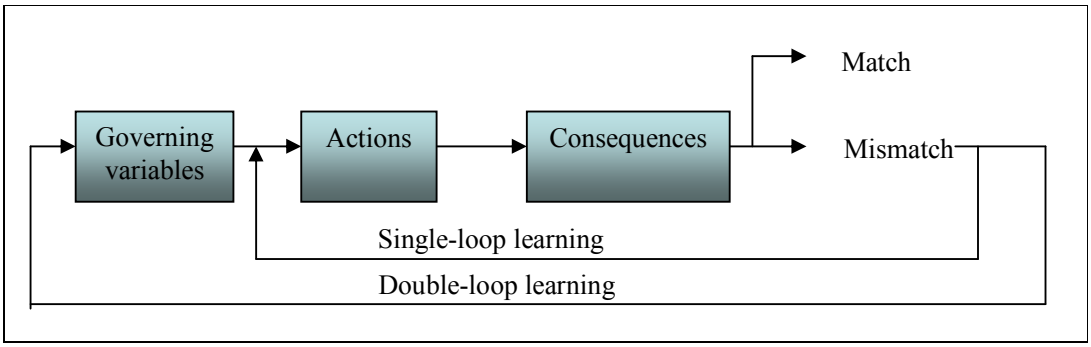

Figure 3.2: Single-loop and double-loop learning
(Argyris 1999: 68)

Figure 3.3 below is a construction of the ideal learning processes that are required in organisations. It is based on a review of three studies into organisational learning. The first by Garvin (2005) denotes the three levels of organisational learning, which are the cognitive, behavioural and performance improvement level. Carnall (2003) also highlights the many aspects of learning and how these impact on effectiveness. Spector and Davidsen (2006) point to the critical processes that facilitate organisational learning. Figure 3.3 thus calls for learning from practical experience, which allows for meaningful engagement and processes where people can question. Such learning processes should allow for failure, for ideas to be played with, and for constructive criticism. Through this, people may become more cohesive, respectful, and levels of communication may increase.

Levels of organisational learning (Garvin 2005: 285) • Cognitive level – involves people dealing with new ideas, increasing their knowledge and then thinking differently • Behaviour level – employees internalise new insight and consequently change their behaviour • Performance improvement level – changes in behaviour will have outcomes on measurable improvement in results
An account of learning and change with the goal of seeking effectiveness (Carnall 2003: 230-231) • Learning comes about through exploring dilemmas or contradictions • Personal experience and experimentation constitute learning •The environment must be conducive to risk taking, doing and trying new things •The acknowledgement of conflict and the expression of deeply held beliefs are key in releasing ideas which can be assessed before implementation • Only by permitting the worth of people and ideas can learning be achieved
Key processes to effective organisational learning (Spector & Davidsen 2006: 68) • Actions as reflected in terms of information flow, innovation, involvement, and results • Goal formation processes, including the ability to identify instances of goal cohesion and goal erosion • Leadership engagement, including open exchanges to identify problems, assess situations and consider alternative solutions • Sentiments are reflected in attitudes and preferences pertaining to cohesion, respect, support, and trust • Team processes, including measures of collaboration, coordination, communication and co-mentoring •Tolerance for errors, including the encouragement of experimental and evidence-based reasoning

Figure 3.3: A portrayal of organisational learning

As has been highlighted earlier in this chapter, many organisations try to encourage stability. The danger of this, however, is that learning processes can be affected. Srikantia and Pasmore (1996) argue that a pattern of dependency is an adverse outcome of management's desire to cultivate a safe setting for learning and change. Such behaviour along with risk aversion, need to be unlearnt, in order for there to be sufficient doubt that change is required (Srikantia & Pasmore 1996). Kotter (2002) argues that the difficulties are not so much around strategy, systems, or culture but rather around changing people's behaviours. Unlearning can be viewed as a catalyst towards an active learning process to replace former beliefs and organisational routines with new knowledge (Akgun, Byrne, Lynn & Keskin 2007).

Organisations will experience short-lived or fortuitous changes when they simply continue with their old habits, and thus will not improve unless they learn something novel (Garvin 2005). Unlearning facilitates double-loop learning and is seen as the link in organisational change and learning processes (Akgun *et al.* 2007).

Both processes of doubt and conviction are considered necessary in organisational learning (Srikantia & Pasmore 1996). Doubt is linked to "fear, loss of security and threats to self-esteem" while conviction is "tied to curiosity, inspiration and our eternal hope for a better future" (Srikantia & Pasmore 1996: 43). The authors view training or simulation as one of the ways to enhance doubt by confronting complacency. Conviction can be encouraged by having individuals' self-efficacy highlighted in the learning experience by learning skills or conducting safe experiments, thereby minimising failure in real change events. Furthermore, dialogue between people who have a desire to learn, and observation of those who take steps towards learning effectively can also lead to conviction. Experimentation, following the need for change, should allow for the risk of failure, as well as for new ways of doing things (Srikantia & Pasmore 1996).

The concepts of doubt and conviction are similar to the work of Elkjaer (2005) in identifying openings and closures to organisational learning. Examples of closures and opening include respectively, fears of job losses and previous failures, and the creation of new options and positive changes in job structures. Elkjaer (2005) encourages the acceptance of both as a way of igniting organisational learning through tension that induces inquiry and critical thinking. These concepts are critical in the change process.

Learning is thus a continuous process and organisations need to ensure that the tools, time and occasions, and continuous evaluation and feedback for learning are in place (Mitki, Shani & Meiri 1997). Moerdyk and van Aardt (2003) argue that it is essential that organisational learning become part of change processes, in order to facilitate continuous learning.

As detailed in the preceding sections, organisations cannot afford to overlook the critical role that systemic interactions, complexity and opportunities for learning, play in organisational change and organisational development. The processes and principles involved in these critical areas have been outlined and will now be used in examining critical issues in organisational change which on the surface may appear to be straight-forward, but as will become evident are anything but that.

3.4 Organisational change issues

Most change literature looks at various distinct, yet related components. A neglect to study these components in a holistic manner may not portray an accurate picture. As will become obvious, organisations need to realise how organisational change affects and is affected by these components, whilst considering complexity and systemic interactions, with organisational

learning as key. From the literature, it appears that there are many factors that play a role in change processes, such as communication, participation, etc. This study however does not single out and study any one of these factors in isolation, as is done in some studies, but rather acknowledges the relevance of each of these factors. The following sections examine the various factors in closer detail, and also highlight different perspectives in the literature.

3.4.1 Organisational culture, structure and processes

Current organisational culture, systems and structure will be impacted during organisational change (Harvey & Brown 2001). Corporate culture is an important consideration in change management, and is essentially concerned with values and beliefs about how things are done (Carnall 2003). Organisational culture may however be an obstacle to change. Schein (2005) argues that overlooking organisational cultural forces may play a role in failed change efforts and hence that organisational culture is an intricate but necessary phenomenon in grasping change or resistance to change.

Organisational culture and the type of management are critical in producing an environment conducive to change, and the managerial style must be such that organisational learning is encouraged (Carnall 2003). The actions of management in particular appear to be of importance. A culture of involvement and empowerment must be created where the necessary information, encouragement and resources are provided to all. Carnall (2003) argues that the mind-set in the organisation be changed in order to change the culture. This is achieved by bringing people together to concentrate on shared problems with the aim of working towards new solutions and possibilities. Some authors however, such as Van Dam, Oreg and Schyns (2008) are of opinion that if leaders and subordinates have a close relationship, and if the organisational culture encourages continuous change and development, then it will be easier to have employees accept organisational changes. Such an attitude where change is viewed as something that is thrust onto employees can be harmful for the organisation.

A company's current structure aimed at obtaining efficient, predictable performance can be a challenge to organisational learning (Mitki *et al.* 1997). There is often a dominant thinking in organisations to encourage stability, but this can come at a cost, especially to learning. Bureaucratic structures need to be substituted with speed and simplicity; with a view on constant change and improvement in order to face the new era (Harvey & Brown 2001). Morgan (1997) does however point out that the machine bureaucracy and the divisionalised form of doing things can work in certain situations, such as production driven and efficiency driven firms, where tasks and the environment are simple and stable. The focus should be on the

human side of change, incorporating creativity, ambiguity, spontaneity and room for mistakes and the unanticipated (Callan *et al.* 2004). Drucker (1995: 70) points out that organisations need to "build the management of change into its very structure" by getting ready to discard all that it has done. Worley and Lawler (2006) echo this in envisaging a situation where continuous change is the norm.

3.4.2 Change management skills

Much change literature places great emphasis on the abilities of management to handle change processes. Kilgallon and Lampe (2007) however question whether managers have the necessary skills needed to handle transformation efforts. This is echoed by Doyle (2002) who mentions how oblivious many organisations are to the need for building change management expertise, and that managers may be unaware of the basic principles involved in change management (Hamlin *et al.* 2001). Handling change processes requires vastly different skills and abilities. Such skills include acknowledging that there may not be answers to questions that are asked, and another skill includes being capable of appreciating different ideas and experiences (Senge *et al.* 1992; Kanter *et al.* 1992). Anderson and Anderson (2001) encourage leaders to develop new skills that include letting go of old approaches, and coming to the realisation that they themselves must change. Doyle (2002) describes the management of change as essentially qualitatively distinct from the usual operational or professional roles.

Carnall (2003) maintains that invisible assets, such as knowledge, values and skill are just as significant in achieving successful change as the physical, financial and human assets. Managers therefore require leadership insights, values and skills, apart from technical competencies (Moerdyk & van Aardt 2003).

Some authors go beyond just focusing on management and instead emphasise a more inclusive approach. Leadership skills required include building a shared vision, addressing current mental models and engaging in systemic thinking patterns, and ultimately enabling a learning environment where individuals create their futures by continuously addressing their capabilities Senge (2006). The role of leadership is to produce an environment where people feel valued and where a spirit of learning, competence, flexibility, and a feeling of belonging to a team exists (Carnall 2003).

Reference is often made to 'soft skills' but the very use of the word soft can imply that developing such skills and abilities are not as critical. Research by Doyle (2002) clearly points to some organisations conducting formalised programmes and teaching technical change skills,

but neglecting the soft skills needed for change management, and other companies relying on processes from the past. Soft skills often derive from experience, and entail managing and working with people, striving for customer satisfaction, communication skills, team building skills, flexibility and creativity skills, and leadership skills (Sukhoo, Barnard, Eloff, Van der Poll & Motah 2006).

Formalised programmes could be considered an obstacle to learning. Antonacopoulou (2001) questioned banking managers' perceptions on the interrelationships between training, learning and change. Some of the reasons for their learning processes being blocked included the timing of training, weak administration and organisation, disregard for individuality, and inconsistency.

Antonacopoulou (2001) also identifies a political side to training and learning. Training is about gaining command and conditioning of the understanding of an employee and is often a tool to strengthen the organisation's cultural norms, views and meanings (Antonacopoulou 2001). Antonacopoulou's (2001) research revealed that training for managers was generally inadequate due to individuals being incapable of steering the training, resulting in a reliance on the organisation which restricts individual power. This may imply that individuals do not engage in learning processes. A new emphasis should be placed on discovery rather than mere training, as a way of encouraging people to engage in learning processes and to develop capabilities (Anon 2008a).

Organisations can thus consciously or even unconsciously stifle learning opportunities for employees. The consequence of complying with work norms and status is that workers deal with the same problems, thereby neglecting to deal with root causes. In the process, valuable learning opportunities are lost (Tucker, Edmondson & Spear 2002).

Antonacopoulou (2001) draws on the works of Argyris and Schon to demonstrate that when individuals are concerned about their security and advancement, that only single-loop learning occurs when they address organisational priorities and policy by conforming and observing. People therefore cannot focus on challenging their current thinking to perhaps question how things are done in organisations, because they have concerns about losing their jobs. Kolb (1984) also touches on this point by mentioning how people get socialised into professions, where the emphasis is on means and methods, resulting in the implanting of knowledge, skills and attitudes, as well as a change of identity. This however can be problematic in a changing society and as Kolb (1984: 183) asks, "should some of this rigorous specialised training give way to the broader development of learning competencies required for lifelong learning?".

Questioning, experimentation and critical self-reflection are stifled, with the result that constant continuous learning which aims to extend and free the understanding is not catered for (Antonacopoulou 2001). The value of some training is thus questioned. Other consequences of neglect for change management skills are described in Doyle's research. Individuals entrusted to handle the change process experience feelings of vulnerability and stress, as well as professional and self-doubt, when they realise that their existing knowledge and skills are inadequate, and they also undergo changes to their social relations by being viewed as having moved over to management (Doyle 2002). Furthermore, employee's views regarding change tend to be influenced by organisational experience and beliefs concerning managerial competence (Stanley, Meyer & Topolnytsky 2005). The regular unreflective approach to change management also affects workers by making them feel isolated (Bamford & Forrester 2003). There are thus many real dangers that can occur when change processes are entrusted to a few individuals only.

Theoretical change literature also receives criticism from managers. The research of Andrews *et al.* (2008) demonstrates a significant gap between theory and practice, in that managers expressed the desire for their personal experiences to be translated into an experiential learning cycle thereby impacting future change theory. Research that focuses on theory construction from practice would be beneficial by allowing managers and organisations to learn from experience, which could also be employed in change management education (Andrews *et al.* 2008). More practical leadership is focused on getting others into action, and not so much on impressive theories (Carnall 2003).

It is thus clear that many managers involved in change, have not had the opportunity to obtain these specific skills through their normal career progression, and those few that do, have done so through practical experience (Kilgallon & Lampe 2007). The work of Grint (2007) is useful in analysing this problem of managers lacking specific change management skills, which could entail a move towards leadership abilities. Leadership involves moving from simple transmission to translation from theory to practice that is best learnt through social interactions (Grint 2007). This is why training programmes on leadership and skills development cannot be fully effective. People need the opportunity to undergo practical experiences, where they do not merely absorb facts on a cognitive level only.

Antonacopoulou (1999) points to the importance of having opportunities in organisations to *practice* how essential learning and creativity are, rather than merely having them just highlight this. Organisations may sometimes only encourage managers to learn what they consider suitable, or may also not permit for current knowledge to be questioned, and this suppression

prevents the development of new viewpoints and also results in managers utilising existing knowledge to novel circumstance in answer to change (Antonacopoulou 1999).

Grint (2007) employs the work of Aristotle the philosopher, to attest that leadership encompasses more than *techne* and *episteme*. *Techne* refers to techniques and skills; in leadership this refers to education and training programmes designed to improve the 'know how' of the leaders. *Episteme* is concerned with knowledge; that is an understanding into how leadership operates. Grint's work can allow for a better understanding into the limitations of training programmes or even the education of leaders who are charged with leading change processes.

3.4.3 'The leader has all the answers'

Grint (2007) thus argues for *phronesis*, which entails practical wisdom and reflection linked to lived experiences found in situations of uncertainty, where outcomes of decisions cannot be forecast. This approach also acknowledges the possibility of leaders not necessarily having the right answers. Organisations will very often emphasise a pattern of dependency on those at the top. The traditional view of the leader being the one with all the answers has created a state of learned helplessness; the leader should instead acknowledge the power of conflict and collective exploration (Ferdig 2007). Ferdig (2007) explains how despite the fact that we find ourselves in a world of change and uncertainty, how we look towards leaders to take control, give answers, and focus on models of managed change. An over-reliance on management can therefore lead to decreased organisational effectiveness.

When changes are made, there is often a tendency to have a rather generic, standardised approach. Leaders should however rather be able to see the good in a certain situation as well as understand what needs to be done to sort out the problem (Grint 2007). Research of Andrews *et al.* (2008) point to managers having the ability to realise that each situation calls for a considered and perhaps unique reaction.

Therefore, the success of organisations, industries and individual career development of managers, is dependent on continued learning experiences (Kilgallon & Lampe 2007). Doyle (2002) proposes that real-world experience and learning rather than mere skills and abilities of being a professional, are essential in making the shift from change novice to change expert.

3.4.4 Organisation-wide leadership

Every person has a personal responsibility and a chance to collaborate with others towards a sustainable action (Ferdig 2007). It is thus argued that sustainability leaders move beyond self-interest to a cognisance whereby everyone shapes the future by seeing, understanding, interacting and doing so in their individual way (Ferdig 2007). Such an outlook can have input from all, and can in so doing prevent a situation where some are blamed for being solely responsible for conceptualising and implementing change efforts.

Companies that facilitate organisation-wide leadership may be sustainable (Grint 2007). This is verified by Bamford and Forrester (2003) who caution against entrusting a particular manager to see through the change process, as they quite often they get promoted and leave the position, which then sees new managers with their own ideas and techniques entering. Such situations sometimes result in great conflict in the organisation, and often end in a complete stand-still of all intended changes. The concept of shared leadership as being relevant in change management is encouraged, where the organisation builds wide-spread leadership and management abilities (Worley & Lawler 2006).

3.4.5 Changing mind-sets

Change efforts are undertaken many times, without acknowledging the powerful role of the thoughts and assumptions of all in the organisation. This could however be a challenging task, which may not materialise due to practical considerations around access to organisational members, their willingness to be involved, and the time required to engage in such an endeavour. Colvin (2006) is of opinion that one of the greatest difficulties in managing chaos has to do with the nature of people and recommends examining assumptions. Montouri (2000) argues that changes need to be made to disciplinary paradigms focused on basic beliefs about the organisation, and associated dominant paradigms. Organisations should focus on shared organisational schemata, regardless of whether the change was induced by external or internal conditions (Van Tonder 2004).

Change will only occur provided there is a transformation in the joint assumptions and beliefs held concerning how things occur and the ways in which people respond (Balogun 2006). The emphasis must thus not only be on changing work processes of that which is tangible.

Wedge (2006) contends that existing assumptions and obstacles can be challenged by contributions from various people. It is thus critical to not only focus on a select few, such as

the management of an organisation. Organisations can make the transition from a culture of knowing to one of learning by identifying feedback loops focusing on constant adaptation, adjustment and progress (Wedge 2006).

A systems thinking perspective is critical in analysing mental models to better our thoughts and ways of thinking, to focus not only on events but also on long-term patterns of change and the responsible underlying structures (Senge 1994). There has to be a general increase in reflection by all in the organisation. There are parallels to Morgan's (1997) work on metaphors, and the argument that individuals need to acquire skills in comprehending assumptions, frameworks, norms, metaphors and mental models, and consequently challenge and alter them if need be.

The work of Oshry (1995) is useful in understanding how individuals are often oblivious to the experiences, issues, and dilemmas of others in a system, and that we often consider our own beliefs, myths and prejudices to be the truth. Mention is made of spatial and temporal blindness, respectively referring to viewing the part without the whole, and viewing the present without seeing the past.

3.4.6 Expecting the unexpected

Colvin (2006) refers to the work of Drucker by bringing across the point that organisations cling to the past and often use things that worked in the past, thereby having a negative attitude towards attempting new approaches. Attention is also drawn to novel initiatives presented by organisations, which still operate on old principles (Antonacopoulou 2001). This is indicative of neglect for understanding the changing nature of organisations.

The concept of *phronesis* highlights the need to compare new experiences with those of the past, thereby allowing for the detection of patterns through reflection to gain insight and come to solutions (Grint 2007). The leadership required to weather through change and uncertainty, should be able to generate and assess various courses of action, and should encourage complexity rather than simplicity (Montouri 2000). Leaders should be aware of the unexpected, and consider the effects which were not planned for (Callan *et al.* 2004). This is particularly significant for understanding how unintended consequences occur. Key issues such as leadership, action planning, and the capabilities to deal with pressure and uncertainty, as well as a desire to learn, will ensure that change leads to success (Carnall 2003).

Grint (2007) suggests that leaders be given a chance to learn wisdom by *phronesis* by taking charge in real situations where there is uncertainty and opportunities for failure. In conditions of

uncertainty, management must create occasions to support learning and development (Carnall 2003). Organisations need to embrace chaos but often have difficulties because they were constructed with the aim of being chaos-proof (Colvin 2006). The acceptance of uncertainty can therefore make the organisation as a whole more prepared. There will also be less need for change management when the organisation views change as a common feature (Van Tonder 2004). The change process can be seen as an opportunity for creativity, and enhancing employees' and their own skills and abilities to deal with inherent uncertainty (Callan *et al.* 2004).

3.4.7 Shared vision

Great emphasis is often placed on the vision of the organisation. Moerdyk and van Aardt (2003) ultimately view shared vision as the purpose of organisational development, but point out that this cannot be achieved forcefully. The problem is that the vision is only constructed by a few in the organisation. The task of inspiring others is the starting point; leaders capable of inspiring an organisation will ensure that change, growth and improvement proceed (Wedge 2006).

The concept of shared vision is however only possible utilising a systems perspective, by enabling people to learn how policies and actions affect their present reality and in doing so are they able to believe they can alter their future (Senge 1994). There is thus the notion of holism and an understanding of how actions in one area, can affect others. In discussing the vision of the future, Montouri (2000) advises members to release the past and present, and leaders to arouse in their employees a spirit where the creation of change is viewed positively.

Furthermore, change is about working towards a shared understanding of the intricacy of the various issues and consideration of the alternatives, and not about outlined plans and forecasts (Bamford & Forrester 2003). Employees may through their sense-making process alter management plans, despite structures or systems designed to ensure conformity (Balogun 2006). Senior management must therefore be actively engaged in the change process, rather than merely delegating as prescribed by traditional management (Balogun 2006). It is suggested that senior management create opportunities for dialogue with the purpose of collectively analysing different interpretations and to consequently work towards a shared vision of their goals and ways of achieving these.

3.4.8 Problem-solving

Problem-solving approaches are common during change processes but often are not meaningful. Senge (1994: 52) outlines a systems perspective to explain the three levels of explanation in complex situations, namely, events, patterns of behaviour and systemic structure. Event explanations present a reactive view by asking who did what to whom, patterns of behaviour looks at the long-term trends and consequences and is essentially responsive, whereas the structural perspective analyses underlying behaviour where changes occur. The structural level holds the key to learning where people understand that their problems and solutions are in their power. This relates to accountability.

Senge (2006) also tackles the difference between problem-solving and creative tension, and explains that problem-solving has a short-term focus, essentially to fix problems, with the consequences leading to an extrinsic desire for change. Tucker *et al.* (2002) argue that problem-solving can become an obstacle to organisational learning, by focusing on fixing and sorting current problems, with the consequence that there will be less motivation to engage in eliminating root causes. It is suggested by Tucker *et al.* (2002) that resistance to organisational change may be explained by this short-term focused behaviour and the lost opportunities for change and learning.

Tucker *et al.* (2002) argue that resistance also occurs when employees experience personal incompetence in dealing with current systems, and similarly by organisations endorsing well-known routines and skills. First-order problem-solving is cemented by shaping the work context to focus on independence and quick fixes, and the job structure to not include time and means of solving problems (Tucker *et al.* 2002). The 'shifting the burden' archetype as explained by Braun (2002) can be used to understand this better. The archetype essentially states that there will be less motivation to find the fundamental, root causes of a problem once a symptomatic solution has been implemented. There is thus a temporary relief and less pressure to find a fundamental solution; the underlying problem however is still there and will inevitably emerge again.

Engaging in second-order problem-solving on the other hand, necessitates taking a careful look at psychological, organisational and institutional factors (Tucker *et al.* 2002). Root cause removal should become an integral part of employees' work, and sufficient time for improvement efforts must be set aside (Tucker *et al.* 2002). Senge (2006) advocates for creative tension, which is intrinsically driven, that originates when the desire for change arises from a vision. Leaders need to embrace systems thinking to see interrelationships and avoid focusing

on symptomatic fixes, and realise that minor and well-thought out actions can have long-lasting consequences. Senge (1994) thus advocates for a focus on dynamic complexity, where an action can produce different consequences in the system. Furthermore, there is insight into the holistic view of each action being connected to every other action and grasping the long-term effects of our choices (Ferdig 2007).

Problem-solving although important, on its own is insufficient if people do not critically reflect on their actions by asking how they may have created problems and then change their behaviours (Argyris 1999). The significance of double-loop learning is thus highlighted. Leaders should work towards creating learning processes to effectively handle problems (Ferdig 2007). Therefore, Carnall (2003) views learning to be less focused on motivation, but rather on developing a natural inclination towards learning and development in an organisation by removing constraints.

3.4.9 Middle/operating managers

A lot of responsibility for seeing through change processes often lies with middle or operating managers. Such managers screen and refine ideas for change, discuss these with senior management, who then deliberate and ultimately get back to middle managers with planned change initiatives (Bamford & Forrester 2003). There can however be room for misinterpretation, especially when senior management is removed from what occurs on ground level. Balogun (2006) draws attention to the concept of managing change, which to her should be an active and continuous process that incorporates command and monitoring, as well as with the understanding between senior managers and others.

Bamford and Forrester's (2003) work points to how strong an influence the perceptions of operational managers are during change processes. Balogun (2006) recommends that time be put aside for sensemaking for middle management, otherwise they could become overworked or find that they are unable to accomplish the task of seeing through the changes. Middle management involvement in change should centre on increased responsibility and meaningful acknowledgement of their ideas, and not with traditional managerial control (Brewer & Hensher 1998). A reflective operational approach in managing change with less focus on rules or models, rather than a responsive one should be emphasised (Bamford & Forrester 2003). The focus on middle management is however still not ideal because it still implies that the responsibility lies with management, and not everyone in the organisation.

3.4.10 Resistance to change

The concept of resistance to change is something found in almost all literature on change. Cummings and Worley (2001: 111) explain resistance to change as occurring at the personal and organisational level. Personal level resistance includes anxiety about the unknown, whether individual skills and contributions will matter, and if they will function effectively and gain under the new circumstances. Employees do not like the doubt and uncertainty accompanying change, and experience feelings of insecurity, powerlessness and insufficient involvement and knowledge (Lee & Krayer 2003).

Organisational level resistance also consists of technical resistance due to following the usual routines, political resistance from the threat posed to stakeholders with authority, and cultural resistance from systems which encourage the status quo, ensuring compliance to the current values, norms and assumptions (Cummings & Worley 2001).

It is also necessary to consider employee cynicism and scepticism in resistance to organisational change (Stanley *et al.* 2005). Cynicism is the disbelief in the motives of others, such as management or those connected to change efforts. Scepticism related to change involves hesitancy about the likelihood of the change achieving what it set out to do. The viability of a change effort can then be influenced by cynicism concerning management's motives, hence relating to the development of resistance to the change.

Resistance to change can be addressed by those in charge earnestly listening to employees and showing that they care about their feelings, and through participation of members to give them a chance to come up with ideas, which can also assist in identifying potential problems in implementation (Cummings & Worley 2001).

3.4.11 Stakeholder involvement

Van Tonder (2004) is of the opinion that the initiation of change and its management does not solely belong to an exclusive group within the organisation. An important step towards ensuring success is to identify and ensure the assistance of the stakeholders involved (Hayes 2002) and then ensure their involvement from the pre-implementation stage (Van Tonder 2004). It may thus be futile if contact with stakeholders is only made once critical decisions have been made. Stakeholders are all those affected by the change, including management, supervisors, change managers, analysts, human resources and staff (Lee & Krayer 2003). Both internal and external stakeholders must be involved.

3.4.12 Readiness for change and pre-implementation

Oakland and Tanner (2007) in their study on successful change management found that less than half of the organisations interviewed in their research, conducted a pilot implementation or feasibility testing. The authors point to the importance of considering the organisation's readiness for change as critical, as many organisations often rush into implementation without consideration of possible alternatives before making the decision. Hamilton *et al.* (2007) also recommend that diagnostic analysis prior to implementation should be used in a flexible manner that takes complexity theory into account; thus allowing for instability in organisations. As Bamford and Forrester (2003) point out, major transformations can occur through incremental changes; thus if managers encourage a culture of experimentation and risk, then workers can recognise and implement change.

3.4.13 Communication

There are different views on the role of communication in change. The dominant view by many authors is that communication efforts are primarily aimed at informing employees of intended changes. Such literature will emphasise the need for employees to comprehend and support change in the current, rapid work environment (Harrington 2006; Hayes 2002; Lawson & Price 2003; Cummings & Worley 2001). The assumption is that people will then accept proposed changes, once they are fully aware of what it will entail.

It is however important to note that formal language through management briefs and newsletters are not sufficient, as they overlook the complexity of organisational change (Bamford & Forrester 2003). The use of various communication modes, especially face-to-face communication is urged (Callan *et al.* 2004). Change is a "two-way process of sharing and negotiating interpretations through many communication genre… through gossip, discussion, negotiations, observed actions and behaviours as individuals go about their daily work" (Balogun 2006: 43).

Coherence in the deeds, words and behaviour of top management will ensure the prevention of counteracting outcomes (Balogun 2006) lest there be disbelief in the motives of management. This becomes a challenge to address as it cannot be simply rectified with facts and figures, and may consequently result in management becoming cynical about workers (Stanley *et al.* 2005). Those in leadership positions must be willing to change themselves in order for organisational change to occur (Moerdyk & van Aardt 2003).

Moerdyk and van Aardt (2003) draw on some problematic assumptions held by many managers about communication, resulting in a flawed belief that communication is associated with agreement. These include the belief that communication decreases conflict and that if there is a continued conflict situation, then it automatically is associated with communication problems.

Harvey and Brown (2001) state that an effective communication programme may assist in lessening the accompanying anxiety and uncertainty coupled with change but nevertheless that criticism is inevitable, despite the effectiveness of the communication (Callan *et al.* 2004).

Carnall (2003) therefore argues that simply having effective communication efforts is insufficient, unless people can have a chance to pursue solutions to problems. The importance of communication, involvement and empowerment is understood, but the only way to succeed is by engaging with the cognitive challenges. Occasions for communication about problems and immediate feedback opportunities need to be set up (Tucker *et al.* 2002). Much communication efforts are therefore designed around the conventional, planned approach to change, which as has been illustrated is problematic.

3.4.14 Emotions

Another important element often neglected in the change process is that of managers not paying attention to their people and thus having change initiatives that often overlook the critical 'human element' (Hamlin *et al.* 2001). Van Tonder (2004) also supports this view in his argument that the emotions of employees should be taken into account by management.

The danger of over-emphasising communication efforts is also highlighted. People often get authoritarian management during periods of change, rather than empathy, information, ideas, milestones and feedback (Carnall 2003). Overlooking the emotional content and relying on the diffusion of information can cause change efforts to fail (Van Tonder 2004). Not enough attention is thus directed toward the feelings of employees. Changes do not only affect performance in that new systems, processes and structures have to be learnt but also influence the self-esteem levels of those involved (Carnall 2003).

3.4.15 Participation

Tremendous time and effort should be devoted to the people in an organisation, who ultimately are responsible for bringing about transformation (Kilgallon & Lampe 2007). Kirkpatrick (2001) argues that participation is one of the key reasons affecting whether employees will

embrace or resist a change. A programme that encourages the participation of individuals produces interest and ownership which is then bound to affect levels of motivation and understanding (Harvey & Brown 2001).

There are however differences in how meaningful this participation is. Senge (1994) distinguishes between participative openness where people are encouraged to get involved in decision-making and express themselves, and a more meaningful reflective openness. This allows for thinking to be challenged and incorporates aspects of reflection and inquiry, to question the thoughts behind the speech. Senge (1994) argues for a situation to embody both by having a safe environment to speak freely, while having the platform to challenge the thoughts of the individual and others.

Methodologies that are genuine and truly participative, as well as in-depth communication efforts led by trustworthy individuals can decrease resistance levels (Van Tonder 2004). Wedge (2006) makes reference to the importance of exploration whereby various persons not only become involved in the change idea, but can also express their feelings. Participation therefore goes beyond inviting people to listen to the ideas that were drawn up by others. Argyris (1999) argues for a change program that incorporates education at all levels, which will leave a system for use in upcoming changes and one that contributes to organisational learning.

3.5 Concluding remarks

This chapter has emphasised the difficulties of following the traditional approaches to change. A systems perspective and acknowledgement of complexity, while having a constant focus on learning, is critical. The conventional approach to change is problematic and is something that managers themselves struggle with. As has been illustrated, there are many factors that are relevant in change processes. It is however inaccurate to study any one of these in isolation. Organisations can best strive for a situation where there is continued learning and adaptation, in order for all to develop capabilities.

CHAPTER 4: SIMULATIONS

4.1 Definitions

Thiagarajan (2003: 235) presents a useful definition of a simulation as "the representation of the objects, characteristics, behaviours, and relationships of one system through the use of another system", which contains play objects, goals, rules, and roles. Furthermore, a simulation is "an activity that works, fully or partially, on the basis of the players' decisions, and thus represents an operational model which involves abstraction, and the representation of a much larger system" (Enciso 2001: 6). Simulations are thus a useful way for people to stand outside a system but yet still gain a holistic perspective. The focus then is on how the model allows participants to view a certain system rather than just a certain aspect (Le Roux & Steyn 2007) and on the behaviour of the model (Feinstein, Mann & Corsun 2002).

Brief mention is made of the area of system dynamics, and of the work of Sterman and Forrester in advancing computer simulations. System dynamics attempts to comprehend reality and identify structures and knowledge about systems, through studying the relationships between variables (Jackson 1995; Jackson 2000). System dynamics essentially incorporates theory, methods, and philosophy as a means of studying the behaviour of systems, and is valuable in comprehending how policies influence behaviour (Forrester 1998). Jackson (2000) contends that Forrester deemed system dynamics as being able to bridge the human mind and computers. Computer simulation is thus useful in encouraging learning in a complex system (Sterman 2001).

An example of a system dynamics model is provided by Repenning and Sterman (2001) in explaining how a model was developed after the discovery of discrepancies between the maintenance record of a company and that of other best performing companies in the industry. An interactive role-playing simulation called the Manufacturing Game was eventually designed, which incorporated actualities, such as delays, costs, and other parameters.

Some studies will make the distinction between games and simulations. Magee (2006) however points out that the distinctions are less definitive and that the terminologies are used interchangeably. Certain authors also distinguish between various simulation methods and employ diverse terminology, as outlined below.

Content simulations are mainly on computers (Dentico 1999) and use mathematics or object representations to imitate characteristics of a system (Feinstein *et al.* 2002). This is similar to the description of symbolic simulations, which mainly involve the representation of functions, behaviour, processes and other elements on computers (Cybulski, Parker & Segrave 2006). Computer simulations are however incapable of representing interpersonal learning (Feinstein *et al.* 2002) and do not allow for the occurrence of human processes (Dentico 1999). If the focus is thus on interaction between participants, then non-computer based simulations could be more beneficial.

Simulations that do not utilise computers can be referred to in different ways, for example, process, behavioural, or experiential simulations. Process simulations are interpersonal with a focus on achieving agreement amongst stakeholders by experimenting and validating requirements for information and coordination (Dentico 1999). Stumpf, Watson and Rustogi (1994) mention behavioural simulations, which replicate individual and collective behaviours in a work setting and focus on dynamic interactions depicting on-the-job performances. This corresponds with the view of Cybulski *et al.* (2006) when referring to experiential simulations; participants conduct activities to do with their roles and make choices that influence future scenarios. Participants thus assume social roles and conduct activities that have outcomes, and make decisions concerning problems or issues during various rounds (Cybulski *et al.* 2006).

Feinstein *et al.* (2002) suggest that the intended learning outcomes dictate the chosen simulation method. The focus of this study is on the development of a non-computer based simulation, as these complex behavioural simulations focus on interpersonal and behavioural learning (Keys & Wolfe 1990). However, relevant aspects from literature on the various simulations (computer, non-computer based, role-playing, games) are examined in order to gain a better understanding of the subject.

4.2 Simulations as research methodology

Simulations are useful in theory testing and building (Dooley 2002). Davis, Eisenhardt and Bingham (2007) argue that simulation is an increasingly popular way to build theory and advise that the only way for researchers to advance theory, is to locate the research question and theory in relevant literature and later link the results to the literature. Simulation is thus seen as a different approach to conducting scientific studies (Axelrod 1997). Klabbers (1996) states that gaming has been shown to be a powerful combination of methods capable of handling complex, uncertain, and unique issues, as well as value adjustments.

The use of simulations in management studies has been recommended. Erasmus *et al.* (2006) point out that simulation can be beneficial in management due to the opportunity to observe, analyse and judge challenging situations. It is thus the experiential learning from participation in the simulation that is useful in management sciences due to exploring simulated real world challenges in the confines of a classroom setting (Le Roux & Steyn 2007). Keys and Wolfe (1990) appeal for enduring research into management gaming and also point to the opportunities for research that gaming provides.

Simulations are ideal due to the observations that can be made during the activities, which then allows for the discovery of theoretically pertinent behaviour and outcomes (Feld 1997). Simulations permit for observations into the future, unlike most research methods which examine the past (Dooley 2002). Such observations are critical in detecting behaviours which would generally be difficult to do.

Simulations have proven both through theory and practice to be applicable in illuminating complexities, and thus has "its own body of knowledge, its own research tradition, its own professional practice and its own forum; and it learns from systematic reflection on its professional practice" (Geurts *et al.* 2007: 552).

4.3 Complexity

According to Jackson (2004: 22) "interconnected processes within complex multi-component systems" can be adequately demonstrated by simulations, thereby enabling processes of meaning from a variety of complexities. Harrison *et al.* (2007) note that the utilisation of simulations is particularly beneficial in complex systems. It is important to acknowledge various perspectives, which often may be in disagreement (Fannon 2003).

Klabbers (1989) indicates the use of simulations in effectively dealing with complex issues and situations involving many stakeholders with their own unique viewpoints. Cybulski *et al.* (2006) point to the use of the constructivist epistemological view to learning where it is acknowledged that there are multiple viewpoints to organise an understanding of reality. The use of simulations as a means of working through difficulties or conflicts that stakeholders may experience is particularly potent, especially when there is difficultly in employing other methods.

Researchers are able to utilise the innate complexity in organisational systems (Dooley 2002). This can produce a realistic perspective which can add credibility to research. Leigh (2004)

draws on chaos theory to demonstrate how simulations challenge common misperceptions that people have concerning what they think they know for certain, to rather discover emerging possibilities from specific actions. The underlying assumptions of people can thus be confronted but in a way which is non-threatening.

Dooley (2002) provides a useful description of complexity in simulations by pointing to self-organisation occurring when behaviour emerges from the actions of various entities. It is important to note that no one controls this, and that the emergent behaviour has its own rules and laws. Simulations can portray complexity of arrangements that emerge from participants' roles, rules and behaviours when they engage in double-loop learning through exploration of their mental models (Serrano, Ariza, Sotaquira, Gelvez & Parra 2006).

4.4 Experiential learning

Haapasalo and Hyvonen (2001) indicate that experiential learning, as depicted in Figure 4.1, is the method utilised in all simulations.

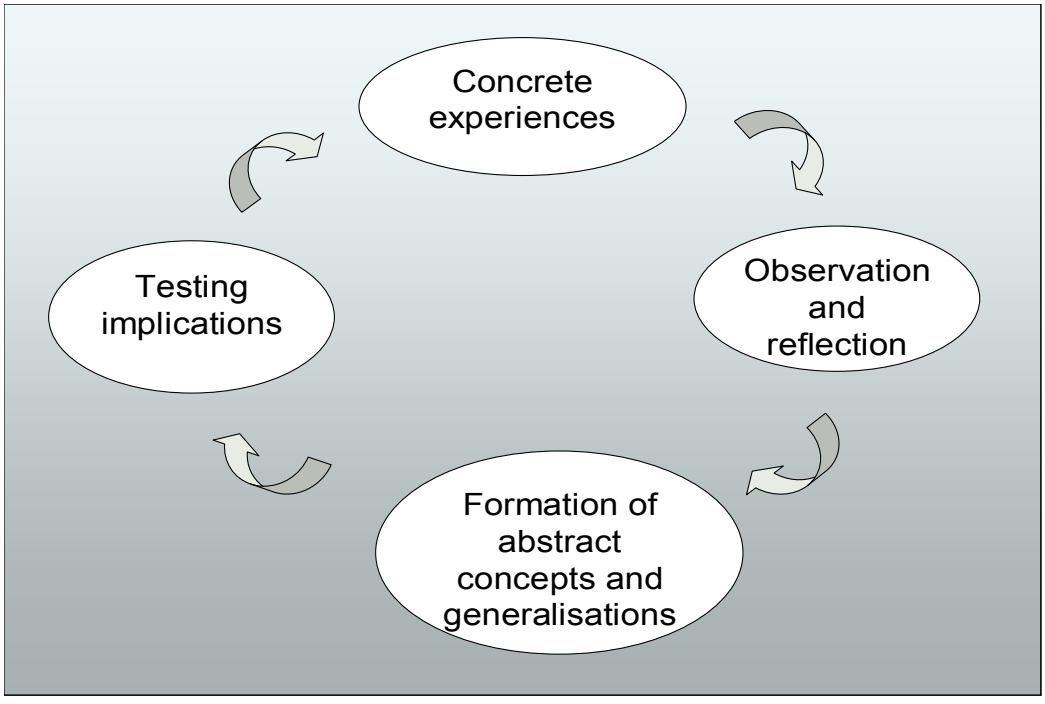

Figure 4.1: Experiential learning
(Kolb 1984: 42)

Lane (1995) draws on Kolb's model of experiential learning to argue for the learning from experience approach inherent in simulations. This comprises participants having concrete

experiences, which leads them to observe and reflect on the experience, thereby promoting the development of abstract concepts that should then be applied and tested.

The focus of the experiential learning method is on engaging the mental faculties; participants actively digest information through involvement in a learning environment (Feinstein *et al.* 2002). Experiential learning thus occurs through the production of knowledge resulting in changes from the experience (Enciso 2001). Through the experiential perspective, participants work through an actual and complex problem by learning through various stages (Geurts *et al.* 2007). This is often very difficult to achieve in the real world, particularly where only a select few in the organisation often engage in problem-solving. Participants in a simulation also have an opportunity to illustrate their ideas to those who are less convinced (Geurts *et al.* 2007). This is a valuable opportunity to build the confidence levels of all. Experiential learning in the form of a simulation is appealing to participants, and outperforms many other training approaches (Green 2002). Some of these methods are mentioned below.

4.5 The appeal of simulations compared to other approaches

Pannese and Carlesi (2007) note that people appear to favour games over conventional exercises. Case studies are often used to facilitate student learning in academic settings. Fripp (1994) however argues that case studies may fail in providing participants with a chance to experience the outcomes of their choices. Dentico (1999) points out that case studies lead to single-loop learning, whereas simulations offer double-loop learning. Furthermore, people know the outcomes in case studies, unlike in simulations.

In contrast, learning through simulations, besides the absorption of facts and ideas, involves an opportunity to put them into practice, thus entailing a move from passive to active learning (Jackson 2004). Simulations allow participants to produce new knowledge by interpreting their decisions and actions (Enciso 2001). Feinstein *et al.* (2002) identify the ability of simulations to aid in decision-making as a particularly distinguishing characteristic. The development of decision-making skills is particularly important in organisational and academic settings.

Jackson (2004) describes how learners in a simulation deeply engage with ideas and principles. Simulations challenge the flawed view that there are only certain ways of education and learning, and also allow for opportunities for similarities and differences to be uncovered through engaging in diverse activities and learning outcomes (Leigh 2004). This is in line with acknowledging and working with complexity. Pivec, Dziabenko and Schinnerl (2003) strongly encourage the use of gaming due to the interactive elements, and it is this interactivity that

captivates participants and ensures their involvement (Pannese & Carlesi 2007). There are also benefits in engaging learners in environments where they experience similarities to those at work (Feinstein *et al.* 2002).

Leigh (2004) strives for the formation of an environment that captures similar interest to that experienced by children doing seemingly uneducative activities, in order to discharge reservations of play in conventional learning. Through processes of creativity, games can assist in both productivity and enjoyment for groups (Geurts *et al.* 2007). Many training approaches do not offer this blend, and thus may fail in captivating the attention of learners.

4.6 Simulations in educational settings

Simulation methods have been used successfully in many educational settings for a variety of subjects. A few examples will be provided. Blasco and Tercero (2008) found that students in a marketing course learnt marketing concepts and related abilities better through experience by participating in a marketing simulation game, which also developed their analytical, decision-making, problem-solving and interpersonal skills. Breinholt, Chesteen and Cooper (1992) used an interactive simulation to teach strategy formulation, whereas Chua (2005) used a simulation designed to teach knowledge management. Cybulski *et al.* (2006) employed a simulation aimed at illustrating principles of information technology or systems and requirements engineering. Pittaway and Cope (2007) used an entrepreneurial simulation to allow students to experience entrepreneurial activities for themselves in a safe environment, and which also incorporated emotional aspects and ownership.

Martin and McEvoy (2003) describe how effective a business simulation used in tourism education was, as an alternative teaching method to address critical and analytical skills. Toyli, Hansen and Smeds (2006) through their simulation, allowed students to develop practical skills in business education, obtain an holistic view of business, and utilise analytical, planning and teamwork skills under time constraints. Doyle and Brown (2000) employed a simulation to teach applied skills and to give students an opportunity to develop and implement strategies. Zantow, Knowlton and Sharp (2005) in their strategic management simulation, allowed for opportunities for generative learning, whereby participants make connections between content and experiences.

All these games/simulations essentially highlight the importance of acquiring practical experience to either solidify concepts or to develop professional skills necessary for students to enter into a future career. Institutions of higher learning sometimes get criticised for releasing

students into the work place who lack the necessary skills to adapt to working environments. As this study is centred on organisations, the use of simulations in a business context will now be discussed.

4.7 Simulations in organisational settings

Simulations are powerful tools of teaching (Jackson 2004) and are ideal for adult employees in organisations (Green 2002; Pivec *et al.* 2003). Learning methods for adults are important as they usually have different needs, and often may not have the same type of knowledge as that of students for example. Business games model a whole or partial organisation, so that participants are able to understand the connections (Pivec *et al.* 2003). Such critical connections can help people to see where the department or unit that they work in, fits into the organisation.

The active component of simulation as opposed to approaches which involve mere listening, appeals to executives and an array of problems can be dealt with in minimal time, thereby accelerating learning (Fripp 1994). Dentico (1999) points to simulations being problem-based exercises, where certain problems that result in various actions are addressed, by having roles interact in specific ways with these problems. People thus get to experience situations similar to their work setting, rather than being subjected to a position where they "passively receive and assimilate learning contents" (Pannese & Carlesi 2007: 451). This is critical in understanding why traditional training and/or education programmes may be insufficient. People also sometimes do not really have an opportunity to critically analyse or question content.

Le Roux and Steyn (2007) view the use of simulation, experiential learning and critical reflection, as a pertinent method in training and education, and define training as a process, compared to education which is concerned with the acquisition of information and data. Dooley (2002) also supports the use of simulations for training and education. Simulations can therefore facilitate learning, which may not be achieved solely through training and education.

A few examples of simulations in organisational settings are briefly presented. Haapasalo and Hyvonen (2001) simulated business and operations management in the electronics industry to illustrate how vital co-operation among various functions is; this presented an opportunity to widen viewpoints about individual functioning in an organisation. Fish Banks is a game, created by Meadows, Fiddaman and Shannon (1993) that teaches sustainable management in the fishing industry by allowing participants to experience the benefits of initial success, which is later followed by the sudden depletion of the resource. The Beer Distribution Game aims to illustrate the dynamic behaviour of systems by allowing participants to be in charge of an integrated beer

production, distribution, wholesaling and retail organisation (Lane 1995). The Beer Distribution Game has however received criticism, for example, mention is made of the limitations in offering an alternative way to manage supply chains, and also to the unrealistic aspects (D'Atri, Spagnoletti, Banzato, Bonello, D'Atri, Traversi & Zenobi 2009). People Express Airline is focused on the factors that limit growth in organisations and aims to encourage long-term strategic thinking by having participants manage a company with the above in mind (Lane 1995).

4.8 Critical aspects of simulations

There are various facets in simulations that have been considered critical in contributing to the success of this approach. These will now be explored.

4.8.1 Breaking mental models

Dentico (1999) highlights the powerful cognitive learning encounters experienced in simulations, which have far reaching consequences that tap into mental models.

Enciso (2001) describes the following as pertinent in changing mental models:

- Simulations promote voluntary learning;
- Participants may experience lower levels of resistance to change due to the uncertainty from the tension in the simulation;
- Participants' mental models can develop by viewing the whole, and this results in the production of shared mental models;
- Participants engage in double-loop learning by experiencing the consequences of their decisions in reduced time, thereby realising that their mental models need to change to solve a situation;
- Shared mental models are created by the joint experience;
- Learning can occur through minor incidents in the actual world thereby providing for a rich interpretation of the past; and
- Participants can interpret and make sense of their experiences.

Keys *et al.* (1996) are of opinion that effective simulations must be capable of portraying shared mental models and of producing holistic communication. It is essentially a collective learning that is strived for. Fannon (2003) supports learning where people engage in processes of

interpretation in order to understand each other's thoughts and decision-making to consequently react effectively. Simulation use is therefore seen as a new consciousness that taps the mental models of participants to promote double-loop learning by adapting assumptions or assisting in the comprehension of a problem (Villegas, Rapp & Saven 1996).

4.8.2 Double-loop learning

Simulations facilitate this deeper learning by challenging existing ways of thinking how we go about things (Enciso 2001). Enciso (2001) mentions the integration of cognition and emotion resulting in active learning to facilitate with dynamic and complex situations, as critical to individuals and organisations. This is of relevance as emotional connections to facts and ideas can be made through participation in a simulation; something which may not ordinarily arise during a training and education programme. The cognitive and emotional aspects arising from interacting with the simulation and resulting feedback can produce necessary behaviours as a result of current thinking being challenged (Pivec *et al.* 2003). The ability of simulations to draw in the emotional aspects are thus of significance.

Argyris (1991) as cited in French *et al.* (2005) argues that organisational members will be more effective in the future when they gather insight into their own problems and dynamics. Apart from solving problems, they also acquire a deeper understanding into the nature of the problems, which leads to continuous improvement, by having members engage in discoveries that could lead to significant outcomes. This is especially important in an organisational context to allow individuals to acquire capabilities. Simulations are thus powerful in unlocking the mind to strive towards continuous improvement by sharpening participants' ability to learn (Cecchini & Rizzi 2001).

Double-loop learning has implications for people and organisations, and involves change which fundamentally makes a difference (McMillan 2008). There are thus profound implications, in that there are multiple levels; people learn to think, behave and ultimately do things otherwise. As McMillan (2008) explains, shifts in the mental models, as well as internal perspectives of people occur, resulting in the acquisition of valuable new perspectives and consequently changed behaviours. Double-loop learning is thus distinct from single-loop learning in that the focus on the latter is on changing things in a way that only touches the surface; thus avoiding an examination of beliefs and assumptions. There is value in that a new skill may have been acquired, which perhaps increases productivity, but the underlying thoughts concerning the job remain unchanged (McMillan 2008). Peschl (2006) therefore argues that double-loop learning involves reflection and radical questioning.

There is another kind of learning. Triple-loop learning involves profound change on a deeper, existential level, which includes individual attitudes, values, perceptions and beliefs (Peschl 2006). There can thus be a transformation of self. This domain can also be referred to as the self or the person, and is not easily tapped by classical learning strategies (Peschl 2006).

The focus of this study is however centred on double-loop learning which arises from participation in a simulation, where the focus is on promoting reflection. An ability to induce profound change as defined in triple-loop learning would require more intervention than participation in a simulation can offer.

Therefore, simulation games allow for double-loop learning due to the various roles, rules and behaviours that participants display. This leads to the contemplation of mental models and the development of strategies which encourage the achievement of a common goal (Serrano *et al.* 2006). Thus, when participants reflect on the consequences of their actions, and make deductions which are tested with further action, learning occurs (Williams 2003).

4.8.3 Organisational learning

Villegas *et al.* (1996) argue that joint dialogue and sharing of experiences and ideas, promotes organisational learning. Wenzler and Chartier (1999) identify simulations as key to organisational learning, where the focus is continuous learning and being adaptable, as opposed to being over-reliant on planning for the future. This is echoed by Pepper and Clements (2008) in noting that this learning capability in dynamic environments has to be achieved as practically as possible. Simulations could thus assist organisations to understand why traditional change management approaches fail. People can through participation in a simulation work through vague situations filled with uncertainty, and limited information with the goal of developing capabilities.

Simulations also provide an opportunity for reflection, experimentation, and action, thus facilitating learning, and are useful in freeing learning within the organisation (Keys *et al.* 1996). Lane (1995) who argues that the main purpose of simulation is to encourage learning among participants also supports this view.

Playing the actual game, deciding whether to take risks and actually doing so, and considering outcomes and rewards, all provide multiple-level learning (Doyle & Brown 2000). Simulations thus incorporate many aspects. The learning process from the simulation influences participants as well as researchers (Barreteau *et al.* 2007).

Simulations encourage independent exploration (Adobor & Daneshfar 2006) but Pivec *et al.* (2003) also point to a community of learning, gathered from the simulation experience which occurs through participants communicating their ideas, problems and solutions to each other. This joint organisational learning is key to the organisation's effectiveness.

4.8.4 Holistic and proactive perspectives

Simulations can allow for a problem to be viewed holistically, as well as proactively by having participants explore strategies before implementation and direct future situations that may cause problems (Geurts *et al.* 2007). Simulations can illustrate an holistic view of a problem presented by multiple stakeholders. This is particularly useful when there are stakeholders who may have competing interests.

4.8.5 Problem-solving through a meaningful experience

Simulations allow participants to be introduced to the situation and problem, and they are encouraged to work towards solving it; thus, content is self-discovered (Lane 1995). Involvement in a simulation leads to the discovery of new features to a problem, as well as idea generation that can be considered by others (Geurts *et al.* 2007).

Lane (1995) argues that the experience from the simulation is 'rich' due to the complex types of knowledge and the mixture of human reactions, emotions and interactions. Villegas *et al.* (1996) attribute this rich experience to the interactions between participants and the game. The richness also originates from the variety of issues involved, and it is this that allows for the creation of a new world emerging during the simulation, which encompasses participants choosing to investigate certain issues, who is responsible for making choices, power distribution, climate and actions (Stumpf *et al.* 1994). Simulations are powerful in that they unearth how people naturally deal with problems and relate to others in the real world. People may thus not be able to see this in the real world but by stepping out, they may actually be able to see their natural tendencies and consequently take action.

During the rounds, which represent specific time periods, in a simulation, ordinarily slow processes are illustrated in a short space of time (Jackson 2004). Outcomes of critical decisions can thus be illustrated in minimal time and to all present. The time limit encourages participants to determine how to do things and the methods they will undertake in doing so (Le Roux & Steyn 2007). Stumpf *et al.* (1994) point to participants choosing how to access and share information, and bounded rationality that occurs as a result of time constraints and uncertainties.

Villegas *et al.* (1996) also suggest that the recurring nature of simulations offers much strength to the learning process.

Thus, having participants look for information and strategies (Pivec *et al.* 2003) can develop critical skills such as decision-making, negotiation and becoming aware of useful information in a discriminating way. It is better that participants are able to practice these skills in the safety of the simulation where there are no serious consequences (Fannon 2003).

4.8.6 Communication and participation

Geurts *et al.* (2007) point to the usefulness of simulations in assisting with communication in complex situations with various groups to facilitate in discussing ideas and closing communication gaps. This is verified by Barreteau *et al.* (2007) in mentioning how simulations promote communication, positive dialogue, clarity and training in a complex system. It is suggested that middle managers who often drive many initiatives, as well as other managers, clients and other stakeholders be involved.

A game consists of more than formal language such as words and speech, but also includes different symbols, and can be viewed as a form of communication that utilises action and thought-provoking experiences to enable a connection between structured and tacit knowledge (Barreteau *et al.* 2007). As Barreteau *et al.* (2007) explain, simulations permit legitimate and candid articulation from all stakeholders. The removal of constraints on participation and communication affects participants' motivation to learn (Pepper & Clements 2008).

Serrano *et al.* (2006) examined collective rationality in simulation games, which is relevant to critical processes of communication and participation. He points out that if a participant believes that others will co-operate, then he will too, based on incentives and beliefs about others. Thus, simulations which are centred on getting learners to interact with others to produce knowledge are a powerful way of addressing vital issues in organisations (Pivec *et al.* 2003). Furthermore, if various participants from different organisational levels and backgrounds, as well as top management, are involved in the simulation, organisational learning can be great (Keys *et al.* 1996). Such meaningful engagement by people from different levels can be very difficult to achieve under normal circumstances. This could have to do with concerns about status by those who are on higher levels, or a simple lack of interest. Attempts at bridging such divides could include attempts at getting those at the top to see the benefits of participation in the simulation for the organisation.

Those involved are not only placed in a better situation to deal with difficult circumstances but may also become more cohesive as a result of the interest produced from the interactive element (Erasmus *et al.* 2006). Simulations also foster dedication in that people get to understand a problem and possible actions; they get to clarify their part in the greater scheme and address their skills base (Geurts *et al.* 2007). The ability of simulations to assist with assessing whether the current skills are adequate is beneficial. Simulations strengthen ties between those dealing with common resources and also ensure future exchange among participants (Barreteau *et al.* 2007).

4.8.7 Testing

Pivec *et al.* (2003) also point to the mixture of knowledge from different backgrounds that participants can utilise in making a decision and testing the consequent outcomes, and the social aspects of simulations which encourage collaboration amongst participants.

Simulations are particularly advantageous when an organisation is confronted with significant change requirements in that strategy and implementation can be practised in a risk-free environment (Keys *et al.* 1996). Critical decisions can therefore be made in the simulation and the outcomes can be assessed by all. Exploratory simulations may also be beneficial by allowing those involved to adapt to a new situation, try alternative ways of behaving, attempt a strategy or develop means of co-operating (Peters & Vissers 2004). Therefore in a simulation, corrective action can be taken before implementation of the change.

Furthermore, as mentioned by Serrano *et al.* (2006: 327) simulations need to include the opportunity to "create, refine and test strategies for cooperation". This will affect choices made in the simulation before being implemented in the real situation. It is essential that those involved understand the system and in so doing, reduce uncertainty.

Savolainen (1997) describes how simulations can release creativity in participants to discover issues and produce solutions, as well as test ideas, in terms of the present and future. Dooley (2002) also discusses the benefit of simulations in allowing for testing in the artificial world, rather than in the real world.

4.8.8 The 'aha' moment

Many articles describe 'aha' moments experienced by participants. This is better articulated by Villegas *et al.* (1996) in explaining how participants become enlightened when the game

provides them with new insights. Participants undergo mental challenges that result in the construction of their own hypothesis or comprehensions (Fannon 2003). Le Roux and Steyn (2007: 345) explain how participants through the process of critical reflection, achieve a state of enlightenment by concluding the experiential learning process "with the cementing of knowledge and the transformation of learning into experience". Such critical reflection is rarely achieved in real world settings and especially where various people that are in a common situation can do so. This critical reflection involves a conscious consideration of individual behaviour, choices, emotions and beliefs, which consequently leads to knowledge being cemented (Le Roux & Steyn 2007). Chua (2005) thus recommends that games be conducive to immediate feedback, collaborative learning and situated learning by knowledge accumulation through situational interaction in a simulated environment.

4.9 Designing simulations

4.9.1 Collaboration in the design phase

Borodzicz and van Haperen (2002) indicate that group and individual learning can be enhanced by involving participants in simulation design and evaluation. Actual complexities of business can be included, such as distractions from a phone as well as information related to the context, unfolding events and time limitations (Cybulski *et al.* 2006). Attempts are thus made at making the setting close to the real world.

Geurts *et al.* (2007) in designing a simulation interviewed internal and external stakeholders to determine problem boundaries. The designer must thus attempt to get input from those in the real world. Stakeholders will be in a better position to comprehend models and improve their knowledge by participating in the simulation with the result that a variety of opinions can be expressed (Barreteau *et al.* 2007). The rich mix of opinions thus provides a more accurate reflection of the actual workings of the system. Another benefit of collaboration in the design of a simulation is that it further strengthens the model (Olson, Shipley, Johnson, Dimitrova, Marchevski, Stoykov & Yankov 2006). Savolainen (1997) also points to the importance of how the models actually end up being examined, due to having those who actually do the work, being involved in the simulation. This in essence is then a form of evaluation, which is critical to understanding whether the simulation worked.

Participants will also respond more readily to learning when they feel that those at the top are involved and support the simulation, and this can be demonstrated by having them organise the location and send out appropriate information timeously (Green 2002).

4.9.2 Problem identification and illustration

Games must be based on a sound, methodologically and empirically tested conceptual model, and relevant literature must be consulted (Chua 2005). This is echoed by Borodzicz (2004) in stating that not only should games have a specific purpose, but they must also be based on theory. Geurts *et al.* (2007) point to reviewing literature to identify related models and concepts and Chua (2005) identifies this as important to recognise critical issues and events for inclusion in their simulation.

Leigh (2004) advises that the problem be identified and that its causes and characteristics be determined. This can be done by conducting observations and interviews. Fripp (1994) describes the design of a simulation for a company where the simulation was designed in collaboration with managers who were able to identify pertinent issues for inclusion in the simulation and how best to demonstrate these issues (Fripp 1994). It is thus important that the designer get input both from former studies and from real world participants.

Simulations cannot however incorporate all issues. Critical elements need to be simplified and effectively represented (Leigh 2004). It is necessary to simplify aspects in order to grasp the basics (Axelrod 1997); thus, the focus is not on exact duplication (Feinstein *et al.* 2002). Fripp (1994) points to the importance of simulations depicting closely the reality of the organisation and its context.

Borodzicz (2004) argues that it is critical that simulations have outward simplicity, yet inner complexity, but also warns that complex games may fail, and encourages the use of simple, yet powerful games where participants better understand issues by focusing on the achievement of a few goals.

Research from Adobor and Daneshfar's (2006) study clearly indicates a link between individual learning and that of the realism and user-friendliness of the simulation. It is recommended that a balance exists between simplification needed to grasp processes and realism to link this to reality, as this ensures that participants feel confident yet free (Barreteau *et al.* 2007).

It is however important to not get completely caught up around realism but the focus should instead be on verisimilitude (Borodzicz 2004). This verisimilitude is critical to achieving actual world-like responses from participants (Keys & Wolfe 1990). Lane (1995) points to the importance of verisimilitude, which refers to the activities in the simulation being similar to

those in the real world, with the aim of having participants carry over experiential lessons to the real world.

4.9.3 Learners

Learners, and what precisely they should learn needs to be determined (Leigh 2004; Pivec *et al.* 2003). Green (2002) warns of simulations failing unless the significance of comprehending what intensifies the learning experience is identified. Furthermore, what learners need to do and the materials that they require must be considered (Leigh 2004). Learners can be given an opportunity to examine the material before the exercise commences.

4.10 Conducting simulations

Simulations essentially consist of three set sequences: briefing, the action and debriefing, as well as further interrelated elements composed of rules which govern actions, specific roles and the relevant situations, and any physical records (Leigh 2004).

4.10.1 Briefing

This phase run by the facilitator is usually not as lengthy as the rest, and essentially involves captivating the interest of participants (Leigh 2004). This phase is thus critical to how the rest of the simulation will unfold. It may be necessary to highlight the learning objectives of the simulation (Adobor & Daneshfar 2006) as well as the rules and requirements (Chua 2005).

Chua (2005) also advises administrators to incorporate aspects of theory, practice and assurance in the briefing. Furthermore, the intention of the simulation can be explained and this can be an opportunity to ease any fears by perhaps having a question and answer session (Chua 2005). It may be useful to point out that participants can note actions and behaviours, which can be discussed later.

4.10.2 Roles assumed

Barreteau *et al.* (2007) draw attention to how roles are formed by simulating certain features of people in the real world. This is influenced by access to resources, personal assets and goals, environmental factors, and behaviours. Players are assigned these simulated roles which may, or may not be similar to their reality, as is the case of those who play opposite roles. It is thus important that designers and facilitators bear this in mind.

During the actual simulation, participants construct their experiences, play their roles and meet set goals, whereas the facilitator steps aside to observe, and may circulate necessary information (Leigh 2004). It is important that participants play various roles so that they acquire knowledge, practical experience and soft skills (Pivec *et al.* 2003). Participants must discover for themselves what it feels like to be in a specific role, along with the accompanying choices and outcomes (Chua 2005). Learning processes will thus be greatly facilitated when participants comprehend what it involves to be in another role.

Participants should be kept engaged, and scenarios altered to secure the interest of those who were in a simulation before (Chua 2005). It is important that all participants are engaged in the simulation through precise and obvious activities (Geurts *et al.* 2007). New unanticipated events should be introduced (Pivec *et al.* 2003). Surprises can facilitate learning (Borodzicz 2004).

A further purpose of playing roles is to ensure that those involved remember that they are participating in a game where they can build the future by drawing on their creativity (Geurts *et al.* 2007).

4.10.3 Level of challenge in the simulation

Goals with an adequate challenge level need to be set (Pivec *et al.* 2003). It is important that there is enough of a challenge (Pivec *et al.* 2003) but the simulation should not be too difficult or easy as it is important to keep participants' attention (Chua 2005). The importance of attaining that balance cannot be under-estimated.

As the confidence levels of the participants can be affected by the simulation, it may be useful to have trial runs before the simulation in the case of a game that is difficult to understand (Green 2002). Other benefits of running a trial are to identify any problems and also to become acquainted with the game (Fannon 2003).

4.10.4 The people in the simulation

It is important to note the influence of group dynamics. Consideration should be given to the mix of people, for example, as Green (2002) points out, having participants together who are familiar with each other could result in groupthink, whereas having different people with their own personalities could create other problems. Emotional matters and issues of social structure between management and employees may also affect the game negatively and should be kept in mind (Bordozicz 2004).

Adobor and Daneshfar (2006) advise instructors to be cognisant when choosing to allocate participants to teams or allowing them to self-assemble rather. Either approach will have have certain advantages and disadvantages. It is recommended that one bears in mind the purpose of bringing together people and how precisely they are organised (Green 2002). Participants should also be encouraged to engage in constructive debating rather than having personal conflicts with other participants (Adobor & Daneshfar 2006). As Geurts *et al.* (2007) mention, simulations must not avoid constructive criticism for the sake of keeping peace, lest this results in group-think. Cohesion building exercises prior to the simulation could assist, as well as the existence of a culture that encourages trust and respect for all people (Green 2002).

4.10.5 Facilitating the simulation

Keys and Wolfe (1990) argue that the administration of a game is nearly as critical as the quality. Instructors should therefore not only focus on learning but also on factors around learning, like group dynamics and features of the simulation (Adobor & Daneshfar 2006).

The role of the facilitator is highlighted by many authors. Green (2002) recommends that the facilitator be well acquainted with all aspects of the game. Barreteau *et al.* (2007) caution those in charge of simulations to consider their choice of participants, medium, location, time, as well as illuminating their motives for raising awareness and their role in the process. It is recommended that every aspect, including the rules, confines, feedback and anticipated commitment levels, of the simulation be made clear (Chua 2005). The preparation of the facilitator is therefore critical to the success of the simulation. It is also important to note the role that facilitators may play in knowledge transfer, and how their knowledge and experience may change the results of an intervention (Le Roux & Steyn 2007). Leigh (2004) cautions against facilitators inflicting their own views on participants, as players have to experience the consequences of their own decisions (Pivec *et al.* 2003). Such intervention can thus hinder the learning processes of participants.

Rosser and Leigh (2008) point to accountability not only held by designers and facilitators to be aware of issues of control, assumptions and objectives in simulations, but also for participants to comprehend occurrences in the game and learning.

The use of simulation essentially centres on facilitators embracing flexibility and releasing excessive command (Le Roux & Steyn 2007). It is important for designers and facilitators to bear in mind that there will be uncontrolled aspects due to the unique experiences and requirements of participants, but that there will be order despite the appearance of disorder

(Leigh 2004). This is in line with the acknowledgement of complexity. Borodzicz (2004) advocates for flexibility in simulations to permit for learning from strengths and shortcomings.

4.10.6 Debriefing

The debriefing phase is the final phase in the simulation. Thiagarajan (2003) views the debriefing phase as particularly critical in complex simulations. Collective learning is emphasised where group discussions concerning reality occur (Barreteau *et al.* 2007). A point to note is that group discussions ensure that individuals learn and are capable of transferring the knowledge back to reality (Villegas *et al.* 1996).

Borodzicz (2004) recommends overviewing the purpose of the game during the debriefing. Fannon (2003) also draws attention to the purpose of debriefing as critical in dealing with positive and negative emotions experienced by participants, and to disengage from the roles. The debriefing phase provides participants with an opportunity to make connections between learning and the game (Pivec *et al.* 2003). Participants can reflect on what they learnt with assistance from the facilitator, and this can be used to decide how to transfer this knowledge to the real world (Green 2002). The debriefing phase is essentially when the facilitator becomes more active, particularly in guiding participants. It is thus important that the facilitator has an opportunity to observe occurrences in the simulation.

Chua (2005) explains further advantages of the debriefing phase of the game. Participants can describe their experiences in the simulation to commence discussion. This can open up their emotions to acknowledge the affective component in learning and also encourage trust amongst participants, and they can raise any expectations that they had which were not consistent with the game, so that they can gather new insights. Thus, as expressed by Cybulski *et al.* (2006) participants can deal with the facilitator and others, process any thoughts, presumptions and ideas that they may have had.

Pivec *et al.* (2003) argue that participants learn not only by making mistakes but also through the consequent feedback. Lane (1995) views the feedback generated as significant in the learning process. Facilitators must therefore maximise the opportunities that are found in the debriefing phase.

4.11 Limitations of simulations

Simulations do have many benefits as has been illustrated but there are also limitations that need to be kept in mind. Some authors argue that there must not only be reliance on simulation as a sole teaching and training method, but that they rather be used in conjunction with other methods (Doyle & Brown 2000). Fortmuller (2009) also points out that participation in one simulation may not be adequate to acquire proper learning. There are also factors around the role of the facilitator which can impact on the simulation (Le Roux & Steyn 2007). Keys and Wolfe (1990) also highlight a weakness in that generalizability is limited due to the specific participants that are selected, which in many studies are students. Dooley (2002) mentions that there is often a problem with simulation studies when it comes to implementation, particularly in disciplines where simulation use is not as common. Another concern is that simulations are not always utilised as well as they should be, perhaps due to not effectively representing the realities of an organisation (Fripp 1994).

It is argued that models are often not used effectively, and that there is no proof of their validity (Forrester 1994; Forrester 1998). Magee (2006) also mentions the importance of having a realistic model. Edelheim and Ueda (2007) contend that simulations may fail in properly duplicating a business environment. Further concerns are around ensuring a realistic level of complexity, and whether or not participants are capable of transferring skills from the simulation to the real world (Magee 2006).

Business games often fail in transferring lessons to the real world; there is a temporary involvement which may provide an illusion of learning, and this may in part arise due to inadequate time being spent on the outcomes of the simulation (Forrester 1998; Sterman 2001). Magee (2006) also raises the issue of simulations and gaming as sometimes being viewed as entertainment. Major constraints around simulations are therefore around reality, validity, and complexity (Edelheim & Ueda 2007). Sterman (2001) also raises concerns that people's mental models, scientific reasoning skills and group processes may not be adequately challenged by simulation models and virtual worlds.

4.12 Concluding remarks

This review has illustrated the suitability of simulations for use in conducting research to test and build theory. Simulations may be more effective than other traditional approaches to learning, such as case studies and passive listening from education and training sessions. This

has been proven in traditional educational settings with students, as well as with adult learners in organisational settings. Simulations are ideal in addressing the multitude of complex situations in organisational settings. Through experiential learning, participants explore a problem and experience for themselves the outcomes of choices that they made. Benefits of using this method include the opportunity for the exploration of mental models in order to acknowledge stakeholders' varying perspectives. This powerful method encourages communication and participation between all involved, and participants can also test strategies in the simulation before implementation in the real world. It is therefore firmly believed that this process is critical to organisational learning.

On a practical level, it is advised that consideration be given to the many aspects of designing simulations. These include involving participants in the design phase to determine the problems, and how best to represent pertinent issues in a model. It is also important to consider aspects pertaining to learners and their needs, as well as to the designers and facilitators. The limitations of simulations should however be kept in mind, despite the many benefits that can be derived.

CHAPTER 5: METHODOLOGY

5.1 Methodological approach in study

This chapter outlines the methodological approach, as illustrated in Figure 5.1, which was undertaken in order to achieve the research objective and to answer questions of this study. A literature review was conducted into the areas of simulations and change management. This was followed by empirical work, utilising interviews, observations and secondary data, in the fisheries context. The data was then analysed to determine the pertinent issues. The secondary data was studied in detail and did provide a perspective into what these issues could be. Emphasis was however mainly placed on deriving data from the interviews. The simulation was then designed. Key issues from the change literature were included, and the simulation literature was utilised to assist with the design. Critical issues that arose from the analysis of the interviews were selected for representation in the simulation. The simulation was tested by having a pilot, which was followed by two runs with some of the stakeholders in the fisheries context.

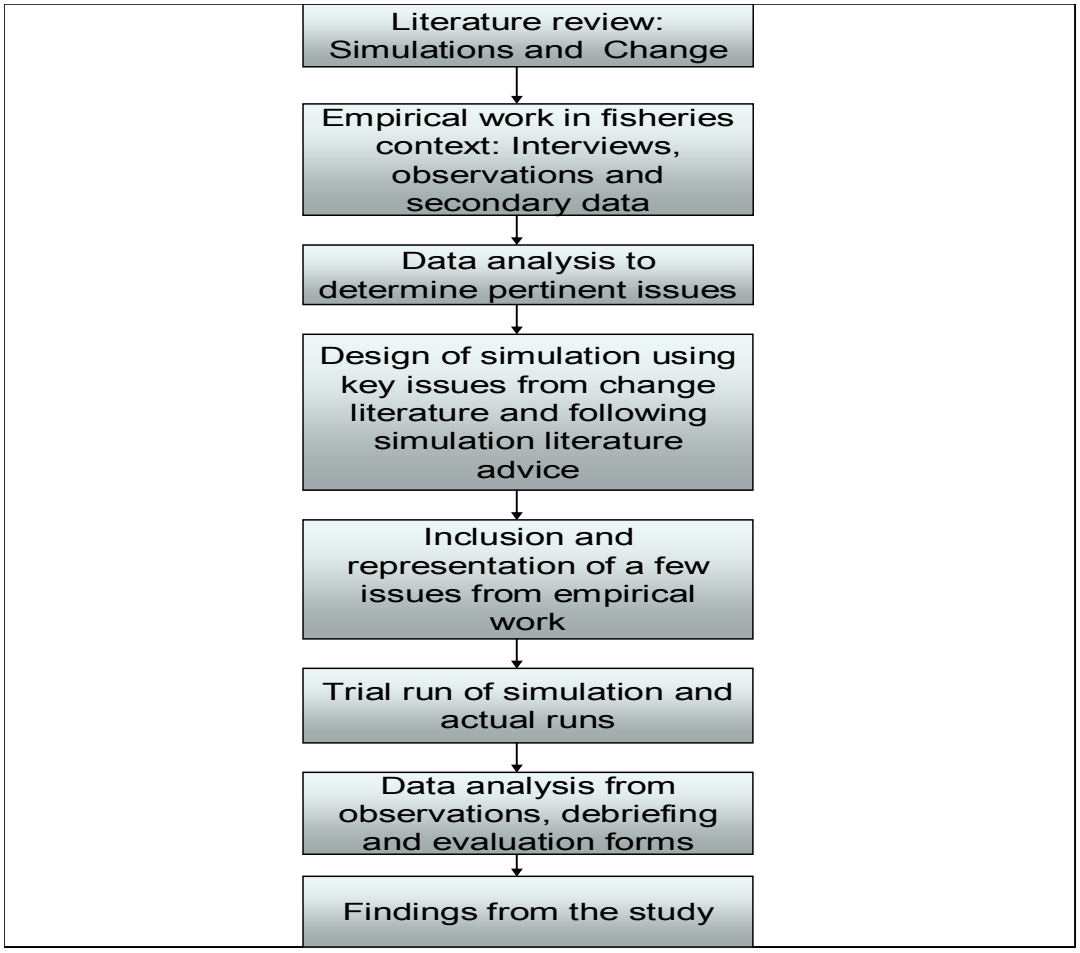

Figure 5.1: Methodological approach undertaken in study

5.2 Study design

The area of change management is very challenging, as was presented in the literature review. An exploratory research design was therefore selected with the aim of gaining insight into the use of a simulation in the context of change management. This is appropriate when few studies have been done in a specific area (Sekaran 1992). The study consequently drew on a qualitative research approach. The reasons for selecting this approach are elaborated on below.

Qualitative research focuses on understanding numerous, complex, socially constructed realities, especially through comprehending how different individuals in a particular social setting construct their world (Denzin & Lincoln 1998; Glesne & Peshkin 1992). The purpose of such research is to enable rich descriptions and understand the perspectives of individuals through multiple methods, such as interviewing or observations (Denzin & Lincoln 1998). Glesne & Peshkin (1992) therefore contend that the intention is to be exposed to the multiple perspectives of individuals, and this is so as not to simplify social phenomena but rather to investigate various behaviours and interactions. Mention is also made of how this research permits for exposure to constraints of the social world, and comprehension of the complex social interactions that exist (Denzin & Lincoln 1998; Glesne & Peshkin 1992).

It was critical to engage in a comprehensive study in order to discover the various views that were held by the stakeholders in the fisheries system. Qualitative research is suitable for discovering "local meanings of phenomena and the interactions that create these meanings" (Bartunek & Seo 2002: 240).

Esterberg (2002) explains that in conducting qualitative research, that the beginning point is to examine the social world and in doing so, develop a theory related to what is being observed. This research which is often inductive is conducted in the natural setting of the social actors (Babbie & Mouton 2001). I thus went to the various settings where the stakeholders of the fisheries context in the Western Cape were based, in order to gain an understanding into how things worked. This was critical for me in comprehending the lives and views of the participants as accurately as possible (Esterberg 2002). I could furthermore see precisely how significant issues were experienced (Bartunek & Seo 2002).

As indicated, qualitative research can yield most valuable insights, but researchers should nonetheless proceed with caution. Sofaer (2002: 333) warns that "when qualitative research is designed or executed poorly, the results are neither credible nor useful". Key to a good qualitative study therefore involves careful consideration of the issues around the design of the

study, sampling, the construction and use of the instrument, and how data analysis will be undertaken. These issues were carefully considered prior to the commencement of the fieldwork component of this study. This was done by extensively consulting the various strands of literature (change and simulations), and writings on research methods, in conjunction with the secondary data. This essentially entailed a thorough process of cross-checking.

An aspect of qualitative research that was taken into account, relates to the role of the researcher. Babbie and Mouton (2001) consider the researcher to be the primary instrument, and hence view the insider perspective as critical in the process, which consequently allows for in-depth descriptions and comprehension of actions and events. Furthermore, as explained by Westbrook (1994) qualitative research is an ongoing process affecting the research design until the researcher completes the field work, and that the theory which arises, grows from data analysis.

Another consideration that also guided this study was that of qualitative research being more flexible by nature. A concerted attempt was therefore made throughout to maintain a balance between being prepared but also adaptable, consistent with the view of Irvine and Gaffikin (2006) in suggesting that the qualitative researcher be flexible and able to handle ambiguity.

5.3 Sampling

Purposive sampling was used; consistent with the idea that participants are purposefully chosen when conducting qualitative research (Creswell 1994). As discussed in Chapter 2, the study context was the fisheries system in the Western Cape province of South Africa. Two other sites were originally explored as options, but without much success due to various constraints about gaining access as research sites. This context was considered suitable, mainly due to the existence of a complex, multiple-stakeholder setting, characterised by stakeholder perspectives and competing interests for limited resources. This was deemed appropriate for the study, and associated research questions. Problems consistent with that which was uncovered in the change literature were discovered. Criteria for selection included that fact that there were many stakeholders, each with their own worldviews, who were involved in a change process of significance that remained unresolved for a few years. An overview of the secondary data seemed to portray a strong need for all stakeholders to engage collaboratively in order to strive for collective learning. I therefore regarded this setting to be ideal in exploring the use of simulation as a tool of change management. The background of the setting was elaborated on Chapter 2.

I decided that the selected participants would include stakeholders from MCM, Masifundise, the small-scale sector, and if possible, representatives from the commercial and recreational sectors. I found this approach best to understand the system holistically. This was considered important to gain a broad and balanced understanding into the various stakeholder perspectives of those in the fisheries system in the Western Cape.

The 'gatekeepers' at MCM were first approached and informed about the proposed research. As recommended by Creswell (1994) a copy of my research proposal was submitted outlining precisely what the study would entail. I was then provided with the details of a contact person at Masifundise. I once again submitted my research proposal and answered questions about what the study would entail.

Ethical clearance (Appendix D), in line with the regulations of the Ethical Clearance Committee of the University was obtained, once approval from both MCM and Masifundise was received.

5.4 Data collection

Ethnographic methods, including observational techniques and interviewing were used, as well as analysis of secondary data. These methods were critical in collecting data from the stakeholders, which was then analysed in order to design a simulation. Bowen (2005) notes the importance of triangulation through various methods to ensure credibility in the results of the research. These techniques ensure triangulation by permitting for data collection regarding the participants' views on the situation of the organisation and their work. Emphasis was mostly placed on gathering data from the interviews as this was a way of coming into direct contact with the participants in order for them to personally narrate their experiences.

Observation and interviewing can produce valuable and convincing qualitative results, but do require an immense amount of "discipline, knowledge, training, practice, creativity and hard work" (Connell, Lynch & Waring 2001: 12). Much preparation went into the fieldwork. Each participant received a consent form (Appendix A) explaining the purpose of the study, procedures and duration. Consent forms were also translated into Afrikaans. Issues around voluntary participation in the research, as well as confidentiality and anonymity were also addressed. Field work was conducted from 29 July – 8 August 2009 in the Western Cape province of South Africa.

5.4.1 Observations

Observations are appropriate when a deeper understanding of how people act in a specific setting is required, and are suitable in capturing aspects of the participants' lives that may not have come through in interviewing; thus, providing another perspective on the people being researched (Esterberg 2002; Irvine & Gaffikin 2006). Non-participant observation, whereby the researcher assumes complete responsibility as researcher and does not become involved in the system (Sekaran 1992) was found to be appropriate for the study. The line between the extent of involvement by the researcher during observations can be very thin, and hence difficult to describe.

I undertook informal observations of some of the coastal fishing towns, including Lamberts Bay, Stompneusbaai, St Helena Bay, Paternoster, Langebaan, Saldanha Vredenburg, and Hout Bay near Cape Town. These towns were specifically selected as there is more dependence on the marine resources for livelihoods, than in other small towns which are located closer to Cape Town. I also went to the West Coast National Park, of which the Langebaan MPA is a part. Figure 5.2 illustrates some of the study sites. I took note of a variety of things: the small-scale vessels, small-scale fishers and their homes, the larger vessels belonging to the commercial sector and the actual commercial companies, the recreational fishers and their holiday accommodation, and the employment opportunities that were available in the towns.

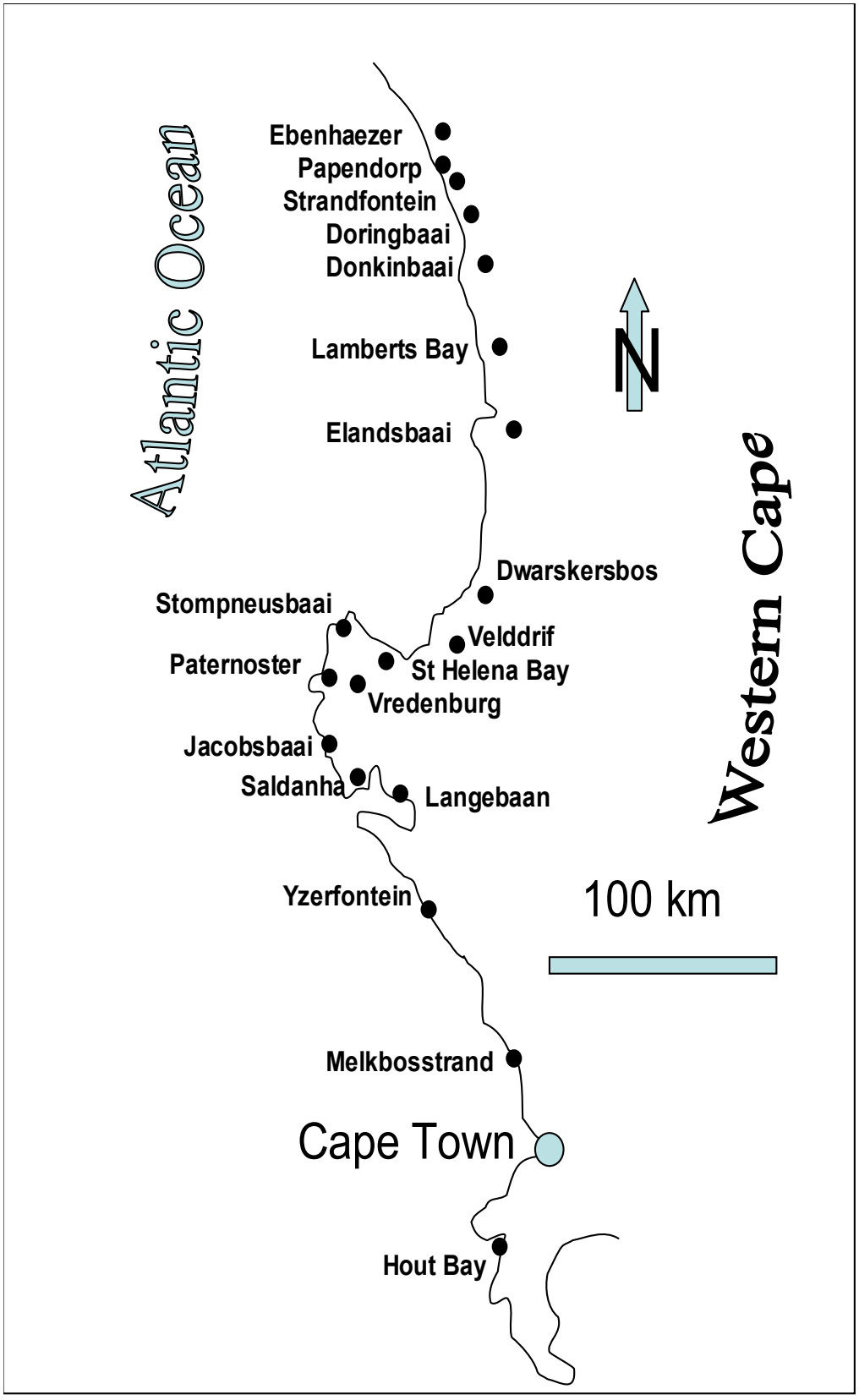

Figure 5.2: Map of the Western Cape illustrating some of the study sites

Observations were conducted firstly at a whole-day meeting in Lamberts Bay on 30 July 2009. This was actually a three-day meeting, but I only attended one day due to the short time that I had available in the Western Cape. I was however provided with a verbal overview of the occurrences of the other two days by the Masifundise staff. Approximately 40 people attended the meeting in which I joined in, including leaders from the various fishing communities in both the Western Cape and Northern Cape, and Masifundise staff members. Apart from visitors, such as myself entering on certain days, the core groups remained present throughout the three days. The purpose of the meeting on the day when I was present was to discuss institutional arrangements, co-management and co-operatives, marketing opportunities and strategies, and skills development. There was also an organisational change and development consultant present to discuss and plan skills workshops in various towns, as well as staff from the RED Door (part of the Department of Economic Development and Tourism aimed at promoting the development of small and/or black-owned businesses) to give an overview of setting up co-operatives. I was introduced and provided an opportunity to explain my project.

I also undertook observation in Cape Town at the MCM offices on 3 August 2009. The meeting was divided into two parts, the first of which was to invite the various stakeholders to provide comments to the Minister of Water and Environmental Affairs about what the new dispensation of the fourth interim relief should entail. Approximately 40 people attended, including MCM staff from the various units, Masifundise staff, and various representatives from the fishing communities from the Western Cape, Eastern Cape, and KwaZulu-Natal provinces, (the Northern Cape was not present due to transport problems). Representatives from the recreational sector, commercial sector including the Rock Lobster Association and Line Fish Association, and universities and organised labour were also present.

The second half of the meeting which was held in the afternoon was with members comprising the National Task Team Meeting members including Masifundise staff, MCM staff, and fishing community representatives from the Western Cape, Eastern Cape and KwaZulu-Natal provinces. Approximately 15 people attended. The meeting with the National Task Team members was essentially to discuss targets and timeframes for setting up the subsistence fisheries policy. I was introduced and mention was made of my project.

Recordings of activities, including details about the context, background, physical details and dynamics were made at both observations, which contributed to the findings (Sofaer 2002; Sekaran 1992). An attempt was made to record notes during the observation period, but when factors prevented this from happening, such as being drawn into conversations with respondents or persons interested in knowing what I was doing; notes were taken soon thereafter (Welman &

Kruger 1999). Detailed field notes were hence taken of both meetings to validate the data from the interviews.

5.4.2 Interviewing

Interviewing was thought to be a good method due to the need to understand what people thought or felt regarding a specific topic (Esterberg 2002). This was so that the researcher could unearth the respondents' covert attitudes and feelings (Ehigie & Ehigie 2005). It was crucial to comprehend the various stakeholders' experience of change and also to understand how the various problems unfolded. Another pertinent reason for choosing interviewing related to the complexity and sensitivity of the issue (Hannabuss 1996).

A semi-structured interview guide (Appendix B) was considered appropriate. These questions were constructed based on an analysis of the secondary data, and of the change literature. The guide was structured with the purpose of gaining an in-depth understanding from the participants into their perceptions of the issues or clashes surrounding the stakeholders in the fisheries system. There was no detailed discussion around what the fisheries system entailed nor was an understanding sought from the participants. This involved a script with a few questions to begin with (Luna-Reyes, Diker & Andersen 2005).

Key informants, as suggested by Welman and Kruger (1999) were selected. These individuals were considered to be most familiar and knowledgeable with the issue at hand, and had more information or were in a better position to express themselves than ordinary members. The two contacts at MCM and Masifindise organised respectively the interviews at MCM, and Masifundise and with the small-scale sector. I managed to secure interviews with representatives from the recreational and commercial sectors, whom I met at the meeting at MCM.

Fifteen, face-to-face interviews were conducted in the Western Cape during the week of 30 July to 6 August 2009. The 15 interviewees comprised four females and 11 males, and in terms of race, seven Coloureds, four Whites, two Blacks and two Indians were interviewed.

Table 5.1 provides details of the interviewees. Five community leaders from the various fishing communities along the West Coast were interviewed in Lamberts Bay, on the West Coast. The community leaders were interviewed straight after the meeting that they were involved in, and some the following day. Most of these interviews were conducted in Afrikaans.

The rest of the interviews, conducted in Cape Town comprised the other stakeholders, such as Masifundise, MCM, and the recreational and commercial sectors. Respondents' answers were recorded on a digital recorder and interviews were transcribed immediately upon return to Durban and used as the main source of data. Notes from the observations were utilised in validating the themes. Thematic analysis was used, as is explained in section 5.5. To maintain full confidentiality, respondents are referred to as R (1 – 15) in Chapter 6, where reference is made to statements that they made.

Stakeholder / role / position	**Interview location**	**Number of persons interviewed**
Fishing community leaders	Lamberts Bay	5
Masifundise	Cape Town	2
MCM (scientists, research unit, subsistence unit, enforcement and compliance unit)	Cape Town	6
Recreational sector	Cape Town	1
Commercial sector	Cape Town	1

Table 5.1: Details of interviews

I encountered some common problems during the interviews, as identified by Hannabuss (1996). These included practical difficulties around approaching respondents who were busy or who may even have been pushed by the gatekeepers into doing the interview. Interviews are often costly and time-consuming, and respondents could answer the questions in a way in which they feel may satisfy the researcher, or they may attempt to mislead the researcher. Other areas of concern included researcher bias and subjectivity, and any anxiety that respondents may have experienced due to the recording or transcribing of the data (Hannabuss 1996). Some interviewees also had more knowledge in certain areas than others, due to their background and current work context.

I prepared as best I could for the interviews to ensure both that my time and the participants' time would be maximised. The following sections outline the guidelines that were used in conducting the interviews.

Participants were reassured about their confidentiality and anonymity, and encouraged to express themselves freely. I also strove to come across as credible to the participants. The following suggestions by Hannabuss (1996) pertaining to the researcher during interviewing, were taken into account. I established rapport and was receptive to the dynamics of the

interview. These included maintaining the flow by not interrupting, knowing how to focus and pace the interview, and even allowing for moments of silence. The questions constructed did not result in closed yes/no answers, and I tried to steer away from jargon and was not critical to the responses.

I made notes during the interviews. An effort was made not to distract the interviewees (Hannabuss 1996). Attention was also focused on the less obvious things, such as factors which drive a decision, unofficial procedures, and differences between attitudes and behaviours.

Much emphasis is placed on the importance of probing in interviews (Ehigie & Ehigie 2005; Hannabuss 1996). Hannabus (1996) however does warn that this could influence the respondents. I was therefore perceptive in this regard, and knew when to encourage the respondents to open up further on certain issues.

I ensured that the open-ended questions remained as such (Sofaer 2002) and also did not interfere with the flow of the interview. This was so that the respondents' views could emerge and for the researcher to better comprehend their experiences. I also made sure that I was fairly familiar with the subject and terminology used in the fisheries context, considered by Ehigie and Ehigie (2005) to be of importance. I also had to ensure that I did not side with any one particular stakeholder group or reveal any information from other interviews.

5.4.3 Secondary data

Documents relevant to the fisheries context, such as memos, reports, and documents found on the internet were also analysed. As Irvine and Gaffikin (2006) point out, this allows for the researcher to assess the impact of such documents on actual organisational life. The secondary data was also intensely scrutinised prior to the interviews to ensure a thorough understanding of the fisheries context. I drew up a detailed document based on the various readings and this guided me tremendously when interacting with the various stakeholders.

5.5 Data analysis

The purpose of data analysis in the study was to draw out important themes or variables that would enable the construction of the simulation. The transcripts of the interviews, observation notes, and document analysis were accordingly analysed. Qualitative data analysis can be laborious; therefore, to assist with the data, the researcher concurrently engaged in data analysis and interpretation, and collection and theory development (Irvine & Gaffikin 2006; Creswell

1994). I also endeavoured to balance objectivity and sensitivity in the data analysis, considered by Strauss and Corbin (1998) to be essential. Objectivity ensures that the researcher feels confident that the findings are presented in a neutral and reasonable manner, whereas sensitivity enables creativity, resulting in novel theory. This was of the utmost importance in the study context.

The following principles of qualitative analysis, as presented by Tesch (1990: 95) were followed in this study:

- Analysis is not the last phase in the research process; it is concurrent with data collection or cyclic.
- The analysis process is systematic and comprehensive, but not rigid.
- Attending to data includes a reflective activity that results in a set of analytical notes that guide the process.
- Data are 'segmented', i.e., divided into relevant and meaningful 'units', yet the connection to the whole is maintained.
- The data segments are categorised according to an organising system that is predominantly derived from the data themselves.
- The main intellectual tool is comparison.
- Categories for sorting segments are tentative and preliminary in the beginning; they remain flexible.
- Manipulating qualitative data during analysis is an eclectic activity; there is no one 'right' way.
- The result of the analysis is some type of higher-level synthesis.

The above process is briefly elaborated on.

Data analysis involved data organising and data interpretation (Tesch 1990). This meant that the text had to be separated into segments and consequently sorted into groups. Text segments were cut out of their context, such that the meanings were retained, and also that those segments had a likely link to the study. I gained a holistic understanding by carefully reading all documents, and noted any thoughts that came to mind (Tesch 1990; Luna-Reyes & Andersen 2003).

Organising took shape through a combination of the theoretical framework and research questions, and the data (Tesch 1990). As Hannabuss (1996) notes, the information can be organised and analysed in a deductive and inductive manner. The deductive manner implies

verification of known common principles, whereas the inductive manner involves offering proof from which to infer the reality of such principles. Generated theory described themes or concepts that emerged from comparing the texts (Luna-Reyes & Andersen 2003).

As recommended by Sofaer (2002) I was careful in distinguishing between actual observations and likewise interviews, as opposed to my interpretations thereof. Short descriptions of the topic, which refers to what is discussed or written, and not to the content which is about the essence of the message, were made next to the relevant text (Tesch 1990).

To identify the topics, I commenced with a few documents and made up a list to draw out the topics (Tesch 1990). Refining occurred as the analysis proceeded, and this resulted in the materialisation of categories. Data sorting occurred through tagging text segments with information regarding the category. This simply meant that I assigned abbreviations or codes to the categories. Thereafter, things that fell into a certain category were assembled there in a way which made sense.

Patterns, definitions, narratives and messages were searched for in the various interviews during the analysis (Luna-Reyes & Andersen 2003). Themes or concepts also surfaced as I became familiar with the data, and began formulating logical links to the interview questions, while also considering important details from the literature review (Bowen 2005). Reviewing the secondary data also contributed to a better understanding.

I followed practical advice, provided by Ryan and Bernard (2003) to identify the themes or concepts. I searched for repetition in the text by noting when a certain idea appeared more than once. This was considered most likely to be a theme. I also looked for terms which were not well-known or which were utilised in a less obvious way. I was also alert to the use of metaphors and analogies, as this was a way for the respondents to express their feelings. Themes also emerged from natural shifts in content. Text was also analysed in terms of similarities and differences that were detected. I also noted causal relation when respondents employed words such as ‘because’, ‘since’, and ‘as a result’ and kept an eye out for missing data. Finally, I also considered theory-related material but attempted to not allow prior theorising to hinder the development of fresh perspectives.

I essentially thus compiled each of the interview transcripts into one document in the order in which the interviews occurred. I then carefully read and re-read first through each interview and thereafter through the whole document, and added in ‘comments’ which were essentially themes.

The results of the analysis of the interviews are presented in Chapter 6.

I then focused on the construction of the simulation, once all the data from the interviews had been analysed to determine the issues.

5.6 The simulation

The results in Chapter 6 enabled me to understand the critical issues in the fisheries context, and to consequently construct a simulation, which was essentially a simplified model of the real world. This step of the study therefore set out to determine whether simulation could be used as a tool in change management. The Fish Banks simulation (Meadows *et al.* 1993) and others were studied. The simulation literature in Chapter 4 was utilised in order to assist with the design of the simulation, which is presented in Chapter 7. The simulation used was both exploratory and used for research purposes with the aim of understanding whether simulation can assist in change processes.

Only two respondents from the interviews attended the simulations. The simulation was first piloted with students at the University of KwaZulu-Natal in Durban, and then with fishers in Langebaan, and finally with MCM staff at their offices in Cape Town. Participants had roles in the interactive simulation, as the emphasis was on collective learning. There was a strong focus on communication and interaction between those involved. The simulation commenced with an initial briefing to prepare participants. The simulation involved rules or protocols regarding what was acceptable and what not, materials or equipment that were used. I assumed the position of facilitator. Each player had specific roles, and there were also boundaries, certain goals and objectives, props and other pertinent information (e.g. documents and memos). The simulation involved three rounds, signifying time periods. Care was taken to ensure verisimilitude. The simulation concluded with a debriefing session to reflect on lessons that were learnt, and specifically linked lessons from the simulation to the real world fisheries context. This critical phase allowed for evaluation of the simulations and for ways of thinking about improving the fisheries context. Chapter 7 presents an in-depth explanation of the construction of the simulation, and Chapter 8 presents the results of the simulations.

The conclusion of the simulations signified the end of the fieldwork component of the study.

5.7 Concluding remarks

I attempted to address concerns around reliability and validity in the methodology. Reliability, as Neuman (2006) points out, refers to dependability or consistency which qualitative researchers achieve by employing various methods. Validity from a qualitative perspective is concerned with authenticity, when the researcher provides a fair and balanced account of what has been observed (Neuman 2006). The strength of this study lies in the fact that the research was positioned within relevant research literature, with the aim of addressing a specific research question. This according to Davis *et al.* (2007) is very important in grounding the study. This study was further strengthened by being validated with empirical evidence. Davis *et al.* (2007) are of opinion that validation will be less of a concern if theory is focused mainly on empirical evidence.

CHAPTER 6: RESULTS

Questions (Appendix B) posed at the beginning stages of the interviews were phrased in a way that allowed respondents to voice their opinions about their perceptions of the various problems facing the fisheries system in the Western Cape. This created the platform for respondents to think about what was important to them, and to also consider the various stakeholders and associated clashes. The latter part of the interviews focused respondents on what could have been done differently, as well as their suggestions on the way forward. The aim of the interviews was therefore to draw out the different stakeholder perceptions or views.

The results reported below cover various themes that are discussed, and illustrative examples from the interview transcripts are provided. The results are presented in two sections. Part 1 deals with the main issues of significance to the various respondents and representing stakeholders. Part 2 highlights suggestions that respondents had for the way forward. A discussion of the results is presented in Chapter 9.

Part 1: Issues

6.1 Stakeholder concerns

6.1.1 The stakeholders

There was general agreement and awareness of the main stakeholders in the system.

> *... there are many role players involved. There is a commercial sector mainly fishing for commercial turnover, to generate income, and it does also contribute to employment opportunities for the communities. There are also recreational fishers who go out to fish for fun or leisure, they are on holidays. And the other group is the coastal communities that are residing along the coast, which classify themselves in different ways. Some of them call themselves traditional fishers, subsistence fishers, artisanal fishers, small-scale fishers. But in the end they all have a common goal, which is fishing. So those are the role players that I can think of. And then on the other hand, there are other role players like the NGOs, which from time to time represent the communities, in terms of ensuring that Government deals with or provides equitable access to the fishers. One of the major role players is the Government because everything starts and ends with the Government. So Government has the final decision in terms of allocation of resources.* (R8)

There was however a tendency for respondents to place great emphasis on perceived differences between the commercial, recreational, and small-scale sectors, as well as point out perceived faults with other stakeholders. Use is made of the word 'perceived' to illustrate that these are opinions which the stakeholders hold, and are as such reflective of their individual mental models. These differences are revealed in the following sections and are summarised in Tables 6.1 and 6.2, and Figure 6.2.

6.1.2 The quota system

The quota system was regarded by some to be the root cause of the problems between the various stakeholders. There were perceptions that the quota system was merely a continuation of the former system. Some also believed that it was structured for the commercial sector and that they were being favoured. There was also a sense that the quota system did not actually bring about true transformation.

> *If you look at the new policy that was brought in post '94, it was actually a policy written for the big industry. And the small-scale fishers sort of had to squeeze in and fit in with that. It wasn't tailored to their unique needs.* (R10)

> *There hasn't been change as to who actually has it… the piece of the pie… the commercial companies haven't changed… they may have put in what I call a figure-head… so that they are representative in the company as far as directors are concerned… so because there is affirmative action in the company, they still get the rights to the fishery.* (R9)

Others however differed on the transformation issue.

> *If you're talking transformation in terms of demographics, it's already been fully transformed – both on a race and on a gender basis; it's pretty good.* (R7)

One of the main problems was that only some people received quotas.

> *There were people that should've got but didn't, and some that got but shouldn't have got. So you have a situation where you have some happy people and a large number of unhappy people.* (R13)

The main critique about the quota system was that it was seen to be a one-size-fits-all solution. There was an understanding by some that the Government had good intentions but had

struggled to practically translate them. Some argued that the quota system may not have been such a bad thing but that it may have been more applicable to the commercial sector. Certain comments reveal that Government should not only have been more sensitive to the values of the communities, but should also have prepared people for what was coming.

> *The state, a person mustn't say all this is bad. The big companies create work in our communities, so you can't say they are bad. The state must protect the resources, so you can't say they bad. But they tried a one-size-fits-all. And I think that's where the mistake was. There's a quota system that you apply for, and if you don't get, then you don't get. And that's wrong. I think the quota system is a good thing but it should have been done around how the people lived. And there should naturally have been improvements. I don't disagree with that. And then big business does to a certain extent create jobs. But not all of us benefited from the quota system. It should have been there, especially importantly for the protection of our resources. But it should have been around the way the fisherman lived.* (R2)

Some felt that the real problem was that there was not enough communication and participation with all involved.

> *The allocation process was fair but there was insufficient consultation with the people that were living in the areas.* (R13)

One of the issues with the commercial sector was that they were originally assigned rights on the basis that they were providing jobs to communities.

> *But initially, I think there was a move by the Department to allocate to commercial bodies, because there's a group of thinking that commercial enterprises and industry, even small, medium and large industry, all of them generate jobs. And they generate a better quality of jobs. There isn't enough fish to allocate to every person, so that was the thinking.* (R15)

An issue raised by some was the temporary nature of the fishing business, resulting in workers receiving no benefits or being easily retrenched, as well as the fact that fishers had nothing to do once the fishing season was closed. The greatest problem however was with factories that were shut down and businesses which moved for financial reasons. Some of the fishing companies for example, decided to export rock lobster, which translated into the shedding of critical jobs, which had negative spin-off effects in the communities.

Even though from time to time there are a group of people who are benefiting from the commercial sector through job opportunities and fish factories. But you find that most of the fish factories are being closed down… there are fish factories that have closed down, which were seen as the main source of living to the locals, the reason being that the market is also a challenge. And where the factories are, they are moving also, shifting down eastwards. Because it's costly now to transport or to ship the resources up to the west. So they are moving factories down to the east, so they can minimise costs. So those people up there are left stranded. They've got nothing, and I mean nothing. (R8)

Some felt that the commercial companies should have taken more responsibility, and that Government should have intervened in creating jobs in the fishing communities, rather than relying on the commercial companies.

So I think there is a social responsibility for those companies to come in as partners to try and address it… And the very local nature, immediacy of this (small-scale) sector enables them to spread the benefits at local level, in a way that larger commercial industry tends not to do. Benefits and profits tend to get centralized and held in the hands of a few monopolies in the commercial sector. (R10)

A few issues around recreational fishers were raised, such as the fact that they could obtain permits from post offices throughout the year. There was some frustration that recreational fishers had easy access, despite the fact that they were not dependant on the resources. There was also a feeling that Government was siding with them.

If you look at the quantities that are worked out for the recreational fisher, then it's unreasonable. Yes, I know we must think about the injection that you get from the recreational fisher. It's part of tourism. But there's a difference with livelihoods, because it affects people on the ground, who make a living from the sea. (R5)

Some were distressed about people who obtained recreational permits and then used them illegally, while others were distressed about how recreational fishers were being treated.

MCM must stop demonising recreational fishing, small-scale fishers must stop demonising… they picking on the wrong people. (R9)

A contentious point was the suggestion that recreational fishers could engage in other activities, because they were not reliant on fishing. This caused distress as it was argued that fishing was a

way of life for recreational fishers, just as it was for small-scale fishers. Some also pointed out that the sector did not present a threat as it was generally low effort.

> *… it's custom and tradition… it's sort of religion to go fishing and diving… Who are the bigger threat, those commercial guys or the guy that goes out with three people in his boat. We are not the threat, we low impact, high reward.* (R9)

There was also debate around whether recreational fishing made a valuable contribution to the coastal fishing towns. There was doubt as to who precisely benefited from tourism.

> *The value chain is quite difficult to unravel, but there are lots of jobs that are created downstream of recreation.* (R7)

> *I'm not convinced it's creating jobs and livelihoods and trickling down to these poor coastal communities.* (R10)

> *The local filling stations employ local people, they stay at local B&Bs during fishing competitions. They require some fishing gear from locals, often they come with their own fishing gear, very specialised… but the bigger issue is that people may not see it coming down to them.* (R15)

6.1.3 Balancing stakeholder needs

An area of significance to many was that of the needs of the various stakeholders, and how MCM responded to the various demands.

> *If you look at a resource, it's only so strong. You have your commercials, you have the recreational fishers, you have your subsistence or interim relief, small-scale fishers. But the resource is only that strong.* (R12)

There was an observation that MCM also had to consider input from Government.

> *MCM must balance the aspirations of a complex set of users within the political administration that sets the general direction and tone and all government policy.* (R15)

Some felt MCM was quick to give in to political pressure and argued that political matters overshadowed scientific recommendations that were made. There was a concern that an over-

emphasis on satisfying stakeholders would lead to the detriment of the marine resources. Many feared a situation where one problem would be solved, but with the result that a multitude of others would be created. The question was asked whether it was about what (marine resources) or who (stakeholders) was being managed.

> *... science doesn't always go with political needs… I think the Department gave in too soon… Department is trying to give everybody a chance.* (R7)

Some were of opinion that all South Africans deserved equal access to the resources.

> *... I feel it's the right of each and every single citizen within the Republic of South Africa… And it's a way of enabling each and every citizen to that resource.* (R12)

The problem to some was that MCM had not taken accountability for decisions that were made and were now taking away resources from some to give to others.

> *Now you give to another group of fishers, and you have to take away from them (commercial sector).* (R6)

> *The Equality Court has ordered MCM to give rights to a group… small-scale fishers… the problem is when they did the draft proposal… they mentioned most of these fish will be coming from the recreational sector…* (R9)

> *If you take away, somebody's going to be affected.* (R13)

Certain respondents argued that the only way to move forward was for rights-holders to give up some of their quota.

> *... start a dialog with the existing rights-holders so they come to the table and that MCM work hard to convince them that some of the rights, the fish they have, will need to be shared with this group. The advantage for them, the gain that can be made for them, is that the industry as a whole will then have more chance of being sustainable because you can address poaching properly.* (R10)

Some felt overwhelmed by the negativity directed at the commercial sector.

It's the perceptions people have, how they see the commercial sector… It's emotional, it's coming from both sides… from the near-shore rights-holder and the other side, those that don't have, that feel that they don't have a right to it... How the Minister is going to accommodate them in terms of the Act, we don't know… (R13)

Some were cognisant of the financial losses that the commercial sector suffered as a result of losing quota.

… the commercial sector went to court, because they had a long-term right, they had a loan to the bank, their business was affected… they had a backlog too… (R6)

Reference was made to greed being a driver, as there were people who just wanted to make quick money. Some also pointed to an attitude of entitlement.

… you have individuals driven by greed. And you also have law-abiding individuals, that "this is my livelihood, this is my right and I'm looking after this and I'm catching only what I'm allowed to catch, so that next year there will still be enough for me to catch and even for future generations". Some rights-holders or recreationals think that way, but others tend to deviate from the law. And greed is the driver. (R12)

Some felt that it was impossible to satisfy everybody because people had the tendency to want more and more.

… the solution will not be a win-win situation, because there just isn't enough for everybody. Somewhere along the line you'll make people unhappy. The question is who, and whether you'll have fallout, and that's the reality of fisheries and fisheries management. It's worldwide, and there's no way around this. You have limited resources, you have people, you have conflict. You have to manage conflict as best you can. (R7)

But you may find that those rights are not going to sustain or keep everybody happy. (R8)

Solutions are easy on paper but it never works. (R13)

6.2 Resource management

6.2.1 Sustainability

There was an understanding that fisheries had to be managed sustainably for the future.

> *Socially and constitutionally, people have to have access to livelihood, the right to livelihood. So there is an element of social dynamics and resource utilisation in an equitable manner. So the Department always has to facilitate that role of ensuring that resources are allocated accordingly regardless of the demand. But the resources have to be allocated in a manner that protects and sustains the resources for future generations to come.* (R8)

Others however argued that Government had failed to balance environmental rights with human rights, and that fisheries management was too conservative and only concerned about the resources.

> *Government, fisheries management, they not even acknowledging that they need to try and balance the human rights of these fishers with the environmental rights.* (R10)

There were accusations that others, particularly the commercial sector, were contributing to the decline of the marine resources, especially since their catches were not limited. Mention was also made about losses suffered through by-catches and destructive methods that were used.

> *So we feel that the big boats, commercial companies can deplete a resource, not a small fisher who sits on his boat and catches with a line.* (R3)

> *Who are the bigger threat, those commercial guys or the guy that goes out with three people in his boat?* (R9)

Others argued that there was no evidence that the commercial sector was engaging in destructive fishing practices.

> *The department would have stopped that practice years ago if it were destructive… there's no scientific proof.* (R13)

Resource allocations were a major issue, with some respondents complaining that the allocations were insufficient.

But if we apply for those people in our area, they reckon there is no more fish for the people making a living out of the sea… the Government wants to give us certain fish. It's not sustainable… (R1)

Commercial off-shore got 80% while commercial near-shore got 20%, which to me is just not fair. (R5)

There was frustration that people failed to understand the issue of sustainability, and that species were being over-caught.

Some of the resources have been over-caught, which is one of the problems. But people do not see that as a challenge. (R8)

Others felt that there was a genuine interest in sustainability, which was not being noticed by others.

We know that tomorrow, next week, next month, next year, we still want to live from that resource. So how would we then destroy it if we want to protect it? We respect the sea, because it is our sustenance, because we live from it. (R3)

The high value of the WCRL was seen as a factor that created problems in the Western Cape, as it was in demand by the commercial, recreational and small-scale sector.

Another issue was that of the export-oriented market and value chain of the WCRL, particularly the difference between the initial price paid to a fisher and the end-price. Some also pointed to the difficulty around the fact that the small-scale sector was dependent on the WCRL for income as well. This added to the differences between the small-scale sectors in the various coastal provinces of South Africa.

… in the Western Cape there is no pure subsistence as is in the Eastern Cape and in KwaZulu-Natal, where they just consume themselves whatever they caught, and maybe a small proportion is sold for school fees and whatever other needs they have, to supplement their income. In the Western Cape they have the same needs, but they want to go more commercial, but not full-scale commercial. Rock Lobster… it's a highly valuable resource. I think the Rock Lobster is a difficult one because of the value. (R15)

Some felt that the impact of environmental factors and climate change on marine resources should be taken more seriously. Others were anxious that MPAs would become the next hotly contested issue, as there was a perception that MPAs were being used to punish both the commercial and small-scale sectors.

6.2.2 Community factors

Community expansion and job loss was considered a serious threat to the marine resources.

> *You find that the number of people who are claiming to be true subsistence, bona fide fishers is increasing… the challenge of an ever-increasing number. People lose employment wherever, they come back home and they claim to be recognised, "I'm a subsistence or bona fide fisher"… the resources allocated cannot sustain the number of people who need or demand access to the resource.* (R8)

A harsh reality was that there were hardly any other job opportunities in the coastal towns.

6.2.3 Indigenous knowledge

This was an issue that many respondents expressed strong views on. Some argued that scientists undertook research and made recommendations without consideration for the indigenous knowledge of communities.

> *And if MCMs researchers decide that there are no fish, but according to our indigenous knowledge, that daily come from the sea, there are. We have visions, our own understanding to use the resource sustainably. We today go out from the south, and we pick up a few fish, catch them with a hand line. Then we come tomorrow, if it is a sea day, then we go back to the same island where we catch more fish. Then we find a quarter, or more than a quarter to a half, and the fish don't bite, then we move somewhere else, to another island and then the fish bite.* (R3)

A challenging aspect was that not everyone understood numbers and mathematical modelling, and that people often had a simplistic way of understanding the status of resources.

> *But when we ask about the status of the resource, someone will say, "well, I've caught a lot of Lobster yesterday, so then the resource must be healthy". But it may just be healthy in that particular place, not all over the coast. Maybe the whole resource is depressed. So the people*

remember what they caught yesterday, but they don't recall that five trips before that they caught nothing, so the average is not so good. So the time scales are different. (R7)

It however appears that the need for recognition of indigenous knowledge may have more to do with the desire to be included in decision-making.

The researchers don't take our indigenous knowledge… it's more that they don't want to take decisions with us. (R3)

There was a sense though that progress had been made on this issue.

And I think if we had someone on our side who could talk the language of ecological science, it would have helped us find a common point sooner. I think they're hearing us now and that we also care about the resource, we also want a sustainable system, they starting to listen to us. Because the community needs to be supported in sorting out what is indigenous knowledge and what are myths. That process needs to be handled very positively and creatively, it's critical. There's a huge gap that the scientists don't include the fishers. Their knowledge must be integrated with scientific knowledge. But we mustn't romanticize indigenous knowledge… But actually, it's so complex; we have to be realistic and critically aware. (R10)

We need to see the value in it and we need to engage it. That has to be balanced with national needs and with the whole range of the species. It also has to be balanced with what role does that location have in that species' national population. But we haven't engaged it at all. So maybe we could, we could engage. (R15)

One respondent however wondered whether the recognition of indigenous knowledge would resolve the problems.

Recognition of indigenous knowledge or not, I don't know if it's a solution to the problem at hand. (R8)

6.3 Government procedures

Issues of authority and decision-making came to the fore, as some felt that everything began and ended with Government. Some expressed frustration in often times having to deal with junior staff who could only convey information but not make decisions because they lacked authority.

There was also the opposite situation when someone made a decision without the consultation of others.

> *… the Langebaan Lagoon is a protected area... SANParks is there represented by a junior person. Some of the decisions are made there, and he doesn't know about them, regarding the zoning of the lagoon… This guy, he only takes the information back, but he doesn't have the power to change things.* (R11)

There was a concern that MCM was not fully utilising local offices in the coastal towns effectively. Others mentioned distance as a challenge.

> *It's difficult to manage a national asset like oceans, from one building in the Western Cape.* (R15)

Government protocol and procrastination often arose as an obstacle. Some spoke about the in and out flow of Government staff, while others complained about the frustration of making progress with one Government official, only to have to start again with another.

> *When you are dealing with Government there are lots of protocols and channels you have to follow. And then there are changes in Government.* (R11)

6.4 Small-scale sector concerns

6.4.1 Access to the sea and recognition

Lack of access to the sea was a sore point for many who argued that they were unable to earn income as they were locked out of the sea. Feelings of non-recognition and powerlessness at not being recognised came to the fore.

> *Here by us we haven't got access to the sea… and that's why people are getting frustrated. It's worrying our fisher people… Because we are not recognized in the MLRA and there's no provision for us. We are the lowest in the whole system.* (R1)

6.4.2 Abilities

One of the most pressing challenges, which practically all respondents mentioned, was the lack of abilities amongst the fishers and fishing communities. This was mainly due to the fact that

most fishers left school at an early age to go fish. The real issue according to many came in when they needed skills, particularly business skills, to obtain fishing rights. This was a major transformation for many who for years were simply used to going to sea and returning. There were difficulties for many who could not complete the required forms to obtain fishing rights. Other challenges arose when credit and subsequent equipment could not be obtained, as a result of not possessing the required abilities. The transformation required people to be businessmen and not only fishers, and many for this reason, argued that there was complete disregard that small-scale fishers did not operate like the commercial sector.

The average education of the fisherman is primary school. So it's a big problem, the education, he's not a business man, he doesn't know those things. He's all the years used to going to sea, come out, sell his product, take his money and use it… The Department has a simple document. The fishers say, "what we must write, what must we do, we don't understand this thing"… They should be able to work with the Department. But there's a fear that results in a shortage. For the simple reason of skills, writing skills. The understanding of what's written there. You can write something in Afrikaans. It's my language but it doesn't make sense because it's business Afrikaans. Yes, the question is, are these business people or fishers? (R2)

There's no funding, and we don't have the experience or the skills… We haven't got equipment… Because most of our fishers are illiterate, they don't go with a briefcase full of documents to the sea. (R1)

6.4.3 Vulnerabilities

Mention was made of the pattern of dependency that fishers had on others. A contentious issue surrounded the requirements imposed on fishers, which some claim resulted in their exploitation by various unscrupulous people. Some felt that Government should have done more to assist the fishers, especially since they lacked previous experience.

They would have to have catching agreements if they didn't own a vessel, they would have to have a packing agreement with a packer and then they would have to find someone to market. Remember they started off with nothing. They were given a right and it was a free for all. Some got good deals, some got bad… Government didn't build business capacity within the people. (R13)

As a result of not having the necessary skills, many fishers believed whatever they were told and entered into dubious contracts with marketers and other middlemen. Some boat owners also took advantage of the situation.

> *They sell their fish to the factory. Some will go into a contractual agreement with a marketer. And they don't read the contract. If they don't read the finer details they might get underpaid… When they come back, they'll have to pay him (boat owner) a percentage of what they earn from the catch. Or they'll have to give him a certain amount of Lobsters, in some cases quite a bit. And what they get out of it is not much, because the boat owner says, "this is my petrol cost." If they go out and don't catch anything, he still wants his money. For petrol and for his time. But they don't know how much his petrol cost.* (R6)

6.4.4 Bona fide fishers

There was a feeling by some that rights were allocated to individuals who were not fishers and therefore not reliant on fishing. It was believed that the lack of abilities, as well as failure to verify traditional fishers contributed to this. Communities were consequently divided.

> *And the fishers, that was the tradition, and there were not hundreds, hundreds of fishers, we knew who the fishers were by us. But when the law came in that anybody could apply, I think just by the word anybody, that is where the problem came in because anybody then applied. And I think the law realised afterwards that that was a mistake because teachers made applications, lawyers made applications, people out of KwaZulu-Natal, everywhere, people came, out of Johannesburg, business people, and they started CCs here. They paid the money because they had the money, because it cost money to apply and that is where us fishers were locked out. By that process were we left out because our people are not learned, they could not fill out the forms themselves, that's where they were locked out.* (R4)

> *There was conflict… Because suddenly you were placed in another category. You that have and you that don't...* (R5).

Some however disputed the above.

> *They now say, "lots of people from outside got rights". That is not the case… There are large discrepancies. There are great issues, and if you'll have the allocation process again, the exact same issues will come up, the same allegations from people who didn't get.* (R7)

6.4.5 Socio-economic concerns

Some spoke about being unable to put food on the table, and the consequent frustration that was experienced at not being able to care for their families. They argued that it was about human dignity. The lack of income led to many parents taking their children out of schools as they could not afford the school fees. Communities were also overcome by drug and alcohol abuse, HIV/AIDS and prostitution.

> *When this system came, it locked out the people who made a living from the sea. It affected households, it affected school children. And it led to prostitution, drug abuse and all those realities… And it caused a great divide in our community… I say it's directly from the policy, because people were left jobless.* (R5)

Others were however in disagreement about the origin of the social problems, and also wondered whether access to the sea would resolve these problems.

> *I don't think access to the sea is a solution to the problem. The community challenges are dynamic and they are not exacerbated by limited access to the sea. Personally I don't think so. However, in the past, when it was open access, the challenges were already prevalent. The issues of crime and drug abuse are not happening or applicable along the coast only, they happen even inland... But fishing isn't a solution to the community problems.* (R8)

Some respondents expressed concern about how money received from selling fish was being spent and argued that more should have been done to assist communities in this regard.

> *As soon as you have a lot of money in your hand, it becomes a problem… easy money, and it's not being used for uplifting the family – it's spent easily, and people are easily trapped with alcohol and drugs.* (R7)

6.4.6 Traditions and culture

Some were distressed about how their traditions and culture were affected. Many male respondents spoke about their experiences of growing up in a fishing community and being taught to fish, whereas female respondents shared how they contributed to the household by assisting their fathers, who were fishers. A strong sense of nostalgia came through.

Now our tradition, culture and everything was taken away… how are we going to save the culture and traditions, what we know as fishermen. (R1)

People fished, we grew up in a house, you crawled. There was a basket that my grandfather always used to put fish in. That's the culture that we grew up with. If you came out of school, then you did what your parents did, what your grandfather did. You came out of school, quickly finished your tasks and then you quickly went to the harbour because you wanted to see it come in. It came in, you tied the boat, and so you learnt from the process… And so we learnt to be fishers. (R2)

Some expressed the desire for the good old days to come back.

I'd like to see that each and everyone, fisherman or woman, have easy access to the water, to the species, the resource. That there can be joy and respect for each other, like those days. Like those days when we were free to catch whatever, we didn't have problems like this – tik, domestic violence, rape, murder, crime. (R1)

There was however doubt whether the past could ever be restored.

Because of apartheid and relocation, people were moved from the sea. And some people who want to push indigenous and cultural, and the social value of the ocean in fishing, want that to come back; where we have harmonized, focused communities that saw the ocean as their lives. But if they were physically moved, 60 years ago or 50 years ago, I don't think you can restore that. I think it's artificial to think you can restore it. (R15)

6.5 Poaching

Practically all respondents highlighted poaching as a serious threat to marine resources. There were however different views on the origins. Some respondents explained how fishers that did not receive rights turned to poaching as a means of accessing the sea, despite the risks involved.

There's a saying, 'a hungry man is an angry man'. When that fisherman is hungry, he gets so angry and he does anything. If his mind tells him go to the sea, then he goes no matter if they send him to jail. (R3)

Others expressed doubts about the argument that people poached to get money for food. Greed was perceived to be a contributing factor.

What I find quite strange, a lot of them say, "to sustain them, they have no food on the table". He says he wants to feed his family, but drives a Toyota Corolla with mag wheels, and sits at the slipway drinking…. (poaching) is based purely on criminal activity, it's for monetary gain. They don't even want allocated rights. They see a way of making money fast. (R14)

The continuous illegal use of recreational permits to catch and sell fish was highlighted. A link between poaching and other problems such as drug and alcohol abuse, and gangsterism was also emphasised. Regardless of the origin, all respondents seemed to be in agreement about the increasing sophistication of poaching and consequent threats to the marine resources.

What the people did – the cheating. In their eyes, it's legal, in the State's, it is illegal. And someone had to take it on, the risk, because it was illegal… They will want more because they are used to making money quickly. I'm referring here to organised crime, drug cartels, etc. So they will try their best to make money illegally… Because doing wrong became a habit. And that habit must be broken. It's a process, and as we now talking, it's still going on. There are unfortunately some fishers who have a negative reaction to that whole process. Two things. The first, he became used to fishing illegally. And to be illegal, you go for maximum, in your mind, because you don't want to go tomorrow because you know you could get caught. But yet you go do it tomorrow because that money you made today, gets spent because you'll go tomorrow and make money. So that's one of the reasons. The other is that these guys also get organized. They get linked to other guys and then it becomes a habit to always deliver to those guys and they always have to ensure that there is. The guy calls from the Cape and he says, "how many crayfish necks do you have there, you must go to sea, I want a 1,000". (R2)

There was a strong sense among many about the unfairness that if one did wrong, then all would have to suffer.

I feel that many departments are not doing their jobs, ok; we're sitting with a lot of poachers. It's the community, it's local. There are poachers in every community… They make the Government decide that there is not enough fish. They are depleting the resource as a result of that. It is difficult. (R4)

6.6 Enforcement and monitoring

Proper enforcement and monitoring of marine resources was essential to the protection of marine resources. Respondents argued that existing laws and capabilities for punishing poachers were insufficient, as many simply continued because they did not fear the law.

There are no punishable rules at a local level. Today he gets caught with crayfish tails or necks and then tomorrow he gets caught again because he knows, "ah, they just write out a fine". In the meantime, the man is doing great damage to the resources. (R2)

There was a general feeling that MCM did not have sufficient staff to deal with the poaching problems along the whole 3000km coastline of South Africa. The work hours of monitors was also seen to be insufficient to deal with the poachers.

Only from 8 to 5… poaching happens 24/7. (R13)

Some were frustrated that existing efforts were not being appreciated, and also that people did not like being enforced. Others pointed to the difficulties of enforcement, due to negative feelings that communities have toward monitors.

What they don't know of is the shift work – a team knocks off, another one comes in… The public just sees what they want to see and then make assumptions… The disgruntlement in terms of compliance is that people don't like being enforced, especially when it comes to marine living resources. They believe, "this is my right to fish, and I am going to fish"… it comes from everybody. (R14)

The need for harsher laws and adherence by all was an urgent requirement.

… there must be strict management measures in place. Compliance, law enforcement must be in place. Strict regulating measures to ensure that people do comply with set requirements... (R8)

Part 2: The future

Before delving into the proposed solutions for the future, brief mention is made of some of the typical responses that were used to address the above-mentioned issues and the consequent changes that arose.

6.7 Responses and changes

6.7.1 Responses

Many highlighted the critical role that NGOs played in bringing about transformation, particularly in providing valuable skills to community members. Other methods such as protest actions, and court hearings were also used to make progress. Coastal towns also became more united.

> *You first of all got involved as an individual, you asked certain questions, had meetings, e.g. with MCM. But you also got involved with organized groups, like Coastal Links and Masifundise, where action was taken against this way of doing things. But we also had to go through a court to be heard.* (R2)

The role of the media was seen to be an advantage for some, but not for others.

> *Yes, we used the media. We were on The Big Question, yes, national TV and local newspapers. We had a newspaper, Fishers Net. To make people aware about their rights. (R1)*

> *I put something in the newspaper every week… I think through the newspapers and protests, people realised that they had to listen, or just do something. (R4)*

> *And one of the biggest problems is… negative publicity… (Someone) said, "we look like the villains".* (R12)

6.7.2 Changes

Many respondents noted a significant improvement in relations between the various stakeholders.

Before the court battles and the summits, they didn't want to consult us; after that there is a big change, now they are consulting us. There's a big difference between two years ago and now. (R11)

The negotiating table is open and I'm talking about many departments that are open and with whom we can discuss. (R4)

6.8 Solutions for the future

6.8.1 Involvement of all stakeholders

Reference was made to the importance of having all stakeholders involved in working towards the future.

I feel that commercial, small-scale fishers, Government departments must come together so that there isn't a communication gap. We must open up, to be willing. (R4)

And in order to succeed… you have to have other stakeholders, the municipality, the local MCM compliance officer, SANParks where relevant. (R11)

Many felt it critical that Government work with everyone involved and be accessible to all, including the fishers on the ground. It was vital that Government be sensitive to how people live.

I think from Government's side, that it must be workable and accessible to the fisherman on the ground. There must be transparency and participation, because at the moment the participation is only at the top level and not at the bottom, you only hear about such and such a person, but you don't know him… we must come together. I have learnt over the years that if you're going to fight for this and you fight for that, then you won't achieve anything at the end of the day. I think if you're united and together identify each problem, and take it from a point, step by step, then you'll achieve more success. (R5)

One must be careful or sensitive to the way that people live. I've learnt that the wrong thing can have terrible effects. (R2)

Some felt that future efforts would be futile without the assistance of Government.

How do we deal with these problems? If we don't have the state's help, then we fighting a losing battle. (R2)

6.8.2 Inter-collaboration between Government departments

More collaboration between Government departments was a requirement, particularly as the many issues involved required expertise beyond that of MCM. The Justice Department and Department of Social Development were mentioned, to respectively address poaching and community problems more effectively.

This is a social problem which needs a joint intervention when it comes to Government departments. (R9)

And you need a concerted effort to make other departments aware of their responsibilities and mandates to address poverty in coastal communities. (R10)

I think harsher laws should be enforced by the Department of Justice. Courts should take crime more seriously… (R14)

6.8.3 Education

All respondents agreed that the fishers and fishing communities receive urgent training and skills, especially business-related skills. It was argued that communities would be more involved in compliance, if they were educated.

… get people educated as much as possible in the communities, because that's where the misunderstandings come in. (R6)

…marketing skills – I think that's the basics. Business skills like how do you draw up a business plan and how do you tender or apply. Computer skills, faxing, those that go together. And funding… If someone can come in and workshop, so that we know what is going on… (R1)

Respondents felt that communities needed more infrastructure, such as schools and libraries, and that more programmes for the youth be in place. Investment in the youth in particular was seen to be of utmost importance, as a means of dealing with the social problems.

Infrastructure, the youth need skills, schools, transportation is difficult. (R11)

6.8.4 Eradicating middlemen

Respondents agreed that action had to be taken regarding the exploitation of the fishers by middlemen. The need for collaboration between the Government departments was again mentioned.

So that instead of you having the fisher and about three middlemen in between, cut them out so you only have the fisher or the end-user, or if you need to, go through proper infrastructure, then at most one middleman in between. (R12)

The thing maybe that we need to look at, is how can we support the local market?... So it's either the Department or somebody like Trade and Industry who will have to come on board. Yes, other departments have to come on board to provide skills, marketing skills on how to run a business. (R8)

6.8.5 Co-management

Mixed views were expressed about co-management. Some felt that this was a solution for the future that could bring the various stakeholders together, as well as be an important joint decision-making tool.

There must be co-management, it's very important. The different role players… that we sit and discuss. That you don't just come as Parks Board and then you say, "another road". You must include us in decision-making and other parties, local Government, MCM and research, all of those who are agents. We must sit and then decide what is the best for us all. (R1)

Some pointed to how co-management could address the poaching problems.

There's also significant research that's been done to show that if local coastal communities who have a history of fishing are brought into the governance and management of the resources in their local areas, that they'll protect the resource, they'll keep out the outsiders and the poachers. Currently that isn't happening because the local fishers themselves have no stake, so they're also poaching. (R10)

One respondent described positive feelings regarding the experience of co-management.

I am very proud of co-management. It's just wonderful. We now have on our committee the important people – those who have to make important decisions are already part of it. It can now work quicker. Because in the past, we had a committee, the local committee had to go to the local MCM, talk to them, and steps still need to be taken. But now they sit with us, part of co-management, and I recommend that each town takes it on. And it's wonderful. In the past, you couldn't even talk about co-management. I'm really excited about it. (R4)

Others were however concerned about aspects around co-management, such as honesty among all involved. This was especially so because of a previous bad experience where some members mismanaged finances and distributed unfairly.

It could only work if people are honest and they report regularly, and there are no jealousies and frictions in the community. The basic concept of co-management is that they let a community manage the resource in their area; there is a board. In other African countries, the community leaders are managing all the money that is coming in and distributing it equally among the people; but there have been many cases when the community leaders actually steal the money from the people and the people are suffering. I think honesty is the key to it. If they can't get that right, it's not going to work... (R6)

One respondent described a previous negative encounter that could influence the acceptance of co-management.

These community-based quotas did cause problems in the past. There were such things in place in the past but there were problems. So the challenge is not to have those problems again. The problem is that there were community-based quotas handed out. The structure was that there were co-operatives in the towns, and then there was a mother body, and then there was the top structure. But from the financial side, money was only generated up to a certain point. It didn't go to the people. And if it went out, then they were the only ones who made decisions about percentages… And now we're coming with the same thing to the same people and that's the challenge. To bring a mind-change that it won't be like that again. (R5)

Issues around accountability therefore came to the fore.

Legally there are challenges for that… whom do you hold accountable should anything go wrong? (R8)

Some had doubts about whether people were ready for co-management. Such respondents did not want co-management to end up being a quick fix and pointed to the realities.

It is a long process to get everybody on the same page in terms of understanding how the science works, how the TACs come about and so on. (R7)

Others were interested in resolving the role that communities would play, and argued that sufficient time had to be dedicated to involvement, empowerment, and training.

We do need to have such an arrangement with communities, because it makes our job easier. In terms of communicating, engaging with them, and getting information from them. Yes, it is a way forward. But the way in which it is implemented, I don't think we are ready to do so. Because communities need to be empowered in terms of understanding their role and involvement… It's time-consuming to bring the structure on to the level of expectation. But it's necessary; they need support from the Government's side. So that they can see that whatever's being done is a joint decision, a joint effort. (R8)

Some were concerned that individual rights would not be respected. Linked to this was the question about who precisely in the community would benefit.

… communities in the past used to be a lot smaller than they are now. They've grown a lot, so who is the community, the whole community, or only those involved with fishing? Do you include those who have building jobs? What is meant by the community? (R7)

So co-management is one of the difficulties, I think it can work. But it all depends on whether all the constitutional rights of the individual are protected… cannot set up any policy that restricts the constitutional rights or the bill of rights of anyone. And this comes down to freedom to access all national lands, and that's the coastline as well, and the sea. So on restricted access, or the community on a certain part of the sea, there are scenarios where it could work, as long as the constitutional rights of people are protected. (R15)

The role of community leaders in fishing communities was found to be key in achieving success.

…but I've discovered that if there isn't a leader that starts something, then nobody will. There must be leaders. I won't be able to continue with everything that I started. But I start with it, give them training, and I say, "if you need help, ask me", but I unfortunately, I can't do

everything. The leaders hold the fort, things go on, and they make sure that things don't stagnate and sit still. The leaders need to make it as friendly as possible, so the people can feel that they want to be involved. Not just that there are two or three people, then it's leaderless and there's no real interest. It must be leaders who really care and want to do the thing. (R4)

The critical role of responsible leadership and the need to fully represent people on the ground was important. Some pointed to how critical it was that leaders report back to the people on the ground, and avoid making decisions alone. There was a clear need to develop the skills of all, as this would have multiple benefits.

The other problem… we only deal with the community leaders, but what about the people on the ground? Some of the leaders don't report back to the communities. And it's the guys who catch the fish, which you would have to inform about a co-operative, about not having a middleman, how you can trade directly with the market. That is the main problem that we will face in the next 6-7 years… we have to inform people. If people own the idea that you are selling, then it's going to work out well. You can't go and say, "this is what I want you to do; you must just do it". If it's going to fail, people will blame you. (R11)

Rigour in co-management, as well as stricter measures for the issuing of rights was a precursor for success.

So co-management must have the teeth. You say, "you will be punished for the next three months; you will not put your feet in the sea"… The state gives us permission for the rights, then there's the permit conditions, 'you can't do this or that". But the state must say, as part of the right we give you, to go on with your life but you must couple it with development, obligatory development. The state has the right to say couple this with your development. That can help us a lot… We unfortunately need to bring a certain degree of force so that people can do good. (R2)

6.9 Concluding remarks

This chapter concludes with an overview of the stakeholder concerns, as well as their agreements and disagreements, and interests and positions on various issues. The interconnectedness of the stakeholders and their issues is demonstrated in a causal loop diagram.

6.9.1 Stakeholder concerns

Three critical questions that stakeholders may have around common resources and which dictate their perceptions have been formulated based on the various accounts. Most often, stakeholders will feel that their particular stakeholder group is being treated unfairly and undermined by others.

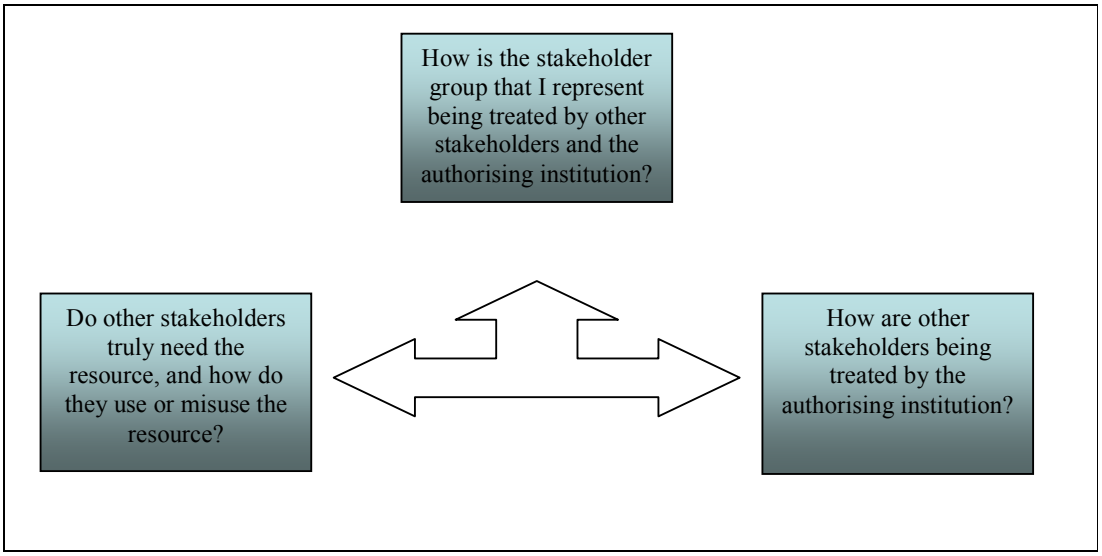

Figure 6.1: Critical stakeholder concerns around common resources

6.9.2 Agreements and disagreements

The main agreements and disagreements that stakeholders have, and what they feel other stakeholders do not understand are summarised below.

Agreements between the stakeholders
Small-scale fishers and fishing communities are struggling also due to lack of employment opportunities, lack the abilities and are being exploited. Education of small-scale fishers is therefore critical.
Poaching presents a serious threat. Proper enforcement and protection of resources is therefore essential.
Collaboration between various Government departments is crucial.

Table 6.1: Agreements between the stakeholders

Disagreements between the stakeholders or what the individual stakeholders feel the others do not understand
Whether everybody can be satisfied.
Whether lack of access to the sea led to the many problems in the fishing communities.
Whether access to the sea will take away the problems.
Whether there has been real transformation in the fisheries.
That fishing is a way of life to both the small-scale fishers and recreational sector.
Whether recreational fishing makes a difference to the fishing communities.
How business and financial operations work, and why factories close down and people cannot be offered permanent jobs.
That people are greedy and always want more.
That scientific recommendations and sustainability are generally not taken seriously or understood by those outside of MCM.

Table 6.2: Disagreements between the stakeholders or what the individual stakeholders feel the others do not understand

6.9.3 Positions and interests

The main issue of stakeholder demand for marine resources is illustrated in Figure 6.2. The various positions and interests, respectively signifying the specific demands and underlying motivations for particular positions are highlighted. Common rather than different interests among the stakeholders are highlighted, thereby removing the focus from personalities and positions. An emphasis on the interests may result in a new awareness of options.

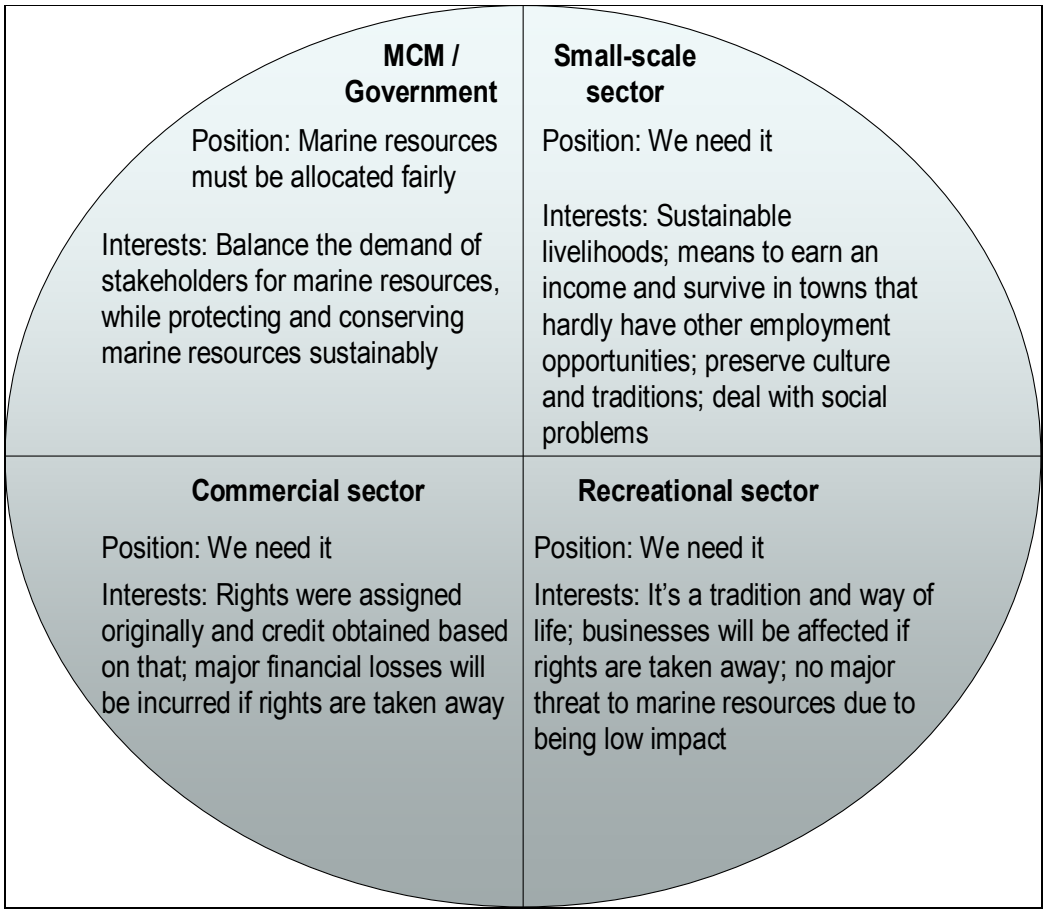

Figure 6.2: Interests and positions of stakeholders regarding the demand for marine resources

6.9.4 The interconnectedness of the issues

This chapter closes with a causal loop diagram presented in Figure 6.3, which draws together the outcomes from the results. A causal loop diagram is another systems thinking tool that has arrows connecting various variables, and which essentially shows how one variable affects another (Toole 2005). I constructed the diagram for the purpose of enabling data analysis, and this was done without input from the participants. The headings correlate to the dominant themes that emerged from the interviews. The structure of a system and the underlying relationships can be adequately demonstrated using a causal loop diagram. Figure 6.3 therefore illustrates the interconnected nature of the stakeholders and their issues, and may come as a surprise to some of the stakeholders. Each arrow has a (+) or (-) sign. A (+) will indicate that when one variable changes, then the other changes in the same direction. Therefore, in Figure 6.3, for example, if there is an increase in timeous decisions, then there will be an increase in the perception of good management. If there is a (-) sign, then it indicates that the first variable

Figure 6.3: Causal loop diagram: Fisheries system, Western Cape, SA

will result in a change in the opposite direction. With reference to Figure 6.3, if there is an increase in perceived enforcement, then there will be a decrease in poaching.

It is evident from Figure 6.3, that there are a few critical areas that stand out: Perception of good management, Poaching, Resource vulnerability, and Perceived social problems. The perception of good management is influenced by different variables such as timeous decisions, staff stability, protocol, perceived fair treatment of stakeholders, stakeholder inclusion in decision-making, and departmental collaboration. Variables that affect poaching include illegal recreational fishing, perceived enforcement, income, and alternative employment. Resource vulnerability is influenced by pollution, climate change, destructive fishing practices, early catching, and resource value. Perceived social problems are influenced by variables such as job loss, poaching, and the ability to provide community skills and development. There is clearly a very complex set of inter-relationships from all the stakeholders, which are at play in the fisheries system in the Western Cape.

CHAPTER 7: SIMULATION DESIGN

7.1 Overview of the process of designing the simulation

This chapter explains how the simulation package listed in Appendix C was constructed. The simulation package consists of various documents which are classified from R1 to R15, for ease of reference.

Figure 7.1 outlines the process that was followed in achieving the final product. This was however not a linear process. This process is explained in more detail throughout the chapter.

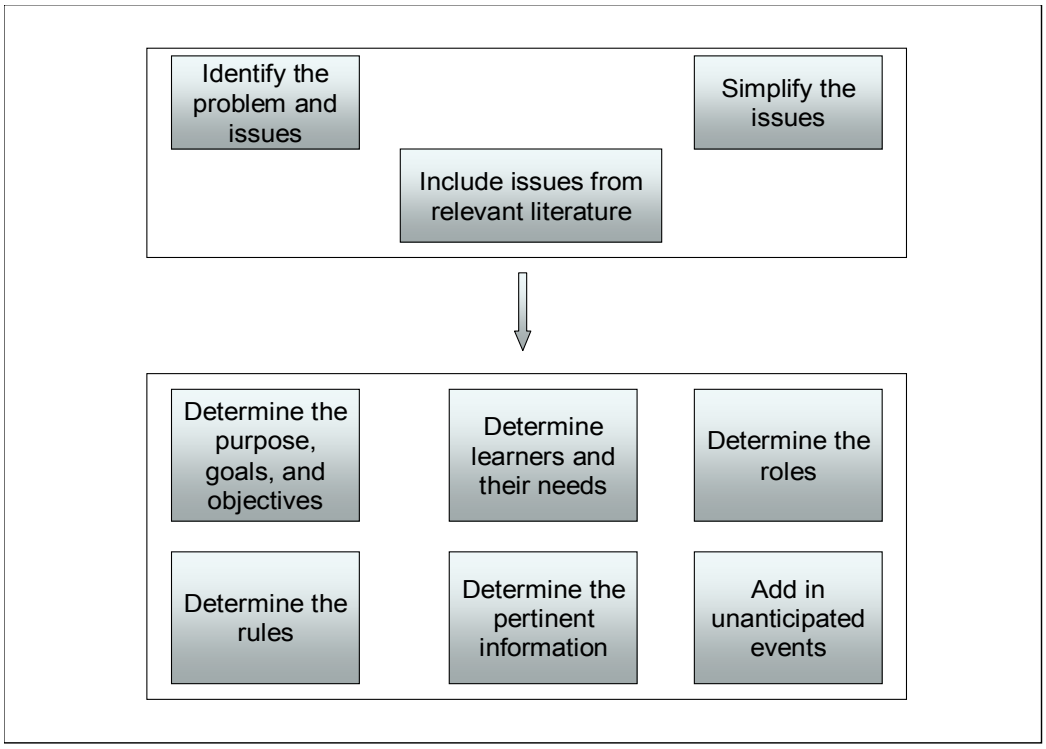

Figure 7.1: Construction of the simulation

The real world stakeholders of the fisheries context were not included in making contributions to the design of the simulation. This was mainly due to time constraints, but also because of the belief that a thorough understanding of the context had been gained from the interviews, observations and secondary data.

7.2 Real world issues for inclusion in the simulation

The results as presented in Chapter 6 were carefully studied in order to decide how to structure the simulation. The Causal Loop Diagram in Figure 6.3 can be used to better understand which issues became the focus of the simulation. As it was not possible to focus on all the issues in the simulation, attention was directed at the major issues considered to be of importance. The issues that were selected were also deemed to be feasible to replicate, considering the constraints of designing an interactive simulation given the available time and resources. The main issues that were selected from Chapter 6 for inclusion in the simulation are listed below. Reference can be made to Chapter 6 for more detail on these issues.

7.2.1 Multi-stakeholder scenario

There was a complex situation involving multiple stakeholders, comprising the Government, MCM, commercial, recreational and small-scale sectors. The contention was mainly about the demand for a limited supply of marine resources. Respondents had a tendency to highlight the differences and faults between them, and their respective stakeholder groups.

7.2.2 Government

The role of Government and MCM was an important issue that came to the fore. The ability to allocate resources fairly, while balancing the needs of all stakeholders was crucial. Stakeholders had the inclination to consider how they were treated by other stakeholders and by the authorising institution, as well as how other stakeholders were treated by the authorising institution. A contributing factor to the many problems was the fact that there were those that had and those that did not. The perception that Government was seen to be taking away from certain stakeholders to give to others, thus leaving some affected was of concern to many respondents. The pressure on Government from the various stakeholders was thus noted.

Government decision-making and protocol, as well as the need for Government to take accountability for decisions that were made, were deemed critical. Concerns around authority, timeous decision-making, staff changes and the fact that everything began and ended with Government were highlighted. There was a strong desire for Government to work with and be accessible to everyone, including those on the ground.

7.2.3 Commercial sector

The assignment of rights to the commercial sector, particularly on the basis of job creation, was a particularly controversial issue. There was much dissatisfaction with job losses as a result of the closure of factories. There was a sense amongst some that the commercial companies should have taken more responsibility, and that Government should have intervened. What stood out was the negativity which was directed at the commercial sector, as well as the financial losses that would be incurred if allocated rights were taken away.

7.2.4 Small-scale sector

The dependency of the small-scale fishing communities on the marine resources for their livelihoods featured strongly, as well as the lack of alternative employment. The added complication of job loss and being unable to earn an income due to lack of abilities was highlighted. Feelings of frustration at not being able to take care of families, non-recognition and powerlessness, and loss of human dignity were described, as well as the inability to obtain credit and equipment, and be dependent on others.

The use of protest actions and media were cited as some of the measures taken to resolve the above-mentioned problems. The media in particularly came through strongly as an advantage for some but not for others. The involvement of NGO representation was also deemed critical.

7.2.5 General concerns

Proper communication between all stakeholders and participation by all in decision-making was regarded as critical. Responsible leadership, coupled with the importance of reporting back to people on the ground and having accountability, as well as the management and distribution of resources and finances were considered essential.

7.3 Structuring the simulation

The issues listed in section 7.2 were accordingly analysed and examined along with the change management and simulation literature (Chapters 3 and 4), to find ways to effectively represent and simplify them. This section outlines how this was accomplished.

7.3.1 Scenario

It was critical that the simulation not make any reference to the reality of fisheries. Potential ideas for the scenario included sustainable agriculture, water, dams, wetlands and invasive species. After some consideration, it was decided that water, dams and wetlands was not appropriate due to having reference to water. Water in particular is a concept with deep resonance in the study context; access to water being a particular sensitive matter. Agriculture was not used because it was thought to be too distant, and invasive species may have been understandable for some participants more than others. It was finally decided that the simulation would focus on rabbits and be named Rabbit-Venture. This was distant enough to avoid any negativity but still close enough to have participants relate. The simulation was also considered appropriate for use with a diverse audience. The simulation (Appendix C) comprises of 15 documents that are referenced as R 1 to 15. An outline of the documents is provided on the first section of Appendix C.

7.3.2 Purpose, goal and learning objectives

The intended audience or learners were the stakeholders involved in the fisheries system in the Western Cape. The simulation was therefore designed to immerse the learners in a multiple stakeholder scenario aimed at allowing participants to gain understanding into the various stakeholder perspectives (R1). Participants thus had to have an opportunity to reflect on their current mental models (Senge 1994). The simulation furthermore had to portray shared mental models so that participants could view the whole, and see the different viewpoints. It was thus critical to challenge common misperceptions that participants may have arrived with.

The aim or goal (R1) of the simulation was inspired by the criterion of success of the Fish Banks simulation which encourages participants to acquire the most assets (Meadows *et al.* 1993). The aim or goal of this simulation was structured specifically with the purpose of allowing participants to make their choices about their definition of success, and choose whether they would cooperate or compete with other stakeholders, and then later experience the outcomes of such decisions. There had to be self-organisation so that participants could comprehend and adapt, and most importantly develop systemic skills, such as decision-making and negotiation skills (Pivec *et al.* 2003).

The simulation objectives (R1) were to provide an experience where participants could see how their interactions and decisions unfolded, sometimes at alarming rates, and how changes infiltrated into other areas (Bamford & Forrester 2003). It was critical for the participants to

experience that they were all part of a system, and that they see how their decisions and actions, and likewise that of others, impact the system (Montouri 2000; Styhre 2002; Beeson & Davis 2000). Participants had to experience how unintended consequences arise (Van Tonder 2004). The simulation also had to result in participants questioning their organisational culture. People had to realise their contribution towards the problems and take accountability for their action (Senge 1994). It was necessary to incorporate failure, to intensify the learning experiences, and to engage all in a better understanding leadership (Grint 2007).

Organisational learning from practical experience was thus of the utmost importance to allow all participants to develop the collective ability to perform more effectively (Hayes 2002). Double-loop learning was however desired so that participants would challenge their current thinking and basic beliefs and assumptions, particularly in complex situations.

Participants had to comprehend how attitudes toward communication and participation shaped matters. Participants had to see the importance of involving all stakeholders from the pre-implementation stage, and also how critical it was to acknowledge the emotions of all (Van Tonder 2004). This was also so that participants could see that those in charge did not have all the answers, but that it may have been better to have everybody work together towards the future (Ferdig 2007).

As important was the need for participants to understand how to respond to ambiguity and unanticipated events and in so doing, become adaptable. Participants also had to grasp the limits of conveying and delegating plans, and learn to expect the unexpected (Callan *et al.* 2004). They also had to realise the importance of not holding on to the past and using things that worked back then. The simulation was therefore centred on getting them to work with difficulties, engage in collective sense-making, collaboration and interpretation, and look for opportunities for growth (Ashmos *et al.* 2000). Related to this was the necessity of having participants gain change management skills.

The flow of the simulation is explained in the Facilitator manual (R1).

7.3.3 Roles

The simulation portrayed four groups, based on the real world fisheries context (R1, R3). This was therefore a multiple stakeholder scenario aimed at allowing the participants to comprehend each other's perspectives and mental models. There was a Government group, based on the Government and MCM as is in reality. There was a company called Fabrication Inc. which

comprised Executives and workers. The Executives group signified the commercial fisheries sector, and the workers were indicative of the small-scale sector. There was also a general public and media group, as is in reality. The simulation could however not include the recreational sector, but general findings were incorporated. The groups in the simulation would essentially represent different stakeholder groups with conflicting interests.

7.3.4 The problem

Participants had to work through a complex problem involving various interconnected processes, so that they would gain an holistic view of the problem presented by multiple stakeholders. The task was thus to have Fabrication Inc. workers produce "rabbit cages" using various materials, including cardboard paper and scissors, under the guidance of the Executives, with Government overseeing the project (R1, R3). This task was considered to be appropriate for use by fishers as well as MCM staff. It was important that the activities had to be challenging enough for all to stay focused, yet avoid being too overpowering for some. The simulation was also constructed to deal with the various issues but in a manner that allowed participants to choose what to investigate, how choices would be made, and who would be included (Stumpf *et al.* 1994). Furthermore, the problem was seen to be a way of facilitating joint dialogue and a community of learning. The simulation attempted to portray elements of realism and user-friendliness, but more importantly verisimilitude, to ensure that lessons learnt from the simulation could be transferred to the real world (Adobor & Daneshfar 2006; Lane 1995).

7.3.5 Limited information and time

Participants had to be overwhelmed by a tremendous amount of ambiguity and uncertainty, but also an array of demands which had to be fulfilled in a limited time. The simulation was thus structured around three stages (R3), the first of which was deliberately tight in time, so that participants could experience the pressure. Stages were considered appropriate rather than 10 rounds for example, as the plan was to have minimal disturbance to allow the participants to engage in the flow of the simulation. The stages specifically would create pressure for participants to make choices whether to cooperate or compete with others.

It was considered appropriate to have participants experience consequences of their decisions in minimal time, through three stages. Decisions that were made in the first stage could for example result in outcomes fairly quickly. It was important to have the outcomes of ordinarily slow process in reality accelerated and vice versa, such as the result of dismissing workers.

Participants could therefore see how decisions and actions unfolded at alarming rates, and would in the process experience unintended consequences. This was also a way of facilitating double-loop learning, and for people to take accountability. The intention was also to have participants question their organisational culture. This would also facilitate the development of system skills.

Another important consideration in selecting the time structure of the simulation was to ensure that participants would be under such pressure that they would almost forget they were in a simulation, and would in the process bring out their true personalities.

7.3.6 Resources and information

The various groups had to commence the activities with unequal resources and information (R1, R3). The workers in particular had to experience what it was like to be dependant on others. A requirement for participation was that each participant would bring R5 with them, which the facilitator would then accumulate and divide such that only the Executives and Government would end up with such contributions. The Executives and Government also had respectively, the cage design (R8) and raw materials (R1). The allocation of the resources was also planned to encourage communication and participation between the participants. The results of the choices that they made could then be illustrated in the simulation. The limited information and uncertainty could then assist participants in becoming adaptable and to expect the unexpected.

It was also decided to have the various groups in different rooms to further allow them to comprehend things on their own. The intention was thus to leave the workers deliberately ignored, so that they could experience feelings of powerlessness and having to wait on others who had the information and resources.

The Executives had to obtain the raw materials from Government using a portion of the investments. This was correlated to the real world where the commercial companies undertook loans and credit, and where rights were obtained from Government.

An attempt was made to replicate the real world criteria that Government uses when allocating rights, by having specifications (R5) that had to be adhered to when building the rabbit cages. There was also a form for the Government to record cages received (R7); this was similar to the real world where MCM keeps records of the status of the marine resources. This was also a mechanism to keep the Government group busy (those who were not building cages).

An incorporation similar to the real world was that of having the Government present a Certificate of Award (R6) to Fabrication Inc. This was likened to the allocation of rights in the real world by MCM, and was also designed to provoke feelings of ownership and accountability. Worked into the Certificate of Award was the notion that Fabrication Inc. would receive the Award partially on the basis of the number of workers, and also on the resources that they had, and would thus be the only supplier of the cages. This was structured to resemble the real world where most of the rights were allocated to the commercial sector, partially due to the jobs that were created.

The aim was to initially empower the Executives and Government by having them be in charge of the resources, power and information. As the simulation proceeds, it however becomes clear that the leaders do not necessarily have all the answers and that they are also faced with uncertainty.

7.3.7 Pertinent information and rules

The briefing document (R3) phrased as a Policy document was designed to provide participants with the scenarios, rules and necessary information. The briefing document was however not intended to provide participants with too much information.

The rules of the simulation were constructed to indicate acceptable behaviour and boundaries. Most of the rules, apart from the sections on "Establishment" and "Production-related matters" were loosely phrased, so as not to be too restrictive, but to rather give participants freedom on how to proceed. This was important so that participants would not blame the facilitator but would rather look at their own actions.

The "Decision-making and communication" sections in the rules were also fairly open for interpretation, particularly by the Government and Executives groups to decide on such matters. This opened the way for a situation where leaders would perhaps not include those on the ground or would not report to them. The rules were also intended to imitate reality where there would be protocol, room for procrastination and final decision-making power with Government.

7.3.8 Unanticipated events

A number of unanticipated events were added, mainly to keep the simulation lively but also to have respondents become more adaptable and open to learning (Pivec *et al.* 2003; Borodzicz 2004). The simulation was planned to have participants think that there would be three stages;

there would however only be two. The second stage therefore incorporated the unanticipated events, and was primarily aimed at introducing pressure through various letters but to also allow participants to adapt to an ever-changing environment.

The first is in the form of a letter to the Executives from the Board about the lack of cage production (R9). This letter was structured in case of no production. The more critical letter however dramatically changes the pace of the simulation. This letter essentially informs the Executives that a new method of producing cages is available, which would result in increased productivity with fewer workers (R10). This was correlated to the real world where the commercial sector dismissed workers or closed down factories. The letter was also deliberately aimed to arrive at a time in the simulation when workers would generally become cohesive.

The intention was for the Executives to experience the pressure and difficulties when dismissing workers, and also to have the dismissed workers undergo job loss. This letter also automatically introduced a situation where there would be those who had and those who did not have, as in the real world. Another letter was structured to be used in case the Executives failed to dismiss any workers (R11). These letters were thus aimed at putting the Executives under pressure, and result in a divided workforce.

Another letter however ensures that the Government experiences anxiety as well. This is in the form of a Crisis Management Letter which has two versions, depending on demonstrated management abilities during the simulation (R12 a/b). The purpose of this letter was to let the Government feel the pressure and to force them to become more involved and accountable. The basic argument in the letter was that the workers' livelihoods had been affected as a result of job loss, and that the only way forward was to assist them to obtain some raw materials and the old method of producing the cages, so they could earn an income. The letter was also meant to point out to the Government that the Executives should willingly give up some of their raw materials. If this was not the case then the Government would have to take back some of the raw materials, considering that the Certificate of Award was issued originally based on the number of workers that Fabrication Inc. had. This was intended to relate to the real world where MCM issued rights to the commercial companies, also partially on the basis that they could provide work.

The letter also served to let the Executives experience what it was like to lose something, as in the real world. The Government group therefore was put in a situation where they had to balance the needs of the various groups. Government thus had to ensure that the dismissed workers obtain sustainable livelihoods, as is similar to the interim relief in the real world. The Government group furthermore was put in a situation where they were perhaps seen to be

favouring one group over another. The ultimate aim however was to have all participants eventually working together, even the dismissed workers. Figure 6.2 outlining the interests and positions of the real world stakeholders, is thus relevant.

A critical inclusion in the simulation relating to the real world was to have representation of the media, and union or civil rights protection. The media would play a critical role in the simulation by having it as an advantage for some and not for others. An additional benefit in utilising such persons was for the facilitator to enter critical information into the simulation through them. This was also to avoid a situation where the facilitator would be blamed. An example would be to have the media put the Government and Executives under pressure and the civil rights individual represent the dismissed workers.

A final unanticipated event was to conclude the simulation with a letter informing the Government that the project had to be terminated, as a result of rabbits that escaped from poorly-built cages (R13). This was mainly a way of ending the simulation, but had some relevance to the real world decline in marine resources which resulted in some stakeholders blaming others for the depletion. It was thus impossible to blame the sub-standard rabbit cages on any one party. The letter also served to demonstrate how occurrences in one area affect other areas.

7.3.9 Debriefing

It was critical to draw out strong emotions that participants may have experienced in the simulation and to discuss key learning lessons that could be used for the real world. It was also considered appropriate to address the learning objectives during the debriefing phase. R1 presents suggestions for the debriefing phase.

7.3.10 Evaluation forms

The evaluation forms (R15) were designed to assess whether the participants acquired any learning from participating in the simulation. The first four questions of the evaluation form were designed for use with general participants, and focused on the participants' experience of the simulation, and whether the simulation made a difference to their real world. The questions also asked participants to describe the challenge level of the simulation and what could have been done better. The other questions related to lessons that were learnt and suggestions specifically concerning the Western Cape fisheries context. A section was also included to

assess whether participants could make links with occurrences in the simulation to the real world.

CHAPTER 8: RESULTS OF THE SIMULATION

8.1 Overview

This chapter details the results from the three simulation runs, using observations and personal reflections, as well as data from the evaluation forms. The simulation was first conducted as a trial run, with the purpose of determining how the simulation would play out in reality, and also to assess whether there were any problems. This therefore provided the opportunity to make adaptations before the two simulation runs with the participants from the Western Cape fisheries context. The chapter concludes by linking my experiences to the simulation theory.

8.2 Trial run of simulation

8.2.1 Participants

The simulation was first piloted with post-graduate students at the University of KwaZulu-Natal in Durban on the 29th of September 2009. Invitations were sent out to students from various disciplines to invite them to participate in the simulation. Twelve students at various levels (Honours, Masters and PhD) mainly with a scientific and commerce background, and who were from various countries (South Africa, Sri Lanka, Kenya, Nigeria, the Democratic Republic of Congo and France) participated.

8.2.2 General reflections and observations

An initial challenge was dealing with the confusion of the participants and their need for more direction, as would be expected in a conventional traditional training session, for example, when a facilitator provides detailed information. Most of the participants were unfamiliar with simulations and were quite overwhelmed by the explanation of a simulation. The introduction of the policy document further intensified their confusion. The low turn-out was particularly challenging as it meant that group interactions were not as desired.

There were several other complications. The assignment of participants to the various groups presented a difficulty, in that the Executives group comprised two young participants who were unable to adjust to the demands of the roles. The result was that they eventually spent all their time with the workers to figure out how to proceed. The media role was also a bit tricky to deal with as the participant had the tendency to want to engage other participants regarding

occurrences in the simulation; this was a concern for the flow of the simulation. Other problems included the use of paper money, which was originally included in the simulation for use as an additional resource apart from the R5s. The paper money was however more of a hindrance, as participants were merely distributing the money when problems would arise. Other challenges including firstly intervening when the Executives were reluctant to dismiss the workers, then when the dismissed workers in turn would not leave, and then when the remaining workers became very close to them. It was also difficult to observe the participants in the various rooms, and keep notes of occurrences.

It was evident however that the pace of the simulation picked up once production of the rabbit cages commenced and it was as this point, that the participants appeared immersed in the simulation.

8.2.3 Feedback from the evaluation forms

Experience in the simulation

Practically all participants described positive feelings regarding their participation in the simulation. Many used the word 'interesting' and some commented on how useful it was in having them understand real life. Some described the simulation as challenging and demanding, and pointed out that it took time for them to understand what was required. Mention was made of the difficulty of initially 'acting out'. This feeling however faded as the simulation proceeded. There was a clear indication that participants 'fell' into the simulation as illustrated below.

> *But when we were spending more and more time with the simulation, it became so real.*

Certain participants felt that the simulation had impressed on them the devastating effects that lack of planning, lack of coordination, and poor human management could have. Some also expressed how critical it was to understand what was going on in an organisation. It was clear that participants took to the roles that they were in and that the roles therefore came across as intended. Those in the Government role for example spoke about the demands that were placed on them by both Executives and workers, whereas dismissed workers described the feeling of job loss as very real.

> *I felt the emotions, devastation of losing the job and the impact it will bring to yourself and family and that felt real.*

Effect of the simulation on thoughts about the real world

Some pointed to thinking differently about issues around people relations, pressures on management and communication, as a result of participation in the simulation. The need to be prepared for unexpected happenings and urgent demands in the real world, as well as being proactive came to the fore. Others spoke about how the simulation made them realise how dependent they were on the university to finance their studies; some also felt strongly about the desire to not want to be dependent on anyone. There were those who felt that the simulation did not make them think differently about the real world, as what they experienced in the simulation was similar to the real world.

> *No, because what I experienced in the simulation is what you often find in the real world. In the real world things are done without much planning. The Government is doing its own things, no consultation and proper communication.*

Recommendation for others to participate

There was general agreement and positivity about recommending others to participate in the simulation. One participant pointed out that the simulation had enlightened their mind, and that it was reflective of the real world.

Challenge level of the simulation and suggestions for improvement

The simulation was regarded as having been challenging yet interesting. There was however agreement that more time should have been spent on better explaining the simulation and its importance. The difficulties of understanding the briefing document and rules was also raised, as well as the fact that not everybody had a business background. The need for more time to explain what would be required of the participants, what the different steps would be and how much time would be available, was raised.

8.2.4 Adaptations after the simulation

I felt satisfied that the simulation had achieved what it was intended to but I knew that certain things had to be revised before the real world runs. The suggestions for improvement by the participants were carefully studied to improve the simulation. Certain aspects of the simulation were thus changed after the trial run. The policy document (R3) and specifications (R5) documents were simplified for example, and it was decided that the participants would deal with

the specifications themselves, rather than the facilitator. I also made a point for the future to go through the policy document slowly, and explain it in more detail, if need be. The definition of a simulation was also altered to be more understandable for participants. The use of paper money was also omitted, and the role that the media person would play in the simulation was carefully noted for consideration for future runs.

The simulation was then altered to incorporate the changes and the evaluation forms specifically adapted for the fisheries system.

8.3 Simulation run with the fishing community

8.3.1 Participants

The simulation was run on the 7th of October 2009 in Langebaan on the West Coast. Approximately 25 people, 22 of whom were fishers attended, as well as three community leaders. Figure 8.1 provides an idea of the interaction and illustrates the "rabbit cages", which are in essence cardboard boxes.

Figure 8.1: The Langebaan simulation

8.3.2 General reflections and observations

The simulation was scheduled to start at 11am but only started about 15 minutes later. There was some confusion about the name badges, as well as the handing over of the money and the signing of the document confirming receipt of the money. All the simulation documents, except the facilitator manual were translated into Afrikaans. I spoke in Afrikaans to accommodate the participants. There were some challenges, particularly having to think in English, convert this to Afrikaans and then speak, often with English and Afrikaans mixed.

There was noticeable confusion with the reading of the Policy document. One fisher wanted to know what the relevance of the simulation was to them as fishers. One of the leaders intercepted and said that there would be general lessons that would be applicable for them as fishers. I also added that I did not want to say too much but that it would become much clearer as the time passed. He nodded but still did not look very convinced.

I highlighted the division into groups, and that some of them would represent Government, others Fabrication Inc. workers and Executives, and that there would also be a Media person. The Government and Executives groups worked quite well as there were some assertive people in both groups. The Union and the Media people were community leaders which also worked out very well, as they could use the opportunity to observe and learn.

It was nerve-wrecking initially to wait and see what would happen, and overwhelming dealing with their initial confusion. Things soon fell into place, and production actually began promptly when the Production Phase started. I was a bit worried to see the cage design being cut and almost intervened but did not. It was a feeling of immense relief to see the cage production happen and to see the participants actually fall into the roles. It was encouraging to see the communication and interaction between them. I did however again find the observation role rather challenging.

One participant said, “Yes, Minister van Schalkwyk, rather just give us our fishing rights”, in response to the introduction of the ‘termination letter’ (R13). This statement seemed to sum up the whole project.

The debriefing went quite well and it was great to hear them relate their experiences. Some participants did not share and not all aspects of the real world could be discussed. I tried to bring in the commercial and recreational sectors and MCM, but I could see that they could not relate. The leaders understood and made comments, but also explained to me that the fishers were not

so involved and knowledgeable about those aspects. I also spoke to the person who initially wanted to know about the relevance of the simulation, and he said that he could see the significance.

My impression of the group was that they were a very compliant, yet extremely practical group. Perhaps this had to do with the nature of their work. They were extremely quick with the production and really seemed to get into it. The Executives and Government would promptly follow out the instructions from the letters. I do however think that the evaluation forms were a bit challenging. Three of the fishers could not read or write, and therefore required assistance. Others completed the forms but not as thoroughly as I would have liked. This of course had to do with the fact that many of them did not complete their schooling. The leaders however seemed to do quite well with the forms, probably due to the training that they had received and also as a result of their knowledge.

The leaders informed me afterwards that they were very impressed with how engaged the fishers were, and that they saw hidden talent in the fishers. They also added that they would like to use role-play exercises in future with the fishers. Mention was also made that something had happened that had never happened before, in that all the fishers had come together. Someone else also said that the fishers would now have a lot to talk about for a very long time, and someone wanted to know more about what had precisely occurred in the simulation.

The simulation may have been an important boost of confidence for the fishers and may also have demonstrated to them that they do have capabilities. The emphasis on communication and participation was particularly important.

8.3.3 Feedback from the evaluation forms

Experience in the simulation

Comments included ‘very interesting, satisfied, exciting, wonderful’ and mention was made of lots of learning that had occurred in the simulation. Mention was made that the simulation was applicable to the real world. Some felt that they had acquired a better understanding of how Government works from the top to the bottom. Others were positive that all parties could work together to find solutions. Some described the simulation as a real adjustment for a fisher, whereas others described an initial anxiety but which soon faded.

Nervous in the beginning but it got better as time went by.

Effect of the simulation on thoughts about the real world

Mention was made of insight that had been gained into how to do things better that were previously considered vague. Some felt that there was a clear correlation with the real world, but that their participation in the simulation made them realise that there was a lot that they could do. Others just thought about the need to work to put food on the table, and about work relationships between bosses, foremen and workers, and the importance of communication between all also came to the fore.

Recommendation for others to participate

There was clear agreement that others should participate in the simulation.

Challenge level of the simulation and suggestions for improvement

The simulation was described as challenging, yet interesting and comfortable enough for all to participate in. Some pointed out that it became easier as time passed, whereas others felt it was easy at the beginning of the simulation but that it became difficult when the demands came in. General remarks were made that everything had been clear, and that no changes were needed, and everything that was done was applicable, and handled well.

Lessons for the fisheries system in the Western Cape

Some felt that problems had to be solved quickly. The need for organised labour for informal fishers was noted in that they had no-one to protect or to represent them. Some felt it important that there be better relationships between the fishers and that there be more cohesion between the fishing communities. Ideas to start a business in the fishing industry also cropped up, while others were reminded of the importance of keeping their boats in a good condition, lest there be problems. Mention was also made about the role of the media and co-management. Communication was considered critical by practically all participants.

Links to the real world

Links could be made to the criteria used to assign fishing rights in that there were too many rules or laws or guidelines, and that the process was long, drawn-out and slow. The fact that Government alone had decision-making power concerning criteria was also highlighted. Connections could be made to the fishing rights allocation process, with reminders of how long

the process takes to give rights to fishers, and how expensive and complicated the forms were. Mention was also made about the distance between fishers and MCM. The loans or credit that the commercial sector took out was noted, as well as the fact that fishers had no access. Some could see the correlation to the interim relief, in that all stakeholders were involved but some also spoke about how delayed the process was, that it did not benefit all, and that it was not a solution for informal fishers.

Suggestions

Fishers and fishing communities had to be more involved in decisions concerning rights, and issues around communication and relationships were significant. They also had to become more organised and mobilised, and had to come together to make decisions on how to resolve problems.

It was suggested that MCM take more of an interest in informal fishers and listen to fishing communities and communicate with them. The slow turn-around time with applications was highlighted.

It was argued that the commercial sector listen to the needs of the informal fishers, and look at issues concerning fishing rights and finances, as well as equality within the industry. Some felt that that the commercial industry did not always know what was happening in the fishers' lives. There were similar responses for the recreational sector to look at informal fishers. Some felt that recreational fishers had to be restricted and monitored more, but that they could remain.

8.4 Simulation with MCM

8.4.1 Participants

This simulation was run at the MCM offices in Cape Town on the 8th of October 2009. The invitation was sent out to many people but only 10 arrived, due to most staff having had to attend an unexpected meeting with the Minister of Water and Environmental Affairs. The participants comprised mostly of young, junior scientific staff.

8.4.2 General reflections and observations

The simulation was scheduled to start at 9:30am but only commenced around 10am. The participants also appeared quite overwhelmed initially by the documentation. The participants

assigned to the Executives and Government roles were fairly soft-spoken but managed in the end. After the assignment to the groups, one of the participants in the Government role remarked how "this Government thing is quite good". This same person however later was exasperated and cited miscommunication as a huge problem. It was interesting to note that the workers were not approached during the establishment phase; they used the time wisely however to form a union, known as the South African Rabbit Workers Union (ZARWU) and to select a union representative. It took 45 minutes before production commenced. This was a slightly frustrating wait. My intervention in the simulation was more than I would have considered appropriate, for example, I had to make certain that the Government group intervened when the letters were sent to them.

When the simulation ended, one of the participants actually kept on producing a cage, despite the simulation being over. He reluctantly stopped after a while. The debriefing went well, except for a lack of time, as a result of the simulation having started late. It was evident that all of the participants were able to relate well to what had happened. There was also an interest in the research project as well, and mention was made that it was a good project. Some even asked whether I found the simulation to be useful.

There was however a strong feeling about the lack of participation by senior staff in the simulation, probably due to the fact they were the ones who made critical decisions. Some also commented that the simulation should have been run with all the stakeholders. My impression was that the simulation had an impact on the junior staff, despite the lack of presence of senior staff. A difficulty however was that many could not comment on all aspects of the evaluation form, especially the latter half, due to their limited experience.

My impression of the group was that they were very engaged, yet also not as easily accepting of all aspects of the simulation, such as taking time to consider whether to dismiss the workers. They also took more time to comprehend and think of more abstract things, such as the formation of a union. This probably had to with their education and work background. They did however portray immense interest, particularly during the debriefing phase of the simulation.

8.4.3 Feedback from the evaluation forms

Experience in the simulation

There was general agreement that the simulation depicted how things were in the real world. Many pointed to learning that had occurred. Common descriptions included 'interesting' and

some considered it a positive, thought-provoking experience. Some also commented on how interesting it was to see how quickly people adjusted to their roles in the simulation, even if it was completely different to what they did in reality. Those in Government and Executive roles described a short-lived feeling of initial empowerment. A common description was that the simulation had put many under pressure, whether it was as worker, Government, or Executive.

From an outside perspective you can actually see the pressure people are under.

Effect of the simulation on thoughts about the real world

Some felt that the simulation had made them consider other entities, and that insight had been gained into the different thought processes, from the different stakeholder's perspective, which occur at the different levels. Mention was made of how critical it was to consider other stakeholders and how decisions impacted them. Some found it interesting to have been in the role of worker where no decisions were made, which was in contrast to their real jobs. The use of the media was highlighted, as well as the importance of communication.

It showed that there should always be communication between all the stakeholders that are involved in a project.

Recommendation for others to participate

All respondents were in agreement about recommending others to participate. Some stated that it would broaden many people's minds when dealing with people, and considered it critical for anyone working in an environment with many stakeholders.

Challenge level of the simulation and suggestions for improvement

Most participants were satisfied with the challenge level. Some however felt that the simulation was not very challenging, whereas others struggled to get into the role.

Takes some mental ability to get into the role, but once there it flows.

The need for more participants to have been involved, especially all fishing sectors and Government was highlighted, as well as the suggestion that participants be in reverse roles. Some commented that the simulation was well planned and felt that anyone could participate,

and that the simulation was adequate as is. This is illustrated below by one participant when responding to whether any improvements to the simulation were required.

Nothing! If the purpose was to increase awareness about who should take blame when things go wrong. It showed that all sectors share some part of the blame.

Lessons for the fisheries system in the Western Cape

Communication and critical skills, and inclusion of all stakeholders was emphasised and was regarded as priority for all affected parties. Some also noted that communication problems were continuously arising and that this situation could be avoided.

Communication is key. As soon as there is even the slightest break in communication, things fall apart. But you also need the skills to communicate / facilitate / negotiate.

The importance of having each person do his or her job well also came up as a critical factor to success, as well as the need to not waste time in tackling with critical issues. Some felt that changes had to be conveyed as soon as possible to all involved, and that more people be involved in decision-making. The need for all to work together and stop pointing fingers was stressed. Some were empathetic about the fact that all parties had pressure from a higher party, and that each group had a different view. The devastating role that miscommunication and different opinions can have was also stressed.

Links to the real world

Some could see connections to the criteria used to assign fishing rights, such as how long it took and how many stakeholders were involved. Links could also be made to the fishing rights allocation process in that some saw how the Executives took their time to get to the workers. This was compared to MCM which sometimes did that. Another key area was that communication came through media press releases and not from Government. Mention was also made of how long the process took, with the result that workers grew impatient. Some could see how obtaining materials from the Government related to the commercial lending, and also mentioned how some of the materials were taken away. The link to the interim relief was made as compared to how short term it was, and also things such as protest actions and the new company that had formed.

Suggestions

Recommendations were made that the fishers and fishing communities work together, and protect the resources and take action against drugs/alcohol. There was also a suggestion that they organise themselves better and especially that there were too many splinter groups and conflict within the communities. Some felt that they needed Government assistance but not necessarily only from MCM, whereas others stated that the fishers had to respect the resources and understand that it belonged to everyone, and that issues of sustainability had to be comprehended.

Proposals for MCM included the urgent need to try as best as possible to assist, and engage people more. Open communication internally and externally with all stakeholders, as well as the need to initiate processes in good time to avoid challenges, were highlighted. Some mentioned that MCM had to understand that there were certain pressures exerted on all in the fishing industry sector. The need for improved management from the top, all the way down was emphasised. Certain comments also highlighted the necessity of bringing in people with skills to communicate with stakeholders, e.g. social scientists.

Recommendations for the commercial sector were centred on the importance of them voicing their opinions and being specific in complaints. Some argued though that they had to think about poor people and not have an attitude that they owned everything in the sea. Someone also felt that the recreational sector had to think of others.

8.5 Overall experience of running the simulations

It took a tremendous amount of courage to face the blank stares during the briefing phases of the simulations. It was also a challenge to avoid divulging too much in order to cope with the participants' uncertainties. It would have been better had there been more participants and especially more of the stakeholders together. This would not only have facilitated interaction but would also have been a true test as to the success of the simulation.

It was very difficult dealing with low numbers, as this necessitated more intervention from the facilitator, which could affect emergent outcomes, implying that I as the facilitator could have interfered with the dynamics of the simulation. It can be assumed that some people were reluctant to participate in the simulation, probably due to the time required and also perhaps a fear of the unknown. It would be beneficial thus to develop a marketing strategy to attract the hesitant types but which also does not give away too much information.

It was challenging to wait for people to arrive and then to start late, with the risk of insufficient time to conduct all phases of the simulation. It was therefore disruptive dealing with latecomers or having people leave early. Preparation, adaptability and quick thinking from a facilitator are critical. I also think that having refreshments during the simulations made a difference.

The debriefing phase definitely is critical and is really the chance to make a difference, as mentioned by Thiagarajan (2003), but it does vary tremendously depending on the audience. This was illustrated by the fact that not all of the participants could understand what was happening in other areas, and also that some participants, e.g. the community leaders had more exposure to the different areas, whereas the fishers were mostly to do with fishing. Furthermore, some roles provided more exposure to understanding the whole, e.g. the Executives, Government, and Media in particular could get an overview of everything, whereas the workers only knew what was happening in their immediate vicinity. The Executives, through having to purchase raw materials could thus make the link to the real world where the commercial sector took out loans. This is thus an area that needs some work, as to how precisely to provide all participants with an overview of the whole, considering their specific roles in the simulation and real world backgrounds.

It was very rewarding and a huge relief when people started to make connections during the debriefing phase. This was synonymous to the 'aha' moments described by many authors (Jackson 2004; Villegas *et al.* 1996; Fannon 2003). There was so much that could have been said; sufficient time must therefore be dedicated to the debriefing phase. The facilitator must have enough practice to become skilled at facilitating this phase, and must be flexible and know when to make judgment calls. Long after the simulation was over, questions still arose about how the debriefing went and what else could have been added.

A way to deal with the initial fears on my side when looking at blank faces was to remember that there was order in disorder (Leigh 2004). Things fell into place, and no one simulation was identical to another because the people were different. Even myself, as the facilitator too was different, as I became more experienced and discerning. It was a journey of sense-making for both facilitator and participant alike. This was illustrated by the many people, who expressed how nervous they were in the beginning, but that things made sense later and that they soon fell into role. It is thus critical that the facilitator be prepared, yet flexible (Le Roux & Steyn 2007; Leigh 2004).

As Feld (1997) noted, simulations can be particularly useful for observations that can be made. It may be useful however to have co-facilitators to assist with the running of the simulations and observations.

I also realised that people do indeed want to play. I could see the intensity as they were cutting away and assembling, and how proud they were when they produced a cage, and transferred the cages to the Government. This sort of play clearly opened the door for some learning. The simulation was thus successful in providing the sort of learning environment described by Leigh (2004).

I think that much existing theory may be sufficient but that ordinary people struggle to digest the heavy academic writings. Furthermore, people may find more meaning when they can draw their own conclusions. This can be facilitated by researchers who have insight into the theory as well as familiarity with the context. Simulations can thus be used for theory testing and building (Dooley 2002).

I think that the simulation made a small difference, especially to the confidence of the fishers. They were able to contribute towards providing ideas, and were able to communicate and participate in a meaningful manner (Lane 1995; Geurts et al 2007).

It was good to have had a chance to talk about the theory, but in a meaningfully yet non-threatening way which utilised experiences in the simulation. I would definitely argue that the simulation, which was based on change management theory, provided a valuable learning opportunity.

The specific objectives of the simulation were met and this was attested by my observations, as well as discussions in the debriefing phase and data from the evaluation forms. The interviews and secondary data made the simulation relevant to the learners and their specific needs (Leigh 2004).

It was reassuring to see a diversity of participants with varying levels of education work through the simulation. This means that the simulation may have had the desired outward simplicity, yet inner complexity, considered critical by Borodozicz (2004). The simulation also became more user-friendly after incorporations from the trial run, and this was demonstrated by the fact that no-one mentioned experiencing any difficulties in such regard. This was particularly the case with the briefing phase, which Leigh (2004) points out is critical to captivating the interest of participants.

I feel that this simulation was a start to dealing with the complex issues involving the many stakeholders in the fisheries context in the Western Cape. Furthermore participants could see how interconnected the various issues were (Pivec *et al.* 2003). As Lane (1995) mentioned, simulations are rich due to the various issues that are dealt with. Scientists could thus see how their work and the decisions that they made had impacts on other spheres. Fishers on the other hand could perhaps see how their own actions were of relevance to the whole. Participants also had an opportunity to question assumptions that they may have had (Leigh 2004; Enciso 2001).

The phases in the simulation were critical in illustrating the consequences of decisions made in minimal time (Jackson 2004). The emergence of a union in the one simulation, as a result of not communicating with workers is an example.

The fact that there were diverse roles in the simulation, which were later unpacked and related to the real world roles definitely facilitated learning and allowed participants to see the other stakeholders' perceptions and mental models (Enciso 2001). Participants could thus see a holistic view (Geurts *et al.* 2007) but I am not sure whether or not the simulation allowed them to be proactive. The need to have had more senior staff in the simulation could have facilitated this. Furthermore, it would have been useful to have had more stakeholders playing different roles (Pivec *et al.* 2003). This would probably have required more skill on the part of the facilitator though.

I felt quite privileged to have had this opportunity to meaningfully engage with such a diverse audience, ranging from very practical, mature fishers to younger scientists. The simulation despite having focused on rabbits, was successful in bring across critical learning for the real world. The simulation in particular was thus an important way of interacting with adult learners (Jackson 2004). It was gratifying to have interviewed people to discover the issues, and then to have designed something around those issues. I could actually go to the very people and interact with them.

Although the simulation was a start towards activating certain critical processes in the minds of participants, perhaps other continued measures to encourage learning could be useful to ensure the continued learning of all involved.

CHAPTER 9: DISCUSSION

9.1 Discussion of results of the interviews

This chapter commences by discussing the results from the interviews and simulations. The underpinning literature is then critically re-examined, and the original intentions of conducting this study are revisited. The chapter concludes by presenting salient findings from this study.

The study of the changes and resulting consequences in the fisheries system in the Western Cape was vastly different from most of the portrayed study sites in the change literature, due to the existence of a complex system involving multiple, interconnected stakeholders. There was thus not a traditional organisational setting with management and employees, neither was there a situation where there was interaction between an organisation and one external stakeholder group at best. There are however some parallels that can be made between the results and the change literature.

This study context was characterised by an authorising institution enabled with powers to manage a natural resource, and to decide on the distribution thereof to the many stakeholders in the system. It became apparent that attempting to impose control from the top in a complex system was challenging, as found by certain authors (Senge 1994; Ashmos *et al.* 2000; Lichtenstein 2000).

MCM was tasked with transforming the past imbalances of the fishing industry, and this was done in 1998 by way of the MLRA. It appears that the small-scale sector was in agreement with MCM about the urgent need for transformation within the industry, as a result of South Africa's past. The impact of events in the country therefore also contributed to the perceived need for change. The commercial sector however differed initially, but eventually transformed by adhering to affirmative action targets. There is thus reference to authors who mention how critical it is for people to see the need for change, and consequently to concur with it (Lawson & Price 2003; Hayes 2002; Harrington 2006). The need for change was hence realised by MCM and was triggered by the perceived negative state of affairs in the fishing industry. It also appears that there was no pre-testing of the change, which some authors consider important (Oakland & Tanner 2007; Hamilton *et al.* 2007).

There was an attempt at problem-solving by MCM. As Argyris (1999) highlights, problem-solving may not be adequate, as all stakeholders were not involved and thus did not have the opportunity to reflect on their behaviours and how they contributed to the problems. The MLRA

was consequently viewed by some as a quick fix and one-size-fits-all solution, which was unsustainable. This was illustrated by some respondents who argued that the MLRA did not take their unique situations into consideration. There were also some who felt that the system was not entirely bad but that it was more appropriate for the commercial sector. This corresponds with the need to perhaps consider a unique reaction for various situations (Andrews *et al.* 2008; Grint 2007).

The new system was perceived by some to be a mere continuation of the former system suited for the commercial sector, thereby implying that there had been no transformation. This relates to the concepts of scepticism and cynicism in change described by Stanley *et al.* (2005). There was scepticism, as some in the fisheries context were doubtful about the likelihood of the change (MLRA) achieving what it was set out to do. There was thus a sense that the MLRA and consequently MCM had failed in transforming the industry. This then also resulted in cynicism, where people had disbelief in the motives of the MCM management. MCM and DEAT were viewed in a negative light by the different stakeholder groups, and also by the media.

The area of balancing stakeholder needs, not only during change processes, but on a continuous basis, was found to be important. Underlying this was the prerequisite of identifying and involving all stakeholders from the pre-implementation stage (Van Tonder 2004). The contention around the demarcation of the subsistence category in the MLRA in particular highlights this point. The process of change was not easy from the beginning, and was as Hamlin *et al.* (2001) describe, quite literally difficult and costly, physically and emotionally, for all involved.

A variety of events and actions by the different stakeholders over the years, including the use of court proceedings have affected the fisheries system. The notion of a smooth change process was not possible, mainly due to the reality that a static environment did not exist. This corresponds to Ferdig's (2007) work. The results illustrated the need to expect the unexpected, as stated by Callan *et al.* (2004). There is a need for continued learning experiences, and real world learning, as highlighted by some authors (Kilgallon & Lampe 2007; Doyle 2002).

The plans, structures and systems of the MLRA, such as the medium-term and long-term rights allocation processes, could not proceed smoothly for a number of reasons. This was also attributed to sense-making processes that people engage in, as documented by certain authors (Bamford & Forester 2003; Balogun 2006).

The notion of a number of unintended consequences that arose from the MLRA is particularly pertinent, as demonstrated by the responses. One of the main problems was the lack of abilities and skills among the fishers and fishing communities, which resulted in them being unable to access credit. This relates to people not possessing the required skills and capabilities to cope with new changes or a new system (Lawson & Price 2003; Tucker *et al*. 2002). This was mostly the case with the fishers and fishing communities, but was also found with MCM, in for example not being able to deal with the many problems, and thus necessitating inter-collaboration between Government departments. There was resistance to change at a personal level mainly due to anxiety of the unknown, as well as beliefs that existing skills and contributions were inadequate, and that there were feelings of insecurity, powerlessness, insufficient knowledge and involvement. The resistance to change corresponds to work of Cummings and Worley (2001) and Lee and Krayer (2003). The necessity of having change management skills was also demonstrated. Doyle's (2002) study highlighted the necessity of possessing change management skills.

There was resentment that the system had required the fishers to be businessmen and that they could thus not access the sea, and that people, such as lawyers or teachers, who had the necessary skills qualified. It is interesting to see how the application of complexity theory can assist in better understanding how events unfolded. Initial decisions or seemingly minor inputs resulted in significant outcomes, which could not be controlled for, as is highlighted in literature detailing complexity theory (Beeson & Davis 2002). This was illustrated in the form of the many socio-economic concerns and poaching problems in the fishing communities.

The fact that the respondents tended to highlight their differences and point out faults, may indicate a lack of understanding that they were all part of the whole. There also appears to be some neglect in taking accountability for their contribution towards the problems (Senge 1994). Utilising systems thinking, one can see how inter-related the parts are and how actions in one part, have effects elsewhere (Van Tonder 2004; Styhre 2002; Montouri 2000). The fact that fishers lacked the necessary training and skills, and hence were exploited, was something that did not only affect them, but everybody in the system. The phenomenon of poaching in particular, illustrated the interconnectedness of the system. Even though the poaching occurred and still mainly does in the fishing communities, it nonetheless had serious repercussions for the whole system.

Comprehending the 'Tragedy of the Commons' archetype, as described by Braun (2002) is relevant to understanding the desire by some respondents to have had all understand sustainability, and grasp the finiteness of the marine resources. The commons is any resource

that is available to all; in this study context it refers to the marine resources. As various people place increased demands on the commons to achieve their goals, without realising the limits, the commons increasingly comes under pressure, and can eventually become overloaded and depleted. There can be a total collapse, with the result that all will experience decreased benefits.

It is interesting to note how difficult it is to undo the consequences of actions taken, as noted by the advancement of poaching. Even the introduction of the interim relief could not eradicate the poaching problem. The causal loop diagram (Figure 6.3) can provide an overview of the various factors involved in poaching. Change does therefore come about through the complex interaction between people, and the interactions of the various interconnected causes and effects (Styhre 2002; Beeson & Davis 2000). The stipulation to change the MLRA was thus an example of the outcome of the interplay between all the sectors.

It was evident that stakeholder perceptions and mental models came through very strongly. This was demonstrated by opinions for example, regarding the fact that people were greedy, always wanted more, and could hence not be satisfied. Another example was that discriminatory practices from the apartheid era were merely continuing. The acknowledgement of shared mental models was thus particularly relevant, as found by various authors (Montouri 2000; Van Tonder 2004; Balogun 2006; Wedge 2006). It seems that the various stakeholders may have only engaged in single-loop learning, where they had neglected to challenge their current thinking. So despite the introduction of a mechanism, the MLRA to ensure change, there had hardly been any change in the underlying thinking of all involved.

Although there was communication and involvement of some stakeholders about the implementation of the MLRA, it appears though that it was primarily a vision of MCM that was communicated to the stakeholders. This appears to have been more a case of communication efforts to inform people about the impending changes, as described by Harrington (2006). This is contrasted with reflective openness where people get involved in decision-making but also engage in reflection, inquiry and critical questioning (Senge 1994).

As highlighted by the literature, issues of communication and participation were found to be undeniably critical. The debates around the recognition of indigenous knowledge and introduction of co-management, illustrate the desire by people to be included in decision-making. Although many authors including Hayes (2002) highlight the need for stakeholder involvement during change processes, it does appear to be challenging to incorporate everyone, as is the case for example, where people could not understand how modelling aspects work, thus

making it difficult for scientists and on-the-ground fishers to come together. There was however a very clear desire for all parties to work together.

The feelings of non-recognition and powerlessness, described by the fishers, illustrate the importance of acknowledging the emotions of all involved. Thus, overlooking emotions and self-esteem were detrimental (Carnall 2003; Van Tonder 2004; Kirkpatrick 2001). What was also interesting to note was how the system as a whole shaped events, to a point where all stakeholders are now meeting together to discuss the future. Therefore, despite the initial events, the system somehow moved to a point where the option of excluding anyone simply does not make sense. Most stakeholders furthermore have seemed to comprehend the futility and consequent negative reactions that could occur, if they ignored any particular stakeholder group.

The importance of acknowledging the role of organisational culture, structure and processes was also significant. These factors are highlighted in Carnall's (2003) work. This was demonstrated by the longing for more attention to be cast on issues concerning Government procedures, authority, decision-making and staff changes. Even amongst the fishing communities, leadership issues around the need to involve people on the ground also came to the fore. Ferdig's (2007) study highlighting that leaders do not have all the answers, and that each person has a personal responsibility to collaborate with others, is of relevance.

9.2 Discussion of results of the simulations

The simulations were a useful way for myself, as researcher to conduct research in a complex setting for a management project, where valuable observations were made (Klabbers 1996; Le Roux & Steyn 2007; Keys & Wolfe 1990; Feld 1997). Interconnected processes were demonstrated, and participants had an opportunity to discover various perspectives (Jackson 2004; Klabbers 1989). The innate complexity within the real world system was thus utilised, as recommended by Dooley (2002).

The design of the simulation was, however, more challenging, particularly in adequately portraying the processes in a fair manner, and in a way that engaged all. It was not necessary to include the real world participants in the design of the simulation, as enough information had been accumulated during the interviews. There is no doubt though that the real world participants must be involved in the conceptualisation of the simulation. The benefits of having tailored the simulation to the unique needs of the participants and their learning thus paid off, as was found in other studies (Leigh 2004; Pivec *et al.* 2003; Green 2002). This was confirmed through the evaluation forms and feedback during the debriefing phase, that the simulation had

come across as intended. This is supported by Savolainen's (1997) findings that having participants involved helps to have the models critically examined.

The inclusion of issues from the literature strengthened the simulation, as was highlighted by Chua (2005). A potential weakness however could be that of researcher bias, where I selected certain issues for inclusion. The simplification and representation of the issues from the interviews was more challenging than portrayed by most literature. It is critical to not have exact duplication, as was found by Feinstein *et al.* (2002) but the reality is that there was a tendency to be quite literal in the conceptualisation of the simulation. Another challenge was to have activities that were engaging for all involved.

The formation of the roles in the simulation was based on the real world stakeholders, and participants thus had an opportunity to experience other roles, considered critical by most authors (Pivec *et al.* 2003; Chua 2005). The MCM simulation was interesting in that all the participants were in reality Government employees; only two in the simulation however portrayed that role. It is clear from the results that there was still learning experienced, even for those who played the same roles. Those who played opposite roles got to see the Government role from an outside perspective.

An attempt was made for the participants to view the whole system. This unfortunately was not realised fully due to the background of the participants, as well as the roles that participants had in the simulation. Only certain participants therefore had an opportunity to view the whole system, and this is in contradiction to many studies (Le Roux & Steyn 2007; Geurts *et al.* 2007). The simulations illustrated to participants a holistic view but did not enable a proactive view. Some participants could therefore not take action as they were not enabled to do so in the real world. This is in contrast to the findings of Geurts *et al.* (2007) in arguing that simulations can do both.

Participants had the chance to engage in an interactive environment to engage with ideas and principles, as highlighted by Jackson (2004). The use of various roles may have facilitated double-loop learning for the participants, and this was further induced by having participants experience the consequences of their actions, as found by Serrano *et al.* (2006). The simulations may have been a beginning in facilitating a move towards continuous learning and improvement, as mentioned by Cecchini and Rizzi (2001). There is however no way of knowing whether this was definitely the case and it can furthermore not be assessed in the bounds of this study. The simulation did however highlight to participants the importance of not being overly-dependent on plans.

The concept of problem-solving within simulations was interesting to note. Although the simulations made no direct reference to the fisheries context, participants did seem to draw key learning lessons. It cannot be stated with certainty however that they discovered new features to the problem or generated new ideas, as found by Geurts *et al.* (2007). Most participants in the system may have been aware of their problems, but not on a deeper level. The simulations did however allow participants to develop critical skills. The simulations definitely provided the participants with an opportunity for critical reflection, as found by other authors (Fannon 2003; Le Roux & Steyn 2007).

The results of the involvement of both the leaders and fishers in the Langebaan simulation can be correlated to findings from a few other studies. Firstly, the simulation permitted for involvement from participants who are on different hierarchical levels in real life, as highlighted by Keys *et al.* (1996). This led to key learning lessons for the leaders as to how to involve the fishers in future. The simulation was successful in bringing all the fishers together, and was a step towards strengthening ties, as documented by Barreteau *et al.* (2007). The simulation also allowed the fishers to see their part in the big picture (Geurts *et al.* 2007). These findings are further supported by occurrences in the MCM simulation, where the participants themselves made mention of the absence of senior management. This corresponds to the findings of Green (2002) in stating that participants appreciate the involvement of those at the top.

There were benefits in having a trial run of the simulation before use with the intended audience, as supported by Fannon (2003). The issue of group dynamics was not as pertinent due to the similarities between the participants. The issue of group allocation was however rather relevant, as highlighted by Adobor and Daneshfar (2006). Participants were in all three simulations allocated to teams, which could have had a bearing on how the simulations unfolded. The importance of having a user-friendly simulation came through strongly, as was also found in other studies (Adobor & Danesfar 2006; Barreteau *et al.* 2007).

The facilitation of a simulation, and the qualities of the facilitator were undoubtedly critical to the success of the simulation, as found by other authors (Keys & Wolfe 1990; Borodzicz 2004; Green 2002; Leigh 2004). The simulations in this study necessitated adequate knowledge of the simulation, as well as a good balance between being prepared yet flexible. What was also required was a thorough knowledge of the context, so as to be able to relate to participants during the debriefing phase.

The learning objectives were not highlighted during the briefing phase, as suggested by Adobor and Danesfar (2006) as it was felt that this would have interfered with emergence. Neither was

mention made of any theory, nor was much detail provided about the simulation, as mentioned by some authors (Chua 2005). Based on the findings of this study, participants may actually have gained more when such details were highlighted in the debriefing phase rather.

The debriefing phase was critical as highlighted by many authors (Pivec *et al*. 2003; Thiagarajan 2003). It was important to have participants firstly describe their experiences in the simulation. Connections to the real world had to be made but did not happen as planned, due to the background of the participants, and the roles that some had which predisposed them. Authors such as Green (2002) thus highlight that participants transfer knowledge to the real world through the debriefing phase, but this was challenging to accomplish in reality.

The simulations followed the traditional three-stages; briefing, activities and debriefing, as recommended in many studies (Thiagarajan 2003; Leigh 2004). The stages however took on a journey, characterised by interesting occurrences, both for the facilitator and participants. The briefing phase had the participants very confused as to what to expect; which then led to a great deal of pressure being exerted on the facilitator. During the activities, the facilitator became more relaxed, as the participants became immersed in the simulation, and some participants actually ended up feeling stressed due to happenings. The debriefing phase was a relief for all; the participants could make sense of occurrences in the simulation, and then relate it to the real world, and this then in turn was rewarding to see.

Most participants highlighted that the simulations made them think differently about the real world, whereas a few indicated that the simulation had not made them think differently because the simulation showed how the real world was. The question then is whether those who found the activities in the simulation similar to the real world took away any learning to the real world. Thus, findings from this study cannot fully support claims by other studies around verisimilitude (Borodzicz 2004; Keys & Wolfe 1990; Lane 1995).

Many authors make mention of the powerful learning opportunities through experiential learning, that occur in simulations. The simulations in this study may have been successful in illustrating Kolb's first three phases. The last phase of testing implications may however not be as easy to achieve, if participants do not have the opportunities in the real world.

9.3 Re-examining the underpinning literature

9.3.1 Change literature

The conventional approach to change, which makes reference to the need for change, is often undertaken in many organisations. The purpose is usually to enhance or maintain effectiveness, and this is done by engaging in a planned, step-by-step approach. The planning often only involves a limited number of people from the organisation, who then communicate the intended changes to the rest. Forecasts with various stages and timelines are drawn up and distributed. There is much publicity around the intended changes, and marketing campaigns are designed to inform employees of the benefits.

Despite sounding very orderly and controlled, these approaches to change very often fail or may accomplish only a few goals. When there is an observation by managers that the changes were successful, then this feeling often is not shared by all in the organisation. There is then a 'period of rest' until the next change effort.

When reading through change literature, it does make the reader feel that change management could be a manageable task. Most literature also tends to highlight the critical role that management will play in change processes, and often only mentions a few problems around communication and participation that may be encountered along the way. Some studies focus on certain aspects only, for example on the role of communication in change processes. These studies are in essence reductionist, and tend to produce outcomes that encourage management to continue imposing control on the system.

Very few studies highlight how critical it is to acknowledge the immense complexity that faces an organisation. There is also a neglect to mention how changes in one area will affect others. The reality is thus that there are many issues around change as portrayed in the literature, but many studies have omitted to include both a systems and complexity perspective, thereby reflecting an inaccurate picture.

The majority of studies involve conducting fieldwork to determine a couple of issues, with the result that a few recommendations are made. There is thus an assumption that something will be done. Whether or not this is the case, is debatable. How many times does a study actually go beyond stating what may sometimes be the obvious? How many people actually gain from the study? The studies very often end up with management only, who may or may not choose to distribute and inform others of what was found. Very few studies have looked at how to actually

assist organisations deal with the many issues that beset them. There is also a tendency for the field to periodically undergo a 're-generation' and come up with the latest and most relevant about change management. Organisations will tend to latch onto such discoveries, but will most often end up disappointed.

Much change literature is thus guilty of promoting a straight-forward outlook into change processes. Organisations will frequently end up completely flabbergasted when things go wrong. What is also most astounding is when it is discovered that the changes had negative effects in some areas and that people were not prepared or lacked the necessary skills. It also comes as a surprise when decisions which may have appeared light-weight, result in significant outcomes, which managers often cannot control. Then there is also a realisation that the same issues keep on re-appearing. Organisations thus sometimes only see short-lived results, or experience a situation where they resort to looking at employing processes that worked in the past, or there is simply lost investment.

There exists literature on change which has undoubtedly advanced the field significantly (Kanter 1983; Kanter *et al.* 1992; Kotter 2002; Senge *et al.* 1999). What is needed now though is more emphasis on the realities of organisational life, but with the inclusion of systems thinking and complexity theory. Studies cannot ignore the inherent turbulence that characterises organisations, and organisations must learn how to utilise such complexity to gain an advantage. It must be illustrated that any attempts at imposing order and control will most surely have negative consequences in some areas. Studies should also have less focus on breaking up organisational parts and then studying those in isolation, as this will not present an accurate picture. Aspects around communication, participation, leadership, and organisational culture are critical, but must be studied in a realistic manner that portrays true organisational life.

Change literature, and management studies in general, must attempt to start looking at solutions to issues, and researchers should take more responsibility. It must be highlighted that change is not an event that has a starting and ending date; it is continuous and it occurs in all aspects of the organisation, through the interactions of people.

Traditional change management may make a difference to processes on face-value but it is the people behind the processes that are of concern. The people in an organisation do not leave their emotions at home when they arrive at work; the reality is that they have their views and perceptions of the world. Change literature must illustrate how critical learning processes are but more specifically the deeper, more meaningful learning where there is a change in thought processes. More literature must focus on illustrating the benefits that can be attained when

enhancing the skills and capabilities of all in the organisation. Finally, studies are needed into processes regarding multiple-stakeholder scenarios.

9.3.2 Simulation literature

The use of simulations for various disciplines, specifically in management, is highlighted in many studies, and is a useful way for conducting research. It can be beneficial for students, academics, and organisations. It is a tool that is capable of bringing various people with unique backgrounds together. More academics and researchers can thus do research using simulations to not only teach students critical concepts, but it can also involve people from actual organisational settings, who may in turn benefit. Simulation literature often does not highlight the difficulties of attracting people to a simulation. Research must be done into looking at how to facilitate this, and studies can also compare how people felt before and after the simulations. In a similar vein, the long-term effects of a simulation need to be assessed. There is no doubt that simulations are powerful learning tools, but they may be more effective in the beginning as a way to unleash learning opportunities.

Employing a simulation for use in a complex, organisational setting has far-reaching benefits, as highlighted by the literature. Designing a simulation for a specific setting is however more challenging and current research does not adequately highlight this. Furthermore, designing a tailor-made simulation for a multiple stakeholder setting is a demanding task. Multiple considerations include being fair and ensuring that the simulation does not favour or negatively portray any stakeholder group, and finding activities to hold the interests of all. The researcher or designer decides on which critical issues to include, and this is based on what was considered important. This could involve researcher bias. This same could apply to the formation of the roles. These areas around simulation design need more exploration. Despite the knowledge that the simulation must have adequate goals and challenge level, more work needs to be done around incorporating activities applicable to all.

The use of interactive simulations also holds much promise. This is an approach that works with people who are on different levels, some of whom may be technology-averse, which is often the case in a developing country. It is most useful though for bringing together people in a way in which they jointly communicate and interact with others. The assertions that simulations do assist with communication and participation do hold true.

Practical areas of running simulations deserve more attention in the literature. These include highlighting the journey from stress to enlightenment, which the facilitator and participants

experience. The influence of factors such as low numbers, late starts, disruptions, language, and group dynamics must be further investigated as to how they impact on the flow of the simulation. More studies must highlight the multiple abilities required from facilitators. The literature must also highlight that simulations take on a life of their own, and that the best preparation is for the facilitator to be prepared.

The case of learning through simulations deserves more attention in the literature. Experiential learning in a simulation may vary significantly depending on the participants in the simulation. It could be the case that all simulations do allow people to have concrete experiences, resulting in observation and reflection, and the formation of abstract concepts. These three stages are powerful in triggering learning processes, and challenging mental models.

Some simulations may however not allow for the testing of implications, especially where there is an absence of senior staff or critical decision-makers in the simulation. The limitations of pre-testing in a simulation also need to be measured. Everyone in the simulation therefore may not have the ability to be able to test implications. This also relates to the idea that simulations may not fully allow people to be proactive. Organisational learning and more specifically continuous learning and adaptability, thus may not be fully achieved through participation in a simulation. All the relevant stakeholders would have to participate to see the importance thereof, and would need more than a simulation to facilitate such learning. Other learning mechanisms may need to be used in conjunction with a simulation.

The issue of verisimilitude also requires clarification, as to whether or not having participants see connections to the real world, does indeed facilitate learning. The debriefing phase, which is considered critical, has to take into account the difference between participants, as well as the differences in their experiences in the simulation. Some participants could thus take away more learning from a simulation than others. The skills development of participants could also therefore vary depending on the roles that they had. Participants may furthermore have an opportunity to practice skills in the safety of the simulation, but whether they will have a chance in the real world to utilise such learning, may not be something that is in their control. There are thus some areas around learning that deserve attention.

9.4 Addressing the research questions

The objective of this study was to investigate how and specifically in which ways simulations play a role in change management. The critical research questions can now be addressed, in light of the practical experience gained.

Simulations can play a role in change management by highlighting the inherent complexity of a system, and by illustrating interconnected processes. The complexity is however not suppressed, neither is only one part of a system analysed. Common problems that are encountered during change and that are often mentioned in the change literature, such as communication, participation, and problem-solving can be dealt with. Researchers and organisational participants can furthermore deal with these issues in minimal time, and can make valuable observations, which can be practically applied. What is also most pertinent, is that people can experience the consequences of decisions in the simulation.

Simulations can demonstrate that multiple change issues can be studied and dealt with in a simulation, and made sense of in the context of the whole, and by all. Research can be made applicable to the participants in a study context, with the consequence that they may become empowered through their involvement in the learning environment. Simulations can bring change theory to life, and participants can actually grasp, what is often considered academic jargon. Participants can also provide valuable feedback both verbally and through their actions to researchers, which could be used to advance theory. Participants thus make an actual contribution, and are in a sense co-authors, rather than mere subjects.

Involvement in a simulation can highlight the importance of being adaptable and striving for continuous learning, rather than being overly reliant on plans. This is especially so in illustrating that conventional change management, with its step-by-step approach, has serious limitations. The emergence of unintended consequences, which is a frequent occurrence during change processes, can be adequately demonstrated in the simulation.

A simulation can highlight how essential it is to have everyone in the system involved, and this can have multiple benefits for the organisation as a whole. A simulation can perhaps illustrate that change management as it is often viewed and the concept of the need for change frequently entails crisis-management, complacency and essentially being reactive. Thus, if the organisation as a whole can participate in several runs of a simulation, then the emphasis could shift to realising the value in being proactive, and not having to wait to take action when a problem is detected. Simulations can also highlight how critical it is to focus on people and their mental models, and can thus bring across the notion that change and organisational life is about people and their underlying thinking, and how they interpret things, and interact with the system.

Simulations can play a role in developing the skills of participants, and appear to be effective in triggering an initial inclination to learning. More clarity is however required as to the effectiveness of such learning, whether or not double-loop learning occurs through participation

in a simulation, and how various factors from the side of researcher/designer/facilitator, to participant, influence learning processes amongst the various participants.

9.5 Salient findings from this study

- The use of a simulation was found to be pivotal in illustrating how the various stakeholders in a system interact, and how critical it is that they understand how their underlying thinking, decisions and actions influence each other.
- Simulation use highlighted the difficulty in managing and balancing stakeholder demands in a multi-stakeholder scenario, especially considering the role that mental models and stakeholder perceptions play.
- Participation in a simulation emphasised how essential it was that more emphasis be placed on developing capabilities and being adaptable, rather than being overly-reliant on plans.
- Involvement in a simulation drew attention to how approaches toward communication and participation influence outcomes, as well as the way in which minor decisions can have significant outcomes, and how changes in one area can affect others.
- The effects of the impact of limited resources and information, coupled with much uncertainty, and a lack of abilities, was adequately portrayed through simulation use. Likewise, the simulation could also illustrate how various issues around protocol, procedures, and leadership play a role in change processes.

CHAPTER 10: CONCLUSION

10.1 Back to the original intentions of undertaking this study

This study was intended to explore the use of simulations for change processes. The process commenced by setting the objective and research questions. Relevant literature was reviewed and a better understanding was gained into change management and learning, systems thinking, complexity theory, and simulations. The study then employed a qualitative approach, utilising interviews, observations and secondary data, to discover pertinent issues in the fisheries system in the Western Cape. Relevant interviews were conducted with stakeholders, and the data was then carefully analysed. A simulation was thereafter specifically designed for the context, and was based on the results of the interviews as well as critical issues from change literature. The simulation was piloted and then conducted with some of the real-world stakeholders. This was quite a thorough and meaningful study in the sense that a simulation was designed to make an attempt at addressing the issues that were discovered.

Attention can now shift to answering the research questions as formulated in the introductory chapter.

- How could interactive simulations contribute to change management?

The simulation that was designed and conducted in this study may have drawn attention to an alternative way of achieving organisational effectiveness, which is the core purpose of the conventional change management approaches. This was exemplified by the need for adaptability and the development of the capabilities of all, rather than merely relying on plans or on attempts to transform processes or units.

Furthermore, the simulation highlighted that it was not necessary to wait for a problem, which may only perhaps have been identified by a few, to increase organisational effectiveness. What was particularly important was that the simulation pointed out that it was possible to address the multiple issues that beset organisations during change processes, and to consequently derive some answers from the very people in a context. The simulation furthermore dealt with the various issues in a manner which was not reductionist. The participants were able to make a contribution to areas that were of relevance in their lives.

- How and to what extent do simulations contribute to double-loop learning in the context of organisational change?

The study illustrated that simulation use can assist with initial learning processes, in that there was a move towards facilitating continuous learning and improvement. The mental models of participants were challenged when there were opportunities for reflection, and people could see, understand, and discuss the effects of their decisions. Having the simulation roles based on real world roles further facilitated learning, as participants could see the role of stakeholder perceptions and mental models. Learning processes were also facilitated when participants could see how interconnected everything was.

The extent of the experiential learning that occurred varied however according to the participants in the simulation. Learning processes, and the ability of participants to apply lessons learnt in the simulation to the real world context, were affected by the diversity of the participants in the simulation, as well as the extent to which all the stakeholders were present. The need for the inclusion of other learning mechanisms in conjunction with simulation use was thus raised. The degree to which participants could view the whole system was constrained due to their individual backgrounds and roles that they had in the simulation. Furthermore, those who found the activities in the simulation similar to the real world may not have engaged in any meaningful learning. Thus, double-loop learning may have only occurred for some participants or not at all.

- What is the role of simulation in participation, communication, problem-solving and learning?

The study was significant in demonstrating that simulations can assist with critical issues around participation and communication. The involvement of people from different levels in the simulation strengthened ties, and people could thus see their part in the bigger picture. Utilising systems thinking and complexity theory, the simulation highlighted the realities of organisational life and more specifically change processes. The importance of being adaptable and possessing the necessary capabilities were hence illustrated to participants through the various occurrences in the simulations. Furthermore, the simulation drew attention to the interactions between the various parts in the system and how unintended consequences occur.

The role of simulation in facilitating problem-solving could not be fully ascertained. Participants were able to draw some key learning lessons based on the problem-solving activities in the simulation, despite the fact that there was no reference to their real world

context. It cannot be stated with certainty however whether all participants discovered new features to the problem or were able to generate new ideas. Furthermore, some participants may have already been aware of the problems but perhaps not on a more conscious level. The simulation may however have allowed some participants to develop critical skills, and furthermore improved the confidence levels of some.

- What can simulations offer to the change management body of knowledge?

The simulation highlighted that research needs to focus more on multiple-stakeholder scenarios, characterised by immense complexity and inter-connected processes. A thorough understanding of the realities of organisational life, but with the inclusion of systems thinking and complexity theory, is required. Simulation use illustrated that a meaningful, representative picture of change could be gained by studying the parts in their totality. The simulation also drew attention to the limitations of viewing change in a linear way, as it was demonstrated how the interactions between people drive change. Linked to this was the realisation of the implications that an over-dependence on management can have. This was demonstrated by the need for more meaningful input by all from an early stage.

Based on the overall results, it can be asserted that the study highlighted the potential contribution that simulation use could play in change management. The innate complexity within a specific real world setting was utilised, and the unique needs of learners were taken into account. The role of stakeholder demands, interactions, and perspectives in change were effectively illustrated. A variety of complex issues involving multiple-stakeholders were thus addressed. The simulation was useful in bringing change theory to a level where participants were able to understand and contribute through their experiences, during discussions in the debriefing phase. The simulation was in essence a means of allowing people from diverse backgrounds to digest the theory, but in a way that was neither intimidating nor uninteresting.

The simulation provided valuable input into a variety of issues around change, rather than in one area only. This allowed for a fairly accurate portrayal of reality. Other issues around the role of leadership, protocol, procedures, limited resources and information, uncertainty and lack of information, all of which characterise change processes, were also effectively highlighted in the simulation. The simulation enabled theory testing and building, and also permitted valuable observations.

10.2 Implications of the research

10.2.1 Simulation use for change processes and in general

The simulation was designed for use in a fisheries context, but it is believed that the simulation can be used firstly for other areas of natural resource management, as well as general stakeholder scenarios. The simulation can also be useful in a conventional organisational setting to assist organisations to re-examine the conventional way of approaching change. The change literature may therefore in the process become more meaningful and relevant. The simulation can become a general tool that can be used to address areas of communication, participation, problem-solving, and the development of capabilities, which are of concern in practically all settings. As researcher, I hope that this study can make a valuable contribution in other organisational settings, and can encourage further research and use in academic settings as well.

10.2.2 The fisheries system in the Western Cape

This study has been instrumental in highlighting that there must be more inter-collaboration between the various stakeholders in the fisheries system in the Western Cape. This will not be an easy task, due to past experiences, but people must be afforded an opportunity to constructively express their opinions. The acknowledgement of the underlying thinking and perceptions of all is critical.

Even though MCM has final decision-making power, it is recommended that all the different stakeholder views are taken into account. Even complicated decisions regarding sustainability and how research assessments are determined, may require more interaction between the stakeholders, in order to be fully comprehended and accepted. It should not a take a crisis to bring the stakeholders together. When plans are put into place, for example, if the policy for the subsistence fishery is resolved, then people should not become complacent.

Figure 6.3 which portrayed the interconnectedness of the various issues highlights the urgent need for the fishing industry as a whole to become more adaptable and realise how actions that are taken in a certain sector, affect other parts. This is illustrated in the poaching crisis, which is of consequence in other parts of the country too, such as the Eastern Cape (Hayward 2009). The only way to overcome this problem, and others, is to have more co-operation between the various stakeholders, as well as other Government departments. The inclusion of practically all Government departments including, Education, Social Development, Trade and Industry, SA Police Service, Justice and Constitutional Development, Public Works, is critical for the well-

being of the fisheries system. Areas around fisheries compliance, and education and training, in particular deserve urgent attention, as highlighted in other studies (Hauck & Kroese 2006; Hauck 2008; Petersen 2007). MCM and Government undertakings in general, will need to be carefully considered, as these factors clearly have an influence on the fisheries systems. Critical areas such as leadership, staff changes, protocol, accessibility, and fair treatment of all, appear to play an important role.

Fishing communities must be equipped with basic skills to improve their business knowledge and abilities. Such investments will assist them in their business undertakings, make them more alert to deals which they become involved in, and will certainly benefit the system as a whole. More investment is required in the coastal fishing towns, in terms of education from a young age, investment in the youth, and job creation as a whole. This will not only place less pressure on the vulnerable marine resources, but will also be beneficial for the coastal communities.

The small-scale, recreational and commercial sectors will in particular need to become more involved on a continuous basis to find solutions. All stakeholders will need to become more accountable and aware of how their role impacts the system. There must be comprehension of how the various factors, many of which primarily derive from the small-scale, recreational and commercial sectors, negatively affect the marine resources.

Figure 10.1 below is of an over-turned small-scale vessel resting on the sand, with the name of ‘bite fish bite’, when translated from Afrikaans to English. This scene could fast become a permanent reality for all stakeholders, unless much-needed co-operation between all is achieved. An understanding into the Tragedy of the Commons archetype is therefore a necessity.


Figure 10.1: Small-scale vessel at shore

10.3 Contributions of this study

This study, despite being exploratory in nature, has made a few valuable contributions.

- The simulation was designed specifically for a particular setting, after major issues in a particular context were determined using interviews and other qualitative methods with the various stakeholders in the study context.
- The simulation design was therefore based on a comprehensive three-tiered empirical approach. The secondary data was first thoroughly studied in order to become well acquainted with the setting. Interview questions were then structured around change literature issues and information from the secondary data. Data from the interviews, observations and secondary data were then analysed to determine the major issues.
- The simulation, although focused on rabbits, came across as accurate and fair, and reflective of the multiple-stakeholder fisheries context.
- The simulation managed to address a variety of issues in the change literature, that are considered to be problematic for organisations. Participants could therefore as a result actually make connections to the literature.
- The simulations were significant in that two different groups with completely distinct backgrounds and qualifications could find meaning through their participation.

- The simulation literature was utilised both for the design and conducting of the simulation.
- Based on my experiences from designing and conducting the simulations, valuable input could be made regarding the current change and simulation literature, thereby making it possible to achieve the research objectives and answer the research questions. Recommendations could furthermore be made for future research areas to advance the theory, as well as for the study context.

10.4 Limitations of this study

This study is limited in that it only explored the experiences of those in the fisheries context in the Western Cape province in South Africa. There could thus have been different responses for the other coastal provinces of South Africa, regarding the fisheries system.

Potential weaknesses regarding the simulations include the low numbers in the one simulation, and the fact that the simulation was not conducted with all the stakeholders, independently or simultaneously. Another shortcoming could be researcher bias in selecting the issues for inclusion in the simulations. All findings from the interviews and simulations are context specific, and should thus be interpreted with that in mind.

10.5 Recommendations for future research

It will be interesting to correlate the findings from this study with future research which investigates the use of simulations for the fisheries system in the other coastal provinces of South Africa. Furthermore, such results can then be compared to other natural resource areas, besides marine resources, in South Africa, and beyond. Such research can be used to see whether the simulation in this study is only applicable for use in the specific study context, or can actually be used for a diverse audience. Longitudinal studies may also be useful.

The use of interactive simulations should be explored more, particularly in developing countries, and it will be interesting to see how learning processes from interactive simulations compare to those of non-interactive simulations. Cross-country research should also provide interesting comparisons. The specific learning that occurs through engagement in a simulation and the various factors that enhance or impede such learning need further exploration. Furthermore, the nature of such learning needs to be scrutinised, to determine whether it is double-loop learning, or a more initial or temporary kind of learning that requires further intervention.

It is particularly critical to further investigate the argument that the core purpose of simulations is to facilitate learning of participants. Related to this is the need to examine other mechanisms that can be used in conjunction with simulations, to facilitate such learning, and that can be used on a long-term basis. The impact of the organisational actors on such learning also needs to be assessed. A concerted effort must hence be made to explore and discover what precisely maximises learning from and in simulations. This can be useful to assist organisations in achieving a competitive advantage, as well as to advance theory.

Further research is needed to investigate the factors which influence the outcomes of the simulations, from both researchers/designers/facilitators as well as participants. This study has clearly indicated a range of issues, including low numbers, late starts, disruptions, language, and group dynamics, that influence the flow of the simulation. Studies need to focus on the practicalities of designing and conducting simulations, and the specific attributes required by the facilitator. More studies are needed that focus on the realities of multiple-stakeholder scenarios. The design specifically of simulations for such situations deserves more attention, as this is an area relevant to many settings.

10.6 Concluding remarks

The mention of the word change somehow has the ability to spark a debate in almost any circle. It is said that the only constant is change. People have such diverse opinions regarding change, as it is something that each one of us can absolutely relate to. Change, in an ironic way somehow unites us. It is an area which permeates into practically all spheres of our lives, whether it be at the workplace or at home. In the spirit of acknowledging the inter-connectedness of everything, one recognises that change in one area most certainly has outcomes in other areas. Coupled with this is the notion of the immense complexity that will continually form part of our existence.

The quotation below is presented to bring closure to this research journey, which explored the use of simulation as a tool of change management.

Life is change. Growth is optional. Choose wisely. - Karen Kaiser Clark

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APPENDIX A: INFORMED CONSENT FORMS

UNIVERSITY OF KWAZULU-NATAL
LEADERSHIP CENTRE

MCom (Leadership Studies)
Research Project: Exploring the use of simulation as a tool of change management
Researcher: Cecile Gerwel
Supervisor: Shamim Bodhanya (031-2601493)
Research Office: Ms P Ximba (031-2603587)

Dear Respondent,

I, Cecile Gerwel, am a MCom student, in the Leadership Centre, at the University of KwaZulu-Natal. You are invited to participate in a research project entitled *Exploring the use of simulation as a tool of change management*. The objective of this study is to investigate how and specifically in which ways simulations play a role in change management.

Through your participation I hope to better understand simulation use in the change context, and which factors contribute towards effective change management. The results of the study are intended to contribute to the theoretical base on change management and simulations. Furthermore, the findings and recommendations generated from the study may be utilised by organisations already grappling with the change process, as well as those planning a change strategy.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequences. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Leadership Centre, UKZN.

If you have any questions or concerns about completing the interview or about participating in this study, you may contact me or my supervisor at the numbers listed above.

Your participation in the interview should take about an hour. I hope you will take the time to participate.

Sincerely

Investigator's signature_____Date_____

This page is to be retained by participant.

UNIVERSITY OF KWAZULU-NATAL
LEADERSHIP CENTRE

MCom (Leadership Studies)
Research Project: Exploring the use of simulation as a tool of change management
Researcher: Cecile Gerwel
Supervisor: Shamim Bodhanya (031-2601493)
Research Office: Ms P Ximba (031-2603587)

CONSENT

I_____ (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.
I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT_____ DATE_____

This page is to be retained by researcher.

APPENDIX B: INTERVIEW SCHEDULE

From your perspective, provide an overview of the problems facing those in the fisheries system in the Western Cape:

- Historical overview
- What caused it / what led to it / need?
- Participation and communication
- Who are the stakeholders or those affected?
- What were the clashes about or the main issues that arose?
- What were the stakeholders fighting for or holding onto?
- What were the interventions to try and resolve these issues, and where is the process currently?
- What have you learnt from the process or if things could be done differently, how would this occur?
- What in your own opinion are the areas for potential to move this process forward?

APPENDIX C: SIMULATION PACKAGE

RABBIT-VENTURE©

List of documents comprising simulation package

- Facilitator manual (R1)
- Confirmation of money received (R2)
- Policy document (R3)
- Consent form for participation in simulation (R4)
- Rabbit cage specifications (R5)
- Certificate of Award (R6)
- Record of cages received (R7)
- Rabbit cage design (R8)
- Lack of rabbit cage production letter (R9)
- Improved productivity letter (R10)
- Lack of dismissals letter (R11)
- Crisis management letter, a and b (R12)
- Termination of Rabbit-Venture letter (R13)
- Blanks for letters to be drafted on the spot (R14)
- Evaluation form (R15)

RABBIT-VENTURE©

Facilitator Manual

Rabbit-Venture is an interactive simulation (not computer based) designed to facilitate participant learning. Although the simulation deals with a rabbit-based venture, certain underlying principles can be found in most settings, thereby making the simulation flexible for use among a broad audience.

The aim or goal of the simulation "All involved in *Rabbit-Venture* must at all times aim to be successful in whatsoever position" is phrased in an interpretable manner. This is so that participants can formulate their own definitions about what constitutes success, and specifically regarding the role that they are in. They are given a choice about their behaviour, strategies and actions. This allows participants to decide whether to eventually cooperate or compete with other stakeholders, and to experience the consequences of their decisions. Unanticipated events are added so that participants can respond, and that the simulation remains interesting.

Objectives

To immerse participants in an experience involving multiple stakeholders for the purpose of better understanding each other's perspectives, by gaining insight into how:

- Events unfold due to individual beliefs and actions, and interactions with others.
- A seemingly minor decision may have significant outcomes, and how changes in one area may have consequences elsewhere.
- Approaches toward issues of communication and participation influence outcomes.
- To respond effectively to uncertainty and difficulties through being adaptable and developing capabilities, rather than being overly reliant on plans.

Goal

All involved in *Rabbit-Venture* must at all times aim to be successful in whatsoever position.

Number of participants

Best run with 25-40 participants, but no less than 15.

Materials

- Container for R5 coins
- Name tags
- Flipchart
- Masking tape
- Prestick
- Writing paper
- 1 Box for the cages
- Package of raw materials with
    - Cardboard paper sheets or any paper
    - Rulers
    - Scissors
    - Sticky substance
    - Pens, pencils, coloured markers, and erasers

- Handouts

- Confirmation of money received (R2) - more than 1 copy to save time
- Policy document (R3) - copy for each participant
- Consent form (R4) - more than 1 copy to save time
- Rabbit cage specifications (R5) – enough copies for participants
- Certificate of Award (R6) - initially 1 only but have 2 more for later use
- Record of cages received (R7) - 1 copy initially for Government but have 2 for use later
- Rabbit cage design (R8) - initially 1 only but then many for later use
- Letters - Lack of production (R9), Improved productivity (R10), Lack of dismissals (R11), Crisis management a/b (R12), Termination of Rabbit-Venture (R13) and blanks for letters (R14) which may have to be drafted on the spot
- Evaluation Form (R15) - copy for each participant

Time: 2½ to 3 hours

Flow of events

Preparation before the simulation

- Get 3 rooms that are close to each other, two of which look smarter than the other one.
- The rooms should have enough chairs and tables for the expected participants.
- Place flipchart paper and markers in each room.
- Participants must be notified in advance of the simulation to bring a R5, and also to arrive on time for the simulation. Late-comers could disrupt the flow of the simulation, especially if roles have already been assigned.

The simulation

Briefing phase

Collection of money and name tags

- As participants arrive, collect the R5s and ask them to sign the "Confirmation of money received" form. Preferably have more than one form available to save time. Also let participants write their names on the tags.
- Take the money, which will be converted into another currency.

Introduction of facilitator, participants and simulation

- If participants do not know each other, then you may choose to have participants introduce themselves briefly at the beginning, or you could leave this until the end of simulation.
- Welcome participants to the simulation, and introduce yourself as facilitator and any co-facilitators.
- Ask if any of them participated in a simulation before. Then provide a brief explanation of what a simulation entails, but do not say too much as this may affect the flow of the game. The following can be used as a guideline.

> You may have heard of role-play or a business games before. In a business game, people form teams that represent companies, and then work towards a goal by making decisions, which have certain outcomes. A simulation is a lot like this. So, a simulation is essentially an interactive, experiential, practical exercise.

- Give each participant a copy of the "Policy document".
- Read out the "Policy document" which is essentially the briefing. The "Policy document" contains the opening scenario, setting and rules.

- The learning objectives of the simulation will not be highlighted at this stage. Objectives can be dealt with in the debriefing.

Consent

- Ask participants if they are all comfortable to participate in the simulation, and whether they have any questions. Once again, do not give too much away. Rather focus them on the "Policy document".
- Hand out the "Consent Form" and let all participants sign. Preferably have more than one form available to save time.

Group formation and assignment of roles

- Participants will need to be grouped. You can choose whether to assign them or have them self-select.
- You will want to end up with the following groups, with the majority being the Fabrication Inc. workers. The Government and Fabrication Inc. Executives groups will be almost equal, and the Media and General Public group can be 2 or 3 people at most.
    - Government
    - Fabrication Inc. Executives
    - Fabrication Inc. workers
    - Media and general public

- Perhaps mention to participants that you and other co-facilitators will now be observers, and will only intervene if absolutely critical. Also wear an Observer badge.

Commencement of the action

Establishment Phase

- Inform participants that the Establishment Phase has started and that it will last approximately 20 minutes.
- Send the different groups to the rooms, which should not be too far apart.
- Have flipchart paper in each room, which can be used to indicate the phase and time for it.
- Send the Government to a more fancy room or area, and give them an envelope with many copies of the "Rabbit cage specifications", "Certificate of Award", "Record of cages received", Package of Raw materials, and the 25% of the investments (R5s which were received).
- Send the Fabrication Inc. Executives to the better looking room that is close to the room where the workers will be. Give the Executives an envelope with the "Rabbit cage design", and the 75% of the investments (R5s which were received).
- Send the Fabrication Inc. workers to the other room.
- Ensure that the 3 workers are initially in their separate areas.
- The media and general public must stay behind with you. The people who play these roles will perform critical roles during the simulation. Give them notepads, pens, and markers, and inform them that they should initially go around the three rooms and observe what is happening during the Establishment phase.
- Advise the Media person that you will routinely hand them notes with clues that they should announce as a broadcast using the bell. Also mention that they should just present the facts, and not engage in any debate.
- The other person can fulfil the role of someone from the Union who will check to see that everything is going well with the workers. The person must not be too pushy either. This person can later fulfil the role of Civil Rights Protection authority.
- Any late-comers may be added to the media and general public group, or to the Fabrication Inc. workers group.
- If participants ask questions, generally refer them to the "Policy document".

- Go into the three rooms to observe what is happening, and take notes. Essentially step aside, ensuring minimal interference.
- The Executives and Government should be interacting during this phase to sort out the raw materials, specifications, and Certificate of Award. Executives with or without the input of workers should be planning production.

Production Phase

- The real aim of the Production Phase is actually to throw in a variety of challenges. Participants will not actually end up in the Evaluation Phase.
- This phase may be slightly tricky to facilitate, as it will call for a tremendous amount of judgement based on occurrences, which will indicate the required intervention. You will have to ascertain which of the various documents to use as the triggers. You may also have to create some of your own, as events unfold. The following pointers can be used as a guideline.
- Indicate on the flipchart paper in all the rooms when the Production Phase has started and indicate approximately 1 hour.
- Due to potential events, this phase may run into 1½ to 2 hours.
- By this stage, work on the cages should begin.
- If not, give them about 5-10 minutes, and then ask one member of the general public group, to act as Courier to deliver the Fabrication Inc. Executives the "Lack of Production" Letter.
- If all goes well, then observe the rabbit cage production. Also watch how the Executives take the cages to the Government.
- Encourage the media to go around and solicit information, and possibly conduct interviews.
- Once approximately 3 cages have gone through to Government, let the media produce some sort of publication or create a hype about how well *Rabbit-Venture* is going and how money is being made.
- Depending on the progress made, allow for approximately 3-6 more cages to be taken to Government.
- At this stage, ask the Courier to deliver the Fabrication Inc. Executives the "Improved productivity" Letter. Do not forget to insert the number of workers (dependent on number of participants) that have to be dismissed, as well as numerous copies of the designs. A few workers should still be in the employment of Fabrication Inc. who should start working on the new design.
- This is when the pace of events in the simulation should change.
- Give the Executives about 5-15 minutes to dismiss the workers. If not, then ask the Courier to deliver the Fabrication Inc. Executives the "Lack of Dismissals" Letter. Ensure that the dismissed workers leave immediately.
- If all goes well, then the workers should be dismissed. See what occurs from here.
- The Government should soon thereafter receive either version of the "Crisis management" letter, along with 2 copies of both the "Certificate of Award" and "Record of cages received" from the Courier.
- Let the media and Civil rights protection person, conduct interviews, and write up as necessary. You can prompt them as need be.
- Civil rights protection person should take an interest in the well-being of the workers.
- This person should encourage the workers to organise, and stand up for their rights and question as to what they will do now that they are unemployed, especially considering that they only know how to make cages. Have the person encourage them to also start some sort of small business by approaching Government, and also to point out that the Executives have the 2 rooms, the raw materials, and the designs. The media should be following all this.
- Let this play out for a while and see what occurs.
- By this stage, the Executives could be ignoring the protests from the dismissed workers, or buckling under the pressure, or could be turning to Government.
- Ensure that the workers are not reinstated as this will be problematic for the flow of the simulation.

- The Government may intervene or not. If they do, they may decide to take away some of what the Executives have, to allow the dismissed workers to start a new venture.
- This should add a new dimension to the simulation, as Government will have to redistribute.
- Both 'companies' should hopefully start producing cages.
- You will have to observe to see what happens.
- A final letter, "Termination of Rabbit-Venture" may be mailed to Government to end the simulation, depending on whether production goes ahead or not.
- End the simulation and inform participants to come out of their roles, and that a debriefing phase will follow.

Debriefing phase

The debriefing should ideally include all participants. Thiagarajan's (2003: 87) six-phase model for debriefing may be used as a guide.

- How do you feel?
    - Discuss how participants felt about the assignment to the groups, and allow for any strong positive and/or negative emotions to be expressed.

- What happened?
    - Enquire about any expectations, assumptions, and individual recollections which can be compared and contrasted.

- What did you learn?
    - Highlight any key learning points, and connect to the objectives and purpose of the simulation.

- How does this relate to the real world?
    - Link in the significance of the simulation to the real world.

- What if?
    - Highlight and apply new insights to new contexts, and use alternative scenarios to speculate on how people's behaviour may have changed.

- What next?
    - Use insights from the simulation to undertake planning for the real world.

Conclusion of simulation

If time permits, then a video or presentation that ties in with the objectives of the simulation can be shown.

Evaluation form of simulation

Once the debriefing phase has ended, ask participants to complete the "Evaluation form". Let participants know that you are available at the end if anyone would like to discuss anything.

Get the R5s at the end and return to participants.

RABBIT-VENTURE©

Confirmation of money received

Names	Signature

RABBIT-VENTURE©

Policy document

Congratulations, you are all part of *Rabbit-Venture*! *Rabbit-Venture* is a Government-initiated project, based on the idea that rabbit production was found to be a viable source of income in many countries.

The following groups are involved in *Rabbit-Venture*: Government, Fabrication Inc. comprising Executives and workers, and the media and general public. Government oversees *Rabbit-Venture* and gave Fabrication Inc. the opportunity to get the project off the ground by producing rabbit cages.

All involved in *Rabbit-Venture* must at all times aim to be successful in whatsoever position.

All must sign to abide by the following standard rules governing participation.

STANDARD RULES

Establishment

- All those participating in *Rabbit-Venture* must maintain a respectable relationship, with absolutely no physical threat or harm to any individual.
- Government and Fabrication Inc. Executives will routinely receive important mail with orders, which must be followed.
- Each person must invest R5.00, as a sign of enthusiasm to participate in *Rabbit-Venture.*
- Government will keep 25% of the investments as tax, and Fabrication Inc. Executives the other 75%.

Decision-making and communication

- Government has final decision-making power in all matters of interest relating to *Rabbit-Venture,* but will attempt to include Fabrication Inc. in decision-making.
- Government may on occasions need to make critical decisions immediately.
- Likewise, certain decisions may require more time due to Government protocol.
- Government may choose how and what to communicate to Fabrication Inc.
- Fabrication Inc. Executives will be required to communicate with Government, participate in meetings and any other necessary undertakings, and handle financial concerns.
- Fabrication Inc. Executives may choose how and what to communicate to workers.
- Fabrication Inc. Executives may on occasions need to make critical decisions immediately.
- For their efforts, Fabrication Inc. Executives may allocate an additional stipend or any other compensation deemed fit to themselves.

Production-related matters

- The Research & Development team at Fabrication Inc. created the rabbit cage design, which is with Fabrication Inc. Executives.
- Only one copy of the design is available; care must be taken not to damage it. This means that workers will have to copy the design on blank sheets of paper and make these into cages.
- Workers will have to study the rabbit cage design and build cages using raw materials.
- Fabrication Inc. Executives must use 25% of their investments to obtain the necessary raw materials from Government. Credit of not more than 50% may be provided, but will have to be repaid by the Evaluation Phase. Only raw materials from Government may be used.
- The rabbit cages that are built must strictly adhere to the specifications, which were drawn up by and is with Government.
- Fabrication Inc. Executives will have to decide on the company structure, and how work and other labour-related matters will be accomplished.

- Fabrication Inc. has an office suite available for the Executives and a production site for the workers.
- Government may at any time visit Fabrication Inc. to monitor progress, and may make any decisions in the interests of *Rabbit-Venture*.
- Government may reward or penalise Fabrication Inc. in any manner, and at any time, as is deemed fit.

Rabbit-Venture will attract much interest from the media and general public. Relevant newspaper columns will be prepared. The sound of a bell will signal the announcement of breaking news. All are encouraged to listen at such times, but must thereafter continue with the activities that they were busy with prior to the broadcast.

The phases of *Rabbit-Venture* which will be indicated by the facilitator are as follows, but may be revised, depending on the progress made.

Establishment Phase: The rabbit cage design and specifications must be studied, and the necessary raw materials purchased. Government must publicly present the Certificate of Award to Fabrication Inc. once they are satisfied that Fabrication Inc. can produce the cages, considering the human resources capacity and raw materials. The Certificate of Award must state that Fabrication Inc. is the only supplier of the rabbit cages, and that Fabrication Inc. may not engage in any other production. Planning for rabbit cage production can occur, but cages may only be produced during the Production Phase.
Production Phase: Fabrication Inc. must produce as many rabbit cages as possible.
Evaluation Phase: The project must be evaluated and future product development assessed.

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Consent for participation in simulation

Names	Signature

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Rabbit cage specifications

The cages that are built will be critical to the well-being of the rabbits. Each and every cage must be built with the following in mind.

- The rabbit cages have a base and an upper part, which is the roof.
- Both of these must be carefully drawn according to the design, and then cut along all outside lines. Broken lines indicate where you must fold the paper.
- All flaps must be pasted; when applying the sticky substance, work carefully as these substances can affect the rabbit's health. However, the cage must be solidly built.
- The roof must not be stuck to the base, to allow easy access for rabbit handlers.
- There will be an open space, which is the window for breathing.
- Workers may decorate the exterior of the rabbit cages, as considered appropriate.
- Government must have quality control inspectors, and can at any time make spot-checks to Fabrication Inc.
- Government will reject sub-standard cages.
- Fabrication Inc. Executives will transfer successfully completed cages to Government every 10 minutes. Workers must continue production.
- Government will keep a record of the cages received on the provided form, and will then place the cages in a box, which will be indicative of immediate transfer to the site. No-one will have access to the cages thereafter.

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Certificate of Award

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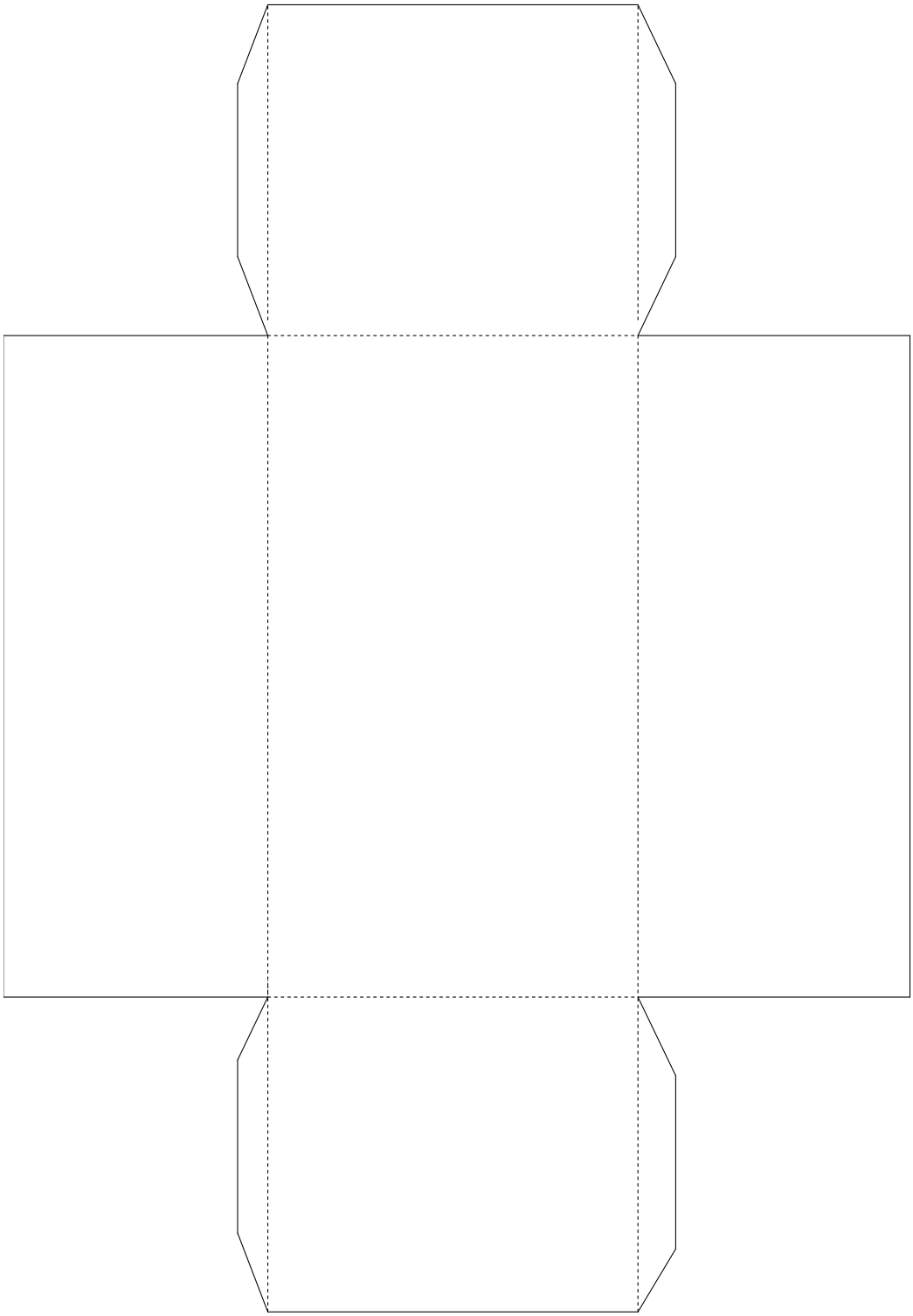
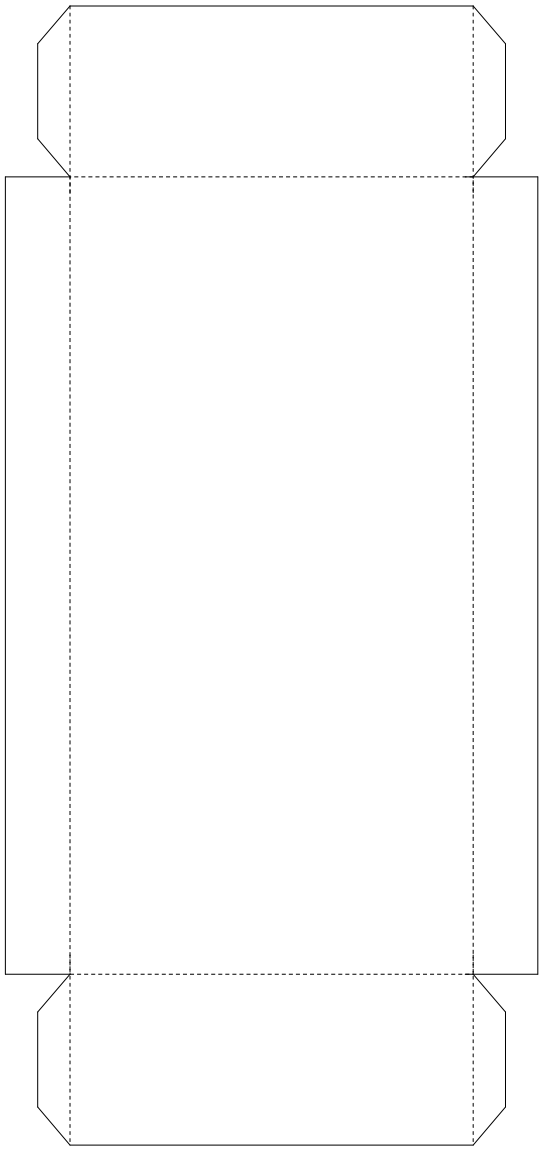
Record: Cages received every 10 minutes

NAME OF COMPANY:		
No.	**TIME**	**NUMBER OF CAGES**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

NB. Update this record every 10 minutes. Record the time and the number of cages received. If no cages are received, still record the time, and insert a 0, under number of cages.



R8



R8

RABBIT-VENTURE©

To: Fabrication Inc. Executives

Re: Lack of rabbit cage production

We are deeply concerned about the lack of production. This is a very important project, with a lot at stake. Please ensure that production commences immediately.

Yours truly,

The Board

RABBIT-VENTURE©

To: Fabrication Inc. Executives

Re: Improved productivity for rabbit cages

An improvement in the method of producing rabbit cages has become available, that will dramatically increase efficiency and consequently profits.

Workers previously had to make copies of the rabbit cage design, which would then be cut, resulting in low productivity. Now printed copies of the design are available to be cut directly, with no copying involved.

This new approach however means that a substantial part of the workforce, ____ workers to be precise, will unfortunately have to be dismissed with immediate effect. Have the dismissed workers leave immediately.

Place aside the old method, and have the remaining workers start with the new method without delay. It is critical that this instruction is promptly followed through.

Yours truly,

The Board

To: Fabrication Inc. Executives

Re: Lack of Dismissals

We are deeply concerned about the very apparent lack of dismissals. We are losing a substantial amount of money by keeping these people on. If they are not dismissed immediately, then your jobs may be at risk.

Yours truly,

The Board

RABBIT-VENTURE©

To: Government

Re: Crisis management

It is with much shock that we have come to hear about the latest regarding Project *Rabbit-Venture. (Version A)*

It is with much embarrassment, that we have come to hear about the latest regarding Project *Rabbit-Venture.* We are being portrayed in a very negative light due to your inability to manage well. (*Version B)*

Do not force the Fabrication Inc. Executives to take back the dismissed workers but rather assist the dismissed workers in achieving sustainable livelihoods. These workers however only know how to produce rabbit cages.

Allow Fabrication Inc. to continue with the new method, but give the dismissed workers the old method of producing rabbit cages. The Certificate of Award given to Fabrication Inc. was issued partially, but quite importantly on the basis of their human resources capacity. Therefore, considering that Fabrication Inc. now has fewer workers, they should give back some of the raw materials, in order to allow the dismissed workers to start production. It would thus be ideal to have the Fabrication Inc. Executives willingly distribute some of their possessions in order to assist the dismissed workers to establish themselves. If they are not willing, then you will need to take decisive action.

Therefore, revoke the Certificate of Award originally issued to Fabrication Inc. and issue two new Certificate of Awards, making mention of the changes. Cage production must commence immediately thereafter by Fabrication Inc. and the newcomers, and also keep new records of the cages received from both.

Rabbit-Venture holds much promise; therefore ensure that the current situation is sorted immediately.

Yours truly

Portfolio Committee on Trade and Industry and Economic Development

RABBIT-VENTURE©

To: Government

Re: Termination of Rabbit-Venture

We have received news that some rabbits have escaped, possibly from sub-standard cages. These rabbits are presenting a threat to various indigenous species, particularly at a time when there is international pressure to preserve our biodiversity. The rabbits are very adaptable as they can eat anything, breed fast, and can affect the soil, and even affect human health. They have the tendency to become pests.

These rabbits will have to be destroyed by culling, gassing, introducing a virus or by using a tractor to demolish their burrows.

This unfortunately signifies the end of *Rabbit-Venture*. Inform all involved as soon as possible.

Yours truly
Portfolio Committee on Environmental Affairs and Tourism

RABBIT-VENTURE©

To:

Re:

Evaluation form: Participation in Rabbit-Venture Simulation

Thank you for taking the time to participate in the *Rabbit-Venture* simulation. Please complete the following questions regarding your participation in the simulation.

- How would you describe your experience in the simulation?

- Has your participation in the simulation made you think differently about your real world, life, or work? Please describe.

- How would you describe the challenge level and ease of use of the simulation? Would you recommend others to participate?

- What could have been done better in the simulation?

- What are the lessons that were learnt from the simulation, specifically regarding the fisheries system in the Western Cape?

- Looking back to your experience in the simulation, can the following links in your real world be made? Tick in the box if you can relate, and then describe what it was in the simulation that reminded you of this.

Criteria used to assign fishing rights	☐	
Fishing rights allocation process	☐	
Loans or credit taken out by the commercial sector	☐	
Interim relief	☐	

- What are your suggestions for how the following groups in the fisheries system in the Western Cape can do things differently, in order to move forward as a collective whole?

Fishers and fishing communities:
Marine and Coastal Management (MCM):
Commercial sector:
Recreational fishers:

Thank you!

APPENDIX D: ETHICAL CLEARANCE APPROVAL

UNIVERSITY OF
KWAZULU-NATAL

RESEARCH OFFICE (GOVAN MBEKI CENTRE)
WESTVILLE CAMPUS
TELEPHONE NO.: 031 – 2603587
EMAIL : ximbap@ukzn.ac.za

20 JULY 2009

MS. CN GERWEL (209510447)
LEADERSHIP CENTRE

Dear Ms. Gerwell

ETHICAL CLEARANCE APPROVAL NUMBER: HSS/0468/09M

I wish to confirm that ethical clearance has been approved for the following project:

"Exploring the use of simulation as a tool of change management"

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years

Yours faithfully

Pximba
.....
MS. PHUMELELE XIMBA
ADMINISTRATOR
HUMANITIES & SOCIAL SCIENCES ETHICS COMMITTEE

cc. Supervisor (Shamim Bodhanya)
cc. Mrs. C Haddon